Pearson Level 2 Foundation Certificate in Digital Systems and Data

Specification

First teaching September 2027

Final Draft V1

Pre-Accreditation Draft

This draft qualification has not yet been accredited by Ofqual. It is published to enable teachers to have early sight of our proposed approach to Pearson Foundation Certificate in Digital Systems and Data. Further changes may be required and no assurance can be given at this time that the proposed qualification will be made available in its current form.

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At Pearson, our purpose is simple: to help people realise the life they imagine through learning. We believe that every learning opportunity is a chance for a personal breakthrough. That's why our c.18,000 Pearson employees are committed to creating vibrant and enriching learning experiences designed for real-life impact. We are the world's lifelong learning company, serving customers in nearly 200 countries with digital learning and assessments experiences, verified skills, and credentials. For us, learning isn't just what we do. It's who we are.

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Introduction

About Foundation Certificates

Foundation Certificates are Level 2 vocational qualifications for post-16 students who want to explore a sector through applied learning. They give students broad vocational knowledge and skills relevant to a sector and help them to progress to Level 3 study, such as V Levels, T Levels or other vocational or academic qualifications.

Foundation Certificates are designed to be taken over one year and range from 240 to 300 guided learning hours (GLH), depending on the sector. Students can combine a Foundation Certificate with English and maths qualifications, enrichment, employability and pastoral support as part of a study programme.

Based on the Department for Education (DfE) subject content, Foundation Certificates combine sector knowledge, practical learning and transferable skills. Through applied work-related learning, students develop an understanding of how the sector works, as well as the wider skills and attributes needed for Level 3 study.

Unlike Occupational Certificates, Foundation Certificates provide a broad introduction to a sector rather than preparing students for a specific occupational role. They help students explore opportunities, understand progression routes and make informed decisions about their future.

Why choose Foundation Certificates from Pearson?

Drawing on decades of vocational expertise and our strong partnerships with educators and employers, Pearson has developed Foundation Certificates that help students build secure foundations for Level 3 study, while giving educators the tools and support they need to deliver with confidence.

Authentic vocational learning. Our qualifications are built around practical learning and real-world application. Students can connect what they learn in the classroom with how the sector operates in practice, helping them to stay engaged, build their understanding and apply their learning in different contexts.

Assessments you can trust. Our assessments are vocationally relevant, straightforward to deliver and designed so that the full range of students can demonstrate what they know and can do. This gives you confidence in student outcomes.

Pathways and progression routes. Our broad range of Level 3 vocational and academic qualifications, including V Levels, helps you to plan coherent pathways from Level 2 that reflect students' aspirations and support their next steps.

Confident delivery. You can deliver our Foundation Certificates with confidence through our comprehensive teaching and learning support resources, professional development offer and dedicated support from our Subject Advisors.

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This specification should be used in conjunction with the *Pearson Foundation Certificates Supplementary Specification*, available on our website.

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1 Pearson Level 2 Foundation Certificate in Digital Systems and Data Purpose

Who is the qualification for?

The Pearson Level 2 Foundation Certificate in Digital Systems and Data has been developed for post-16 students who want to explore the digital sector through engaging, applied learning in order to progress to Level 3 study. Students will build essential sector knowledge and put skills into practice through relevant work-related contexts.

The qualification develops students' understanding of how data, software, hardware and networks work together, and how organisations use them to deliver secure and reliable digital services. Students will understand how data is prepared and interpreted, how digital systems are set up and protected, how programs are built and tested, and how to judge the reliability of digital information, including AI-generated outputs, and apply this to structured, work-related digital tasks. The qualification provides a broad, applied introduction to the sector, giving students the knowledge, skills and experience to make an informed choice about their next step at Level 3.

This qualification can be combined with English and maths qualifications, enrichment, employability and pastoral support.

How will students apply their learning?

Students will apply their knowledge, understanding and skills to:

- clean, interpret and visualise a dataset in order to answer a question and communicate findings clearly
- configure and secure digital systems by applying access, authentication and configuration measures
- plan, develop and test a programming solution in order to meet a brief
- plan and configure hardware and software components in order to deliver a functional digital system
- select and apply reliable digital sources to produce evidence-based recommendations for an intended purpose.

What knowledge and understanding will students develop

Students will develop knowledge and understanding of:

- **Data, information and evidence:** types and sources of data, how data quality, reliability and bias affect conclusions, and how tables and charts help communicate findings.

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- **Digital systems and networks:** how hardware, software, networks and users work together, including protocols, compatibility and dependencies, and how emerging technologies are shaping digital services.
- **Security of systems and data:** how confidentiality, integrity and availability are protected through authentication, access control, secure configuration, updates and workplace security procedures.
- **Algorithms and programming:** how algorithms and structured logic determine what a program does, and how code is developed in stages to meet a brief.
- **Quality assurance and reliability:** why data, code and systems need to be tested and verified, the causes and effects of errors and faults, and how maintenance keeps systems reliable.
- **Responsible and sustainable digital practice:** using automated and AI-enabled tools with human oversight, respecting privacy, licensing and intellectual property, acknowledging sources and using digital resources efficiently.

Sector-specific skills

Students will develop and have the opportunity to practise the following sector-specific skills:

- data preparation
- programming
- system configuration
- testing and troubleshooting.

Transferable skills

Students are expected to develop the following transferable skills:

- planning
- data interpretation
- problem solving
- communicating
- investigating
- evidence-based decision-making
- self-managing
- recording
- evaluating
- observing.

The Department for Education's Framework for transferable skills and work-related

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behaviours sets out the common language used for transferable skills and work-related behaviours.

Literacy, numeracy and digital skills

Students will continue to develop literacy, numeracy and digital skills through practical application in the subject, including:

- **Literacy:** reading technical information and briefs, recording processes and findings clearly, and acknowledging and referencing digital sources
- **Numeracy:** interpreting totals, averages and proportions, identifying patterns and anomalies, and checking the accuracy of numerical information
- **Digital skills:** using digital applications to search for, organise, store and retrieve information, and using formatting and checking functions to draft and review work.

What can the qualification lead to?

This qualification can lead to progression to the following:

- V Level in Digital Systems and Data
- T Levels in Digital Software Development, Digital Support and Security, and Digital Data Analytics
- A Level in Computer Science.

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2 Qualification overview and key information

Qualification at a glance

Qualification title	Pearson Level 2 Foundation Certificate in Digital Systems and Data
Qualification Number (QN)	XXX/XXX/X
Regulation start date	XX/XX/XXXX
Operational start date	01/08/2027
First certification date	Summer 2028
Approved age ranges	16–18 years
Total qualification time (TQT)	375 hours.
Guided learning hours (GLH)	300 hours.
Duration	Intended to be taken over a one-year programme of study
Entry requirements	Students do not need any prior knowledge, skills or qualifications to take this qualification.
Qualification requirements	Students must complete 3 mandatory units.
Assessment model	• Units 1 and 2 are assessed by Non-Exam Assessments (NEAs). These are marked by centres but set and moderated by Pearson. • Unit 3 is assessed by external task-based assessment, which is set and marked by Pearson. Further information on assessment requirements is provided in each unit.
Examined assessment availability	Assessments are available in January and May/June each academic year First assessment: January 2028
NEA submission	There are two submission windows each academic year, in January and May. Students must be registered for the qualification and entered for the unit before you can submit NEA outcomes for moderation.

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Qualification title	Pearson Level 2 Foundation Certificate in Digital Systems and Data
Resubmission of NEAs	Students have one resubmission opportunity for each NEA. Under certain circumstances, a centre can authorise a resubmission of improved evidence for a NEA before marks and evidence are submitted to Pearson for moderation. Information on the conditions for authorising NEA resubmissions is in the *Pearson Foundation Certificates Supplementary Specification document.*
Retakes	NEAs - following moderation, students can retake an NEA in the next available assessment window. Unless specified, students must respond to the NEA assignment released for the series they are taking the retake. Examined assessment - students may retake the assessment before certification, where necessary.
Grade aggregation	Grade aggregation is compensatory. This means that there are no must-pass units. Students accumulate marks across individual tasks and units, so stronger performance in one area or unit can balance less secure performance elsewhere when the overall qualification result is calculated.
Grading	The qualification and units are graded as Distinction (D), Merit (M), and Pass (P).

Total Qualification Time

For all regulated qualifications, Pearson specifies a Total Qualification Time (TQT). This is the total number of hours that it is estimated students will need to complete and show achievement for the qualification. Within the TQT, Pearson specifies the number of Guided Learning Hours (GLH). These are the hours that we estimate a centre delivering the qualification will provide.

Guided learning means activities such as lessons, tutorials, online instruction, supervised study, and feedback on performance where teachers or assessors are directly involved in teaching, supervising or invigilating students. It also includes the time students spend taking examined assessments under supervised conditions.

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In addition to guided learning, students will spend time on other activities directed by teachers or assessors. These may include private study, assessment preparation and unsupervised assessment activities, such as preparatory reading, revision and independent research.

The Pearson Level 2 Foundation Certificate in Digital Systems and Data has:

- Total Qualification Time: 375 hours
- Guided Learning Hours: 300 hours.

Centres should take these hours into account when planning their programme. However, they should also use their professional judgement to determine the amount of guided learning and study time across the units.

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Qualification structure

This table shows all units and the weighting they contribute to the qualification. Students must complete three mandatory units

Unit number	Unit title	GLH	Weighting	How assessed	Mandatory or optional
1	Digital Security and Systems	90 GLH	30%	Centre marked, Pearson moderated NEA	Mandatory
2	Creating Digital Solutions	90 GLH	30%	Centre marked, Pearson moderated NEA	Mandatory
3	Using and Visualising Data Responsibly	120 GLH	40%	Task-based examination, Pearson marked	Mandatory

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Assessment

Assessment is designed to meet the purposes of the Foundation Certificate qualification. It includes a combination of assessment types and different forms or styles that reflect the qualification content. The two types of assessment are: examined assessment and Non-Exam Assessment (NEA). Students will also respond to synoptic assessments within each type.

Assessment objectives

Assessment objectives are the hierarchy of the specific skills and abilities students are expected to demonstrate in all assessments. The assessment objectives, and their weightings, for this qualification are shown below.

	Assessment objectives (what students must do)	% in qualification
AO1	Demonstrate knowledge and understanding of concepts, principles, requirements and approaches relevant to the subject area	28%
AO2	Apply knowledge and understanding of concepts, principles, requirements and approaches to plan, carry out tasks, produce outputs, and use information appropriately	44.83%
AO3	Interpret, analyse and review information, situations and evidence to identify issues, draw conclusions, and make recommendations	27.17%

Breakdown of assessment objectives (AOs)

Units	AO1	AO2	AO3	Total % for assessment objectives
Unit 1: Digital Security and Systems	3%	18%	9%	30%
Unit 2: Creating Digital Solutions	5%	17.50%	7.50%	30%
Unit 3: Using and Visualising Data Responsibly	20%	9.33%	10.67%	40%

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Non-exam assessment (NEA)

Units 1 and 2 are assessed through non-exam assessment (NEA) set by Pearson, marked by centres and moderated by Pearson. NEAs give students the opportunity to apply their knowledge and understanding through realistic work-related tasks and activities. This helps students connect what they know with how it is applied in practice.

For each unit, new non-exam assessments are released before each submission window through the secure area of our website. Each assessment will be clearly marked with the assessment series and academic year in which it was released. Centres must ensure that they are using the correct assessment for the series in which students have been entered.

Centres will mark the completed assessments using the descriptors in the marking grids provided in each unit.

Unit	NEA Description	Window for assessment
Unit 1: Digital Security and Systems	5 tasks, marked out of a total of 60 marks and completed over 15 hours.	Released in September for January submission and January for May submission First submission January 2028
Unit 2: Creating Digital Solutions	5 tasks, marked out of a total of 60 marks and completed over 15 hours. .	Released in September for January submission and January for May submission First assessment January 2028

Further information about the design and delivery of NEAs, the marking approach, resubmissions and retakes is provided in the Pearson Foundation Certificates Supplementary Specification, available on our website.

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External non-exam assessment

Unit 3: Using and Visualising Data Responsibly is assessed through an external task based assessment that is timetabled, set and marked by Pearson.

The external assessment takes the form of written tasks taken under supervised conditions, which is then marked and a grade awarded by Pearson.

The external assessment comprises 40% of the qualification and is weighted accordingly in the calculation of the overall qualification grade.

Unit	Description of external assessment	Assessment
Unit 3: Using and Visualising Data Responsibly	Two external task-based assessments set and marked by Pearson, completed under supervised conditions. Each paper is worth 45 marks and has a duration of 2 hours.	January and May/June. First assessment January 2028

For more information about external units, please refer to the *Pearson Foundation Certificate Supplementary Specification* document which is available on our website.

Synoptic assessment

Synoptic assessment requires students to demonstrate that they can apply their overall knowledge, understanding and skills, from across the course of study.

Through NEA or examination, students will have the opportunity to:

(a) demonstrate the ability to draw together different areas of knowledge, understanding and/or skills from across the full course of study, and

(b) construct and develop an extended line of reasoning which is relevant, coherent and effectively structured.

Synoptic links between teaching content are identified within each unit .

Language of assessment

Assessment of the internal and external units for these qualifications will be available in English. All student work must be in English. A student taking the qualifications Assessments for all units will be available in English. All student work must be in English. A student taking the qualification may be assessed in British Sign Language where this is permitted for reasonable adjustment. Further information about reasonable adjustments is provided in the *Pearson Foundation Certificates Supplementary Specification,* available on our website.

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Grading of the qualification

The qualification is graded using a scale of Distinction (D), Merit (M), Pass (P) and U (Unclassified). The overall grade is based on performance across all units. Further information about grading is provided in *Section 5: Final grading and awarding*.

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3 Units

Understanding your units

The units in this specification set out the knowledge, skills and assessment requirements for the qualification. We have sequenced the units in the order we believe best supports sustained learning, and we recommend that centres deliver them in this order. Where synoptic assessment requires that a unit must be delivered towards the end of the course, this will be stated in the unit guidance.

Each unit in the specification is set out in a similar way. There are two types of unit format:

- Non-exam assessment
- Examination

This section explains how the units work. It is important that all teachers, assessors, and other staff responsible for the programme review this section.

Non-exam assessment – centre marked, Pearson moderated

Section	Explanation
Assessment type	This confirms how the unit is assessed, (non-exam assessment (NEA) or examined assessment).
Unit type	This confirms whether the unit is mandatory or optional.
Guided learning hours	This indicates the number of hours of teaching, directed activity and supervised assessment expected.
Unit introduction	This is designed with students in mind. It indicates why the unit is important and how learning is structured.
Teaching content	This details the knowledge and skills that must be taught. It also includes additional information, such as synoptic links, where needed. The content has been purposefully structured to support teaching, learning and assessment, and is presented in a sequence that reflects a logical teaching order while helping students build the knowledge and skills needed for successful assessment. Content outcome statements provide the overarching focus for each area of content, enabling teachers to understand the key themes and intended learning at a glance. The content detail then provides further detail on the breadth and depth of content to be taught, ensuring

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	clarity and consistency in the interpretation and delivery of the specification. a) All content is mandatory. The content sets out the full requirement for teaching and assessment, except where: b) The content statement is followed by 'e.g.' – in these instances, the content is indicative within the topic and is not an exhaustive list of what should or could be covered. This content is included to provide clarity around the interpretation of the topic area by providing indicative areas that might be covered. c) content statements include inexhaustive lists, denoted as 'including'. Content following 'including' statements show content that must be taught, but centres may wish to include further examples. Centres should ensure that delivery of content is kept up to date.
Transferable skills	This identifies the transferable skills students are expected to develop in the unit and how they will apply them in work-related contexts relevant to the sector.
Assessment summary	This gives a description of the NEA for the unit, including the nature of the tasks, duration and availability.
Marking the NEA	This gives an overview of the approach for marking the NEA.
Marking grids	The marking grids detail the descriptors across the mark bands that teachers/assessors will use to determine the marks to be awarded to students' assessment evidence.
Resource requirements	This section lists any specific resources that you need to be able to teach and for students to take the assessment. For information on support resources see *Section 6: Resources and support*.

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Task-based external assessment units

Section	Explanation
Assessment type	This confirms how the unit is assessed, (non-exam assessment (NEA) or examined assessment).
Unit type	This confirms whether the unit is mandatory or optional.
Guided learning hours	This indicates the number of hours of teaching, directed activity and supervised assessment expected. It also shows the weighting of the unit in the final qualification grade.
Unit introduction	This is designed with students in mind. It indicates why the unit is important and how learning is structured.
Teaching content	This gives the content that must be taught for the external assessment. It also includes additional information, such as synoptic links, where needed. The content has been purposefully structured to support teaching, learning and assessment, and is presented in a sequence that reflects a logical teaching order while helping students build the knowledge and skills needed for successful assessment. Content outcome statements provide the overarching focus for each area of content, enabling teachers to understand the key themes and intended learning at a glance. The content detail then provides further detail on the breadth and depth of content to be taught, ensuring clarity and consistency in the interpretation and delivery of the specification. All content is mandatory. Content will be sampled through the examined assessment over time.
Transferable skills	This identifies the transferable skills students are expected to develop in the unit and how they will apply them in work-related contexts relevant to the sector.
Assessment summary	This sets out the form of external assessment and the way in which it is used to assess achievement.

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Resource requirements	This section lists any specific resources that you need to be able to teach and for students to take the assessment. For information on support resources see *Section 6: Resources and support*.

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Unit 1: Digital Security and Systems

Assessment type: Non-exam assessment
Unit type: Mandatory
Guided learning hours: 90

Introduction

Every time you send a message, stream a video, clock in for a shift or log in to your college account, you rely on digital systems working behind the scenes. When they work, nobody notices. When they fail, everything stops. That is why organisations of every size need people who can keep their systems running and secure.

In this unit, you will find out how hardware, software and networks work together. Then you will put that into practice. You will plan and set up a working digital system for a given purpose, check that it does what it should, and keep it running with updates and routine maintenance. When something goes wrong, you will follow a step-by-step approach to find and fix straightforward faults. Digital tools, automation and AI can help, but they do not always get it right, so you will learn to check what they produce before you use it.

Security runs through everything you do. You will protect a system by setting up passwords, multi-factor authentication and user permissions. You will review logs, dashboards and alerts to spot anything unusual, then decide what to do next: fix it yourself, recommend a change or escalate it, following workplace procedures. At every stage, you will record what you did and why, so that others can follow your work.

Throughout this unit, you will develop transferable skills in planning, data interpretation, problem-solving, investigating, observing, evidence-based decision-making, self-managing, recording, communicating and evaluating. You will practise these skills as you plan and organise system setup, interpret information, investigate faults and security concerns, choose and check appropriate actions, manage your work and explain and record outcomes. These skills are embedded in practical activities across the unit rather than assessed separately.

This unit is your foundation for Units 2 and 3. The planning, checking, troubleshooting and secure working you practise here will support you as you create and test digital solutions and work with data. This qualification combines theory, practical experience and transferable skills to prepare you for related Level 3 study, including V Levels, T Levels or A Levels, and help you choose which subject areas to specialise in.

Students should be given opportunities to develop their knowledge and skills in a range of contexts including different digital systems, network configurations, security requirements and work-related scenarios.

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Teaching content

Content area A: Setting up a functional digital system

Content outcome	Content detail
A1 Demonstrate knowledge and understanding of the interaction between hardware and software components in enabling system functionality	Students will understand the purpose and function of common hardware and software components, and how hardware capabilities support software operation, enabling components to work together to provide system functionality, process data and support effective system operation. **A1.1 Common hardware components used within digital systems by function** *Students will understand the purpose and function of common hardware components used within digital systems.* **A1.1.1 End-user devices:** desktop computers, laptops, tablets and smartphones **A1.1.2 Connectivity devices:** switches, routers and wireless access points **A1.1.3 Connection media:** cable, wireless and fibre **A1.1.4 Storage devices:** HDDs, SSDs and NAS **A1.1.5 Network interface hardware:** NICs **A1.1.6 Shared peripherals:** network printers **A1.2 Software used to control hardware and provide system and user functionality** *Students will understand how software supports system operation, hardware management and user functionality.* **A1.2.1 Networking systems software:** The role of networking systems software in supporting communication, connectivity and the operation of digital systems. **A1.2.2 Security software: antivirus software and firewalls:** The role of security software in protecting devices, systems and data from security threats.

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	A1.2.3 User and access management software: user accounts, passwords The role of user and access management software in controlling access to systems, services and resources. **A1.2.4 Backup and recovery approaches: full backup, incremental backup** The role of backup and recovery approaches in supporting the restoration and availability of data and digital systems. **A1.2.5 Network monitoring and troubleshooting tools: performance-monitoring tools and event-log viewers** The role of network monitoring and troubleshooting tools in identifying, investigating and supporting the resolution of system and network issues. **A1.3 Hardware capabilities that support software operation** Students will understand how hardware capabilities enable software and digital systems to operate effectively. **A1.3.1 Processing, memory, storage, connectivity and input/output capabilities** How processing, memory, storage, connectivity and input/output capabilities provided by hardware support the operation of operating systems, applications and other software within a digital system.

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A2. Demonstrate knowledge and understanding of the operation of digital networks through connected devices, infrastructure components and software governed by communication protocols	Students will understand how connected devices, infrastructure components, network software and communication protocols work together to enable communication and data exchange across digital networks. **A2.1 Connected devices and infrastructure used within digital networks** *Students will understand the roles of connected devices and infrastructure components in enabling connectivity, communication and access to data, applications and services.* **A2.1.1 Connected devices: client devices, servers, printers, mobile devices, Internet of Things (IoT) devices** The role of connected devices in accessing, exchanging and sharing data, applications and services across digital networks. **A2.1.2 Infrastructure components: routers, switches, wireless access points, network interface controllers, transmission media** The role of infrastructure components in providing network connectivity and supporting communication between connected devices. **A2.2 Operation of digital networks through connected devices, infrastructure and network software** *Students will understand how connected devices, infrastructure components and network software work together to support communication and connectivity across digital networks.* **A2.2.1 Connected devices, switches, routers and network software** How connected devices, switches, routers and network software work together to enable communication and data sharing between devices. **A2.2.2 Network software and services** The role of network software and services in supporting device connectivity, access to data and basic network settings. **A2.3 Network scope and connectivity methods used to connect devices**

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	Students will understand how network scope and connectivity methods influence how devices connect and communicate across digital networks. **A2.3.1 Network scope: personal area networks (PAN), local area networks (LAN), wide area networks (WAN)** How networks connect devices across different geographical scopes and how network scope affects connectivity and resource sharing. **A2.3.2 Connectivity methods:** Ethernet, fibre, Wi-Fi, mobile connectivity How wired and wireless connectivity methods enable devices to connect and communicate across digital networks.

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A3 Demonstrate knowledge and understanding of communication between devices and connected systems within digital networks	*Students will understand how devices and systems communicate across digital networks to exchange data, access services and support network functionality.* **A3.1 Communication between devices and systems** *Students will understand how connected devices and systems exchange data and communicate through digital networks.* **A3.1.1 Communication methods: switches, routers, wireless access points, servers, cloud-based services** How communication can take place directly between devices or through network infrastructure and services. **A3.2 Identifying devices and destinations within network communication** *Students will understand how devices and systems identify communication sources and destinations within digital networks.* **A3.2.1 Network addressing information** How devices and systems identify the source and destination of network communication so that data can be delivered to the correct device or service. **A3.2.2 Network addressing** The role of network addressing in identifying devices and directing data to the appropriate destination.

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A4 Demonstrate knowledge and understanding of the role of component compatibility and system requirements in configuring a functional digital system	*Students will understand how component compatibility and system requirements support the configuration and operation of a functional digital system.* **A4.1 Component compatibility requirements** *Students will understand how compatibility between hardware and software components enables devices and systems to operate together effectively.* **A4.1.1 Component compatibility** How connections and interfaces, operating-system support, device drivers and component capabilities affect whether hardware and software can operate together. **A4.2 System requirements for digital systems** *Students will understand how system requirements identify the resources needed to support the operation of a digital system.* **A4.2.1 System requirements: hardware, network software, operating systems, connectivity, storage, processing resources** The role of system requirements in identifying the hardware, network software, operating systems, connectivity, storage and processing resources required to support network functions and services. **A4.2.2 Minimum and recommended requirements** How minimum and recommended requirements can affect the installation, configuration, performance and availability of network software, services and connected devices. **A4.3 Using compatibility and system requirements to configure a functional system** *Students will understand how compatibility and system requirements support the configuration of a functional digital system and how incompatibility can affect system operation.*

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	A4.3.1 Using compatibility and system requirements How compatibility and system requirements inform the selection and configuration of components for the system's intended purpose. **A4.3.2 Incompatible hardware, incorrect network settings, missing drivers, unmet system requirements** How incompatible hardware, incorrect network settings, missing drivers or unmet system requirements can prevent connectivity, reduce performance or affect the reliable operation of network services.

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A5 Demonstrate knowledge and understanding of factors that affect the energy use, resource efficiency and sustainability of digital systems and devices	Students will understand the factors that influence energy use, resource efficiency and the sustainable operation of digital systems and devices. **A5.1 Energy use** Students will understand the factors that influence energy consumption in digital systems and connected devices. **A5.1.1 Hardware components, processing demand, connectivity, configuration and patterns of use** How the energy consumption of digital systems, network devices and connected equipment is affected by hardware components, processing demand, connectivity, configuration and patterns of use. **A5.2 Resource efficiency** Students will understand how choices about hardware, software and system resources can improve efficiency and reduce unnecessary consumption. **A5.2.1 Hardware, software, network devices and system resources** How selecting hardware, software, network devices and system resources that are appropriate to their intended purpose can improve resource efficiency and reduce unnecessary capacity or processing. **A5.2.2 Maintenance, upgrading, reuse and lifespan extension** How maintaining, upgrading, reusing and extending the useful life of devices, network equipment and components can reduce unnecessary use of materials and resources. **A5.3 Sustainable use of digital systems** Students will understand how decisions about the lifecycle and management of digital systems can support sustainable digital practices. **A5.3.1 Configuration, operation, maintenance and replacement** How decisions about the configuration, operation, maintenance and replacement of digital systems

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	and network infrastructure can affect energy use, resource consumption and overall environmental impact. **A5.3.2 Reuse, refurbishment, recycling and disposal** How responsible approaches to reuse, refurbishment, recycling and disposal of digital devices, network equipment and components can support more sustainable digital practices.

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A6 Demonstrate knowledge and understanding of the role of digital tools, automation features and automated AI-enabled systems in generating configuration and supporting system setup, and the need to check such outputs for suitability for the intended system	*Students will understand how digital tools, automation features and AI-enabled systems can support system setup and configuration while requiring appropriate review, validation and oversight.* **A6.1 Digital tools for system setup** *Students will understand how digital tools and utilities support the setup and configuration of systems and networks.* **A6.1.1 Digital tools and utilities: hardware information, software information, network information, configuration settings, verification** How digital tools and utilities can support system and network setup by identifying hardware, software and network information, applying configuration settings and verifying that components operate as intended. **A6.2 Automation features** *Students will understand how automation features can support and streamline routine configuration activities.* **A6.2.1 Automated tools: common settings, device setup** How automated tools can support routine configuration tasks by applying common settings and setting up devices. **A6.2.2 Automated configuration: validation, monitoring, human oversight** How automated configuration can reduce repetitive manual activity and configuration errors while still requiring validation, monitoring and appropriate human oversight.
	A6.3 AI-enabled systems *Students will understand how AI-enabled tools can support straightforward configuration and troubleshooting tasks.*

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	A6.3.1 AI-enabled tools: settings suggestions, configuration problem identification How AI-enabled tools can suggest settings and help identify straightforward configuration problems. **A6.3.2 AI-generated recommendations, commands and configurations: accuracy, compatibility, security, suitability, unintended effects** The need to review AI-generated recommendations, commands or configurations for accuracy, compatibility, security, suitability and unintended effects before they are applied.

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A7 Demonstrate knowledge and understanding of health, safety and secure handling requirements when setting up, configuring or maintaining digital systems and equipment	*Students will understand the health, safety and secure handling requirements that support the safe setup, configuration and maintenance of digital systems and equipment.* **A7.1 Health and safety requirements** *Students will understand the hazards associated with digital systems and equipment and the practices used to reduce risks during setup, configuration and maintenance.* **A7.1.1 Hazards: electrical risks, trailing cables, equipment placement, heat, manual handling, powered devices** How these hazards can arise when installing, configuring and maintaining digital systems and network equipment. **A7.1.2 Safe working practices, risk assessment and precautions** How safe working practices, risk assessment and appropriate precautions reduce the risk of injury, equipment damage or disruption during system setup and maintenance. **A7.2 Safe handling of equipment** *Students will understand the procedures and responsibilities associated with handling, installing and maintaining digital equipment safely.* **A7.2.1 Handling procedures: connecting, disconnecting, moving devices, components, cables and peripherals** Appropriate procedures for handling, connecting, disconnecting and moving devices, components, cables and peripherals to protect users and equipment from damage. **A7.2.2 Manufacturer instructions, technical documentation and workplace procedures** The importance of following manufacturer instructions, technical documentation and workplace procedures when installing, moving, connecting or maintaining digital equipment. **A7.3 Secure handling**

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	Students will understand how secure handling practices protect devices, systems and information during setup, configuration and maintenance activities. **A7.3.1 Secure handling practices: devices, systems, configuration information, stored data** How secure handling practices protect devices, systems, configuration information and stored data during setup, configuration and maintenance. **A7.3.2 Protection of accounts, credentials, devices and information** The importance of protecting accounts, credentials, devices and information from unauthorised access while configuration or maintenance activities are being carried out. **A7.4 Working within procedures** *Students will understand the role of workplace procedures, personal responsibility and escalation when carrying out system setup, configuration and maintenance activities.* **A7.4.1 Workplace procedures: health, safety, security, access control** The role of workplace health, safety, security and access-control procedures in determining how system setup, configuration and maintenance activities are carried out. **A7.4.2 Personal competence, authorisation, specialist tools and technical expertise** The importance of recognising the limits of personal competence and escalating activities that require additional authorisation, specialist tools or technical expertise.

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A8 Be able to plan and sequence tasks and resources to support delivery of a digital system	*Students will be able to plan and sequence tasks and resources to support the delivery of a functional digital system.* **A8.1 Planning tasks** *Students will be able to identify and plan the activities required to deliver a functional digital system.* **A8.1.1 Implementation activities: preparation, installation, setup, configuration, testing, verification, completion** How these activities contribute to implementing a functional digital system **A8.1.2 User requirements, technical specifications and intended purpose** How user requirements, technical specifications and the intended purpose of the digital system inform the tasks that need to be planned. **A8.2 Sequencing activities** *Students will be able to arrange implementation activities in a logical sequence to support effective delivery of a digital system.* **A8.2.1 Hardware installation, software setup, network configuration, testing and verification** How implementation tasks can be arranged in a logical sequence, recognising dependencies between hardware installation, software setup, network configuration, testing and verification. **A8.2.2 Efficient deployment, configuration errors, delays, service disruption and unnecessary repetition** How appropriate sequencing supports efficient deployment and reduces configuration errors, delays, service disruption and unnecessary repetition. **A8.3 Planning resources**

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	Students will be able to identify and plan the resources required to support implementation activities. **A8.3.1 Resources: hardware, software, network infrastructure, configuration information, technical documentation, time, specialist support** How these resources support the completion of implementation activities. **A8.3.2 Resource availability, technical constraints, dependencies and workplace requirements** How resource availability, technical constraints, dependencies and workplace requirements can affect how implementation tasks are planned and prioritised.

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A9 Be able to configure hardware and software components to achieve a functional digital system	*Students will be able to configure hardware and software components to achieve a functional digital system.* **A9.1 Configuring hardware components** *Students will be able to configure hardware components so that devices and systems operate together to support intended functionality.* **A9.1.1 Hardware installation and configuration: interfaces, ports, device settings, connection methods** How hardware components can be installed, connected and configured using appropriate interfaces, ports, device settings and connection methods to support the intended system functionality. **A9.1.2 Device configuration, connections and hardware settings** How device configuration, connections and hardware settings can be adjusted to enable components to communicate and operate together as required. **A9.2 Configuring software components** *Students will be able to configure software components to support the intended purpose and operation of a digital system.* **A9.2.1 Software configuration: operating systems, applications, device drivers, system software** How operating systems, applications, device drivers and system software can be installed and configured to support the intended purpose of the digital system. **A9.2.2 Software settings, services and dependencies** How software settings, services and dependencies can be enabled or configured so that software operates correctly with required hardware, network resources and other software components. **A9.3 Configuring connectivity**

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	Students will be able to configure connectivity settings that support communication between devices, systems and network resources. **A9.3.1 Connectivity configuration: network settings, addressing, interfaces, connectivity options** How network settings, addressing, interfaces and connectivity options can be configured to enable communication between devices, systems, services and network resources. **A9.3.2 Connectivity requirements: compatibility, protocols, addressing requirements, security, system specifications, intended use** How connectivity configuration should take account of compatibility, protocols, addressing requirements, security, system specifications and intended use. **A9.4 Achieving a functional system** *Students will be able to verify that hardware, software and connectivity configurations work together to provide a functional digital system.* **A9.4.1 Connectivity, interoperability and system operation** The importance of checking and verifying configuration throughout setup to confirm connectivity, interoperability and correct system operation.

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Content area B: Verifying and maintaining systems

Content outcome	Content detail
B1 Demonstrate knowledge and understanding of the occurrence of faults during configuration and operation and the need for checking, diagnosis and corrective action	*Students will understand how faults can occur during the installation, configuration and operation of digital systems.* **B1.1 Occurance and causes of faults** *Students will understand how faults can occur during the installation, configuration and operation of digital systems* **B1.1.1 Hardware, software and network components** How faults can occur when hardware, software and network components are installed, connected, configured, updated or operated within a digital system. **B1.1.2 Causes of faults: incorrect configuration, incompatible hardware or software, addressing problems, connectivity problems, failed services, software errors, updates and environmental changes** How these common causes can lead to faults during system configuration or operation. **B1.2 Recognising faults** *Students will understand how faults can be identified through system behaviour and other indicators.* **B1.2.1 Fault indicators: error messages, warning indicators, loss of connectivity, degraded performance, unavailable services, unexpected system behaviour** How error messages, warning indicators, loss of connectivity, degraded performance, unavailable services or unexpected system behaviour can indicate a fault. **B1.2.2 Observable faults and causes** The difference between an observable fault and its possible cause.

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	B1.3 Checking and diagnosis *Students will understand how systematic checking and diagnostic information can be used to identify faults and their causes.* **B1.3.1 Troubleshooting techniques: connections, configuration, services, individual components** How systematic checking of connections, configuration, services and individual components can be used to isolate and narrow down the cause of a fault. **B1.4 Corrective action** *Students will understand how corrective actions resolve faults and support continued system operation.* **B1.4.1 Corrective actions: configuration settings, component reconnection, component replacement, service restarts, updates, configuration restoration.** How these corrective actions can resolve identified faults and support the restoration of system operation. **B1.4.2 Retesting after corrective action.** The importance of retesting system functionality, connectivity and dependent services after corrective action to confirm that the fault has been resolved without introducing further issues.

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B2 Be able to verify system operation by checking that components function together as intended	*Students will be able to verify system operation by checking that components communicate and operate together as intended.* **B2.1 Checking system operation** *Students will be able to check that digital systems and services operate correctly following installation, setup or configuration.* **B2.1.1 Hardware, software, network devices and connected components.** Checking that hardware, software, network devices and connected components operate correctly after installation, setup or configuration. **B2.1.2 System functions, network services, resources and connectivity.** Checking that required system functions, network services, resources and connectivity are available and operate as specified. **B2.2 Checking components together** *Students will be able to check that system components communicate, exchange data and operate together correctly.* **B2.2.1 Communication, data exchange and interoperability** Checking that components communicate, exchange data and interoperate correctly within the digital system. **B2.2.2 Connections, addressing, configuration settings, protocols and compatibility** Checking connections, addressing, configuration settings, protocols and compatibility where components do not operate together as intended.

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B3 Demonstrate knowledge and understanding of the contribution of maintenance activities comprising updates, checks and troubleshooting to continued system performance and reliability	*Students will understand how maintenance activities support the continued performance, reliability and operation of digital systems.* **B3.1 Maintenance and continued operation** *Students will understand how maintenance activities support continued system operation.* **B3.1.1 Performance, reliability, availability and security** How routine maintenance supports the continued performance, reliability, availability and security of digital systems and network infrastructure. **B3.1.2 Preventative and corrective maintenance** How preventative and corrective maintenance can reduce faults, service disruption, degraded performance and other issues that affect system operation. **B3.2 Updates** *Students will understand the role of updates in maintaining compatibility, security and system performance.* **B3.2.1 Updates: operating system, application, driver, firmware, security** How operating system, application, driver, firmware and security updates can maintain compatibility, performance, reliability and protection against known vulnerabilities. **B3.2.2 Compatibility and update procedures** The importance of checking compatibility and following appropriate procedures before applying updates. **B3.3 Routine checks** *Students will understand how routine checks support the identification of issues before they affect system operation.* **B3.3.1 Routine checks: performance, available resources, connectivity, storage, services, configuration, system status** How routine checks of performance, available resources, connectivity, storage, services, configuration and system status can identify potential issues before they affect operation.

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	B3.4 Troubleshooting Students will understand how troubleshooting supports the identification and resolution of system issues. **B3.4.1 Troubleshooting**: hardware, software, connectivity and configuration issues How systematic troubleshooting can identify and resolve hardware, software, connectivity and configuration issues affecting system performance, reliability or availability. **B3.4.2 Checking operation after maintenance:** How checking system operation after maintenance confirms that faults have been resolved.

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B4 Be able to perform routine maintenance activities to support continued operation	*Students will be able to perform routine maintenance activities that support the continued operation of digital systems.* **B4.1 Routine maintenance activities** *Students will be able to carry out routine activities that support continued system operation.* **B4.1.1 Maintenance activities: updates, system status checks, resource monitoring, connectivity verification, operational issue resolution** How these routine maintenance activities support continued system operation. **B4.2 Applying updates** *Students will be able to apply updates and verify continued system operation.* **B4.2.1 Updates: operating system, application, driver, firmware, security** Applying appropriate operating system, application, driver, firmware and security updates in line with manufacturer guidance and workplace procedures. **B4.2.2 Compatibility, connectivity, services and functionality checks** Checking compatibility, connectivity, services and required functionality after updates to confirm that the system continues to operate as intended. **B4.3 Carrying out routine checks** *Students will be able to carry out routine checks to identify issues that may affect continued operation.* **B4.3.1 Routine checks: system performance, available resources, storage, connectivity, services, configuration settings, device status** Checking system performance, available resources, storage, connectivity, services, configuration settings and device status to identify issues that may affect continued operation. **B4.3.2 Logs, alerts, system messages, status information and monitoring tools** Using logs, alerts, system messages, status information and monitoring tools to determine whether routine maintenance or further technical action is required.

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	B4.4 Troubleshooting and maintaining operation *Students will be able to use troubleshooting techniques and verification activities to maintain continued system operation.* **B4.4.1 Logical troubleshooting process: hardware, software, connectivity and configuration issues** Using a logical troubleshooting process to identify and resolve straightforward hardware, software, connectivity and configuration issues. **B4.4.2 Verification and retesting** Verifying and retesting the system after maintenance to confirm that required functionality, connectivity, performance and reliable operation have been maintained.

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Content area C: Securing and monitoring digital systems

Content outcome	Content detail
C1 Demonstrate knowledge and understanding of the meaning of confidentiality, integrity and availability in relation to protecting data, systems and services	*Students will understand how confidentiality, integrity and availability support the protection of data, systems and services.* **C1.1 Confidentiality** *Students will understand how confidentiality protects information and system resources from unauthorised access and disclosure.* **C1.1.1 Confidentiality: unauthorised access, disclosure, interception** How confidentiality protects data, systems and services from unauthorised access, disclosure or interception. **C1.1.2 Authentication, authorisation, permissions and access controls** How authentication, authorisation, permissions and access controls restrict information and system resources to authorised users and appropriate purposes. **C1.2 Integrity** *Students will understand how integrity supports the accuracy and reliability of data and system information.* **C1.2.1 Integrity: accuracy, completeness, consistency, trustworthiness** How integrity relates to maintaining the accuracy, completeness, consistency and trustworthiness of data and system information. **C1.2.2 Modification, corruption and deletion of data** How unauthorised, accidental or malicious modification, corruption or deletion of data can affect the reliability of systems and services. **C1.3 Availability** *Students will understand how availability supports access to data, systems and services when required.*

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	C1.3.1 Availability: data, systems, network resources and services How availability relates to ensuring authorised users can access data, systems, network resources and services when required. **C1.3.2 Availability issues: hardware failure, software faults, network disruption, power loss and security incidents** How faults, disruption, power loss or security incidents can reduce or prevent authorised access to data, systems and services. **C1.4 Protecting digital systems** *Students will understand how confidentiality, integrity and availability work together to support the protection of digital systems.* **C1.4.1 Security controls and operational practices** How security controls and operational practices can support one or more elements of confidentiality, integrity and availability when protecting a digital system.

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C2 Demonstrate knowledge and understanding of the causes and indicators of security weaknesses and risks arising from insecure access, weak authentication methods, unpatched software and misconfigured system or network settings	*Students will understand the causes, indicators and potential impact of security weaknesses and risks affecting digital systems.* **C2.1 Insecure access** *Students will understand how insecure access can create vulnerabilities and increase security risk.* **C2.1.1 Insecure access: systems, devices, accounts and information** How unauthorised or inappropriate access to systems, devices, accounts or information can create security vulnerabilities and increase the risk of compromise. **C2.1.2 Indicators of insecure access: unexpected logins, unusual account activity, unauthorised privilege changes, inappropriate account use** How unexpected logins, unusual account activity, unauthorised privilege changes and inappropriate account use can indicate insecure or unauthorised access. **C2.2 Weak authentication** *Students will understand how weak authentication controls can increase the likelihood of unauthorised access.* **C2.2.1 Weak authentication controls** How weak authentication controls can increase the risk of credential compromise and unauthorised access to systems and services. **C2.2.2 Indicators of weak authentication: easily guessed passwords, shared passwords, reused passwords, default credentials, lack of multi-factor authentication** How easily guessed, shared or reused passwords, default credentials and the absence of multi-factor authentication where appropriate can indicate weak authentication controls. **C2.3 Unpatched software** *Students will understand how missing or delayed updates can create security vulnerabilities.*

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C2.3.1 Unpatched software: operating systems, applications, firmware and services
How unpatched operating systems, applications, firmware or services can contain known vulnerabilities that may be exploited by attackers.

C2.3.2 Missing, failed or overdue security updates
How missing, failed or overdue security updates can indicate increased exposure to known threats and vulnerabilities.

C2.4 Misconfigured systems and networks

Students will understand how inappropriate configuration settings can create security weaknesses.

C2.4.1 Insecure or inappropriate configurations
How insecure or inappropriate system and network configurations can expose devices, accounts, data and services to unnecessary risk.

C2.4.2 Indicators of misconfiguration: excessive permissions, open ports, unnecessary services, insecure default settings, weak access controls, incorrectly configured network security
How excessive permissions, open ports, unnecessary services, insecure default settings, weak access controls and incorrectly configured network security can indicate system or network misconfiguration

C2.5 Recognising security risk

Students will understand how security weaknesses and vulnerabilities affect digital systems and inform risk management.

C2.5.1 Vulnerabilities, threat indicators and potential impacts
How identifying vulnerabilities, threat indicators and potential impacts supports appropriate risk assessment and the selection of suitable security controls.

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C3 Demonstrate knowledge and understanding of authentication measures, access permissions, configuration settings and protective controls in securing digital systems	*Students will understand how authentication, access permissions, secure configuration and protective controls contribute to securing digital systems.* **C3.1 Authentication measures** *Students will understand how authentication measures help verify identity and protect access to digital systems.* **C3.1.1 Authentication measures** How authentication measures verify the identity of users before granting access to systems, devices, applications and information. **C3.1.2 Authentication methods: passwords, PINs, biometrics, security tokens, multi-factor authentication** How passwords, PINs, biometrics, security tokens and multi-factor authentication can be used individually or in combination to provide appropriate levels of identity assurance and access protection. **C3.2 Access permissions** *Students will understand how access permissions control access to systems, information and services.* **C3.2.1 Authorisation and access permissions** How authorisation and access permissions control which systems, files, data, services and functions authenticated users are allowed to access. **C3.2.2 User roles, responsibilities and least privilege** How permissions can be assigned according to user roles, responsibilities and the principle of least privilege to reduce unnecessary access. **C3.3 Security configuration settings** *Students will understand how configuration settings can strengthen or weaken system security.*

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	C3.3.1 Security configuration settings: operating systems, applications, devices and networks How operating system, application, device and network security settings can be configured to reduce vulnerabilities, restrict access and protect systems and data. **C3.3.2 Insecure defaults, excessive privileges, unnecessary services, open ports and inappropriate settings** How insecure defaults, excessive privileges, unnecessary services, open ports or inappropriate configuration settings can weaken system security. **C3.4 Protective controls** *Students will understand how protective controls help prevent, detect and limit security threats.* **C3.4.1 Protective controls: firewalls, anti-malware software, endpoint protection, encryption, device security features** How firewalls, anti-malware software, endpoint protection, encryption and device security features help prevent, detect or limit security threats.

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C4 Demonstrate knowledge and understanding of communication protocols, IP addressing conventions, secure configuration baselines and patch management practices in supporting secure and reliable digital systems	*Students will understand how communication protocols, IP addressing conventions, secure configuration baselines and patch management practices support secure and reliable digital systems.* **C4.1 Communication protocols** *Students will understand how communication protocols support the exchange of data between devices and systems, and how secure communication protocols help protect data during exchange.* **C4.1.1 Communication protocols** How communication protocols define agreed rules for formatting, transmitting, receiving and interpreting data between devices and systems. **C4.1.2 Secure communication protocols** How secure communication protocols help protect data exchanged between devices and systems. **C4.2 IP addressing conventions** *Students will understand how IP addressing supports communication between connected devices and systems.* **C4.2.1 IP addresses** How IP addresses identify devices on a network and support communication. **C4.2.2 IP addressing and network communication** How appropriate IP addressing supports communication between connected devices and networks. **C4.3 Secure configuration baselines** *Students will understand how secure configuration baselines support consistent and secure system configuration.* **C4.3.1 Standard security settings** How standard security settings support consistent and secure system configuration.

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	C4.3.2 Standard security settings: default passwords, access restrictions How changing default passwords and applying appropriate access restrictions help protect digital systems. **C4.4 Patch management** *Students will understand how patch management practices support secure and reliable system operation.* **C4.4.1 Software patches, firmware updates and security updates** How software patches, firmware updates and security updates address known vulnerabilities and support secure, stable and reliable system operation. **C4.4.2 Checking, installing and verifying security updates** How checking, installing and verifying security updates helps protect systems. **C4.5 Supporting secure and reliable systems** *Students will understand how security practices work together to support secure and reliable digital systems.*

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C5 Demonstrate knowledge and understanding of the role of digital tools, automated security scanning tools and AI-enabled systems in supporting secure configuration and identifying potential vulnerabilities	*Students will understand how digital tools, automated security scanning tools and AI-enabled systems can support secure configuration and the identification of potential vulnerabilities.* **C5.1 Digital tools for secure configuration** *Students will understand how digital tools support secure configuration and security-related decision-making.* **C5.1.1 Digital security tools** How digital security tools can provide information about system settings, access controls, software status and potential security weaknesses. **C5.2 Automated security scanning tools** *Students will understand how automated security scanning tools can support the identification of common security weaknesses.* **C5.2.1 Automated security tools: missing updates, insecure settings** How automated security tools can identify missing updates and insecure settings as common security weaknesses **C5.2.2 Scan results and alerts** How basic scan results and alerts can identify security weaknesses requiring action or reporting. **C5.3 AI-enabled systems** *Students will understand how AI-enabled tools can support the identification of security issues and configuration improvements.* **C5.3.1 AI-enabled tools: security problems, improvement suggestions** How AI-enabled tools can highlight potential security problems and suggest improvements. **C5.3.2 AI-generated findings and recommendations: accuracy, relevance, context, security impact, suitability**

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	The need to validate AI-generated findings and recommendations for accuracy, relevance, context, security impact and suitability before they are implemented. **C5.4 Appropriate use and oversight** *Students will understand the importance of human decision-making and oversight when using digital, automated and AI-enabled security tools.* **C5.4.1 Human oversight, verification and accountability** The importance of human oversight, verification and accountability when interpreting tool outputs, prioritising risks and deciding whether security or configuration changes should be applied.

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C6 Be able to configure digital systems by applying secure configuration, authentication requirements, access controls, permissions, security settings and update procedures	*Students will be able to configure digital systems using secure configuration, authentication requirements, access controls, permissions, security settings and update procedures.* **C6.1 Secure configuration** *Students will be able to apply secure configuration settings that support the protection of digital systems.* **C6.1.1 Secure configuration settings: operating systems, applications, devices and network infrastructure** Applying secure configuration settings to operating systems, applications, devices and network infrastructure to reduce vulnerabilities, unnecessary services and exposure to security threats. **C6.1.2 Configuration requirements: system purpose, user roles, data sensitivity, network environment, security risks** Applying configuration requirements that are appropriate to the system purpose, user roles, data sensitivity, network environment and identified security risks. **C6.2 Authentication and access** *Students will be able to apply authentication controls, permissions and access controls appropriate to the digital system.* **C6.2.1 Authentication controls: password requirements, multi-factor authentication** Configuring password requirements and multi-factor authentication where suitable to control access to systems, devices and accounts **C6.2.2 Permissions, user roles and access controls** Applying permissions, user roles and access controls in line with the principle of least privilege so that users can access only the systems, data and functions they require. **C6.3 Security settings and protective controls**

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	Students will be able to configure security settings and protective controls to support system security. **C6.3.1 Security settings and access restrictions** Configuring appropriate system, device and application security settings and access restrictions to protect the digital system. **C6.3.2 Protective controls** Applying protective controls and verifying that they are enabled, correctly configured and operating as intended. **C6.4 Updates and secure operation** *Students will be able to apply updates and verify that secure operation is maintained.* **C6.4.1 Updates: operating system, software, firmware and security updates** Applying appropriate operating system, software, firmware and security updates to address known vulnerabilities and support continued secure operation. **C6.4.2 Security settings, access controls, protective measures and system functionality** Checking security settings, access controls, protective measures and required system functionality after changes or updates to confirm that the system remains secure and operational.

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C7 Demonstrate knowledge and understanding of the use of monitoring information, log files, dashboards and automated security tools in identifying potential weaknesses and supporting system security	*Students will understand how monitoring information, log files, dashboards and automated security tools support the identification of potential weaknesses and the security of digital systems.* **C7.1 Monitoring information** *Students will understand how monitoring information can indicate the operational and security status of digital systems.* **C7.1.1 Monitoring information: performance, availability, user activity, network activity, security status** How system and security monitoring information provides evidence about performance, availability, user activity, network activity and the security status of digital systems. **C7.1.2 Changes and unusual activity** How repeated failures, unexpected changes or other differences from normal system behaviour can indicate a potential fault, weakness or security concern **C7.2 Log files and system alerts** *Students will understand how logs and alerts support the identification and investigation of security concerns.* **C7.2.1 Logs: system, application, authentication and security events** How system, application, authentication and security logs record events and user activity that can support identification and investigation of potential security issues. **C7.2.2 Alerts and notifications: failed logins, configuration changes, service failures, suspicious activity** How alerts and notifications can highlight failed logins, configuration changes, service failures, suspicious activity or other events that may require investigation. **C7.3 Monitoring dashboards**

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	Students will understand how monitoring dashboards support ongoing oversight of digital systems. **C7.3.1 Monitoring dashboards: system, network and security information** How monitoring dashboards can aggregate and present system, network and security information to support ongoing oversight. **C7.3.2 Trends, thresholds, status indicators and alerts** How trends, thresholds, status indicators and alerts presented through monitoring dashboards can help identify changes or patterns that require further investigation. **C7.4 Automated security tools** *Students will understand how automated security tools support the identification of vulnerabilities and unusual activity.* **C7.4.1 Automated monitoring and security tools** How automated tools can identify potential weaknesses, unusual activity or changes in system status that may require further checking. **C7.4.2 Automated alerts** The importance of checking automated alerts to confirm whether a security concern requires further action.

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C8 Be able to review log files, monitoring dashboards, system alerts and other security-related information to identify signs of unexpected or anomalous activity	*Students will be able to review security-related information to identify signs of unexpected or anomalous activity.* **C8.1 Reviewing security-related information** *Students will be able to review security-related information to understand system activity.* **C8.1.1 Security-related information: system logs, application logs, authentication logs, security logs, dashboards and alerts** Reviewing relevant system, application, authentication and security logs, monitoring dashboards, alerts and other security information to understand system activity. **C8.1.2 Entries, events and patterns** Identifying entries, events or patterns that differ from expected system behaviour and may indicate a potential security issue. **C8.2 Identifying unexpected activity** *Students will be able to identify unexpected activity that may require investigation.* **C8.2.1 Unexpected activity: unusual events, repeated failures, unexpected access, configuration changes, abnormal activity** Recognising unusual events, repeated failures, unexpected access, configuration changes or abnormal activity that may require further investigation. **C8.2.2 Expected behaviour and normal operating patterns** Comparing observed activity against expected behaviour, normal operating patterns and known system use to identify potential anomalies. **C8.3 Using information from different sources** *Students will be able to use information from multiple sources to support understanding of security issues.* **C8.3.1 Information from logs, dashboards, alerts and other security sources** Bringing together relevant information from logs, monitoring dashboards, alerts and other available security sources to understand an identified issue.

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	C8.4 Identifying the need for further action *Students will be able to determine when further action, investigation or escalation is required.* **C8.4.1 Investigation, corrective action and escalation** Recognising when unusual or anomalous activity requires further investigation, corrective action or escalation in line with organisational procedures. **C8.4.2 Findings, evidence and observations** Recording relevant findings, evidence and observations clearly and accurately so they can support subsequent investigation or security action.

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C9 Be able to identify security weaknesses within digital systems and explain their potential impact on the confidentiality, integrity and availability of systems, devices and data	*Students will be able to identify security weaknesses and explain their potential impact on the confidentiality, integrity and availability of systems, devices and data.* **C9.1 Identifying security weaknesses** *Students will be able to identify vulnerabilities and weaknesses that may expose systems, services or data to risk.* **C9.1.1 Vulnerabilities and weaknesses in systems, devices, accounts, applications and networks** Identifying vulnerabilities and weaknesses in system, device, account, application or network security that could expose systems, services or data to risk. **C9.1.2 Security settings and system information** Using security settings and basic system information to identify straightforward weaknesses. **C9.2 Impact on confidentiality** *Students will be able to explain how identified weaknesses may affect confidentiality.* **C9.2.1 Unauthorised access, interception, exposure and disclosure** How an identified weakness could enable unauthorised access, interception, exposure or disclosure of systems, accounts, services or data. **C9.3 Impact on integrity** *Students will be able to explain how identified weaknesses may affect integrity.* **C9.3.1 Alteration, corruption, deletion and reliability** How an identified weakness could allow data, configuration settings, software or system information to be altered, corrupted, deleted or made unreliable. **C9.4 Impact on availability** *Students will be able to explain how identified weaknesses may affect availability.*

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	C9.4.1 Disruption, degradation and loss of authorised access How an identified weakness could disrupt, degrade or prevent authorised access to systems, devices, network resources, data or services. **C9.5 Explaining potential impact** *Students will be able to relate identified weaknesses to their likely consequences for digital systems and data.* **C9.5.1 Vulnerabilities and likely consequences** Relating an identified vulnerability to its likely consequences for the confidentiality, integrity or availability of the affected system, service or data.

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C10 Be able to apply or recommend appropriate actions that support security improvement, troubleshooting and protection of digital systems	*Students will be able to apply or recommend appropriate actions that support security improvement, troubleshooting and the protection of digital systems.* **C10.1 Identifying appropriate action** *Students will be able to determine appropriate responses to identified security concerns.* **C10.1.1 Security concerns and required action** How the type of security concern helps determine whether a straightforward action or escalation is required. **C10.1.2 Security actions: issue resolution, strengthened controls, remediation and technical support** How issue resolution, strengthened controls, remediation and technical support can provide appropriate responses to identified security concerns. **C10.2 Security improvement** *Students will be able to apply or recommend proportionate improvements to system security.* **C10.2.1 Security improvements: authentication, permissions, access controls, security settings, patching and protective controls** Applying or recommending appropriate changes to authentication, permissions, access controls, security settings, patching or protective controls to address identified weaknesses. **C10.2.2 Functionality, performance, usability and legitimate access** Considering how proposed security improvements may affect system functionality, performance, usability and legitimate user access. **C10.3 Troubleshooting** *Students will be able to use troubleshooting techniques to address straightforward security and operational issues.*

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	C10.3.1 System information, logs, monitoring outputs and troubleshooting techniques Using system information, logs, monitoring outputs and logical troubleshooting techniques to identify and address straightforward issues affecting security or system operation. **C10.3.2 Verification of corrective action** Verifying the effect of corrective action to confirm that the identified issue has been resolved without introducing new faults, vulnerabilities or access problems. **C10.4 Protecting digital systems** *Students will be able to apply or recommend appropriate actions that support the protection of digital systems.* **C10.4.1 Escalation, authorisation and specialist support** Recognising when an issue requires escalation, additional authorisation or specialist support rather than direct action, in line with organisational procedures.

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Content area D: Recording, communicating and escalating

Content outcome	Content detail
D1 Demonstrate knowledge and understanding of the role of workplace policies and procedures in supporting secure system use and incident management	*Students will understand how workplace policies and procedures support secure system use, incident management and the protection of digital systems and information.* **D1.1 Workplace policies and procedures** *Students will understand how workplace policies and procedures support secure, consistent and responsible use of digital systems.* **D1.1.1 Workplace policies and procedures: digital systems, devices, accounts, networks and information** How workplace policies and procedures define requirements for the secure, lawful and responsible use of digital systems, devices, accounts, networks and information. **D1.1.2 Security controls, user behaviour, reporting and incident response** How documented policies and procedures support consistent security controls, user behaviour, reporting and responses to identified risks or incidents. **D1.2 Secure system use** *Students will understand how workplace requirements support the secure use of digital systems and information.* **D1.2.1 Access, authentication, handling, storage, sharing and use** How workplace requirements govern appropriate access, authentication, handling, storage, sharing and use of digital systems and information. **D1.2.2 Security requirements, access rights and permitted system use** The importance of following organisational procedures and seeking clarification or authorisation where security requirements, access rights or permitted system use are uncertain. **D1.3 Incident management**

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	Students will understand how incident management procedures support the identification, reporting and escalation of security incidents. **D1.3.1 Incident management procedures: identification, recording, reporting and escalation** How workplace procedures define how suspected or confirmed security incidents should be identified, recorded, reported and escalated. **D1.3.2 Following incident procedures** How following defined incident procedures supports timely, consistent and accountable responses to security events and helps limit further impact. **D1.4 Roles and responsibilities** *Students will understand how workplace roles and responsibilities support secure system use and incident response.* **D1.4.1 Secure system use, monitoring, reporting, incident response and protection of digital assets** How workplace policies assign responsibilities for secure system use, monitoring, reporting, incident response and protection of digital assets. **D1.4.2 Authority, competence and escalation** The importance of recognising limits of authority and competence, and escalating security concerns to an appropriate person, team or specialist function when required.

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D2 Be able to record and organise security-related information clearly and accurately using appropriate digital tools	*Students will be able to record and organise security-related information clearly, accurately and appropriately using digital tools.* **D2.1 Recording security-related information** *Students will be able to record security-related information in a clear and accurate manner.* **D2.1.1 Security-related information: concerns, observations, evidence, actions and outcomes** Recording identified concerns, observations, evidence, actions and outcomes clearly and accurately so that the security-related information can be understood and used where required **D2.1.2 Dates, times, affected systems, users and services** Recording relevant dates, times, affected systems, users and services so that the information can be understood and used by others where required. **D2.2 Organising information** *Students will be able to organise information so that records can be located, interpreted and reviewed effectively.* **D2.2.1 Structures, categories and naming conventions** Organising security-related information using appropriate structures, categories and naming conventions so that relevant records can be located, interpreted and reviewed efficiently. **D2.3 Using digital tools** *Students will be able to use digital tools to create, store and manage security-related records.* **D2.3.1 Digital tools and systems** Using appropriate digital tools and systems to create, store, organise and retrieve security-related records.

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	D2.3.2 Features supporting record keeping Using appropriate features of digital tools to keep records accurate, secure and accessible. **D2.4 Maintaining accurate records** *Students will be able to maintain accurate and up-to-date records.* **D2.4.1 Accuracy, completeness, relevance and clarity** Checking recorded information for accuracy, completeness, relevance and clarity before it is stored or shared.

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D3 Be able to handle security-related information in accordance with privacy, confidentiality and data protection requirements	*Students will be able to handle security-related information in a manner that supports privacy, confidentiality and data protection requirements.* **D3.1 Privacy and confidentiality requirements** *Students will understand the requirements governing the use and protection of security-related information.* **D3.1.1 Privacy, confidentiality and data protection requirements** How privacy, confidentiality and data protection requirements govern the collection, use, storage and disclosure of security-related information. **D3.1.2 Authorised users and legitimate need to know** The importance of restricting access to security-related information to authorised users with a legitimate need to know. **D3.2 Secure handling of information** *Students will be able to handle security-related information securely.* **D3.2.1 Protection against unauthorised access, disclosure, alteration, loss and misuse** Handling security-related information in ways that protect it from unauthorised access, disclosure, alteration, loss or misuse. **D3.2.2 Secure storage, access permissions, encryption and approved transfer methods** Using secure storage, access permissions, encryption and approved transfer methods when storing, accessing, sharing or transmitting security-related information. **D3.3 Appropriate use and disclosure** *Students will understand the principles of appropriate use and disclosure of security-related information.* **D3.3.1 Minimum information required for an authorised purpose** Using and sharing only the minimum security-related information required for an authorised and legitimate purpose. **D3.3.2 Sensitive security-related information** Recognising that security-related information may contain sensitive details about

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	systems, accounts, users, vulnerabilities or incidents that require additional protection. **D3.4 Following requirements and procedures** *Students will be able to follow organisational requirements and procedures when handling security-related information.* **D3.4.1 Organisational policies and procedures** Following relevant organisational policies and procedures when accessing, storing, sharing, retaining or disposing of security-related information. **D3.4.2 Disclosure and authorisation requirements** Recognising when information must not be disclosed, or when further authorisation is required before access, sharing or transfer can take place.

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D4 Be able to record and communicate configuration and maintenance activity clearly to others	*Students will be able to produce clear, accurate and useful records of configuration and maintenance activity and communicate relevant information appropriately to others.* **D4.1 Recording activity and outcomes** *Students will be able to record configuration and maintenance activity clearly and accurately.* **D4.1.1 Activity and outcomes** Recording relevant changes, settings, checks, faults, corrective actions and outcomes. **D4.1.2 Clear and traceable records** Recording sufficient relevant detail so that others can understand what was completed, any issues identified and the resulting system status. **D4.2 Communicating for purpose and audience** *Students will be able to communicate configuration and maintenance information appropriately for its purpose and intended audience.* **D4.2.1 Relevant information** Selecting and communicating relevant information about the activity completed, issues identified, actions taken and outcomes. **D4.2.2 Terminology, detail and format** Using terminology, technical detail and a format appropriate to the purpose, audience and level of responsibility. **D4.3 Updating and maintaining useful records** *Students will be able to keep configuration and maintenance records accurate, current and usable.* **D4.3.1 Updating records** Updating records when further configuration, maintenance, testing or corrective action takes place.

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	D4.4 Maintaining useful information *Students will be able to maintain accurate and useful records of configuration and maintenance activities.* **D4.4.1 Updating records** Updating records when further configuration, maintenance, testing or corrective action takes place so that an accurate history of system changes is maintained.

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D5 Be able to communicate security concerns, risks and recommended actions clearly for different audiences	*Students will be able to communicate security concerns, risks and recommended actions clearly and appropriately for different audiences.* **D5.1 Communicating security concerns** *Students will be able to communicate security concerns clearly and accurately.* **D5.1.1 Security concerns: affected systems, devices, accounts, services, data and activities** Communicating the nature of an identified security concern and the affected system, device, account, service, data or activity clearly and accurately. **D5.1.2 Evidence and significance of concerns** Selecting and presenting relevant evidence so that the nature, severity and significance of the concern can be understood. **D5.2 Communicating risks and potential impact** *Students will be able to communicate risks and potential impacts associated with security concerns.* **D5.2.1 Confidentiality, integrity, availability and system operation** Explaining how an identified security concern may affect confidentiality, integrity, availability and system operation. **D5.3 Communicating recommended actions** *Students will be able to communicate recommended actions that address identified security concerns.* **D5.3.1 Recommended actions** Communicating proportionate recommended actions that respond to the identified security concern, vulnerability or risk.

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	D5.3.2 Rationale and expected outcomes Providing sufficient rationale for others to understand the purpose, expected outcome and any limitations of the recommended action. **D5.4 Communicating for different audiences** *Students will be able to adapt communication to the needs of different audiences.* **D5.4.1 Terminology, technical detail, format and communication methods** Adapting terminology, level of technical detail, format and communication method to the knowledge, role and needs of the intended audience. **D5.4.2 Communicating with technical and non-technical audiences** Presenting security information clearly and appropriately so that technical and non-technical audiences can understand the concern, potential impact and required or recommended action.

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D6 Be able to escalate potential cyber security concerns using defined workplace procedures	*Students will be able to escalate potential cyber security concerns using defined workplace procedures.* **D6.1 Recognising concerns that require escalation** *Students will be able to recognise when security concerns require escalation rather than direct action.* **D6.1.1 Incidents, suspected compromise, significant vulnerabilities and activity outside authority** Recognising incidents, suspected compromise, significant vulnerabilities and activity outside the user's authority as concerns that require reporting or escalation rather than direct action **D6.1.2 Nature, potential impact and level of authority** How the nature and potential impact of a concern, and the level of authority required to address it, determine whether reporting or escalation is appropriate. **D6.2 Following defined workplace procedures** *Students will be able to follow workplace procedures for reporting and escalation.* **D6.2.1 Reporting, recording and escalation procedures** Following organisational procedures for reporting, recording and escalating potential cyber security concerns. **D6.2.2 Appropriate reporting route** Using the person, team or reporting route identified in the defined workplace procedure. **D6.3 Providing relevant information** *Students will be able to provide information that supports investigation and further action.* **D6.3.1 Information supporting investigation** Providing clear, accurate and relevant information about the identified concern to support investigation and appropriate further action.

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	D6.3.2 Observations, evidence, affected systems or accounts, timestamps and actions taken Providing relevant observations, evidence, affected systems or accounts, timestamps and actions already taken when escalating a concern. **D6.4 Handling concerns appropriately** *Students will be able to handle concerns appropriately while escalation is taking place.* **D6.4.1 Avoiding unauthorised actions** Escalating concerns without taking unauthorised actions that could increase risk, disrupt services, alter evidence or compromise system security. **D6.4.2 Protecting information relating to a concern** Continuing to protect information relating to the concern in line with security, privacy, confidentiality and incident-handling requirements.

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Transferable skills

Students are expected to develop the following transferable skills through the learning and assessment activities for this unit:

- **Planning** tasks, resources and sequences of activity when setting up, configuring, securing and maintaining digital systems.
- **Data interpretation** when interpreting system information, configuration settings, logs, dashboards, alerts and other monitoring information.
- **Problem solving** when identifying faults, security weaknesses and configuration issues and determining appropriate corrective actions.
- **Communicating** technical information, security concerns, risks and recommended actions clearly and appropriately for different audiences.
- **Investigating** system behaviour, faults, security information and anomalous activity to identify causes, weaknesses and potential risks.
- Evidence-based **decision-making** when selecting appropriate components, configurations, security controls, corrective actions and recommendations based on available system information and evidence.
- **Self-managing** when carrying out multi-stage setup, configuration, checking, maintenance and security activities systematically and in accordance with relevant procedures.
- **Recording** configuration decisions, checks, faults, maintenance activities, security concerns, actions and outcomes clearly and accurately.
- **Evaluating** the suitability and effectiveness of configurations, maintenance activities, security controls and corrective actions.
- **Observing** system behaviour, error messages, logs, alerts, dashboards and other indicators to identify faults, changes or unexpected activity.
- The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

Assessment summary

The NEA for this unit consists of five tasks.

- In response to Task 1, students will analyse the requirements for a digital system and produce a workable implementation plan.
- In response to Task 2,students will implement and configure the proposed network, connecting the required devices and applying the necessary network settings and services.

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- In response to Task 3, students will apply a secure configuration, including authentication and access permissions, and verify that the required security measures and system functions operate as intended.
- In response to Task 4, students will carry out routine maintenance, record changes and issues, communicate relevant concerns and recommended actions, and provide information about health, safety and secure handling requirements.
- In response to Task 5, students will review supplied network and monitoring information to identify unexpected or anomalous activity, diagnose associated security weaknesses or risks, recommend appropriate actions and escalate relevant concerns.

The assessment will take 15 supervised hours to complete.

The NEA is set by Pearson and will be marked by centres and moderated by Pearson. New assessments for this unit will be released in September and January of each academic year through the secure area of our website. Students must use the assessment to provide the required evidence to achieve this unit.

A sample assessment is provided on the Pearson website.

Marking the NEA

You will make assessment decisions for the NEA using the marking grid given below. Before making assessment decisions, you should refer to the guidance on using the marking grid provided in the *Pearson Foundation Certificates Supplementary Specification,* available on our website.
A glossary of terms used in the marking grid is provided in *Appendix 1*.

Further information on managing NEAs is provided in the *Pearson Foundation Certificates Supplementary Specification,* available on our website.

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Marking Grid

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 1: Applying system and security understanding to plan the system.				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of networking knowledge and understanding to plan system delivery. Evidenced through: • an **emerging interpretation** of the scenario, identifying limited network requirements with little connection to underpinning concepts • a **basic** application of relevant networking, security, protocols, compatibility and maintenance knowledge. • an **emerging plan** for network configuration, security and maintenance, with some relevant tasks identified. • a **limited recognition** of dependencies between configuration, security, testing, monitoring and maintenance activities.	**Mostly appropriate** application of networking knowledge and understanding to plan system delivery. Evidenced through: • a **relevant interpretation** of the scenario, identifying the main network requirements and making connections to underpinning concepts. • an **appropriate application** of relevant networking, security, protocols, compatibility and maintenance knowledge. • a **workable plan** for network configuration, security and maintenance, with the main tasks identified and sequenced. • **relevant dependencies identified** between configuration, security, testing, monitoring and maintenance activities.	**Effective** application of networking knowledge and understanding to plan system delivery. Evidenced through: • a **reasoned interpretation** of the scenario, connecting the network requirements to relevant underpinning concepts. • an **accurate** application of relevant networking, security, protocols, compatibility and maintenance knowledge. • a **considered plan** for network configuration, security and maintenance, with relevant tasks logically sequenced. • a **clear consideration of how dependencies affect** configuration, security, testing, monitoring and maintenance activities.	**Thorough** application of networking knowledge and understanding to plan system delivery. Evidenced through: • a **thorough interpretation** of the scenario, making clear and sustained connections between the network requirements and underpinning concepts. • an **in-depth application** of relevant networking, security, protocols, compatibility and maintenance knowledge. • a **thorough plan** for network configuration, security and maintenance, with tasks logically sequenced and clearly informed by the requirements of the scenario. • a **thorough consideration of dependencies and their impact on** configuration, security, testing, monitoring and maintenance activities.

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Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 2: Set up a network to meet a brief				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding of network configuration and integration. Evidenced through: • an **emerging** configuration of network devices, services and settings • **attempts** to integrate hardware and software components, with limited evidence that they work together • an **emerging** network solution, with some configuration completed but gaps or errors that limit its operation.	**Mostly appropriate** application of knowledge and understanding of network configuration and integration. Evidenced through: • a **partially functional** configuration of network devices, services and settings • **partial** integration of hardware and software components, with some components working together as intended • a configured system that meets the main requirements of the brief, but **gaps or errors prevent some required functionality** from operating as intended.	**Effective** application of knowledge and understanding of network configuration and integration. Evidenced through: • an **effective** configuration of network devices, services and settings • **effective** integration of hardware and software components, with only minor issues affecting how they work together • a configured system that meets the requirements of the brief and **operates as intended, despite minor gaps or errors.**	**Thorough** application of knowledge and understanding of network configuration and integration. Evidenced through: • a **fully configured** set of network devices, services and settings • **full** integration of the required hardware and software components, which work together consistently as intended • a system that meets the requirements of the brief and operates **consistently** as intended.

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Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 3: Apply a secure configuration to the network, verifying system operation				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding of system configuration and security. Evidenced through: • an **emerging** configuration and integration of hardware and software, with limited security methods applied • a **limited** consideration of system functionality and compatibility • a **basic** application of authentication, access permissions, security settings and update procedures • a **limited** verification of system operation, identifying whether some components function as intended.	**Mostly appropriate** application of knowledge and understanding of system configuration and security. Evidenced through: • a **partially functional** configuration and integration of hardware and software, with relevant security methods applied • **relevant** consideration of system functionality and compatibility • **appropriate** application of authentication, access permissions, security settings and update procedures, with some aspects not configured as intended • **relevant** verification of system operation, identifying whether key components function together as intended and identifying issues where present.	**Effective** application of knowledge and understanding of the system configuration and security. Evidenced through: • an **effective** configuration and integration of hardware and software, with security methods applied to support secure operation • **clear** consideration of how system functionality and compatibility support system operation • **effective** application of authentication, access permissions, security settings and update procedures to support secure system operation • **effective** verification of system operation, using the results of checks to determine whether operational requirements are met.	**Thorough** application of knowledge and understanding of the system configuration and security. Evidenced through: • **a fully integrated configuration** of hardware and software, with security methods applied consistently to support secure operation • **insightful consideration** of how system functionality and compatibility support system operation • a **proficient application** of authentication, access permissions, security settings and update procedures to support secure system operation consistently • **thorough** verification of system operation, using the results of checks to determine whether operational requirements are met and providing clear evidence to support the conclusion.

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Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 4: Maintain, Record and communicate a system				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic routine** maintenance of the network and system documentation. Evidenced through: • **basic** maintenance of the network system, with **relevant maintenance tasks attempted** and **incomplete records** of work carried out • **limited** system documentation and records, with security-related information that may contain gaps or inaccuracies**, limited recording of changes or reasons for any deviations** from the original plan, and **basic** health, safety and secure-handling guidance • **basic** escalation of security concerns, with recommendations that have **limited relevance** to the concern or intended audience.	**Appropriate** routine maintenance of the network and system documentation. Evidenced through: • **appropriate** maintenance of the network system, with **suitable maintenance tasks carried out** and recorded, although there may be errors • **relevant** system documentation and records, identifying relevant security-related information, **recording changes with reasons for any deviations** from the original plan, and **relevant** health, safety and secure-handling guidance • **appropriate** escalation of security concerns **to a suitable person**, with **relevant** recommended actions for the intended audience.	**Effective** routine maintenance of the network and system documentation. Evidenced through: • **effective** maintenance of the network system, with relevant maintenance tasks carried out and clearly recorded • **clear** system documentation and records, accurately covering relevant security-related information, with **clear rationale for any deviations** from the original plan and **appropriate** health, safety and secure-handling guidance • **effective** escalation of security concerns with the **relevant** information clearly communicated, supported by **reasoned** recommended	**Sustained** routine maintenance of the network and system documentation. Evidenced through: • **sustained** maintenance of the network system, with relevant maintenance tasks carried out and consistently recorded • **detailed** system documentation and records, accurately and consistently covering relevant security-related information, with **pertinent rationale for any deviations** from the original plan and **thorough** health, safety and secure-handling guidance • **proficient** escalation of security concerns with **pertinent** information communicated clearly to the appropriate

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			actions appropriate for the intended audience.	person, supported by **pertinent, recommended actions** for the intended audience.

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 5: Monitor, respond to anomalous activity by escalating concerns.				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** interpretation and diagnostics of monitoring evidence, leading to recommendation of security actions. Evidenced through: • a **basic** identification of unexpected or anomalous activity from the monitoring evidence • a **basic** diagnosis of associated security weaknesses or risks, with a limited conclusion about potential impact • **limited** recommendations for security actions, with limited connection to the identified issues and **limited communication of concerns.**	**Appropriate** interpretation and diagnostics of monitoring evidence, leading to recommendation of security actions. Evidenced through: • **a relevant** identification of unexpected or anomalous activity from logs, dashboards or alerts • a **relevant** diagnosis of associated security weaknesses or risks and a conclusion of its impact. • **relevant** recommendations for security actions, with links to the identified issues and **appropriate communication of relevant concerns.**	**Effective** interpretation and diagnostics of monitoring evidence, leading to recommendation of security actions. Evidenced through: • a **clear** identification of unexpected or anomalous activity, supported by relevant evidence from logs, dashboards or alerts • a **reasoned** diagnosis of associated security weaknesses or risks, with a supported conclusion about their potential impact • **reasoned** recommendations for security actions, clearly linked to the identified issues, with **effective escalation of relevant concerns.**	**Perceptive** interpretation and diagnostic of monitoring evidence, leading to recommendation of security actions. Evidenced through: • a **perceptive** identification of unexpected or anomalous activity, supported by pertinent evidence from logs, dashboards or alerts • an **insightful diagnosis** of associated security weaknesses or risks, with a convincing explanation of their potential impact. • **perceptive** recommendations for security actions, with clear rationale for how they address the identified issues, and **proficient escalation of relevant concerns.**

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Resource requirements

For this unit, students must have access to:

- a computer with appropriate offline software to produce written evidence, plans, configuration and maintenance records
- suitable software and hardware, or an appropriate virtual environment, to implement, configure, secure, test and maintain a digital network
- the network monitoring information provided for the assessment
- controlled internet access to an online AI tool where permitted by the assessment
- appropriate facilities for saving and submitting the required digital evidence.

The permitted use of internet access and artificial intelligence varies by task and is specified in the assessment materials.

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Unit 2: Creating Digital Solutions

Assessment type: Non-exam assessment

Unit type: Mandatory

Guided learning hours: 90

Introduction

Every time you use an app, log in to an account or enter information into an online form, you are using a digital solution that someone has designed and programmed. Behind what you see are instructions that tell the solution what to do, what information to use and how to respond. Creating a successful digital solution means understanding what is needed, working out how to achieve it and building something that works reliably for its users.

In this unit, you will find out how programming solutions are developed from an initial idea or brief. Then you will put that into practice. You will identify what a solution needs to do, plan how you will develop it and design algorithms that set out its logic. You will turn your designs into code, bringing together inputs, processing and outputs to create a working solution. You will also consider how usability and accessibility affect the way people interact with digital solutions.

Testing and refining run through everything you do. You will use different types of test data to check that your solution behaves as expected, investigate errors and make changes where needed. You will work with code that you write yourself as well as code from other sources. Automated and AI-enabled tools can help you create code, but their suggestions may not always be accurate, secure or suitable, so you will review, understand and test generated code before deciding whether to use, change or reject it. You will also consider where code has come from and any licensing requirements that apply.

Throughout this unit, you will develop transferable skills in planning, data interpretation, problem solving, communicating, investigating, evidence-based decision-making, self-managing, recording, evaluating and observing. You will practise these skills as you interpret a brief, plan your work, design algorithms, develop and check code, investigate errors and use test results to refine your solution. You will also record your decisions and code sources, explain outcomes clearly and judge how well your solution meets its intended purpose. These skills are embedded in applied activities across the unit rather than assessed separately.

This unit builds on the digital systems and security knowledge you developed in Unit 1. As part of the synoptic assessment, you will draw on your knowledge of authentication and controlled access when you review, test and integrate code used to control access to a digital solution. The planning, checking, problem-solving and communication you develop here will also support you as you work with information

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and data in Unit 3. This qualification combines theory, practical experience and transferable skills to prepare you for related Level 3 study, including V Levels, T Levels or A Levels, and help you choose which subject areas to specialise in.

Students should be given opportunities to develop their knowledge and skills in a range of contexts including different programming problems, software tools, user requirements and work-related scenarios.

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Teaching content

Content area A: Planning a programming solution

Content outcome	Content detail
A1 Apply knowledge and understanding of the stages of programming solution development and their role in meeting an intended purpose	*Students will understand how the stages of programming solution development work together to support the creation of programming solutions that meet an intended purpose and requirements.* **A1.1 The seven stages of programming solution development** Students will understand the stages involved in developing a programming solution from an initial brief through to review and evaluation. **A1.1.1 Programming solution development stages: understanding the brief and intended purpose, identifying requirements and constraints, planning the solution, designing algorithms and solution structure, developing code, testing, correcting and refining and reviewing the completed solution** How the stages form a connected development process, with decisions and outputs from each stage informing subsequent development. **A1.2 Role of the stages in meeting an intended purpose** Students will understand how each stage contributes to the development of a programming solution that meets its intended purpose and requirements. **A1.2.1 Understanding the brief and intended purpose** Establishes the problem to be solved, the intended users and the outcome the solution needs to achieve. **A1.2.2 Identifying requirements and constraints** Establishes the required functionality and the limitations that need to be considered throughout development. **A1.2.3 Planning the solution** Provides a structured and achievable approach by identifying and sequencing the activities and resources needed. **A1.2.4 Designing algorithms and solution structure** Defines the ordered instructions, logic and

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Content outcome	Content detail
	organisation required to produce the intended solution behaviour. **A1.2.5 Developing code** Implements the planned algorithms and structure in a form that can be run as part of the programming solution. **A1.2.6 Testing, correcting and refining** Provides evidence of whether the developing solution behaves as expected and supports the identification, correction and retesting of problems so that the solution can be refined. **A1.2.7 Reviewing the completed solution** Establishes how effectively the completed solution meets the brief, intended purpose and requirements, including any remaining limitations.

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A2 Apply knowledge and understanding of the role of algorithms as ordered instructions that determine solution behaviour	*Students will understand how algorithms define the logic, behaviour and outcomes of programming solutions.* **A2.1 Purpose and structure of algorithms** *Students will understand how algorithms provide the instructions and logic needed to produce an intended outcome.* **A2.1.1 Ordered instructions** Understanding that an algorithm sets out the instructions required to achieve an intended outcome and that the order of instructions can affect solution behaviour. **A2.1.2 Inputs, processing and outputs** Understanding how an algorithm defines the data or information required, the processing or actions to be carried out, and the outputs to be produced. **A2.1.3 Structured logic: sequence, selection, iteration** Understanding how sequence, selection and iteration can be used within an algorithm to control what a solution does. **A2.2 Solution behaviour** *Students will understand how algorithm logic determines the behaviour and outcomes of a programming solution.* **A2.2.1 Sequence** Understanding how carrying out instructions in a defined order determines what happens and when. **A2.2.2 Selection** Understanding how conditions and decisions can cause a solution to follow different actions or paths. **A2.2.3 Iteration** Understanding how repeating instructions can produce required behaviour until a defined number of repetitions is reached or a condition is met. **A2.2.4 Inputs and conditions** Understanding that different inputs or conditions can cause an algorithm to produce different behaviour and outputs. **A2.3 Representing algorithms**

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	Students will understand how algorithms can be represented and communicated. **A2.3.1 Algorithm representation: structured descriptions, flowcharts, pseudocode** Understanding that algorithms can be communicated in clear forms such as structured descriptions, flowcharts or pseudocode so that the intended instructions and logic can be understood. **A2.4 From algorithm to solution behaviour** *Students will understand how algorithms provide the basis for program code and solution behaviour.* **A2.4.1 Algorithms, program code and solution behaviour** Understanding that an algorithm defines the intended logic of a solution and provides the basis for developing code that produces the required behaviour.

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A3 Apply knowledge and understanding of the role of structured logic and algorithms in the design of digital solutions	*Students will understand how structured logic and algorithms support the design of coherent and effective digital solutions.* **A3.1 Structured logic** *Students will understand how structured logic supports the organisation of solution behaviour.* **A3.1.1 Structured logic: sequence, selection, iteration, inputs, processing and outputs** Organising solution behaviour through clear sequence, selection and iteration, with defined inputs, processing and outputs. **A3.2 Decomposition** *Students will understand how problems can be broken into manageable parts during solution design.* **A3.2.1 Decomposition** Breaking a problem into manageable parts with defined responsibilities and relationships so that each part can be designed, developed and checked. **A3.3 Abstraction** *Students will understand how abstraction supports the design of digital solutions.* **A3.3.1 Abstraction** Identifying the information and behaviour relevant to the purpose while excluding detail that does not affect the solution. **A3.4 Application** *Students will understand how structured logic and algorithms are applied when designing digital solutions.* **A3.4.1 Application of structured logic and algorithms** Using structured logic and algorithms to create a coherent solution design that can be implemented, tested, maintained and explained.

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A4 Apply knowledge and understanding of the role of planning tasks, sequencing activities and allocating resources when delivering a digital system	*Students will understand how planning, sequencing and resource allocation support the successful delivery of digital systems.* **A4.1 Task planning** *Students will understand how planning supports the delivery of a digital system.* **A4.1.1 Task planning** Identifying the activities needed to move from requirements to a functional digital system and defining the purpose and output of each activity. **A4.2 Sequencing** *Students will understand how sequencing affects the delivery of a digital system.* **A4.2.1 Dependencies, resource availability, checking opportunities and consequences** Ordering activities according to dependencies, availability of resources, opportunities for checking and the consequences of carrying out work in an unsuitable order. **A4.3 Timescales** *Students will understand how timescales support the planning and completion of activities.* **A4.3.1 Timescales** Estimating the time required for individual tasks and setting appropriate deadlines for completing the work. **A4.4 Milestones** *Students will understand how milestones support monitoring progress.* **A4.4.1 Milestones** Identifying key stages or points in the development and delivery of the digital system. **A4.5 Resource allocation** *Students will understand how resources are matched to planned activities.* **A4.5.1 Resource allocation: time, people, hardware, software, information and other**

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	resources Matching time, people, hardware, software, information and other available resources to the requirements and constraints of planned activities. **A4.6 Monitoring and adaptation** *Students will understand how plans may need to be adjusted as development progresses.* **A4.6.1 Monitoring and adaptation** Comparing progress and outcomes with the plan and revising activities or resources when faults, delays, changed requirements or new dependencies arise.

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A5 Be able to plan a programming solution to meet a given brief	*Students will be able to plan a programming solution that meets the requirements of a given brief.* **A5.1 Understanding the brief and requirements** *Students will be able to identify and interpret the requirements of a programming solution from a given brief.* **A5.1.1 Interpreting the brief** Identifying the problem to be solved, the purpose of the solution and what the solution is expected to do. **A5.1.2 Requirements** Identifying the main features and functions that the completed solution must provide. **A5.2 Planning solution requirements** *Students will be able to identify the information and processes required within a programming solution.* **A5.2.1 Inputs** Identifying the data that will be entered into or received by the solution. **A5.2.2 Outputs** Identifying the information or results that the solution needs to produce. **A5.2.3 Processing** Identifying the calculations, decisions and other operations needed to transform inputs into outputs. **A5.2.4 Data requirements** Identifying the variables and appropriate data types needed to store and process information. **A5.3 Planning solution design** *Students will be able to plan and communicate how a solution will operate.* **A5.3.1 Algorithms** Developing an ordered set of instructions to describe how the solution will work. **A5.3.2 Structured logic** Planning the use of sequence, selection and iteration within the solution. **A5.4 Planning testing and evaluation**

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	Students will be able to plan how the completed solution will be tested and evaluated. **A5.4.1 Test planning** Identifying suitable test data and expected results to check that the completed solution works as intended. **A5.4.2 Success criteria** Identifying clear criteria that can be used to determine whether the completed solution meets the requirements of the brief.

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Content area B: Developing a programming solution

Content outcome	Content detail
B1 Apply knowledge and understanding of the relationship between algorithms, program code and solution outputs	*Students will understand how algorithms, program code and solution outputs are connected and how changes in one can affect the others.* **B1.1 Relationship between algorithms, program code and solution outputs** *Students will understand how algorithms are translated into program code and how code execution produces solution outputs.* **B1.1.1 Relationship between algorithms, code and outputs** Algorithms define intended logic; program code implements that logic in a programming language; solution outputs are the observable results produced when the code executes. **B1.1.2 Translation into code: variables, operators, sequence, selection, iteration, inputs and outputs** How variables, operators, sequence, selection, iteration, inputs and outputs implement the steps and decisions defined by an algorithm. **B1.1.3 Traceability** The connection between a requirement, the corresponding algorithmic step, the code that implements it and the output used to confirm its behaviour. **B1.1.4 Interpretation** Tracing values and control flow through an algorithm and its code to predict outputs and locate where actual behaviour differs from intended behaviour. **B1.1.5 Judgement** Determining whether an unexpected output results from the algorithm, its implementation, unsuitable input or an incorrect expectation, and identifying the appropriate point for correction.

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B2 Apply knowledge and understanding of the use of developer-written and externally sourced code within digital solutions and the need to comply with licensing requirements	*Students will understand how developer-written and externally sourced code can be used within digital solutions and the responsibilities associated with using external code.* ***B2.1 Sources of code*** *Students will understand the different sources of code that may be used within a digital solution.* ***B2.1.1 Developer-written code*** *Understanding code created specifically by the developer or development team to meet the requirements of a digital solution.* ***B2.1.2 Externally sourced code: code libraries, frameworks, APIs, repositories, documentation, tutorials, forums and other developers*** *Understanding that code can be obtained from external sources.* ***B2.2 Using externally sourced code*** *Students will understand how externally sourced code can be incorporated into digital solutions.* **B2.2.1 Code reuse** Understanding how existing code can be reused, adapted or incorporated to provide functionality within a digital solution. **B2.2.2 Reasons for using externally sourced code** Considering benefits such as reducing development time, using established functionality, improving efficiency and accessing specialist functionality. **B2.2.3 Risks of externally sourced code** Considering issues such as incorrect or unsuitable code, security vulnerabilities, compatibility problems, poor quality, outdated code and dependencies on external components. **B2.2.4 Review of externally sourced code** Examining code before incorporating it into a solution to determine its purpose, quality, suitability, security and compatibility with the intended solution. **B2.2.5 Testing externally sourced code** Testing reused or adapted code to confirm that it behaves as expected and does not introduce errors or unintended behaviour into the solution. **B2.2.6 Modification and integration** Understanding that externally sourced code may need to be adapted, configured or integrated with

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	developer-written code to meet the requirements of the solution. **B2.2.7 Code provenance** Identifying where externally sourced code has come from and understanding the importance of being able to establish its source. **B2.3 Licensing and compliance** *Students will understand the responsibilities associated with licensing and using externally sourced code.* **B2.3.1 Software licensing** Understanding that software and source code may be subject to licensing conditions that determine how it can be used, modified, distributed and incorporated into other solutions. **B2.3.2 Types of software licence: proprietary licences, open-source licences** Understanding the characteristics and implications of common licence types. **B2.3.3 Compliance** Selecting and using externally sourced code in accordance with its licensing requirements and ensuring that licence conditions are not inadvertently breached. **B2.3.4 Attribution and documentation** Appropriately acknowledging the source of externally sourced code where required and maintaining records of licences and third-party components used within a solution. **B2.3.5 AI-generated code** Understanding that code generated using artificial intelligence tools should be treated as externally generated code and must be reviewed, tested and assessed for suitability, security, accuracy and licensing implications before being incorporated into a solution.
B3 Apply knowledge and understanding of the role of automated and AI-enabled tools in generating code suggestions, and the need to review, test and understand these outputs before use	***Synoptic link:*** *When reviewing and testing AI-generated code used to control access to a digital solution, students must draw on their knowledge and understanding of authentication and access control from Unit 1: Digital Security and Systems, C2.2, C3.1 and C3.2.* *Students will understand how automated and AI-enabled tools can support programming activities and why their outputs require review, testing and human judgement.* **B3.1 Automated and AI-enabled code suggestions**

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	Students will understand the role, contribution and limitations of automated and AI-enabled code suggestions. **B3.1.1 Automated and AI-enabled code suggestions** Code outputs generated from instructions, existing code or detected patterns to support code creation, completion, explanation or correction. **B3.1.2 Potential contribution** Supporting productivity, exploration of alternative approaches and identification of possible code structures or corrections. **B3.1.3 Review** Checking generated code against the brief, algorithm, programming-language requirements, licensing obligations and the surrounding solution. **B3.1.4 Testing and understanding** Explaining how suggested code operates and testing its expected, boundary and invalid-input behaviour before integrating it. **B3.1.5 Limitations and judgement** Recognising that suggestions may be inaccurate, insecure, inefficient, incompatible or unsuitable; accepting, modifying or rejecting them using independent reasoning and human oversight.
B4 Apply knowledge and understanding of the role of user interface elements, accessibility and digital content in supporting the usability of a digital system	*Students will understand how user interface elements, accessibility and digital content contribute to the usability of digital systems.* **B4.1 User interface elements, accessibility and digital content** *Students will understand how user interaction, accessibility and digital content design influence usability.* **B4.1.1 User interface elements** The controls, inputs, outputs, navigation and feedback through which users interact with a digital system. **B4.1.2 Accessibility** Designing and configuring interaction and content so that users with differing access needs can perceive, understand, navigate and operate the system. **B4.1.3 Digital content** The text, images, audio, video, data and messages

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	presented to users, and the need for accuracy, clarity, relevance and suitable organisation. **B4.1.4 Usability relationships** How consistency, feedback, readable content, understandable controls, accessibility and error handling influence effectiveness and user confidence.
B5 Apply knowledge and understanding of the influence of dependencies between components on overall system operation	*Students will understand how dependencies between components influence the operation, functionality and maintenance of programming solutions.* **B5.1 Components and dependencies** *Students will understand how components interact and depend on one another within a programming solution.* **B5.1.1 Components of a programming solution: code modules, functions, procedures, variables, data structures, inputs and outputs** Identifying the different components of a programming solution. **B5.1.2 Dependencies between components** Understanding how one component of a programming solution may rely on another component to operate correctly. **B5.1.3 Component interaction** Understanding how components interact and exchange data to deliver the required functionality of a programming solution. **B5.1.4 Data flow between components** Understanding how data is passed between components and how the output from one component can become the input for another. **B5.2 Impact of dependencies** *Students will understand how dependencies affect solution behaviour, reliability and maintenance.* **B5.2.1 Impact of errors and failures** Understanding how errors or failures in one component can affect the functionality and operation of other components and the overall programming solution. **B5.2.2 Component integration** Understanding the importance of integrating components correctly to ensure that a programming solution operates as intended. **B5.2.3 Compatibility between components** Recognising the need for components to use

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	compatible data types, data structures, interfaces and parameter values when interacting. **B5.2.4 Changes to components** Understanding how modifying one component can affect other components that depend on it and may require changes to maintain the functionality of the programming solution. **B5.2.5 Testing and debugging dependencies** Using knowledge of component relationships and dependencies to identify, investigate and resolve errors when developing and testing a programming solution.

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B6 Be able to develop a programming solution by writing and integrating code	*Students will be able to develop a programming solution by writing, integrating and refining code to meet the requirements of a defined brief.* **B6.1 Writing and organising code** *Students will be able to write and organise code that implements a planned solution.* **B6.1.1 Write code** Create code that implements the planned sequence of instructions and produces the required solution behaviour. **B6.1.2 Use data: variables, constants and simple data types** Create and use variables, constants and appropriate simple data types to receive, store and process the data required by the solution. **B6.1.3 Inputs, processing and outputs** Write code that accepts required inputs, carries out relevant calculations, comparisons or other processing, and produces clear outputs. **B6.1.4 Structured logic: sequence, selection and iteration** Use sequence, selection and iteration where required by the planned algorithm and the requirements of the brief. **B6.1.5 Organise code: functions and procedures** Structure code into manageable sections and, where appropriate to the solution, use reusable functions or procedures. **B6.2 Integrating and adapting code** *Students will be able to integrate code from multiple sources within a programming solution.* **B6.2.1 Integrate code** Combine developer-written code with suitable externally sourced or AI-generated code, adapting it where necessary so that the parts work together and meet the intended purpose. **B6.2.2 Code modification** Adapt existing or externally sourced code to meet the requirements of the given solution. **B6.3 Code readability** *Students will be able to apply coding practices that support understanding and maintenance of a programming solution.* **B6.3.1 Code readability: meaningful names, consistent layout, comments**

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	Use meaningful names, consistent layout and concise comments where needed so that the code can be understood and maintained.

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Content area C: Testing, refining and communicating a solution

Content outcome	Content detail
C1 Apply knowledge and understanding of the role of testing approaches in confirming that programming behaves as expected	*Students will understand how testing approaches are used to compare actual behaviour with expected outcomes, identify faults and provide confidence that programming behaves as intended.* **C1.1 Testing approaches** *Students will understand different approaches used to test programming solutions during development and after completion.* **C1.1.1 Testing during development** Testing manageable sections of code as they are developed so that problems can be identified before further functionality is added. **C1.1.2 Component testing** Testing an individual function, procedure or other part of a solution separately to confirm that it produces the expected behaviour. **C1.1.3 Integration testing** Testing components together to confirm that they interact correctly and that data and outputs pass between them as intended. **C1.1.4 Whole-solution testing** Testing the completed programming solution against the requirements and expected outcomes of the brief. **C1.1.5 User testing, where appropriate** Obtaining feedback from an intended or representative user where this supports checking that the solution works effectively for its intended purpose. **C1.2 Test data** *Students will understand how different types of test data are used to confirm solution behaviour.* **C1.2.1 Normal data** Data representing expected and permitted use. **C1.2.2 Boundary data** Data at the limits of permitted values. **C1.2.3 Invalid or erroneous data** Data that should be rejected or handled safely by the solution. **C1.3 Test planning and coverage**

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	Students will understand how testing is planned and how coverage supports confidence in solution behaviour. **C1.3.1 Test planning** Defining the feature or requirement being tested, test inputs, expected result, actual result and any action required. **C1.3.2 Range of testing** Understanding the need to test relevant requirements, expected outcomes, inputs, processing, outputs and interactions between appropriate solution components. **C1.4 Evaluating testing outcomes** *Students will understand how testing outcomes are interpreted when confirming solution behaviour.* **C1.4.1 Expected behaviour and outcomes** The behaviour and outputs that should occur when programming operates correctly, based on the intended purpose, requirements and planned solution. **C1.4.2 Limitations and judgement** Recognising that passing selected tests provides evidence that programming behaves as expected under the conditions tested but does not confirm the absence of every possible fault.

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C2 Be able to use appropriate software tools to run and test the code within a solution	*Students will be able to use software tools and logical processes to run, test and refine program code.* **C2.1 Development and testing tools** *Students will be able to use appropriate software tools to support program development and testing.* **C2.1.1 Development tools** Using an appropriate programming environment or software tools to write, run and test program code. **C2.1.2 Running code** Executing the program and observing how the solution behaves. **C2.2 Developing and refining code** *Students will be able to apply a structured approach when developing and refining a programming solution.* **C2.2.1 Step-by-step development** Developing and refining code in manageable stages rather than attempting to create the complete solution at once. **C2.2.2 Logical problem solving** Using a structured, step-by-step approach to identify problems, make changes and check the effect of those changes. **C2.2.3 Testing during development** Testing sections of code as they are developed to identify problems before integrating them into the complete solution. **C2.3 Debugging and correction** *Students will be able to identify, investigate and correct programming errors.* **C2.3.1 Identifying errors** Recognising common types of programming errors, including syntax, logic and runtime errors. **C2.3.2 Debugging** Using appropriate tools and techniques to locate the cause of errors within program code. **C2.3.3 Correcting errors** Making appropriate changes to code to correct identified errors without introducing further problems. **C2.4 Retesting and refinement** *Students will be able to evaluate changes and confirm continued solution functionality.*

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	C2.4.1 Retesting Testing the solution again after changes have been made to confirm that errors have been corrected and that existing functionality still works. **C2.4.2 Refinement** Making changes to improve the functionality, reliability, efficiency or usability of the solution where testing identifies a need for improvement. **C2.4.3 Recording test results** Recording test data, expected results, actual results and outcomes to provide evidence that the solution has been tested. **C2.4.4 Meeting the intended outcome** Using testing to confirm that the completed solution produces the expected outputs and meets the requirements of the given brief.

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C3 Be able to test the solution to confirm it produces the expected outcome	*Students will be able to test completed programming solutions and determine whether they produce the expected outcomes.* **C3.1 Confirming expected outcomes** *Students will be able to compare actual solution behaviour with expected behaviour.* **C3.1.1 Expected outcome** The behaviour and outputs derived from the brief, requirements and algorithms for specified conditions. **C3.1.2 Test execution** Applying planned normal, boundary and invalid data and recording expected and actual results for relevant functions and paths. **C3.2 Evaluating test outcomes** *Students will be able to determine whether testing demonstrates that a solution is working correctly.* **C3.2.1 Confirmation** Comparing results with requirements and distinguishing a pass, a failure and an outcome that requires further investigation. **C3.2.2 Retesting** Repeating relevant tests after a correction and rechecking previously working functionality to confirm that the change has not introduced further errors. **C3.2.3 Evaluation** Judging the level of confidence supported by the coverage and outcomes of testing, including identifying untested conditions or remaining limitations.

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C4 Apply knowledge and understanding of the effect of logic errors, syntax errors and incorrect conditions on program behaviour	*Students will understand the characteristics and effects of syntax errors, logic errors and incorrect conditions, and how evidence from program execution can be used to diagnose and correct errors while considering the possible effects of changes on other parts of the solution.* **C4.1 Syntax errors** *Students will understand how syntax errors affect the interpretation and execution of program code.* **C4.1.1 Programming-language rules** How violations of programming-language rules can prevent code from being interpreted or executed as intended. **C4.1.2 Error information** How error messages and information from the development environment can indicate the location and nature of a syntax error. **C4.2 Logic errors** *Students will understand how faults in an algorithm or its implementation can affect program behaviour and outputs.* **C4.2.1 Algorithm and implementation faults** How faults in an algorithm or its implementation can allow code to run but produce incorrect, incomplete or unintended behaviour. **C4.2.2 Expected and actual behaviour** How comparing actual program behaviour and outputs with the algorithm, requirements and expected outcomes can indicate a logic error. **C4.3 Incorrect conditions** *Students will understand how incorrect conditions can affect selection and iteration within program code.* **C4.3.1 Values and relationships** How conditions that test the wrong values or relationships can cause program code to follow an unintended path. **C4.3.2 Boundaries** How unsuitable boundaries can cause selection or iteration to begin, end or repeat incorrectly. **C4.3.3 Selection and iteration** How incorrect conditions can cause selection and iteration to occur when they should not, or prevent them from occurring when required. **C4.4 Diagnosing errors**

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	Students will understand how evidence from program execution can be used to identify the cause of an error. **C4.4.1 Error information** Interpreting error messages and other information provided by the development environment to support identification of an error. **C4.4.2 Tracing execution and inspecting values** Tracing program execution and inspecting values to identify where behaviour begins to differ from the intended algorithm. **C4.4.3 Comparison with algorithms and requirements** Comparing actual program behaviour with the algorithm, requirements and expected outcomes to identify the likely cause of an error. **C4.5 Correction and implications** *Students will understand how errors can be corrected and how a correction can affect related program behaviour.* **C4.5.1 Targeted correction** Making a targeted change that addresses the identified cause of an error without unnecessarily changing other parts of the solution. **C4.5.2 Retesting affected and related behaviour** Retesting the affected behaviour and related parts of the solution to confirm that the correction has resolved the error. **C4.5.3 Effects of corrections** Recognising that a correction may introduce new faults or alter other parts of the solution and that further checking may therefore be required.
C5 Be able to identify and correct errors in code	*Students will be able to identify, investigate and correct errors in program code and confirm through retesting that the correction has resolved the identified problem.* **C5.1 Identifying errors** *Students will be able to recognise and locate errors using program behaviour and available diagnostic information.* **C5.1.1 Recognising errors** Identifying syntax errors, unexpected outputs, incorrect processing, unsuitable conditions and other behaviour that differs from the intended solution. **C5.1.2 Using diagnostic information** Using error messages, test results, variable values,

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	outputs and observed behaviour to help locate an error. **C5.1.3 Isolating the cause** Narrowing an investigation to the relevant section of code, condition, input or variable. **C5.2 Correcting and confirming** *Students will be able to correct identified errors and confirm the effect of the correction.* **C5.2.1 Correcting code** Making an appropriate change to address the identified cause. **C5.2.2 Retesting** Repeating the relevant test after a correction to confirm that the problem has been resolved and that required functionality continues to operate as intended.

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C6 Be able to apply a logical, step-by-step approach when developing and refining code	*Students will be able to apply a structured and logical approach throughout the development and refinement of program code.* ***C6.1 Logical development*** *Students will be able to work systematically through the development of a programming solution.* **C6.1.1 Logical approach** Working from defined requirements and algorithms through manageable implementation steps, checking each step before adding further complexity. **C6.1.2 Traceable change** Making controlled changes with a clear reason and distinguishing the effect of one change from another. **C6.2 Refinement and problem solving** *Students will be able to refine solutions using evidence gathered through development and testing.* **C6.2.1 Refinement** Improving correctness, readability, usability, efficiency or maintainability in response to testing and review. **C6.2.2 Problem solving** Isolating the affected component, forming a reasoned explanation, testing the explanation and evaluating whether the change resolves the issue.

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C7 Be able to communicate outcomes clearly using concise explanations and structured documentation	*Students will be able to communicate solution outcomes clearly and appropriately using structured documentation.* **C7.1 Communicating outcomes** *Students will be able to communicate programming outcomes clearly for different audiences.* **C7.1.1 Purpose and audience** Identifying the purpose of the communication and adapting the level of detail and language to suit the intended audience. **C7.1.2 Clear communication** Presenting information using clear, concise and appropriate language. **C7.1.3 Communicating outcomes** Clearly describing what has been achieved, including the main features, functionality and results of the digital solution. **C7.2 Structured documentation** *Students will be able to organise and present information using appropriate documentation structures.* **C7.2.1 Structured documentation** Organising information using appropriate headings, sections, tables, lists and other structures to make documentation easy to follow. **C7.2.2 Evidence** Selecting appropriate evidence, such as screenshots, test results, outputs or other supporting information, to demonstrate outcomes. **C7.3 Presenting information** *Students will be able to present information so that it is accessible and understandable.* **C7.3.1 Presentation of information** Using appropriate formatting, visuals and digital content to make information accessible, readable and understandable. **C7.3.2 Recommendations and improvements** Clearly communicating identified limitations and appropriate suggestions for further development.

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Transferable skills

Students are expected to develop the following transferable skills through the learning and assessment activities for this unit:

- **Planning** development and testing activities by identifying requirements, sequencing tasks, allocating time and resources and defining expected outcomes.
- **Data interpretation** when interpreting briefs, requirements, program inputs and outputs, code behaviour and test results.
- **Problem solving** when designing algorithms, developing code, identifying errors, debugging and refining programming solutions.
- **Communicating** solution designs, algorithms, testing outcomes and technical information clearly through appropriate written, visual and digital formats.
- **Investigating** code behaviour, errors and developer-written, externally sourced or AI-generated code to determine its suitability and identify required changes.
- Evidence-based **decision-making** when selecting programming approaches, reviewing code, interpreting test results and deciding on appropriate changes and improvements.
- **Self-managing** development activities, time, testing and iterative refinement throughout the programming-solution development process.
- **Recording** requirements, designs, code sources, development decisions, test results, corrections and review outcomes accurately.
- **Evaluating** the behaviour, quality, suitability and fitness for purpose of code and the completed programming solution.
- **Observing** program outputs, error messages, values and behaviour during development and testing to identify where actual behaviour differs from expected behaviour.

The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

Assessment summary

The NEA for this unit consists of five tasks.

- In response to Task 1, students analyse the requirements of the brief and plan the timescales for developing the programming solution.
- In repsonse to Task 2, students design the programming solution, including its algorithms, data requirements, programming structures and planned testing.

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- In repsonse toTask 3, students develop and test a programming solution that meets the requirements of the brief.
- In repsonse to Task 4, students use an AI tool to generate code for specified functionality, then review, test, adapt where necessary and integrate the code into a larger program. Students draw on their prior learning about authentication and controlled access from Unit 1 when reviewing and testing the functionality.
- In repsonse to Task 5, students review their completed solution against its purpose and requirements and produce guidance for its users.

The assessment will take 15 supervised hours to complete.

The NEA is set by Pearson and will be marked by centres and moderated by Pearson. New assessments for this unit will be released in September and January of each academic year through the secure area of our website. Students must use the assessment to provide the required evidence to achieve this unit.

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A sample assessment is provided on the Pearson website.

Marking the NEA

You will make assessment decisions for the NEA using the marking grid given below. Before making assessment decisions, you should refer to the guidance on using the marking grid provided in the *Pearson Foundation Certificates Supplementary Specification,* available on our website.
A glossary of terms used in the marking grid is provided in *Appendix 1*.

Further information on managing NEAs is provided in the *Pearson Foundation Certificates Supplementary Specification,* available on our website.

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Marking grid

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 1 – 1a Analyse the problem, 1b Planning timescales				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding to analyse the problem and plan the project. Evidenced through: • **basic** analysis of the problem, identifying some information about the program purpose and requirements, with limited connection between the required inputs, processing, stored data and outputs. • an **emerging** project plan, with some relevant tasks identified but gaps or inaccuracies in the subtasks, indicative durations or milestones. • **basic** recognition of dependencies between project activities, resulting in a	**Mostly appropriate** application of knowledge and understanding to analyse the problem and plan the project. Evidenced through: • **mostly appropriate** analysis of the problem, identifying the main program purpose and requirements and making connections between the required inputs, processing, stored data and outputs. • a **relevant** project plan, with the main tasks, subtasks, indicative durations and milestones identified, although some elements may require further development. • **mostly appropriate** dependencies identified between the main project	**Effective** application of knowledge and understanding to analyse the problem and plan the project. Evidenced through: • **considered analysis** of the problem, connecting the program purpose and requirements to the required inputs, processing, stored data, outputs, validation and suitable programming techniques. • a **considered** project plan, with relevant tasks and subtasks arranged in a logical sequence and supported by realistic indicative durations and clear milestones. • **logical consideration** of how dependencies affect the	**Thorough** application of knowledge and understanding to analyse the problem and plan the project. Evidenced through: • **perceptive** analysis of the problem, establishing how the program purpose, requirements, inputs, processing, stored data, outputs, validation and suitable programming techniques relate to one another. • a **sustained** project plan, with tasks and subtasks arranged in a logical sequence and supported by realistic indicative durations and milestones that provide a clear and coherent route through the project. • **insightful** consideration of dependencies and their impact on the sequence,

	sequence that may not support successful delivery.	activities, supporting a generally workable sequence.	sequence and timing of project activities.	timing and successful delivery of project activities.
Mark Band 0	**Mark Band 1**	**Mark Band 2**	**Mark Band 3**	**Mark Band 4**
Task 2: Design the solution				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding to design the solution. Evidenced through: • **emerging** algorithms that describe parts of the intended solution but contain gaps or errors that would limit implementation. • a **basic** design that identifies some relevant variables, data types, data structures, validation, calculations and programming constructs, but does not yet provide a workable basis for the whole solution • a **limited** test plan containing basic test data or expected results, with gaps	**Mostly appropriate** application of knowledge and understanding to design the solution. Evidenced through: • **mostly appropriate** algorithms that describe the main solution processes, although gaps or errors would affect some required behaviour • a **coherent** design that identifies the main variables, data types, data structures, validation, calculations and programming constructs required for the solution. • an **appropriate** test plan covering the main solution	**Effective** application of knowledge and understanding to design the solution. Evidenced through: • **effective** algorithms that describe the required solution processes in a logical order and support implementation. • a **considered** design that uses variables, data types, data structures, validation, calculations, selection and iteration to provide a clear basis for development. • a **logical** test plan using appropriate normal, boundary and invalid data	**Thorough** application of knowledge and understanding to design the solution. Evidenced through: • **sophisticated** algorithms that describe the required solution processes in a fluent and implementable form. • an **in-depth** design that integrates variables, data types, data structures, validation, calculations, selection and iteration into a comprehensive and implementable solution . • a **sustained** test plan using well-selected normal, boundary and invalid data,

	that would restrict checking of the solution.	features with relevant test data and expected results.	with clear expected results for the required solution features.	with precise expected results to check the required solution behaviour.

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 3 Develop and test the solution				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding to develop and test the solution. Evidenced through: • an **emerging** solution with some functionality developed, but gaps or errors significantly limit its operation against the brief. • **Basic** use of programming constructs and conventions, with limited control of inputs, processing, data storage, validation, selection or iteration.	**Mostly appropriate** application of knowledge and understanding to develop and test the solution. Evidenced through: • a **partially functional** solution that meets the main requirements of the brief, although gaps or errors prevent some required functionality from operating as intended • **competent** use of programming constructs and conventions to implement the main solution processes, with some code inefficient or inconsistently structured.	**Effective** application of knowledge and understanding to develop and test the solution. Evidenced through: • a **reliable** solution that meets the requirements of the brief and operates as intended overall, despite minor gaps or errors. • **effective** use of programming constructs and conventions to implement the required solution processes in code that is logically structured and generally	**Thorough** application of knowledge and understanding to develop and test the solution. Evidenced through: • a **fully developed** solution that meets the requirements of the brief and operates consistently as intended. • **proficient** use of .programming constructs and conventions to implement the required solution processes in code that is clear, logically structured and consistently

	• **limited** implementation of inputs, outputs and user interaction, with issues that make parts of the solution difficult to use or understand. • **limited** testing of the developing solution, with incomplete recording of outcomes and limited identification or correction of errors.	• **appropriate** implementation of the main inputs, outputs and user interactions, although some aspects may be unclear or inconsistent. • **relevant** testing of the main solution features, with outcomes recorded and some identified errors corrected.	efficient. • **clear** implementation of inputs, outputs and user interactions, enabling the solution to be used as intended with only minor issues. • **effective** testing throughout development, with clear records of outcomes and appropriate correction and retesting of identified errors.	efficient. • **assured** implementation of inputs, outputs and user interactions, enabling the solution to be used clearly and consistently as intended. • **systematic** testing throughout development, with detailed records of outcomes and effective correction, retesting and refinement of the solution.

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 4: AI code integration				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** application of knowledge and understanding to review and make decisions about AI-generated code. Evidenced through: • a **limited** review of the AI-generated function against the requirements, identifying some obvious issues but providing little basis for decisions, changes made or	**Mostly appropriate** application of knowledge and understanding to review and make decisions about AI-generated code. Evidenced through: • a **coherent** review of the AI-generated function against the main requirements, identifying relevant issues and providing a clear basis for some decisions, changes made or retaining the	**Effective** application of knowledge and understanding to review and make decisions about AI-generated code. Evidenced through: • a **reasoned** review of the AI-generated function against the requirements, identifying errors, incorrect conditions or unsuitable code and using findings to explain decisions,	**Thorough** application of knowledge and understanding to review and make decisions about AI-generated code. Evidenced through: • a **perceptive** review of the AI-generated function against all requirements, identifying pertinent issues in its logic, suitability and behaviour and using convincing evidence to

	retaining the original code. • **basic** adaptation of the function where required, with changes addressing only some identified issues or introducing further errors. • **emerging** development of the menu program and integration of the final login function, with gaps or errors significantly limiting the required menu and access-control behaviour. • a **limited** test plan and testing process, with incomplete coverage or results and limited correction or retesting of identified errors.	original code. • **competent** adaptation of the function where required, with changes addressing the main identified errors or unsuitable logic. • **coherent** development of the menu program and integration of the final login function, implementing the main menu and access-control behaviour, although gaps or errors affect some required operation. • an **appropriate** test plan and testing process covering the main login and menu behaviours, with results recorded and some identified errors corrected and retested.	changes made or retaining the original code. • **effective** adaptation of the function where required, with changes resolving identified errors or unsuitable logic and producing the required authentication behaviour. • **effective** development of the menu program and integration of the final login function, with start-up, menu options, authentication, attempt limits, returned values, messages and access control operating as intended despite minor issues. • a **logical** test plan and effective testing process covering the required login and integration behaviours, with clear results and appropriate correction and retesting.	justify decisions, targeted changes or retaining the original code. • **sophisticated** adaptation of the function where required, with targeted changes resolving pertinent errors or unsuitable logic while preserving suitable elements of the original function. • **sustained** development of the menu program and integration of the final login function, with start-up, all three menu options, authentication, attempt limits, returned values, messages and access control operating consistently and cohesively. • a **thorough** test plan and systematic testing process covering all specified login and integration behaviours, with precise results and effective correction and retesting of identified errors.

Mark Band 0	Mark Band 1	Mark Band 2	Mark Band 3	Mark Band 4
Task 5: Review of solution and end user guide				
0 marks	**1 – 3 marks**	**4 – 6 marks**	**7 – 9 marks**	**10 – 12 marks**
No rewardable material	**Basic** review and communication of the completed solution. Evidenced through: • an **emerging** review using limited evidence to identify some strengths, limitations or issues in how the completed solution meets its purpose and requirements, with limited consideration of decisions, testing or problem-solving. • a **basic** conclusion about the completed solution, with limited connection to identified strengths, limitations or available evidence. • **limited** recommendations for future and accessibility improvements, with weak	**Competent** review and communication of the completed solution. Evidenced through: • a **coherent** review using some relevant evidence to identify strengths, limitations and issues in how the completed solution meets its main purpose and requirements, with some reflection on decisions, testing and problem-solving • a **clear** conclusion about how the completed solution meets its main purpose and requirements, connected to some identified strengths, limitations and evidence. • **appropriate** recommendations for realistic future and accessibility improvements, connected to	**Effective** review and communication of the completed solution. Evidenced through: • a **reasoned** review using relevant evidence to identify and explain strengths, limitations and issues against the solution's purpose and requirements, including the influence of important decisions, testing and problem-solving • a **supported** conclusion explaining how effectively the completed solution meets its purpose and requirements, based on identified strengths, limitations and relevant evidence. • **supported** recommendations for realistic future and accessibility improvements, clearly	**In-depth** review and sophisticated communication of the completed solution. Evidenced through: • a **perceptive** review using pertinent evidence to identify and examine significant strengths, limitations and issues against the solution's purpose and requirements, including the influence of important decisions, testing and problem-solving • a **convincing** conclusion judging how effectively the completed solution meets its purpose and requirements, synthesising pertinent strengths, limitations and evidence into an overall judgement of fitness for purpose. • **insightful** recommendations for realistic future and accessibility improvements, with convincing justification of

	connections to evidence, identified limitations or intended-user needs. • a **basic** end-user guide containing limited or unclear instructions about the solution's features, inputs, outputs, validation or error messages, with weaknesses in structure or suitability for staff. • **limited** selection and use of solution information and screenshots, providing restricted evidence of how the main features work.	some evidence, identified limitations or intended-user needs, although parts of the rationale are underdeveloped. • an **appropriate** end-user guide explaining the main features, inputs, outputs, validation and error messages, using a generally clear structure and language suited to staff, although some information may be incomplete or unclear. • **appropriate** selection and use of relevant solution information and screenshots, demonstrating how the main features work, although there may be gaps or weak connections between the visuals and instructions.	connected to evidence, identified limitations and intended-user needs. • an **effective** end-user guide providing clear, accurate and logically organised instructions covering the main features, inputs, outputs, validation and error messages for staff at the community sports centre. • **effective** selection and use of relevant solution information and well-chosen screenshots, clearly supporting the instructions and demonstrating the main features working.	how they would address pertinent limitations and improve the solution for intended users. • a **sophisticated** end-user guide providing precise, cohesive and audience-appropriate instructions covering the relevant features, inputs, outputs, validation and error messages, enabling staff to use the solution confidently. • **perceptive** selection and use of pertinent solution information and purposeful screenshots, with text and visual evidence working together to demonstrate clearly how the main features operate.

Resource requirements

For this unit, students must have access to:

- a computer with appropriate offline software to produce written reports, planning and design documentation, testing records and user guidance
- an appropriate Python development environment for writing, running, testing and integrating program code
- controlled internet access to an online AI tool for Task 4 only
- appropriate facilities for saving and submitting the required digital evidence.

The permitted use of internet access and artificial intelligence varies by task and is specified in the assessment materials.

Unit 3: Using and Visualising Data Responsibly

Assessment type: Task-based external assessment
Unit type: Mandatory Unit
Guided learning hours: 120

Introduction

Every time you read a review, compare information online or use data to help you make a choice, you need to decide whether the information can be trusted and what it really tells you. Organisations face the same challenge when they use information to understand situations and make decisions. Knowing how to find, check and interpret information helps you use evidence with confidence.

In this unit, you will find out how different types and sources of data and information can be used for a defined purpose. Then you will put that into practice. You will find and compare information, prepare and clean datasets, and use digital tools to organise and analyse data. You will create tables, charts and other visual formats to help you identify patterns, draw conclusions and communicate what you have found.

Using evidence responsibly runs through everything you do. You will check the quality of information, consider how bias can affect what it tells you and make sure your conclusions are supported by the evidence. Digital tools, automation and AI can help you analyse and present information, but they can also produce inaccurate, misleading or fabricated content, so you will check their outputs before relying on them. You will also acknowledge your sources and consider ownership, attribution and appropriate use when working with digital and AI-generated content.

Throughout this unit, you will develop transferable skills in planning, data interpretation, problem solving, communicating, investigating, evidence-based decision-making, self-managing, recording, evaluating and observing. You will practise these skills as you organise and clean data, compare and check sources, identify patterns and anomalies, use evidence to reach conclusions and explain your findings and recommendations. You will also manage your work systematically and keep accurate, traceable records. These skills are embedded in applied activities across the unit rather than assessed separately.

This unit builds on the digital systems and data skills you developed in Units 1 and 2 and gives you the chance to use evidence to reach conclusions and make recommendations. You will bring together skills in checking information, analysing data and communicating clearly for a purpose and audience. This qualification combines theory, practical experience and transferable skills to prepare you for

related Level 3 study, including V Levels, T Levels or A Levels, and help you choose which subject areas to specialise in.

Students should be given opportunities to develop their knowledge and skills in a range of contexts including different datasets, digital sources, software tools and work-related scenarios.

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Teaching content

Content area A: Understanding and preparing data and information

Content outcome	Content detail
A1 Apply knowledge and understanding of numerical, text, categorical and date or time data types	*Students will understand how different data types represent information and support valid processing, comparison and interpretation.* **A1.1 Data types and their application** *Students will understand how numerical, text, categorical and date or time data types represent information and support valid processing and interpretation.* **A1.1.1 Numerical data** How numerical data represents quantities or measurements and supports calculations, comparisons and statistical summaries. **A1.1.2 Text data** How text data represents words, descriptions and identifiers. **A1.1.3 Categorical data** How categorical data assigns records to defined groups. **A1.1.4 Date or time data** How values represent dates and times, and why consistent formats are needed to support processing. **A1.1.5 Application of data types** How to assign data types appropriate to the intended use of each field and identify where an incorrect type could prevent valid processing or lead to misleading interpretation.

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A2 Apply knowledge and understanding of digital data sources comprising spreadsheets, databases, survey outputs, online data repositories and system-generated reports	*Students will understand the structure and characteristics of specified digital data sources and how these affect their suitability and use.* **A2.1 Digital data sources** *Students will understand the structures, characteristics and suitability of spreadsheets, databases, survey outputs, online data repositories and system-generated reports.* **A2.1.1 Characteristics of digital data sources.** How spreadsheets, databases, survey outputs, online data repositories and system-generated reports differ in their purpose, characteristics and organisation of records, fields, headings and categories. **A2.1.2 Source suitability** How level of detail, accessibility, currency and likely data quality influence whether a data source is suitable for a defined purpose. **A2.1.3 Preparing information from different sources** How differences in structures, formats, units, categories and definitions may require data to be prepared before it can be compared or combined.
A3 Apply knowledge and understanding of the role of database structures and fields used to organise and retrieve structured data	*Students will understand how records and fields organise structured data and support its retrieval and use.* **A3.1 Database structures and fields** *Students will understand how records and fields organise structured data and support searching, sorting, filtering, comparison and reporting.* **A3.1.1 Database organisation** How databases organise structured data into records and fields to support searching, sorting, filtering, comparison and reporting. **A3.1.2 Records** How each record is a collection of related data about one item or occurrence. **A3.1.3 Fields** How each field stores one defined item of data within a record so that data can be organised and retrieved.

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A4 Apply knowledge and understanding of variation in the reliability, accuracy, authority and purpose of digital information	*Students will understand how reliability, accuracy, authority and purpose influence the suitability of digital information.* **A4.1 Reliability, accuracy, authority and purpose** *Students will understand how reliability, accuracy, authority and purpose affect the suitability of digital information for an intended use.* **A4.1.1 Reliability** How to determine whether information is consistent and sufficiently trustworthy for its intended use. **A4.1.2 Accuracy** How to determine whether information is correct, complete and supported by verifiable evidence. **A4.1.3 Authority** How the knowledge, responsibility, expertise or recognised position of the individual or organisation responsible for information affects its authority. **A4.1.4 Purpose** How to determine why information was created and whether its purpose is to inform, advise, promote, persuade, record or generate engagement.
A5 Apply knowledge and understanding of the role of comparing information across multiple sources in supporting accurate conclusions	*Students will understand how comparing relevant information across multiple sources supports accurate, evidence-based conclusions.* **A5.1 Comparing information across sources** *Students will understand how information from relevant digital sources can be compared to support accurate conclusions.* **A5.1.1 Information for comparison** How to identify relevant facts, figures, claims or interpretations that should be checked across sources. **A5.1.2 Comparing information across sources** How to compare corresponding information from more than one relevant digital source to identify agreement, difference or conflict. **A5.1.3 Considering differences** How differences in date, purpose, context or supporting evidence may explain variation between sources. **A5.1.4 Relevance and reliability** How the relevance and reliability of each source influence the confidence that can be placed in the information.

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	A5.1.5 Conclusions How to use the comparison to determine what the available evidence supports and reach a conclusion consistent with that evidence.
A6 Apply knowledge and understanding of the effect of missing values, duplicate records, inconsistent formatting and incorrect data types on accuracy and interpretation	*Students will understand how specified data-quality issues can affect processing, accuracy and interpretation.* **A6.1 Data-quality issues** *Students will understand how missing values, duplicate records, inconsistent formatting and incorrect data types affect processing, accuracy and interpretation.* **A6.1.1 Effects on processing** How missing values, duplicate records, inconsistent formatting and incorrect data types can affect calculations, totals, ordering, filtering, grouping, comparisons and chart creation. **A6.1.2 Effects on interpretation** How incomplete, repeated or incorrect data may conceal patterns, exaggerate results or lead to unsupported conclusions. **A6.1.3 Data-quality issues and valid variation** How to distinguish an actual data-quality issue from a valid variation within the dataset.
A7 Apply knowledge and understanding of the efficient use, storage and handling of data to support responsible and sustainable digital practices	*Students will understand how efficient storage and responsible handling of data support sustainable digital practice.* **A7.1 Responsible and sustainable data practices** *Students will understand how efficient storage and responsible data handling support sustainable digital practices.* **A7.1.1 Storage and organisation** Why meaningful file names, appropriate file formats and controlled versions support efficient storage and retrieval. **A7.1.2 Responsible data handling** How to protect the confidentiality of data throughout collection, preparation, analysis and storage of results. **A7.1.3 Sustainable digital practice** How reducing unnecessary storage, repeated processing and duplicated files can reduce the resources used by digital systems.

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A8 Be able to identify digital sources that are relevant to a defined purpose	*Students will be able to identify digital sources that meet a defined information need and intended purpose.* **A8.1 Identifying relevant digital sources** *Students will be able to establish an information need and identify digital sources that are relevant to a defined purpose.* **A8.1.1 Defined purpose** Establishing the information need, intended outcome, scope, audience and decisions the information will support. **A8.1.2 Search concepts** Using key terms, related terms and appropriate boundaries to locate information relevant to the purpose. **A8.1.3 Relevance** Judging whether a source directly addresses the information need, provides the required level of detail and relates to the appropriate context.
A9 Be able to check information across sources to confirm key points	*Students will be able to compare relevant information across sources to confirm key points and identify where further checking is needed.* **A9.1 Checking information across sources** *Students will be able to compare information across relevant sources to confirm key points and identify where further checking is required.* **A9.1.1 Key points** Identifying the facts, claims, figures or interpretations that could affect a conclusion or recommendation. **A9.1.2 Cross-checking** Locating corresponding information in other relevant sources and comparing meaning, definitions, context and supporting evidence. **A9.1.3 Judgement** Determining whether the evidence confirms the key points or whether further investigation is required.

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A10 Be able to format, clean and prepare digital datasets using spreadsheet and data presentation tools	*Students will be able to use spreadsheet and data-presentation tools to format, clean and organise digital datasets for valid use.* **A10.1 Formatting, cleaning and preparing datasets** *Students will be able to use spreadsheet and data-presentation tools to format, clean and organise digital datasets.* **A10.1.1 Formatting** Using tools to apply consistent headings, data formats and layout appropriate to the dataset. **A10.1.2 Cleaning** Identifying and resolving inconsistent formatting, unwanted duplication and missing values. **A10.1.3 Organisation** Structuring and ordering fields and records so that data can be stored, retrieved and used efficiently.
A11 Be able to review datasets for accuracy and resolve missing values, duplicate records, inconsistent formatting and incorrect data types	*Students will be able to review datasets, resolve specified data-quality issues and consider the implications of any unresolved issues.* **A11.1 Reviewing and resolving data-quality issues** *Students will be able to identify and resolve missing values, duplicate records, inconsistent formatting and incorrect data types, and review the resulting dataset.* **A11.1.1 Missing values** Determining whether a value is missing or intentionally omitted before deciding how it should be handled. **A11.1.2 Duplicate records** Distinguishing duplicated records from valid repeated records by comparing fields and contextual information. **A11.1.3 Formatting and data types** Standardising formatting and data types to support valid calculation, comparison, ordering and presentation. **A11.1.4 Review and implications** Checking the revised dataset and identifying where unresolved issues may affect later interpretation or conclusions.

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Content area B: Analysing and interpreting data

Content outcome	Content detail
B1 Apply knowledge and understanding of the role of spreadsheet, data presentation, automated and AI-enabled features in supporting interpretation and presentation of data	*Students will understand how spreadsheet, data-presentation, automated and AI-enabled features support the processing, interpretation and presentation of data.* **B1.1 Tools and features for data interpretation and presentation** *Students will understand how spreadsheet, data-presentation, automated and AI-enabled features support the processing, interpretation and presentation of data.* **B1.1.1 Data manipulation methods** How importing, formulae, functions, sorting and filtering can prepare and process data for interpretation. **B1.1.2 Conditional and lookup methods: decision-making, lookup, counting and logical functions** How these functions can support relevant calculations, comparisons and decisions within a dataset. **B1.1.3 Organisation and presentation methods: multiple or linked worksheets, subtotals, grouping, alternative views and conditional formatting** How these methods can organise information and make patterns or exceptions clearer. **B1.1.4 Data summaries: totals, counts, averages and percentages** How these summaries support comparison and interpretation of data. **B1.1.5 Presentation features: font, alignment, wrapping, borders, shading and titles** How these features support readable and consistent presentation. **B1.1.6 Dashboard presentation methods: tables, pivot tables, sparklines, charts and appropriate controls** How these methods can bring together information for interpretation and presentation. **B1.1.7 AI-enabled features** How AI-enabled features can support data cleaning, identification of trends, generation of formulae and recommendations for visual representations, with outputs checked before use.

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Content outcome	Content detail
B2 Apply knowledge and understanding of the potential for automated and AI-enabled systems to produce inaccurate, misleading or fabricated information	*Students will understand how automated and AI-enabled systems may produce unreliable information and why outputs must be checked.* **B2.1 Reliability of automated and AI-enabled information** *Students will understand how automated and AI-enabled systems may produce inaccurate, misleading or fabricated information and why outputs require checking.* **B2.1.1 Inaccurate information** How generated content may contain factual, numerical, contextual or interpretative errors. **B2.1.2 Misleading information** How omission, emphasis or unsupported interpretation can make generated content misleading. **B2.1.3 Fabricated information** How generated claims, details or sources may be presented as genuine even though they cannot be verified. **B2.1.4 Human oversight** How to check generated information against reliable evidence and sources before using it.
B3 Apply knowledge and understanding of the role of emerging digital technologies in shaping digital systems and services	*Students will understand how emerging digital technologies can influence digital systems, services and their use.* **B3.1 Influence of emerging digital technologies** *Students will understand how emerging digital technologies can influence digital systems, services and their use.* **B3.1.1 Influence on systems and services** How emerging technologies can change system functions, user interactions, organisational processes and services. **B3.1.2 Opportunities** How emerging technologies may create opportunities for new or improved digital systems and services. **B3.1.3 Implications and limitations** How emerging technologies can affect skills requirements, processes, cost and security.

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Content outcome	Content detail
B4 Apply knowledge and understanding of the influence of bias within digital information on interpretation and recommendations	*Students will understand how bias within digital information can affect interpretation and the suitability of recommendations.* **B4.1 Bias within digital information** *Students will understand how sources of bias can influence interpretation and the suitability of recommendations.* **B4.1.1 Sources of bias** How bias may arise from a creator's purpose or perspective, selected information, the represented population or data, and the collection method. **B4.1.2 Effects on interpretation** How emphasis, omission and language can influence what users notice and the meaning they take from information. **B4.1.3 Effects on recommendations** How reliance on biased information can produce recommendations that are unsupported, unbalanced or unsuitable for the intended purpose.
B5 Apply knowledge and understanding of the role of graphical and tabular formats, including their use within infographics, in supporting interpretation and communication of findings	*Students will understand how graphical and tabular formats, including their use within infographics, support interpretation and communication of findings.* **B5.1 Formats for interpreting and communicating findings** *Students will understand how graphical, tabular and infographic formats support interpretation and communication of findings.* **B5.1.1 Graphical formats** How charts and other visual representations display comparisons, changes and patterns. **B5.1.2 Tabular formats** How rows, columns, headings, labels, units, ordering and grouping support accurate presentation and interpretation of data. **B5.1.3 Infographics** How graphical, tabular and written information can be combined to communicate findings in an accessible visual form. **B5.1.4 Format selection** How to select a format appropriate to the intended purpose, data and audience needs.

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Content outcome	Content detail
B6 Be able to create tables and charts to represent data	*Students will be able to create accurate tables and charts that represent selected data clearly.* **B6.1 Creating tables and charts** *Students will be able to select data and create accurate tables and charts that represent it clearly.* **B6.1.1 Data selection** Selecting the records, fields, categories and level of detail needed to represent the data. **B6.1.2 Table construction** Using headings, labels, filtering, ordering, grouping and appropriate numerical presentation to create accurate tables. **B6.1.3 Chart construction: titles, axes, scales, labels and legends** Selecting a chart appropriate to the type of data and applying these features where relevant to support accurate and clear representation. **B6.1.4 Comparison and judgement** Comparing alternative tables or charts to determine which communicates the evidence most clearly.

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Content outcome	Content detail
B7 Be able to identify patterns and draw conclusions from data	*Students will be able to identify and interpret patterns, trends and anomalies in processed data and draw conclusions that answer a defined question.* **B7.1 Identifying patterns and drawing conclusions** *Students will be able to identify and interpret patterns, trends and anomalies and draw conclusions supported by the available data and analysis.* **B7.1.1 Patterns and trends** Identifying meaningful patterns, trends, relationships and differences within processed data. **B7.1.2 Anomalies** Identifying values or results that differ from expected or wider patterns and considering their significance. **B7.1.3 Interpretation** Explaining what identified patterns, trends and anomalies show in relation to the defined question or purpose. **B7.1.4 Conclusions** Drawing conclusions that are accurate, proportionate and supported by the available data and analysis.

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Content area C: Communicating findings and recommendations

Content outcome	Content detail
C1 Apply knowledge and understanding of the importance of intellectual property rights, ownership, attribution and appropriate use of digital and AI-generated content	*Students will understand how ownership, attribution and usage requirements affect the responsible use of digital and AI-generated content.* **C1.1 Intellectual property and appropriate use** *Students will understand how ownership, attribution, permissions and restrictions affect the responsible use of digital and AI-generated content.* **C1.1.1 Ownership** How the person or organisation holding rights in digital content may differ from the individual who accesses or publishes it. **C1.1.2 Attribution** Why the source or creator of content must be clearly cited or referenced where required. **C1.1.3 Appropriate use** How to use, adapt and share content in accordance with relevant permissions, licences and restrictions. **C1.1.4 Implications and judgement** How legal, ethical and reputational considerations affect decisions about using digital and AI-generated content.
C2 Apply knowledge and understanding of the role of referencing practices in ensuring transparency and traceability of sources	*Students will understand how referencing supports transparency and enables sources and evidence to be traced and checked.* **C2.1 Referencing, transparency and traceability** *Students will understand how referencing supports transparency and enables sources, claims and evidence to be traced and checked.* **C2.1.1 Role of referencing** How referencing identifies information and evidence used in an investigation. **C2.1.2 Transparency** How referencing helps an audience distinguish sourced information from the student's own interpretation, conclusion or recommendation. **C2.1.3 Traceability** How sufficient reference information enables claims, data and supporting evidence to be followed back to their origin and checked in context.

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Content outcome	Content detail
C3 Apply knowledge and understanding of the role of workplace procedures governing acknowledgement and recording of information sources	*Students will understand how workplace procedures support consistent and accountable acknowledgement and recording of information sources.* **C3.1 Workplace procedures for information sources** *Students will understand how workplace procedures govern the acknowledgement, recording and use of information sources.* **C3.1.1 Workplace requirements** How organisational procedures define requirements for recording, attributing, storing and communicating information obtained from digital sources. **C3.1.2 Purpose of procedures** How procedures support consistency, accountability, quality assurance, intellectual-property compliance and verification of information used in decisions. **C3.1.3 Recording requirements** How to record the source, location, ownership, date and permitted use of information. **C3.1.4 Handling conflicts** How to recognise when information does not meet workplace requirements and when permission, clarification or an alternative source is required.

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Content outcome	Content detail
C4 Apply knowledge and understanding of the contribution of clear written and visual communication when presenting findings	*Students will understand how clear written and visual communication supports accurate and audience-appropriate presentation of findings.* **C4.1 Written and visual communication** *Students will understand how clear written and visual communication supports accurate and audience-appropriate presentation of findings.* **C4.1.1 Written communication** How accurate terminology, concise explanations and clear connections between evidence and conclusions communicate findings. **C4.1.2 Visual communication** How readable labels, meaningful titles and consistent formatting present relevant information without distortion. **C4.1.3 Audience and context** How vocabulary, structure and presentation formats can be adapted to the audience's existing knowledge and needs.
C5 Be able to use search, formatting and checking functions within digital applications to support drafting, reviewing and organising information	*Students will be able to use application functions to locate, structure and check information during drafting and review.* **C5.1 Using application functions** *Students will be able to use search, formatting and checking functions to support drafting, reviewing and organising information.* **C5.1.1 Search functions** Using search functions to locate relevant information and identify where it is repeated or inconsistent. **C5.1.2 Formatting functions: headings, styles, lists, tables, spacing and layout** Using these functions to structure and organise information. **C5.1.3 Checking functions: spelling, grammar, consistency, formula and data validation** Using these functions to identify potential errors.

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Content outcome	Content detail
C6 Be able to acknowledge and reference sources used	*Students will be able to acknowledge and reference sources accurately and consistently, including the use of digital and AI-generated content.* **C6.1 Acknowledging and referencing sources** *Students will be able to acknowledge and reference sources accurately and consistently, including the use of digital and AI-generated content.* **C6.1.1 Source acknowledgement** Identifying where information, data, ideas or digital content originated from another individual, organisation or system. **C6.1.2 Reference information** Recording sufficient source details for another person to identify and locate the material used. **C6.1.3 Digital and AI-generated content** Distinguishing the use of generative AI assistance from independently verified source evidence and acknowledging its use as required. **C6.1.4 Accuracy and consistency** Checking that source details are complete, correspond to the material used and follow required procedures.

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Content outcome	Content detail
C7 Be able to communicate findings clearly for an intended purpose	*Students will be able to communicate evidence-based findings clearly and appropriately for an intended purpose and audience.* **C7.1 Communicating findings** *Students will be able to select, structure and communicate evidence-based findings clearly for an intended purpose and audience.* **C7.1.1 Selection of findings** Selecting the information most relevant to the intended purpose. **C7.1.2 Evidence connection** Using tables, charts, values and identified patterns to support each conclusion. **C7.1.3 Communication structure** Organising content logically so the audience can follow the relationship between purpose, evidence, interpretation and conclusion. **C7.1.4 Audience adaptation** Using terminology, explanation and visual detail suited to audiences with different needs or levels of technical knowledge.
C8 Be able to select information that directly supports an evidence-based recommendation	*Students will be able to select relevant and sufficiently reliable information that directly supports an evidence-based recommendation.* **C8.1 Selecting evidence for recommendations** *Students will be able to select relevant and sufficiently reliable information that directly supports an evidence-based recommendation.* **C8.1.1 Evidence-based recommendation** Understanding how a proposed course of action or informed choice should follow logically from relevant and sufficiently reliable information. **C8.1.2 Information selection** Selecting evidence according to its relevance, quality and contribution to the reasoning required for the recommendation. **C8.1.3 Sufficiency** Using enough evidence to support the recommendation while excluding detail that does not affect the decision.

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Content outcome	Content detail
C9 Be able to communicate recommendations clearly, showing how evidence supports conclusions	*Students will be able to communicate clear recommendations and explain how relevant evidence supports the conclusions reached.* **C9.1 Communicating evidence-based recommendations** *Students will be able to communicate clear recommendations and explain how relevant evidence supports the conclusions reached.* **C9.1.1 Recommendation** Presenting clear proposed actions or improvements that address and follow from the conclusion. **C9.1.2 Evidence use** Referring to the most relevant evidence and explaining its significance rather than presenting sources or facts without clarification. **C9.1.3 Audience** Adapting language, terminology, structure and level of detail so the intended audience can understand the recommendation and its evidence base.

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Transferable skills

Students are expected to develop the following transferable skills through the learning and assessment activities for this unit:

- **Planning** data preparation, investigation, analysis and communication activities to meet a defined purpose.
- **Data interpretation** when organising and analysing data, identifying patterns, trends and anomalies and interpreting evidence from different digital sources.
- **Problem solving** when resolving data-quality issues, interrogating datasets and addressing issues with sources, automated outputs and the presentation of information.
- **Communicating** findings, conclusions and recommendations clearly using appropriate written, tabular, graphical and digital formats for the intended audience.
- **Investigating** digital sources and datasets by selecting, comparing, checking and interrogating relevant information and evidence.
- Evidence-based **decision-making** when judging the reliability and suitability of information, selecting appropriate evidence and using it to support conclusions and recommendations.
- **Self-managing** data preparation, analysis, checking and review activities systematically and refining work where required.
- **Recording** data-quality decisions, source information, references, calculations, findings and supporting evidence accurately and transparently.
- **Evaluating** the reliability, accuracy and suitability of information, automated or AI-enabled outputs, presentation choices, conclusions and recommendations.
- **Observing** data, sources and analytical outputs to identify missing or inconsistent information, patterns, trends, anomalies, bias or other issues requiring further investigation.

The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

The qualification Delivery Guide suggests ways for centres to help students develop these transferable skills.

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Summary of assessment

Two papers, each worth 45 marks, will be completed under supervised conditions. Each paper has a time allowance of 2 hours and should be arranged in the period timetabled by Pearson.

The assessment is available in January and May/June each academic year. First assessment is January 2028.

For each assessment, students will be provided with a vocationally relevant brief and supplied data and/or digital information. Students will use the supplied materials to complete the specified data, information, analysis and communication tasks.

Sample assessment materials will be available to help centres prepare students for assessment.

Resource requirements

For this unit, students must have access to:

- a computer with appropriate offline spreadsheet and document-production software
- the spreadsheet data files and any other source materials supplied by Pearson for each assessment
- appropriate facilities for saving and submitting the required spreadsheet files, reports and other digital evidence.

Internet access and artificial intelligence are not permitted during the external assessments. The specific assessment conditions and required files will be stated in each task booklet.

A command word taxonomy for externally-assessed units is provided in *Appendix 2*.

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4 Planning your programme

Is there a student entry requirement?

There are no formal entry requirements. Students are expected to study this qualification alongside English and/or maths qualifications where appropriate. Centres are responsible for ensuring that students make reasonable progress and achieve at this level. Achievement can be supp

What level of sector knowledge is needed to teach this qualification?

We do not set any requirements for teachers but recommend that centres review the skills and knowledge of the teaching team to ensure they remain relevant and up to date. This will help ensure that students benefit from teaching that reflects current sector practice and from programmes that support progression.

What resources are required to deliver this qualification?

As part of your centre approval, you will need to show that the necessary resources and workspaces are available to deliver the qualification. For some units, specific resources are required; please refer to individual units.

What makes good vocational teaching?

Effective vocational teaching is rooted in the application of knowledge, understanding and skills within the sector. Teaching and learning should be contextualised through realistic vocational activities, scenarios and projects that help students connect what they learn with how the sector operates in practice. Through opportunities to apply their learning, supported by practice, feedback and reflection, students can develop their understanding and skills over time and build confidence in applying their learning in different contexts. To support this, we provide delivery guidance for the qualification and CPD to support effective delivery.

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5 Final grading and awarding

Awarding and reporting for the qualification

The Foundation Certificate qualifications are graded on a three-grade scale of Distinction (D), Merit (M), and Pass (P). Students who do not meet the minimum requirements for a qualification grade will be recorded as Unclassified (U) and will not be certificated.

Individual units will be graded on the same grade scale. Individual unit results will be reported.

Grade boundaries will be set for each unit in the series in which it is offered through a process known as awarding. Awarding is used to set grade boundaries and ensure that standards are maintained over time. This ensures that students have the same opportunity to achieve regardless of the assessment opportunity.

Students' unit 'raw' marks will be converted to a Uniform Mark Scale (UMS). The UMS is used to convert students' unit raw marks into uniform marks. This is done to standardise marks across assessment series. (Further details of the UMS are provided below in the section '*Calculation of a Qualification Grade'*.)

The awarding and certification of the qualification will comply with the requirements of the Office of Qualifications and Examinations Regulation (Ofqual).

Eligibility for an award

In order to be awarded a qualification, a student must achieve an outcome for all units and achieve the minimum number of overall uniform marks at a qualification grade threshold.

There are no 'must pass' units within the qualification. A unit result of Unclassified is considered an outcome for the purposes of aggregating a final award.

Subject to eligibility, Pearson will automatically calculate the qualification grade for your students when the qualification claim is made.

Calculation of the qualification grade

The final qualification grade represents an aggregation of a student's performance across all units. Stronger performance in some units may be balanced by lower performance in others.

The UMS is used to convert students' unit 'raw' marks into uniform marks. This is done to standardise marks across different assessment series. For example, a student who just achieves a Pass in a unit one year will receive the same uniform mark as a student achieving that same unit grade in later series, regardless of their raw marks.

The minimum uniform marks required for each grade for each unit

Units 1 and 2

Unit Grade	D	M	P
Maximum UMS = 90	72	54	36

Students who do not achieve the standard required for a Pass will receive a uniform mark in the range 0–35.

Unit 3

Unit Grade	D	M	P
Maximum UMS = 120	96	72	48

Students who do not achieve the standard required for a Pass will receive a uniform mark in the range 0–47.

Qualification level results: the minimum uniform marks required for each grade

Qualification Grade	D	M	P
Maximum UMS = 300	240	180	120

Students who do not achieve the standard required for a Pass grade will receive a uniform mark in the range 0–119.

Results issue

Results are issued in line with the published dates shown in the 'Key dates' section of the *Information Manual*, available on our website.

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6 Resources and support

We provide a range of resources and professional development opportunities to support the delivery of Foundation Certificates. These are available on our website.

Support for setting up your course and preparing to teach

Delivery Guide

The Delivery Guide provides an overview of the qualification units and assessments. It includes a broad scheme of work, with guidance on delivery, teaching approaches, assessment preparation and additional resources.

Support for teaching and learning

Pearson provides a range of resources to support the teaching and learning of vocational qualifications. Details of Pearson's own resources and all endorsed support materials are available on our website.

Resources may also be available from other publishers.

Support for assessment

Sample assessment materials (SAMs) for examined units

Sample assessment materials are available for the examined unit and can be downloaded from the Pearson Qualifications website. An additional set of materials will also be available prior to the first live assessment, allowing your students further opportunities for practice.

Sample NEAs

Sample NEAs are available for the non-exam units and can be downloaded from the Pearson Qualifications website.

Centre standardisation materials for NEA units

Marked examples of student work will be provided to support the centre marking and standardisation process.

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Training and support from Pearson

Training and professional development

- We provide a range of training and professional development events to support
  the introduction, delivery, assessment, quality assurance and administration of Foundation Certificates. These sector-specific events are developed and delivered by subject specialists.

People to talk to

There are many people who can support you and give you advice and guidance on delivering your Foundation Certificates. They include:

- Subject Advisors – they are available for all sectors. They have expertise across Pearson qualifications within their sector and can answer queries on planning, teaching, learning and assessment.
- Customer Services – the 'Support for You' section of our website explains how to contact us for general queries. For specific queries, our service teams will direct you to the relevant person or department.
- Pearson Quality Advisors – they can support centres with the quality assurance aspects of programme delivery.

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Appendix 1

Glossary of terms used for NEA marking grids

Level-based descriptor	Generic Level 2 NEA evidence definition
Accurate	Evidence is correct and precise, with few or no substantive errors in the knowledge, reasoning, processes or outcomes presented.
Appropriate	Evidence is relevant and suitably matched to the task, context, purpose or intended outcome.
Assured	Evidence demonstrates secure control and confidence, with decisions, reasoning or skills applied consistently and effectively.
Basic	Evidence addresses straightforward aspects of the task but shows only elementary knowledge, reasoning, control or development.
Clear	Evidence is readily understood, relevant points are expressed directly, and the relationship between ideas, actions or outcomes is apparent.
Coherent	Evidence is logically connected and forms a consistent line of reasoning, process or response.
Cohesive	Evidence is integrated into a unified whole, with individual elements working together effectively to support the purpose or outcome.
Competent	Evidence demonstrates a sound and dependable standard of knowledge, understanding or skill sufficient to meet the task requirements.
Comprehensive	Evidence covers the relevant aspects of the task in substantial breadth and depth, with few significant omissions.
Concise	Evidence communicates the required information economically and precisely without unnecessary material.
Considered	Evidence shows that relevant information, alternatives or implications have been deliberately examined before choices or conclusions are made.

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Level-based descriptor	Generic Level 2 NEA evidence definition
Consistent	Evidence maintains an appropriate standard across the response, process or outcome, with limited variation in quality or control.
Convincing	Evidence presents well-supported reasoning or outcomes that provide a strong basis for accepting the conclusion, choice or judgement.
Detailed	Evidence includes specific and relevant information that develops the response beyond general or outline statements.
Developed	Evidence extends ideas, reasoning or work sufficiently, showing progression and purposeful elaboration.
Effective	Evidence achieves the intended purpose or outcome and is supported by relevant, well-applied knowledge, reasoning or skill.
Emerging	Evidence shows early signs of the required knowledge, reasoning or skill, but these are not yet secure or consistently demonstrated.
Focused	Evidence remains closely directed towards the task, purpose or intended outcome and avoids significant irrelevant material.
Fully	Evidence demonstrates the required quality, coverage or application across all relevant aspects of the task.
Inconsistent	Evidence varies noticeably in relevance, accuracy, control or quality across the response or outcome.
In-depth	Evidence explores relevant aspects with substantial detail, explanation and sustained reasoning.
Independent	Evidence shows self-directed and purposeful decision-making, with ideas or actions adapted rather than simply reproduced.
Insightful	Evidence demonstrates a strong and perceptive understanding of significance, relationships or implications that may not be immediately obvious.
Limited	Evidence demonstrates a restricted range, depth, accuracy or control and addresses only some aspects of the task.

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Level-based descriptor	Generic Level 2 NEA evidence definition
Logical	Evidence follows a valid and orderly sequence in which conclusions, decisions or outcomes arise from the information presented.
Mostly	Evidence demonstrates the stated quality across the greater part of the response or outcome, although some noticeable weaknesses remain.
Partial	Evidence addresses only part of the task or demonstrates the required quality incompletely, with important gaps or undeveloped areas.
Perceptive	Evidence identifies and explains important meanings, relationships or implications with a high degree of discernment.
Pertinent	Evidence is directly relevant and makes a purposeful contribution to the task, reasoning or outcome.
Proficient	Evidence demonstrates well-developed, reliable and controlled knowledge, understanding or skill in completing the task.
Reasoned	Evidence uses connected reasons and relevant support to explain decisions, conclusions or judgements.
Relevant	Evidence relates appropriately to the task, context, issue or intended outcome.
Reliable	Evidence demonstrates dependable reasoning, processes or outcomes that are sufficiently accurate and consistent for the intended purpose.
Secure	Evidence demonstrates firmly established knowledge, understanding or skill, applied with consistent control and few significant weaknesses.
Simplistic	Evidence reduces an issue or task to basic points and overlooks relevant complexity, relationships or competing factors.
Skilful	Evidence demonstrates effective technical or practical control, with techniques selected and applied purposefully.

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Level-based descriptor	Generic Level 2 NEA evidence definition
Sophisticated	Evidence demonstrates highly developed, integrated and discerning knowledge, reasoning or skill, handled with precision and subtlety.
Sound	Evidence demonstrates a generally secure and credible standard, supported by relevant knowledge, reasoning or skill, despite some limitations.
Suitable	Evidence is appropriate for a particular purpose.
Sufficient	Evidence provides enough relevant coverage, support or control to meet the task requirements, though it may not be extensive.
Superficial	Evidence addresses surface features but lacks explanation, analysis, development or engagement with underlying significance.
Supported	Evidence is backed by relevant examples, findings, sources, observations or reasoning rather than assertion alone.
Sustained	Evidence maintains the stated quality, line of reasoning or level of control across the response, process or outcome.
Thoughtful	Evidence shows purposeful consideration of relevant information, implications, alternatives or feedback.
Thorough	Evidence addresses the relevant aspects of the task carefully and in substantial breadth and depth, with strong supporting detail and few omissions.

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Appendix 2

Mapping between Department for Education subject content and Pearson content and Pearson Level 2 Foundation Certificate in Digital Systems and Data

DfE LO1: Clean, interpret and visualise a dataset in order to answer a question and communicate findings clearly	
DfE Foundation Certificate subject content statement	**Unit in Pearson qualification**
Demonstrate knowledge and understanding of numerical, text, categorical and date or time data types	Unit 3: A1
Demonstrate knowledge and understanding of digital data sources comprising spreadsheets, databases, survey outputs, online data repositories and system-generated reports	Unit 3: A2
Demonstrate knowledge and understanding of the role of database structures and fields used to organise and retrieve structured data	Unit 3: A3
Demonstrate knowledge and understanding of the effect of missing values, duplicate records, inconsistent formatting and incorrect data types on accuracy and interpretation	Unit 3: A6
Demonstrate knowledge and understanding of the efficient use, storage and handling of data to support responsible and sustainable digital practices	Unit 3: A7
Demonstrate knowledge and understanding of the role of graphical and tabular formats, including their use within infographics, in supporting interpretation and communication of findings	Unit 3: B5
Demonstrate knowledge and understanding of the role of spreadsheet and data presentation tools, and automated and AI-enabled features in supporting interpretation and presentation of data	Unit 3: B1

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Demonstrate knowledge and understanding of the role of emerging digital technologies in shaping digital systems and services	Unit 3: B3
Demonstrate knowledge and understanding of the contribution of clear written and visual communication when presenting findings	Unit 3: C4
Be able to format, clean and prepare digital datasets using spreadsheet and data presentation tools	Unit 3: A10
Be able to review datasets for accuracy and resolve missing values, duplicate records, inconsistent formatting and incorrect data types	Unit 3: A11
Be able to create tables and charts to represent data	Unit 3: B6
Be able to identify patterns and draw conclusions	Unit 3: B7
Be able to communicate findings clearly for an intended purpose	Unit 3: C7

DfE LO2: Configure and secure digital systems by applying access, authentication and configuration measures	
DfE Foundation Certificate subject content statement	**Unit in Pearson qualification**
Demonstrate knowledge and understanding of the operation of digital networks through connected devices, infrastructure components and software governed by communication protocols	Unit 1: A2
Demonstrate knowledge and understanding of communication between devices and connected systems within digital networks	Unit 1: A3
Demonstrate knowledge and understanding of the meaning of confidentiality, integrity and availability in relation to protecting data, systems and services	Unit 1: C1
Demonstrate knowledge and understanding of the causes and indicators of security weaknesses and risks arising from insecure access, weak authentication methods,	Unit 1: C2

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unpatched software and misconfigured system or network settings	
Demonstrate knowledge and understanding of authentication measures, access permissions, configuration settings and protective controls in securing digital systems	Unit 1: C3
Demonstrate knowledge and understanding of the role of workplace policies and procedures in supporting secure system use and incident management: acceptable use policies, access control and authentication requirements, incident reporting and escalation procedures, data protection requirements, privacy and confidentiality requirements	Unit 1: D1
Demonstrate knowledge and understanding of communication protocols, IP addressing conventions, secure configuration baselines and patch management practices in supporting secure and reliable digital systems	Unit 1: C4
Demonstrate knowledge and understanding of the use of monitoring information, log files, dashboards and automated security tools in identifying potential weaknesses and supporting system security	Unit 1: C7
Demonstrate knowledge and understanding of the role of digital tools, automated security scanning tools and AI-enabled systems in supporting secure configuration and identifying potential vulnerabilities, and the need to interpret, review and validate outputs before use	Unit 1: C5
Demonstrate knowledge and understanding of health, safety and secure handling requirements when setting up, configuring or maintaining digital systems and equipment	Unit 1: A7
Be able to configure digital systems by applying secure configuration, authentication requirements, access controls, permissions, security settings and update procedures	Unit 1: C6
Be able to review log files, monitoring dashboards, system alerts and other security-related information to identify signs of unexpected or anomalous activity	Unit 1: C8
Be able to identify security weaknesses within digital systems and explain their potential impact on the	Unit 1: C9

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confidentiality, integrity and availability of systems, devices and data	
Be able to apply or recommend appropriate actions that support security improvement, troubleshooting and protection of digital systems	Unit 1: C10
Be able to record and organise security-related information clearly and accurately using appropriate digital tools	Unit 1: D2
Be able to communicate security concerns, risks and recommended actions clearly for different audiences	Unit 1: D5
Be able to escalate potential cyber security concerns using defined workplace procedures	Unit 1: D6
Be able to handle security-related information in accordance with privacy, confidentiality and data protection requirements	Unit 1: D3

DfE LO3: Plan, develop and test a programming solution in order to meet a brief	
DfE Foundation Certificate subject content statement	**Unit in Pearson qualification**
Demonstrate knowledge and understanding of the stages of programming solution development and their role in meeting an intended purpose	Unit 2: A1
Demonstrate knowledge and understanding of the role of algorithms as ordered instructions that determine solution behaviour	Unit 2: A2
Demonstrate knowledge and understanding of the relationship between algorithms, program code and solution outputs	Unit 2: B1
Demonstrate knowledge and understanding of the role of structured logic and algorithms in the design of digital solutions	Unit 2: A3
Demonstrate knowledge and understanding of the use of developer-written and externally sourced code within	Unit 2: B2

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digital solutions and the need to comply with licensing requirements	
Demonstrate knowledge and understanding of the effect of logic errors, syntax errors and incorrect conditions on program behaviour	Unit 2: C4
Demonstrate knowledge and understanding of the role of automated and AI-enabled tools in generating code suggestions, and the need to review, test and understand these outputs before use	Unit 2: B3
Demonstrate knowledge and understanding of the role of testing approaches in confirming that programming behaves as expected	Unit 2: C1
Be able to plan a programming solution to meet a given brief	Unit 2: A5
Be able to develop a programming solution by writing and integrating code	Unit 2: B6
Be able to use appropriate software tools to run and test the code within a solution	Unit 2: C2
Be able to apply a logical, step-by-step approach when developing and refining code	Unit 2: C6
Be able to test the solution to confirm it produces the expected outcome	Unit 2: C3
Be able to identify and correct errors in code	Unit 2: C5
Be able to communicate outcomes clearly using concise explanations and structured documentation	Unit 2: C7

DfE LO4: Plan and configure hardware and software components in order to deliver a functional digital system	
DfE Foundation Certificate subject content statement	**Unit in Pearson qualification**
Demonstrate knowledge and understanding of the role of planning tasks, sequencing activities and allocating resources when delivering a digital system	Unit 1: A4

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Demonstrate knowledge and understanding of the interaction between hardware and software components in enabling system functionality	Unit 1: A1
Demonstrate knowledge and understanding of the role of user interface elements, accessibility and digital content in supporting the usability of a digital system	Unit 2: B4
Demonstrate knowledge and understanding of the role of component compatibility and system requirements in configuring a functional digital system	Unit 1: A4
Demonstrate knowledge and understanding of the influence of dependencies between components on overall system operation	Unit 2: B5
Demonstrate knowledge and understanding of the occurrence of faults during configuration and operation and the need for checking, diagnosis and corrective action	Unit 1: B1
Demonstrate knowledge and understanding of the contribution of maintenance activities comprising updates, checks and troubleshooting to continued system performance and reliability	Unit 1: B3
Demonstrate knowledge and understanding of factors that affect the energy use, resource efficiency and sustainability of digital systems and devices	Unit 1: A5
Demonstrate knowledge and understanding of the role of digital tools, automation features and automated AI-enabled systems in generating configuration and supporting system setup, and the need to check such outputs for suitability for the intended system	Unit 1: A6
Be able to plan and sequence tasks and resources to support delivery of a digital system	Unit 1: A8
Be able to configure hardware and software components to achieve a functional digital system	Unit 1: A9
Be able to verify system operation by checking that components function together as intended	Unit 1: B2
Be able to perform routine maintenance activities to support continued operation	Unit 1: B4

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Be able to record and communicate configuration and maintenance activity clearly to others	Unit 1: D4

DfE LO5: Select and apply reliable digital sources to produce evidence-based recommendations for an intended purpose	
DfE Foundation Certificate subject content statement	**Unit in Pearson qualification**
Demonstrate knowledge and understanding of variation in the reliability, accuracy, authority and purpose of digital information	Unit 3: A4
Demonstrate knowledge and understanding of the role of comparing information across multiple sources in supporting accurate conclusions	Unit 3: A5
Demonstrate knowledge and understanding of the influence of bias within digital information on interpretation and recommendations	Unit 3: B4
Demonstrate knowledge and understanding of the potential for automated and AI-enabled content generation systems to produce inaccurate, misleading or fabricated information (sometimes referred to as hallucinated outputs), and the need to verify such information against reliable sources.	Unit 3: B2
Demonstrate knowledge and understanding of the importance of intellectual property rights, ownership, attribution and appropriate use of digital and AI-generated content	Unit 3: C1
Demonstrate knowledge and understanding of the role of referencing practices in ensuring transparency and traceability of sources	Unit 3: C2
Demonstrate knowledge and understanding of the role of workplace procedures governing acknowledgement and recording of information sources	Unit 3: C3
Be able to identify digital sources that are relevant to a defined purpose	Unit 3: A8
Be able to check information across sources to confirm key points	Unit 3: A9

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Be able to select information that directly supports an evidence-based recommendation	Unit 3: C8
Be able to acknowledge and reference sources used	Unit 3: C6
Be able to communicate recommendations clearly, showing how evidence supports conclusions	Unit 3: C9
Be able to use search, formatting and checking functions within digital applications to support drafting, reviewing and organising information	Unit 3: C5

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