

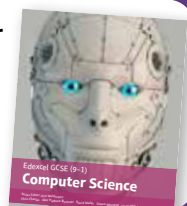
GCSE (9-1) Computer Science

Computational Thinking in Context

Discover our new qualification for 2016



Look out for
Pearson's
published
resources
too!



Computational Thinking in Context

This brochure will provide an overview of our new Edexcel specification for GCSE Computer Science from 2016.

As both an awarding body and a publisher, we'll outline how our specification will inspire your students, address changes to the qualification, and we'll also outline the high-quality support and resources you can expect.

Our qualification:

- ✿ develops students' ability to apply 'computational thinking' **Page 4**
- ✿ has a specification with a trusted approach and familiar content **Page 5**
- ✿ has clear assessments accessible to all **Page 6**
- ✿ fosters skills and knowledge for progression to further study **Page 7**
- ✿ provides a full programme of support and expert advice **Page 8**

Working with you

We wanted to make sure our new Edexcel GCSE Computer Science specification was shaped by you, for your students, to help them achieve their full potential. That's why we've been working with practising teachers and the Computer Science community to design our brand new qualification.

Look out for Pearson's published resources on page 11!

Our new Edexcel GCSE Computer Science specification

Remember:
GCSE Computer Science counts towards the EBacc science measure.

Our new Edexcel GCSE specification is reassuringly familiar, and contains three components, **Principles of Computer Science**, **Application of Computational Thinking** and a **Computer Science Project**. It offers a wide range of choice and flexibility so you can appeal to students' interests and your departmental specialisms.

Component	Title	Overview	Summary of assessment
Component 1 ⚖️ 40% 🕒 1hr 40mins	Principles of Computer Science	All Topics	Examination. Multiple choice, short and extended open response questions.
Component 2 ⚖️ 40% 🕒 2hrs	Application of Computational Thinking	Main focus on Topics 1 and 2, but may draw on all other topics	Examination, based on a scenario. Short and extended open response questions.
Component 3 ⚖️ 20% 🕒 20hrs	Computer Science Project	A designed, tested and refined program, and a written report	Non-examined supervised assessment. A levels-based mark scheme, over four stages of development.

Develops students' ability to apply 'computational thinking'

Our new Edexcel GCSE Computer Science specification enables students to **apply computational thinking in context**, across both examined and non-examined assessments (NEA). We build students' ability to think computationally, within the context of a single scenario, and prepare students for real-world computer challenges.

Computational thinking is integrated throughout the content to embed this essential approach to the subject.

“Computational thinking will be a fundamental skill used by everyone by the middle of the 21st Century. Just like reading, writing and arithmetic.”

Wing (2011) Computational Thinking

A specification with a trusted approach and familiar content

Our qualification is modern and relevant but has changed very little as we anticipated the recent changes. It follows the same approach as our legacy specification and contains familiar content, updated where necessary to be relevant in today's world.

We have worked with:



Teachers from a wide range of schools and colleges, and with different levels of experience of teaching Computer Science



Our Expert Computer Science Advisory Group comprising university academics from University of Greenwich, King's College London and Brighton University



British Computer Society



Computing at Schools

Our content is split into six clear topics, giving you flexibility in how you approach the learning requirements.

Our topics are:



problem solving



data



communication



programming



computers



the internet and the bigger picture

Clear assessments accessible to all

Our qualification:

- ✿ has a straightforward structure
- ✿ provides clear and easily applied mark schemes which outline exactly what students need to achieve for each level
- ✿ clearly explains the new specification's teaching and learning requirements and how students need to approach both written and practical assessments
- ✿ caters for the full ability range through accessible scenarios, which are relevant and engaging
- ✿ encourages refinement in the NEA - allowing students to revisit and update their projects, as they would in a real world scenario.

(c) A drawing of a home network is shown.

Describe how data is transmitted from device B to device C.

(2)

Sample GCSE exam question from Unit 1: Principles of Computer Science.

Fosters skills and knowledge for progression to further study

Our qualification develops 'underpinning knowledge' and transferable skills for progression to A levels or BTEC Nationals and to higher education or the workplace. It includes topics that extend students' understanding and aid progression, for example, the internet and databases.

The skills and knowledge developed through this qualification help students to:

- ✿ understand and apply the fundamental principles and concepts of computer science, including abstraction, decomposition, logic, algorithms, and data representation
- ✿ analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs
- ✿ think creatively, innovatively, analytically, logically and critically
- ✿ understand the components that make up digital systems, and how they communicate with one another and with other systems
- ✿ understand the impacts of digital technology to the individual and to wider society
- ✿ apply mathematical skills relevant to computer science.



Full programme of support and advice

We'll provide a full programme of teaching and learning support to help you to plan, teach and track/asses our new Edexcel GCSE (9-1) Computer Science with confidence.

Subject support

If you have any questions, get in touch with **Tim Brady**, Subject Advisor for Computer Science and ICT. You can sign up via the website to receive emails from Tim and be kept up to date about key dates, training events, news and resources.

Visit online:

www.edexcel.com/GCSECompSci2016

Email: TeachingComputerScience@pearson.com

Follow Tim on Twitter: [@Pearson_CS](https://twitter.com/Pearson_CS)

Join the **Edexcel GCSE Computer Science** Facebook group



Plan

There will be a full range of free support available to help you to plan for the new qualification.

We'll provide:

- ✿ an editable **course planner** and **schemes of work** that you can adapt to suit your department
- ✿ a **Getting Started** guide, which will give you an overview of our new Edexcel GCSE Computer Science qualification to help you understand what the changes mean for you and your students
- ✿ **mapping documents** to highlight the key differences and similarities between this qualification and legacy qualifications.



Teach

Our free and paid-for teaching and learning support will help you to deliver the new qualification with confidence.

Our support includes:

- ✿ **lesson materials**, including booklets of suggested activities for every lesson, designed to save you time when planning your Edexcel GCSE Computer Science course
- ✿ **activity solutions** for the suggested lesson activities in a student-friendly format, designed to save you time
- ✿ **materials on specific content**, for example, a useful reference document showing various ways of representing common algorithms
- ✿ **teacher support materials**, for example our Python guide, which has been produced as a helpful reference document for you and your students when writing code in Python.

Sample lesson activity.

edexcel

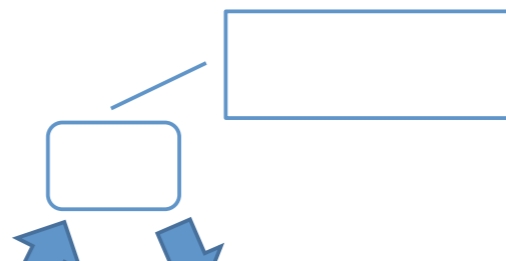
Lesson 22 activities

Activity 22.1

Complete this diagram of the fetch-decode execute cycle using the labels below.

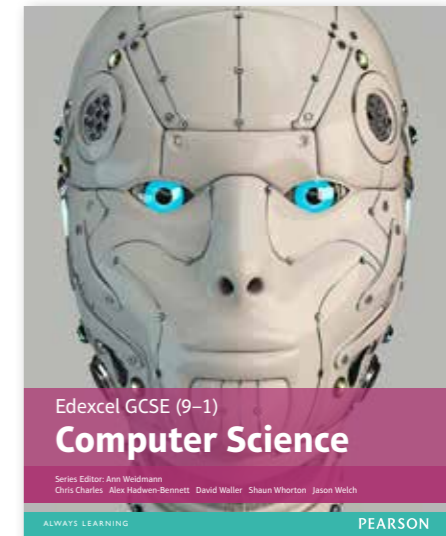
Labels

- FETCH
- DECODE
- EXECUTE
- Fetches the next instruction from memory and increments program counter
- Decodes the bit pattern (machine code) into the instruction to be executed
- Executes the instruction and stores the results in memory or registers



Find out more about our free support at:
www.edexcel.com/GCSECompSci2016

Published Resources*



Pearson will also be producing a set of paid-for teaching and learning resources* to support you with our new 2016 Edexcel GCSE Computer Science specification.

- A fully illustrated **Student Book** covering all 3 components, designed to inspire and motivate students by relating and applying skills to real-world contexts and making learning relevant.
- An **Activebook** (e-book) version of the Student Book for schools and colleges, with multiple user licences to provide flexibility in the way you teach.
- A **Revision Guide** and **Revision Workbook** in print and digital formats to support preparation for the external assessments.

**These resources have not yet been endorsed. This information is correct as of 31st October 2015, but may be subject to change. You do not have to purchase any resources to deliver our qualification. Resources are available from other publishers.*

Register your interest to receive further information and request an evaluation pack at:

www.pearsonschoools.co.uk/GCSE2016launch

Pearson's paid-for resources, as well as other endorsed resources, are not a prerequisite for the delivery of our Edexcel specifications.

Supporting you every step of the way

Track and Assess

When it comes to tracking progress and preparing for assessment, we'll provide support and resources to help you and your students throughout the course.

- ✿ **Sample Assessment Materials**, so that you can get to grips with the format of the papers and the level of demand as quickly as possible.
- ✿ **Exemplar materials with commentaries** for both examined and non-examined components.

Tools to help you track progress

examWizard

examWizard is a free exam preparation tool containing a bank of past Edexcel GCSE Computer Science questions, mark schemes and examiners' reports. Coming in 2016 for Edexcel GCSE Computer Science.

www.examwizard.co.uk

ResultsPlus

ResultsPlus provides the most detailed analysis available of your students' exam performance. Widely used by teachers across the country, this free online service will help you identify the topics and skills where further learning would benefit your students.

www.edexcel.com/resultsplus

Develop

We're running a range of free events in the lead up to first teaching to help you plan for 2016 with confidence.

Find out more
and book online at
[www.edexcel.com/
training](http://www.edexcel.com/training).

Launch events

Our **free launch events** will help you to learn more about the new specification and the support we are offering.

You'll benefit from the opportunity to:

- ✿ hear a full **overview to the changes** to GCSE Computer Science
- ✿ explore the **content of our Edexcel specification** and what it offers you and your students
- ✿ speak to one of our **Computer Science team**
- ✿ find out about the **range of support available** to help you make the transition.

Autumn 2015

Getting Ready to Teach events

As part of the support we're providing to help you with delivering our new Edexcel GCSE Computer Science (9-1) qualification, we're running free Getting Ready to Teach events.

Each whole-day event will look at how the new Edexcel GCSE Computer Science (9-1) can be delivered in the classroom.

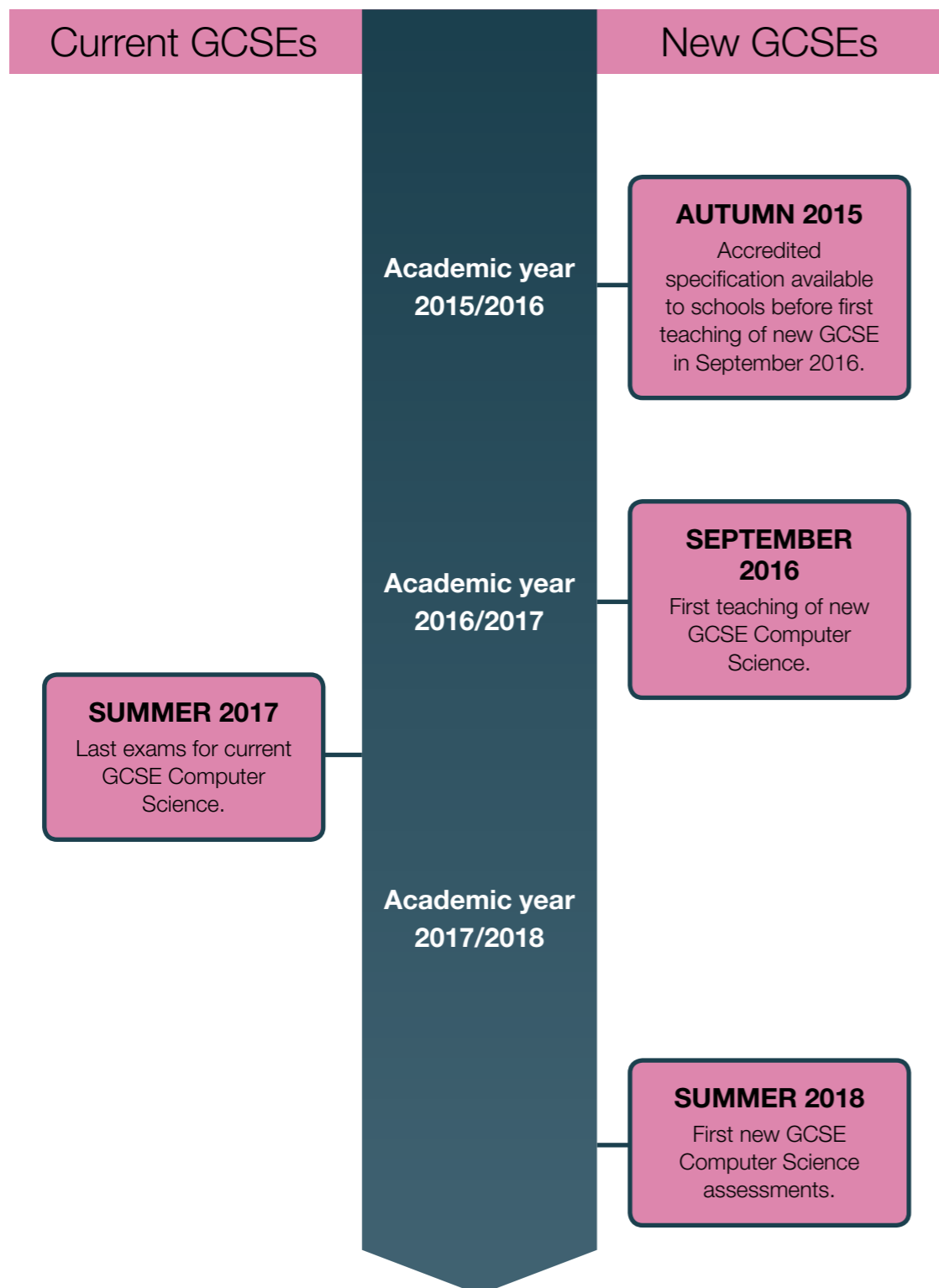
Topics we will explore include:

- ✿ the **structure, content** and **assessment** of our new specification
- ✿ **teaching strategies**
- ✿ the **full range of support** available for delivering the new qualification.

You'll also have the opportunity to **network** with other teachers, discuss **best practice** and meet our **Computer Science subject team**.

Spring/Summer 2016

Timeline of GCSE reforms



Learn more: www.edexcel.com/GCSECompSci2016

Key facts: GCSE Computer Science (9-1)

The following changes will apply to all awarding organisations' specifications.

- ✿ GCSE specifications in Computer Science will be assessed through a combination of 80% written examination(s) and 20% non-examined assessment.
- ✿ Programming languages used will be high-level, with a textual program definition.
- ✿ The non-examined assessment will take the form of a project, which will include:
 - ✿ a program designed, written, refined and tested by the learner, either to a specification or to solve a problem
 - ✿ a written report.



Get in touch

Edexcel GCSE (9-1) Computer Science

For queries, information and support, we're here to help.

Call us: **020 7010 2188**

Email us: **TeachingComputerScience@pearson.com**

Follow us: **@Pearson_CS**

Visit us online: **www.edexcel.com/GCSECompSci2016**

Find out more about our published resources at:

www.pearsonschools.co.uk/GCSE2016launch

