

Pearson BTEC Higher Nationals in Computing

PEARSON-SET THEME & TOPIC RELEASE

UNIT 6: Managing a Successful Computing Project Theme and Topic Release 2017

For use with the Higher National Certificate and

Higher National Diploma in Computing

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1.1 Introduction to theme

The Pearson-set theme for use with Unit 6: Managing a Successful Computing Project is

Vulnerabilities

Integrity, availability, and confidentiality are the three main goals for computer security. In computer security, a vulnerability is a weakness that allows an attacker to reduce a system's information assurance. A security vulnerability could allow an attacker to compromise the integrity, availability, or confidentiality of that product. A single security vulnerability can compromise one or all of these elements at the same time. For instance, an information disclosure vulnerability would compromise the confidentiality of a product, while a remote code execution vulnerability would compromise its integrity, availability, and confidentiality.

A resource (either physical or logical) may have one or more vulnerabilities that can be exploited. The result can potentially compromise the confidentiality, integrity or availability of resources (not necessarily the vulnerable one) belonging to an organisation and/or other parties involved (customers, suppliers).

This unit will enable students to examine the multi dimensions of vulnerabilities within computing systems from the standpoint of a prospective computing professional. This will provide the opportunity for students to investigate the causes and impacts of vulnerabilities within computing systems and explore the solutions to the problems presented.

1.2 Topic Selection

Tutors must choose one topic from the list provided below and decide which type of project is most suitable for small-scale research. All students must complete the same topic and project chosen by the tutor, however, if delivering to different cohorts of students then tutors may select a different topic and project for each cohort.

The Sample Assessment Material (SAM) document for Unit 6: Managing a Successful Computing Project, provides additional support and guidance for both tutors and students

Topic

1. How can vulnerabilities in an existing system be identified and counteracted?
2. The impact vulnerabilities can have on a system and it's usage
3. How to reduce vulnerabilities in a system during development?
4. How can vulnerabilities in distributed systems be reduced?

1.3 Choosing a project type

You will need to devise a project brief for the student to follow in completion of the assignment for this unit.

The type of project chosen for the selected topic should allow for a sufficient degree of research through the existence of adequate background materials and allow for the depth and breadth of study suitable for a level 4 qualification.

Guidance for tutors is available in the Pearson-set Sample Assessment Material (SAM) for Unit 6: Managing a Successful Computing Project. This provides a range of project types and examples that could be utilised for a project. The project types provided are not exhaustive or mandatory and we do encourage tutors to be innovative with their ideas.

Please note that if reasonable adjustments are necessary to meet a specific individual student need you are able to adjust internal assessments to take this into account. In most cases, this could be a defined time extension or adjustment in the format of evidence.

Further details on how to make adjustments for students with protected characteristics are given in the document '*Pearson Supplementary Guidance for Reasonable Adjustment and Special Consideration in Vocational Internally Assessed Units*' available on our website (<http://qualifications.pearson.com>).

1.4 Project Evidence / Outcomes

It is important to recognise that project work is reliant on gathering information/data that can be analysed. The scale of the project means that there must be time for both primary and secondary research. An advised model would be to use secondary research to provide a context for the students to conduct and interpret primary data collection. The project could then yield data/information that could be compared with the findings of secondary research information.

In assessing the project, the assessor should be able to see how project objectives have been met, how students have explored the research material relevant to the project objective, how students have developed and formulated their outcomes and answers to the central questions posed by the objectives and what they have learned in carrying out their project. An important part of the conclusion must be an awareness of the significance of results. Well edited, focused writing and presentation, where the key decisions, developments, lines of argument and salient research are explained succinctly, is preferable to unstructured writing and presentation where little attempt to select or edit material has been made.

It is important to recognise that there are many different presentation formats and it is important that students think carefully about the suitability of any presentations for their target audience, if this is a chosen format. Their presentations should be appropriate to the audience, both in terms of the nature and level of material they use and also in terms of length. Students should be guided to produce presentations that give a succinct account of the main arguments or developments from their project.

The question and answer session should address issues raised by the presentation, but also give students an opportunity to review their work.

Students are to submit a completed technical report as evidence for the unit, however centres would be advised that in addition to their project findings, a project management plan, a completed logbook and performance review should also be submitted. **The project management plan** is designed to define how the project is to be planned, executed and monitored. The project management plan should give details of the actions required for the integration and coordination of various planning activities to carry out the project. **The project logbook** is designed to provide evidence of the project development process and ongoing reflection. It should provide evidence that the student has thought about the direction of their project and in particular, what problems they encountered and steps they have taken to address them. **The performance review** will provide evidence of reflection and evaluation of the project management process and individual performance.

1.5 Employer engagement

It is advisable that centres look at the Pearson-set Assignment as an appropriate unit to embed employer engagement, although this is not a mandatory requirement. Developing and establishing links with employers enhances the teaching and learning experience and improves students' employability. Where possible, identifying links with employers as part of the delivery of the Pearson-set Assignment could lead to enhancing and supporting student learning. Real-life projects provide students with the opportunity to develop and acquire appropriate skills, knowledge and expertise required by employers.

1.6 Sharing of good practice

The Pearson-set Assignment unit will be a sampled unit by the centre appointed External Examiner (EE) as part of the annual Pearson EE centre visit. The focus will be on standardisation of student assessed work and sharing of good practice. The EE will review and identify exemplars in all aspects of good practice. Good practice will focus on current themes that align to QAA Higher Education Reviews:

- Innovation
- Digital literacy
- Student employability and entrepreneurial skills
- Employer engagement
- Quality of assessment feedback.

1.7 Resources and useful links

Suggested resources and links that centres may find useful are shown below. Centres should choose those resources that are relevant for localised use and complement those with additional resources to support independent research in the chosen topic and project type.

Type of Resource	Resource Titles	Links
Useful resources for underlying principles, examples of published reports on computer vulnerabilities activities		
Published Report	Common Cyber Attacks: Reducing The Impact	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/400106/Common_Cyber_Attacks-Reducing_The_Impact.pdf
Published Report	Windows of Vulnerability: A Case Study Analysis	http://www.cs.umd.edu/~waa/pubs/Windows_of_Vulnerability.pdf
Webinar	Secure Software Development Landscape	http://www.sei.cmu.edu/webinars/view_webinar.cfm?webinarid=465578
Webinar	Observations of Successful Cyber Security Operations	http://www.sei.cmu.edu/webinars/view_webinar.cfm?webinarid=59061&gaWebinar=ObservationsofSuccessfulCyberSecurityOperations
Useful links for case studies of computer vulnerabilities activities.		
Published Report	Verizon Data Breach Digest 2016	http://www.verizonenterprise.com/resources/reports/rp_data-breach-digest_xg_en.pdf
Published Report	Verizon Data Breach Digest 2017	http://www.verizonenterprise.com/resources/reports/rp_data-breach-digest-2017-perspective-is-reality_xg_en.pdf

Type of Resource	Resource Titles	Links
Published Report	PwC Cybercrime US Center of Excellence Advisory - Forensics	http://www.pwc.com/us/en/forensic-services/assets/cyber-crime-data-breach-case-studies.pdf
News Articles (Jan 2017)	"Russian security expert cracks Facebook and makes \$40,000"	http://rbth.com/science_and_tech/2017/01/27/russian-security-expert-cracks-facebook-and-makes-40000_690546
News Articles (Feb 2017)	"When your stuff spies on you"	https://www.sciencenewsforstudents.org/article/when-your-stuff-spies-you

The Sample Assessment Material (SAM) for Unit 6: Managing a Successful Computing Project should be read in conjunction with the theme and topic release. It provides advice and guidance for both tutors and students.

For any further additional support or queries regarding this document, please email btecdelivery@pearson.com.