CAMBRIDGE ADVANCED NATIONALS

OCR
Oxford Cambridge and RSA

It's easy to join us

Moving to the new Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development from BTEC Level 3 in Computing

Are you currently teaching the BTEC Level 3 in Computing (first teaching September 2017)?

This guide will take a look at our Level 3 Cambridge Advance National (AAQ) in Computing: Application Development, show you how it compares to the Pearson BTEC Level 3 in Computing and how you can easily move to teaching our specification.

Developed with the support of teachers, our new Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development has a number of key benefits for teachers and students:

- teacher-friendly specification based on extensive research and engagement with the teaching community.
- straightforward for teachers to deliver and accessible for students.
- structure of the qualification can be tailored to suit your needs.

The unit grade awarded is based on the **total** number of achieved criteria for the unit. The total number of achieved criteria for each unit can come from achievement of any of the criteria (Pass, Merit or Distinction). This is **not** a 'hurdles-based' approach, so students do not have to achieve all criteria for a specific grade to achieve that grade (e.g. all Pass criteria to achieve a Pass).

We have designed our new specification to help students build real and relevant skills for the future.

Your students will develop:

- key knowledge, understanding and skills **relevant** to the subject
- their ability to think creatively, innovatively, analytically, logically and critically
- valuable **communication** skills through having to communicate ideas in different ways to different stakeholders, important in all aspects of further study and life
- a whole host of other **transferable skills** including time management, planning, presentation and research along with project-based working and reflective learning skills
- **independence** and **confidence** in applying their knowledge and skills, vital for progression to HE and relevant for the ICT Practitioners sector and more widely.

Our specification offers:

- **three mandatory units t**hat contain the fundamentals of application development
- **two externally assessed units** that focus on applied knowledge and skills in application development
- **five practical** non-examined assessment (NEA) units
- **optional** NEA units to provide flexibility.

About our support

We believe in developing specifications that help you bring the subject to life and inspire your students to achieve more.

We've created teacher-friendly specifications based on extensive research and engagement with the teaching community as well as representatives from higher education. The new specifications are designed to be straightforward and accessible so that you can tailor the delivery of the course to suit your needs. We've clarified the depth and breadth required throughout, and we've made the assessment criteria clearer.

We offer a range of support services to help you at every stage, from preparation to delivery and assessment:

- **free OCR resources** to help you plan your teaching and get your students ready for assessment
- an extensive **range of free professional development courses** covering everything from getting started to hands-on assessment practice. There are also regular Q&A opportunities with moderators and examiners. To find out more, visit our professional development page.
- Active Results: our **free results analysis service** to help you review the performance of individual students or whole school
- ExamBuilder: our **free question-building platform** that helps you to build your own tests using past OCR exam questions
- **expert Subject Advisors** who are part of their subject communities and here to support you with advice, updates on resources, and information about training opportunities.
- **textbooks and teaching and learning resources from leading publishers.**

To find out more about all of our support services, please visit Teach Cambridge.

At a glance specification comparison

	OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development	Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Structure	**Extended certificate (360 GLH):** There are five units of assessment. Students must complete three mandatory and two optional units to achieve the qualification. Two mandatory externally assessed units: • Unit F160 Fundamentals of application development • Unit F161 Developing application development. One mandatory internally assessed and externally moderated NEA unit: • Unit F162 Designing and communicating UX/UI solutions. Two optional internally assessed and externally moderated NEA units from a choice of four: • Unit F163 Game development • Unit F164 Website development • Unit F165 Immersive technology solution development • Unit F166 software development. **Certificate (150 GLH):** There are two units of assessment. Students must complete both mandatory units to achieve the qualification. One mandatory externally assessed unit: • Unit F160 Fundamentals of application development. One mandatory internally assessed and externally moderated NEA unit: • Unit F162 designing and communicating UX/UI solutions.	**Extended certificate (360 GLH):** There are four units of assessment. Students must complete three mandatory units and one optional unit to achieve the qualification. Two mandatory externally assessed units: • Unit 1 Principles of computer science • Unit 2 Fundamentals of computer systems. One mandatory internally assessed and external standards verification unit: • Unit 7 IT Systems security and encryption. One optional internally assessed and external standards verification units from a choice of seven: • Unit 10 Human-computer interaction • Unit 11 Digital graphics and animation • Unit 14 Computer game development • Unit 15 Website development • Unit 17 Mobile app development • Unit 20 Managing and supporting systems • Unit 22 Systems analysis and design. **Certificate (180 GLH):** There are two units of assessment. Students must complete both mandatory units to achieve the qualification. One mandatory externally assessed unit: • Unit 2 Fundamentals of computer systems. One mandatory internally assessed and external standards verification unit: • Unit 7 IT Systems security and encryption. This qualification is also available as Foundation Diploma, Diploma and Diploma Extended levels.

	OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development	Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Grading	All results from each unit are awarded on the following scale: • Distinction (D) • Merit (M) • Pass (P) The unit grade awarded is based on the **total** number of achieved criteria for the unit. The total number of achieved criteria for each unit can come from achievement of any of the criteria (Pass, Merit or Distinction). This is **not** a 'hurdles-based' approach, so students do **not** have to achieve **all** criteria for a specific grade to achieve that grade (e.g. all Pass criteria to achieve a Pass). The overall qualification grades are awarded: • Distinction* (D*) • Distinction (D) • Merit (M) • Pass (P) • Unclassified (U).	All results from units are assessed on the following scale of: • Distinction (D), • Merit (M), • Pass (P), • Near Pass (N) • Unclassified (U) Qualifications in the suite are graded using a scale of: • P to D* • PP to D*D • PPP to D*D*D*
Assessment	**Extended certificate:** Mandatory Units: • F160 Exam 75 minutes • F161 Exam 75 minutes • F162 NEA, internally marked and moderated by OCR (mandatory). Two optional units from four that are internally marked, and OCR moderated: • F163 optional NEA • F164 optional NEA • F165 optional NEA • F166 optional NEA.	**Extended certificate:** Mandatory units: • Unit 1 Exam 2 hours • Unit 2 Exam 1 hours 45 minutes • Unit 7 NEA, internally assessed and subject to external standards verification. One optional NEA unit from a choice of seven to complete: • Unit 10 Optional NEA • Unit 11 Optional NEA • Unit 14 Optional NEA • Unit 15 Optional NEA • Unit 17 Optional NEA • Unit 20 Optional NEA • Unit 22 Optional NEA.

	OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development	Pearson BTEC Level 3 National in Computing (first teaching September 2017)
	Certificate: Two mandatory units: • F160 Exam 75 minutes • F162 NEA, internally marked and moderated by OCR (mandatory).	**Certificate:** Two mandatory units: • Unit 2 Exam 1 hour 45 minutes • Unit 7 NEA, internally assessed and subject to external standards verification. This qualification is also available as Foundation Diploma, Diploma and Diploma Extended levels.
Administration	External assessments available twice a year, with opportunity to resit. Internal assessment with external moderation available in two assessment windows each year: January and June. The NEA assignments will be valid for 2 year(s). The dates for which they are live will be shown on the front cover. There is one resubmission opportunity per NEA assignment. For external moderation, you must make unit entries for students before you can submit outcomes to request a moderation visit. Students can resit the examined unit twice before they complete the qualification. Familiar administration for exam officers. See the specification for full administration information.	External assessments available twice a year. Examined units can be resat. Internal assessment with external standards verification. Centre must make arrangements for secure delivery of exams and supervised tasks. Single retake opportunity for internally assessed units. Retake can only be achieved at a pass.

Detailed comparison of units

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Types of software used in application design	1.1	Programs and applications Programs Applications	Unit 2: Fundamentals of Computer Systems, A2 Computer software in a computer system
	1.2	Operating Systems (OS) for application software Network Open OS Proprietary	Unit 2: Fundamentals of Computer Systems, A2 Computer software in a computer system
	1.3	Application types and categories	Unit 2: Fundamentals of Computer Systems, A2 Computer software in a computer system
	1.3.1	Application types Communication Educational Entertainment Games Lifestyle Productivity Protection and utility Web browsers	Unit 2: Fundamentals of Computer Systems, A2 Computer software in a computer system
	1.3.2	Application software categories Open Closed Shareware Freeware Embedded	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.3.3	Application software types Off-the-shelf Custom off-the-shelf Bespoke	
Topic Area 2: Software development models	2.1	Software development models	Unit 22: Systems Analysis and Design, A1 Development models Unit 23: Systems Methodology, A1 The software development life cycle
		Traditional model • Waterfall	Unit 3: Planning and Management of Computing Projects, D1 The waterfall software development life cycle model Unit 22: Systems Analysis and Design, A1 Development models Unit 23: Systems Methodology, A1 The software development life cycle
		Prototyping model • Rapid Throwaway • Incremental • Evolutionary	Unit 22: Systems Analysis and Design, A1 Development models Unit 23: Systems Methodology, A1 The software development life cycle
		Iterative model • Rapid Application Development (RAD) • Spiral • Agile	Unit 22: Systems Analysis and Design, A1 Development models Unit 23: Systems Methodology, A1 The software development life cycle

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	2.2	The common phases of software development models	
		Planning • Requirements • Feasibility	Unit 22: Systems Analysis and Design, B4 Requirements specification
		Design	Unit 22: Systems Analysis and Design, C1 Input and output requirements Unit 22: Systems Analysis and Design, C2 Data and processes within a system
		Constructing/creation	
		Testing	Unit 22: Systems Analysis and Design, C3 Testing and maintenance methodologies
		Implementation • Phased • Parallel • Big bang (crash)	Unit 3: Planning and Management of Computing Projects, D5 Implementation strategy
		Documentation creation	
		Maintenance	
Topic Area 3: Planning application development projects	3.1	Planning projects	
		Purpose of planning projects	

		Planning considerations
		• Budget
		• Constraints
		• Legislation
		  ○ Copyright
		  ○ Data protection
		  ○ Electronic communications
		• Resources
		• Success criteria
		• Time
			Unit 3: Planning and Management of Computing Projects, B3 Identifying assumptions and constraints
			Unit 22: Systems Analysis and Design, B3 Threats to system success

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	3.2	Project planning tools	
		Arrow diagram	
		Critical Path Analysis (CPA)/ Critical Path Method (CMP)	
		Flowchart	Unit 1: Principles of Computer Science, B2 Flowcharts and using standard symbols
		Gantt charts	
		PERT charts	
		Strengths/Weaknesses/ Opportunities/Threats (SWOT) analysis	Unit 23: Systems Methodology, B1 Problem investigation
Topic Area 4: Application design scoping	4.1	Methods of gathering client requirements	
		Document analysis	Unit 22: Systems Analysis and Design, B2 Investigation techniques that use standard analytical methods
		Focus group	
		Interviews	Unit 22: Systems Analysis and Design, B2 Investigation techniques that use standard analytical methods
		Meetings	
		Observation	Unit 22: Systems Analysis and Design, B2 Investigation techniques that use standard analytical methods
		Problem reports	
		Questionnaire	Unit 22: Systems Analysis and Design, B2 Investigation techniques that use standard analytical methods
		Shadowing	
		Suggestion analysis	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	4.2	Client requirement specifications	Unit 22: Systems Analysis and Design, B4 Requirements specification
		Purpose of new system	
		Functional requirements	
		Non-functional requirements	
		Process constraints	
		Current system deficiencies	
		Data formats	

		Client defined constraints
		• Budget
		• Time
		• Integration
		• Software
		• Hardware
		• Data storage location
		  ○ Local/onsite
		  ○ Cloud
		  ○ Physical storage devices
			Unit 22: Systems Analysis and Design, B3 Threats to system success

		Version and source control	
	4.3	Decomposition methods	Unit 1: Principles of Computer Science, A1Decomposition
		Abstraction	Unit 1: Principles of Computer Science, A3 Pattern generalisation and abstraction
		Pattern recognition	Unit 1: Principles of Computer Science, A2 Pattern recognition
		Modularisation • Top down • Bottom up	
		Parsing of requirements	
Topic Area 5: Human computer interface and interaction	5.1	Human computer interaction and devices	Unit 10: Human-Computer Interaction, A1 Developments in electronic devices

F160 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	5.1.1	Types of human computer interaction	
		Audio	
		Movement/gesture	
		Touch	
		Visual • Command line • GUI	
	5.1.2	Types of device Desktop Games console Laptop Smart speaker Smart TV Smartphone Tablet Augmented Reality (AR)/Virtual Reality (VR)/Mixed Reality (MR) devices	Unit 2: Fundamentals of Computer Systems, A1 Computer hardware in a computer system
	5.2	Human computer interface visual design considerations Colours Interaction Location hierarchy Messages • Help • Error Typography • Style • Size	Unit 22: Systems Analysis and Design, C1 Input and output requirements Unit 10: Human-Computer Interaction, A4 Design principles of HCI

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F160** **Fundamentals of application development** **OCR-set and marked** **60 Marks** **75 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	5.3	Human computer interface design documents and diagrams	

		Processing and data handling
		• Data flow diagrams
		  ○ Level 0
		  ○ Level 1
		• Flowcharts
			Unit 22: Systems Analysis and Design, A2 Systems analysis tools and techniques
			Unit 23: Systems Methodology, A3 Systems methodology techniques

		User interface designs • Visualisation diagram • Wireframe diagrams	Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution
Topic Area 6: Job roles and skills	6.1	Job roles Application Designer Mobile Application Designer Project Manager Systems Analyst Systems Designer User Experience Designer (UXD) User Interface Designer (UID)	
	6.2	Communication skills required in application development Appropriate language to meet the needs of the audience Non-verbal Questioning techniques to elicit specific information Verbal Written	Unit 22: Systems Analysis and Design, C4 Skills knowledge and behaviours

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Application software considerations	1.1	Application platforms	
		Augmented Reality (AR)/Virtual Reality (VR)/Mixed Reality (MR) • Educational • Instructional • Research	Unit 10: Human-Computer Interaction, A1 Developments in electronic devices
		Websites • Ecommerce • Informative • Educational • Social media	Unit 15: Website Development, A1 Purpose and principles of website products
		Computer games	
	1.2	Devices Console Desktop Haptic Laptop Server Smart devices Tablet/hybrid Wearables	Unit 2: Fundamentals of Computer Systems, A1 Computer hardware in a computer system
	1.3	Storage locations	
	1.3.1	On-site	
		File servers	Unit 2: Fundamentals of Computer Systems, A1 Computer hardware in a computer system
		Network Attached Storage (NAS) devices	Unit 2: Fundamentals of Computer Systems, A1 Computer hardware in a computer system
		Portable storage devices	
		Solid State Drive (SSD)	
		Storage Area Network (SAN)	Unit 19: Computer Networking, A1 Network types of models

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.3.2	Cloud storage Location of cloud storage • Private • Public • Hybrid • Community Types of cloud storage • File storage • Object storage • Block storage • Elastic/scalable storage • Cloud-based database services	
Topic Area 2: Data and flow in application software	2.1	Data format and types	
		Data formats • American Standard Code for Information Interchange (ASCII) • Comma-separated Values (CSV) • Fixed width • JavaScript Object Notation (JSON) • Extensible Markup Language (XML)	Unit 2: Fundamentals of Computer Science, C2 Text representation
		Data types • Boolean • Character • Date • Integer • Real • String	Unit 1: Principles of Computer Science, C1 Handling data within a program Unit 16: Object Orientated Programming, C2 Constructs and techniques Unit 17: Mobile Apps Development, C2 Developing a mobile app

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	2.2	Data flow	Unit 2: Fundamentals of Computer Systems, F The use of logic and data flow in computer systems

		Input
		• Number
		• Text
		• Movement
		• Audio
		• Image
		  ○ Moving
		  ○ Static	

		Storage • On-site • Cloud	

		Output information
		• Number
		• Text
		• Movement
		• Audio
		• Image
		  ○ Moving
		  ○ Static
			Unit 10: Human-Computer Interaction, B1 Requirements for a HCI solution

		Black box concept • Flow in • Flow to storage • Flow out	
	2.3	Data states At rest In transit (motion) In use	
Topic Area 3: API and protocols	3.1	Application Programming Interfaces (API)	Unit 1: Principles of Computer Science, D4 Coding for the web Unit 17: Mobile Apps Development, C2 Developing a mobile app
		Role	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Certifications • Composite • Internal • Private • Public • Partner	
		Types • Representational State Transfer (REST) • Simple Object Access Protocol (SOAP) • Remote Procedure Call (RPC)	
	3.2	Protocols	Unit 1: Principles of Computer Science, D4 Coding for the web Unit 2: Fundamentals of Computer Science, E1 Transmitting data Unit 19: Computer Networking, A3 Networking communication standards and protocols
		File Transfer Protocol (FTP)	
		Hyper Text Transfer Protocol (HTTP)	
		Post Office Protocol (POP)	
		Simple Mail Transport Protocol (SMTP)	
		Simple Network Management Protocol (SNMP)	
		Transport Control Protocol (TCP)	Unit 19: Computer Networking, A3 Networking communication standards and protocols
		User Datagram Protocol (UDP)	
		Internet Control Message Protocol (ICMP)	
		Internet Protocol (IP)	Unit 19: Computer Networking, A3 Networking communication standards and protocols

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 4: Application software security	4.1	Security considerations	

		Threats
		• Botnets
		• Denial of Service (DOS)/ Distributed Denial of Service (DDoS)
		• Hacking
		• Lack of supplier support
		• Malicious spam
		• Malware
		• Out of date
		  ○ Software
		  ○ Hardware
		  ○ Firmware
			Unit 7: IT Systems Security and Encryption, A1 Threat Types

		Physical security mitigations • Biometrics • Cable locks • Cameras • Locks • RFID • Safe • Swipe cards	Unit 7: IT Systems Security and Encryption, C1 Physical Security

		Digital security mitigations
		• Access rights
		• Anti-malware
		• Back-up
		• Cryptography
		• Encryption
		  ○ At rest
		  ○ In transit
		• Firewalls
		  ○ Hardware
		  ○ Software
		• Two-Factor Authentication (2FA)
			Unit 7: IT Systems Security and Encryption, B1 Cryptographic principles
			Unit 7: IT Systems Security and Encryption, C3 Software-based protection

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 5: Operations considerations	5.1	Testing	

		Test plan structure
		• Test number
		• Test type
		• Test description
		  ○ Purpose
		  ○ Procedure
		• Test data
		• Expected result
		• Actual result
		• Remedial action required
		• Retest result	

		Types of test data • Normal • Extreme • Erroneous	Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs Unit 16: Object-Oriented Programming, C4 Test and review object-oriented programs
		Types of testing • Technical • User	
	5.2	Types of application software installation Create ghost/image and deployment Upgrade Clean Install Repair/modify installs Remote install Unattended installation Cloud download/install Mobile install Network install	
	5.3	Policies Application user guide Acceptable Use Policy (AUP) Backup(s) Codes of practice Staying safe online Use of information	*F161 comparison continues on next page.*

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F161** **Developing Application software** **OCR-set and marked** **60 Marks** **70 GLH** **1 hour and 15 minutes written examination**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 6: Legal considerations	6.1	Legal considerations	Unit 7: IT Systems Security and Encryption, A4 Legal requirements Unit 9: The Impact of Computing, B4 Ethical issues
		Computer Misuse Act (CMA)	
		Data Protection Act (DPA)	
		UK General Data Protection Regulation (UK GDPR)	
		Freedom Information Act (FIA)	
		Privacy and Electronic Communications Regulations (PECR)	
		Information Commissioner's Office (ICO) in the UK	

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Principles of UX and UI design	1.1	Basics of UX and UI User experience (UX) design User Interface (UI) design	
	1.2	Application end user considerations	
		Experience • Novice/beginner • Occasional • Regular • Expert user	Unit 10: Human-Computer Interaction, A2 User development factors
		Available hardware • Input devices • Screen sizes • Type of device	Unit 10: Human-Computer Interaction, A1 Developments in electronic devices
		Accessibility needs	Unit 10: Human-Computer Interaction, A2 User development factors
	1.3	UX/UI design principles	
		Perception	Unit 10: Human-Computer Interaction, A4 Design principles of HCI
		Navigation design principles • Hierarchy • Menu selection • Recognition vs recall	
		Schneiderman's 8 Golden Rules of interface design • Consistency • Enable shortcuts • Include informative feedback • Dialogue yields closure • Simple error handling • Easy reversal of actions • Support internal locus of control • Reduce short-term memory load	Unit 10: Human-Computer Interaction, A4 Design principles of HCI

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Interface layout design principles • Above and below the fold • Colour theory • Information visualization • Principle of thirds • Typography	
	1.4	UX/UI design psychology Cognitive load Hicks law Law of Proximity	
	1.5	UX/UI experience	
	1.5.1	Factors that impact UX Accessible Creditable Desirable Findable Usable Useful Valuable	
	1.5.2	Features of UI	
		Types of UI • Command line interface (CLI) • Form-based user interface • Graphical user interface (GUI) • Menu-driven user interface • Natural language user interface • Touch user interface • Voice user interface (VUI)	Unit 10: Human-Computer Interaction, A1 Developments in electronic devices

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Interaction types • Function keys • Gestures • Voice • WIMP (Windows Icons Menus Pointers)	Unit 10: Human-Computer Interaction, A3 Use of HCI in society and its impact
	1.6	UX/UI interface design standardisation Interface standards • Common user interface layouts, icons and labels throughout the application • Cross-platform standards • Standard interface widgets • Standard protocols	
Topic Area 2: Plan UX/UI solutions	2.1	Requirements of UX/UI solutions	

		Types of requirements
		• Client requirements
		• User requirements
		• Solution requirements
		  ○ Functional requirements
		  ○ Interface requirements
		  ○ Non-functional requirements
			Unit 3: Planning and Management of Computing Projects, A2 Quality and deliverables
			Unit 10: Human-Computer Interaction, B1 Requirements for a HCI solution
			Unit 14: Computer Games Development, C4 Reviewing computer games
			Unit 15: Website Development, C3 Website review

		Sources of UX/UI solution requirements • Client briefs • Current systems • Existing documents • Users/user profiles	Unit 10: Human-Computer Interaction, C1 Content preparation for a human-computer interface

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**

		Tools to document UX/UI solution requirements
		• Requirements specification
		  ○ Purpose/scope
		  ○ Business/client requirements
		  ○ User requirements
		  ○ Functional requirements
		  ○ Interface requirements
		  ○ Non-functional requirements	

		Use case diagrams • Actors • System interactions	
	2.2	Tools and techniques to document UX/UI ideas and design concepts	
		Tools and techniques to document ideas • Mind map • Mood boards • Spider diagrams	Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution Unit 11: Digital Graphics and Animation, B2 Design documentation
		Tools and techniques to document design concepts • Low-fidelity prototypes ○ Wireframes • Paper prototyping • Sketches and diagrams	Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 15: Website Development, B1 Website design
Topic Area 3: Design UX/UI solutions	3.1	Tools to represent UX/UI solutions	
	3.1.1	Design tools	

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**

		Diagrams
		• Types
		  ○ Flow chart
		  ○ Navigation
		  ○ Task flows
		  ○ Wireflow
		• UX/UI design features
		  ○ Interaction flows
		  ○ Navigation routes
		  ○ Steps within processes
		  ○ User steps to complete actions
			Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution

		High-fidelity prototypes
		• Types
		  ○ Graphical mock-ups
		  ○ Screen flows
		  ○ Interface
		• UX/UI design features
		  ○ Navigation aides
		  ○ House style
		  ○ Layout
		  ○ Content
		  ○ System interaction and event handling
		  ○ Error handling and feedback
			Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution

	3.1.2	Software tools Software types • Standard software • Vector drawing • Diagramming • Interface prototyping software Software tools and techniques • Image/canvas size • Layout tools • Drawing tools • Layers and grouping • Typography • Image library objects • Interactivity	

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	3.2	Tools and techniques to check UX/UI solution designs Method of checking • Checklist UI audit metrics to check • Branding and messaging • Customer journey bottlenecks and roadblocks • Design inconsistencies • Layout and hierarchy inconsistencies • Legal compliance • Usability and accessibility • Usability heuristics Interface metrics to check • Ability to configure the interface • Ability to navigate within the system • Keystroke effort per task	
Topic Area 4: Communicate UX/UI solutions	4.1	Develop UX/UI solution showcases Showcase formats Showcase content considerations • Type • Depth • Relevance Showcase design considerations • Colour scheme • Language and vocabulary • Layout • Style	

F162 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F162** **Designing and communicating UX/UI solutions** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **75 GLH (15 GLH for set assignment)** **This set assignment has four practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	4.2	Techniques to deliver UX/UI solution showcases Resources required • Hardware • Software Techniques for effective communication • Clarity • Coherence • Completeness • Conciseness • Correctness • Courteousness	
Topic Area 5: Review and improve UX/UI solutions	5.1	Review the fitness for purpose of UX/UI solutions	
		Suitability for meeting • Client requirements • User requirements • Solution requirements	Unit 10: Human-Computer Interaction, C4 Reviewing the development process and outcomes Unit 14: Computer Games Development, Reviewing computer games Unit 15: Website Development, C3 Website review
		Application of UX/UI design principles	
	5.2	Improvements to UX/UI solutions User experience Use of UX/UI design principles Use of principles of UX/UI design psychology Use of UX/UI interface standards	Unit 10: Human-Computer Interaction, C4 Reviewing the development process and outcomes
	5.3	Review the processes used to plan, design and communicate UX/UI solutions Effectiveness of processes used Effectiveness of tools and techniques used	Unit 10: Human-Computer Interaction, C4 Reviewing the development process and outcomes

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Game development	1.1	Types and genres of digital games	
	1.1.1	2D	
		3D	
		Immersive games (Augmented Reality, Virtual Reality, Mixed Reality)	Unit 14: Computer Games Development, A1 Social trends in computer gaming
		Massive Multiplayer Online (MMO) games	
		Massive Multiplayer Online Role-Playing Games (MMORPG)	
		Role-Playing Games (RPG)	
		Platform	
		Simulation	
	1.1.2	Genres of game Action Educational Puzzle and trivia Quest Sports Strategy	Unit 14: Computer Games Development, A1 Social trends in computer gaming
	1.1.3	Gaming platforms	
		Types of gaming platforms	Unit 14: Computer Games Development, A2 Technologies used in computer gaming
	1.1.4	Pan European Game Information (PEGI) Certificates Age ratings Content descriptions	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.2	Principles of game design	Unit 14: Computer Games Development, B1 Computer games design processes and techniques
	1.2.1	Game concept Game purpose Game audience Story Unique Selling Proposition (USP)	

	1.2.2	Game and gameplay elements
		Game elements
		• Goals/objectives
		• Aesthetics/visuals
		• Game world dimensions
		  ○ Environmental
		  ○ Physical
		  ○ Temporal
		  ○ Emotional
		  ○ Ethical
		• Theme and story
		Gameplay elements
		• Competition
		• Outcome and feedback
		• Player immersion
		• Player interaction
		• Progression
		• Reward/accomplishment
		• Scoring
		• Strategy and chance	

	1.2.3	Game assets Animation Backgrounds Main characters Non-Player Characters (NPCs) Objects Scenery Sounds Textures Video	Unit 14: Computer Games Development, C2 Developing computer games

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.2.4	Game mechanics Character and object movement Character and object navigation Game actions and events Game play controls Game start mechanisms Game end mechanisms Inputs and outputs Collision detection Player interaction and feedback Scoring and timing mechanisms Shortcuts and cheats	Unit 14: Computer Games Development, C2 Developing computer games
Topic Area 2: Plan and design high-fidelity game prototypes	2.1	Tools to plan and design game prototypes	
	2.1.1	Game design documents (GDDs)	
		Format, layout, and templates of GDDs	Unit 14: Computer Games Development, B1 Computer games design processes and techniques, B2 Design documentation
		Content of GDDs • Client requirements • Executive summary of game concept • Success criteria • Game and gameplay elements • Game assets • Game mechanics	
	2.1.2	Game planning and design tools	
		Tools to document designs for game visuals • Concept art • Storyboard • Assets list	Unit 14: Computer Games Development, B1 Computer games design processes and techniques

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Tools to document plans for game mechanics • Decision trees • Flowchart • Pseudo code	Unit 14: Computer Games Development, B2 Design documentation
Topic Area 3: Create high-fidelity game prototypes	3.1	Tools and techniques to source and prepare assets Sources of assets • Internet • Stock libraries Preparation of assets File formats and properties used in game creation Asset naming conventions used in game creation	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 11: Digital Graphics and Animation, C1 Digital graphics and animation processing techniques Unit 12: Digital Audio, B1 Digital audio planning and design Unit 12: Digital Audio, B3 Sourcing digital assets Unit 13: Digital Video, B3 Sourcing digital assets Unit 15: Website Development, B1 Website design Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs Unit 17: Mobile App Development, B2 Designing a mobile app
	3.2	Technical skills to create game environments and game functionality	
		Game engine tools • Asset management • Object controls • Animation systems • Physics engine/collision detection and response • Rendering engine • Sound support • Scripting environment • Libraries	Unit 14: Computer Games Development, B1 Computer games design processes and techniques Unit 14: Computer Games Development, C2 Developing computer games
		Programming techniques • Variables, constants, operators, inputs, outputs and assignments • Sequence, selection and iteration • Conditions using comparison, arithmetic and Boolean operators • File handling • Sub programs (sub routines/functions/ procedures)	*F163 comparison continues on next page.*

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 4: Test high-fidelity game prototypes	4.1	Game prototype testing	
		Testing methods • Dry run • Iterative • Test plan • Trace tables	Unit 10: Human-Computer Interaction, C3 Testing an interactive solution Unit 14: Computer Games Development, B2 Design documentation Unit 16: Object-oriented Programming, C4 Test and review object-oriented programs
		Testing types • Functionality testing • Performance testing • Play testing • Compatibility testing	Unit 10: Human-Computer Interaction, C3 Testing an interactive solution
		Elements of game prototypes to test • Actions and events • Audio effects • Character movement and navigation • Consistency of graphics • Game play controls • Game progression/levels • Player interaction and feedback • Scoring and timing mechanisms • Usability and gaming experience • User interface and functionality	Unit 14: Computer Games Development, B2 Design documentation Unit 14: Computer Games Development, C3 Testing computer games
		Results analysis and remedial action	Unit 14: Computer Games Development, C3 Testing computer games

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F163** **Game development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 5: Review and improve high-fidelity game prototypes	5.1	Techniques to review the fitness for purpose of game prototypes Suitability for meeting: • Client requirements • Planning and design requirements Audio-visual/aesthetics quality Game and gameplay elements Player interaction and engagement Player suitability/appeal	Unit 14: Computer Games Development, C4 Reviewing computer games Unit 15: Website Development, C3 Website review
	5.2	Improvements to, and further developments for, game prototypes	
	5.2.1	Improvements	Unit 14: Computer Games Development, C4 Reviewing computer games
		Audio	
		Gameplay	
		Graphics	
		Levels and progression	
		Lifelikeness	
		Video/animation	
	5.2.2	Further development opportunities	
		Building gaming communities	
		Facilitating in-game purchases	
		Marketing opportunities	
		Release to gaming platforms	
		Widen scope of game concept	

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Fundamentals of website development	1.1	Website principles Domain name/Uniform Resource Locator (URL) • Structure Platform and browser compliance Device compliance • Sizes • Types W3C compliance • Protocols and guidelines • Web Content Accessibility Guidelines (WCAG) Site structures • Index page • Site map Web 2.0 Web 3.0	Unit 15: Website Development, A1 Purpose and principles of website products Unit 15: Website Development, B2 Common tools and techniques used to produce websites
	1.2	Purpose of websites Advertise/promote Educate Entertain Influence Inform Market Sell	Unit 15: Website Development, A1 Purpose and principles of website products
	1.3	Website types Interactive Multimedia Responsive Single page Static Dynamic Content Management Systems (CMS)	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.4	Webpage components and structure	
		Semantic page components • Interface designs	
		Hyper Text Markup Language 5 (HTML5) or later versions	Unit 15: Website Development, B2 Common tools and techniques used to produce websites
		Cascading Style Sheets 3 (CSS3) or later versions	Unit 15: Website Development, B2 Common tools and techniques used to produce websites
		Client-side scripting	Unit 15: Website Development, C1 Client-side scripting languages
		Navigational components • Hyperlinks • Hotspots • Navigation bar	Unit 15: Website Development, B2 Common tools and techniques used to produce websites
		User interactions	
		Forms	
		Tags	Unit 15: Website Development, A1 Purpose and principles of website products
		Responsive design features • Compatibility • Browser • Device • Fluid grids • Media queries/break points • Relative sizing	Unit 15: Website Development, C2 Website development
		Libraries/Frameworks • HTML based • CSS based • JavaScript based • Hypertext Pre-processor (PHP) based	Unit 15: Website Development, C2 Website development
		Animation techniques	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.5	Search Engine Optimisation (SEO) techniques Crawling Indexing Keywords Metadata Mobile-friendly Ranking	Unit 8: Business Applications of Social Media, C5 Search engine optimisation Unit 15: Website Development, A1 Purpose and principles of website products
Topic Area 2: Plan and design high-fidelity website prototypes	2.1	Planning and design considerations	
		Client requirements • Purpose • Type of website • Target audience • Content of website	Unit 15: Website Development, C Develop a website to meet client requirements (C1 to C5) Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution Unit 22: Systems Analysis and Design, B4 Requirements specification
		User requirements	Unit 17: Mobile Apps Development, B2 Designing a mobile app
		Navigation system	Unit 15: Website Development, B2 Common tools and techniques used to produce websites Unit 17: Mobile Apps Development, B2 Designing a mobile app
		Interactive components • Buttons • Media controls • User input fields • Rollovers • Hyperlinks • Hotspots	Unit 15: Website Development, B2 Common tools and techniques used to produce websites

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Assets • Text • Sound • Images • Video/animation • Forms	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 11: Digital Graphics and Animation, C1 Digital graphics and animation processing techniques Unit 12: Digital Audio, B1 Digital audio planning and design Unit 12: Digital Audio, B3 Sourcing digital assets Unit 13: Digital Video, B3 Sourcing digital assets Unit 15: Website Development, B1 Website design Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs Unit 17: Mobile App Development, B2 Designing a mobile app

		House style
		• Colours
		• Fonts
		• Styles
		  ○ Images
		  ○ Text	

		Plugins	
		Responsive design features	
		Search Engine Optimisation (SEO)	Unit 8: Business Applications of Social Media, A1 Social media websites
		W3C compliance	Unit 3: Planning and Management of Computing Projects, A2 Quality and deliverables
		Hosting requirements • Cost • Location • Security • Domain name	
	2.2	Tools to plan and design website prototypes	
		Tools to document ideas for website prototypes • Mind maps • Mood boards	Unit 11: Digital Graphics and Animation, B2 Design documentation

F164 comparison continues on next page.

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Tools to document plans and designs for website prototypes • Site plans • Visualisation diagrams • Wireframes • Storyboards • Assets list • House style sheet	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 15: Website Development, B1 Website design
Topic Area 3: Create high-fidelity website prototypes	3.1	Tools and techniques to create website prototypes	
		Folder structure • Templates • Assets • Pages	
		Site page structure	Unit 15: Website Development, A1 Purpose and principles of website products
		Index page location	
	3.2	Techniques to source and prepare assets	
		Sources of assets • Internet • Stock libraries Preparation of assets File formats and properties used in website creation Asset naming conventions used in website creation	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 11: Digital Graphics and Animation, C1 Digital graphics and animation processing techniques Unit 12: Digital Audio, B1 Digital audio planning and design Unit 12: Digital Audio, B3 Sourcing digital assets Unit 13: Digital Video, B3 Sourcing digital assets Unit 15: Website Development, B1 Website design Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs Unit 17: Mobile App Development, B2 Designing a mobile app

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	3.3	Technical skills to create website pages	

		Web authoring tools
		• Visual design environment
		• Scripting environment with coding assistance
		• Template creation
		• Cascading style sheets (CSS)
		  ○ Box model
		  ○ Website/page formatting
		  ○ Content formatting
		• Responsive design features
		• Form controls
		• Interactive features and controls
		• Preview and publishing
		• Libraries/Frameworks
		• Search Engine Optimisation (SEO)
			Unit 15: Website Development, B2 Common tools and techniques used to produce websites
			Unit 15: Website Development, C2 Website development

Topic Area 4: Test high-fidelity website prototypes	4.1	Website prototype testing	
		Testing methods • Dry run/trace table • Iterative • Test Plan	Unit 10: Human-Computer Interaction, C3 Testing and interactive solution Unit 16: Object-oriented Programming, C4 Test and review object-oriented programs
		Testing types • Technical testing • Viewpoint testing • User testing	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Elements of website prototypes to test • Content display • Ease of use • Hyperlinking • Interactive elements Multiple browser testing • Multiple device testing • Multiple viewpoint size testing • Navigation features • Pages display • Readability of content	Unit 15: Website Development, C4 Website optimisation
		Results analysis and remedial action	Unit 15: Website Development, C4 Website optimisation
Topic Area 5: Review and improve the effectiveness of high-fidelity website prototypes	5.1	Techniques to review the effectiveness of website prototypes	
		Suitability of meeting • Client requirements • User requirements	Unit 14: Computer Games Development, C4 Reviewing computer games Unit 15: Website Development, C3 Website review
		Accessibility	
		Device independence/ compatibility	
		Responsive design	
		Search Engine Optimisation (SEO) techniques used	
	5.2	Improvements to, and further developments for, website prototypes	
		Constraints • Legislation • Libraries/Frameworks • Skills • Software • Time	Unit 3: Planning and Management of Computing Projects, B3 Identifying assumptions and constraints Unit 22: Systems Analysis and Design, B3 Threats to system success

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F164** **Web development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Improvements • Accessibility • Browse independence/ compatibility • Content, visuals and interaction • Device independence/ compatibility • Domain name • Search Engine Optimisation (SEO) • Security	Unit 15: Website Development, C4 Website optimisation
	5.2.2	Further development opportunities Extra content/features Further user interactivity Hosting considerations Payment gateways/processors	Unit 15: Website Development, C3 Website review

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Principles of immersive technology	1.1	Types and uses of immersive technology	
		Types of immersive technology • Augmented Reality (AR) • Virtual Reality (VR) • Mixed Reality (MR)	Unit 10: Human-Computer Interaction, A1 Developments in electronic devices
		Immersive technology use	
	1.2	Immersive technology concepts	
		AR types • Marker-based/object recognition • Markerless • Location-based • Superimposed	
		Components of AR • Lenses • Processing • Sensing	
		User interaction/layers • Static • Interactive	
		Devices • AR glasses • Laptop/PC • Mobile devices • Smart devices	
	1.2.2	Virtual Reality (VR)	
		VR type • Non-immersive • Semi-immersive • Fully immersive	
		Characteristics of VR • Virtual world • Immersive • Sensory feedback • Interactivity	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		User interaction • Tracking sensors • Hand controllers • Audio	
		Devices • Laptop/PC • Smart devices • VR glasses • VR headset and hand-held joystick	
	1.2.3	Mixed Reality (MR)	

		MR concepts
		• Blend of physical and digital world
		• Unlocking interactions
		User interaction
		• Static
		• Interactive
		  ○ Tracking sensors
		  ○ Hand controllers
		  ○ Audio	

		Devices • Laptop/PC • Mobile devices • MR glasses/lenses • MR wearables • Smart devices	
		Displays • Head mounted display (HMD) showing video • Immersive audio visual (AV) with 3D graphics with superimposed video on a monitor • Monitor-based video displays • Optical see-through Head Mounted Displays (HMDs)	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	1.2.4	Technologies which support AR, VR and MR	
		3D modelling	
		Multimedia	
		Real-time tracking and registration	
		Sensors	
Topic Area 2: Plan and design high-fidelity immersive technology solution prototypes	2.1	Planning and design considerations	

		Prototype planning considerations
		• Client requirements
		  ○ Purpose
		  ○ Target audience
		  ○ Type of immersive technology
		• User requirements
		• Technical requirements
		  ○ Hardware requirements
		  ○ Devices required to access immersive technology prototype
		  ○ Software considerations
			Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution
			Unit 22: Systems Analysis and Design, B4 Requirements specification

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**

		Prototype design considerations
		• Layout
		• Content
		  ○ Assets
		• Triggers
		  ○ Marker-based/object recognition
		  ○ Markerless
		  ○ Location/geo-based
		• Layers
		  ○ Single layer
		  ○ Multiple layers
		• User Interaction
		  ○ Action flow
		  ○ Static
		  ○ Interactive
		• Degrees of freedom
		  ○ Rotational movements
		  □ Pitch
		  □ Roll
		  □ Yaw
		• Translational movements
		  ○ Left and right
		  ○ Forwards and backwards
		  ○ Up and down
		• Field of view
		• Frames per second
		• Latency
			Unit 1: Principles of Computer Science, D3 Event driven programming

	2.2	Tools to plan and design immersive technology prototypes	
		Tools to document ideas for immersive technology prototypes • Mind maps • Mood boards	Unit 11: Digital Graphics and Animation, B2 Design documentation

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Tools to document plans and designs for immersive technology prototypes • Storyboards • Visualisation diagrams • Wireframes • Assets list • Flowcharts	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 15: Website Development, B1 Website design
Topic Area 3: Create high-fidelity immersive technology solution prototypes	3.1	Techniques to source and prepare assets Sources of assets Preparation of assets File formats and properties Asset naming conventions used in immersive technology prototype creation	Unit 11: Digital Graphics and Animation, B2 Design documentation Unit 11: Digital Graphics and Animation, C1 Digital graphics and animation processing techniques Unit 12: Digital Audio, B1 Digital audio planning and design Unit 12: Digital Audio, B3 Sourcing digital assets Unit 13: Digital Video, B3 Sourcing digital assets Unit 15: Website Development, B1 Website design Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs Unit 17: Mobile App Development, B2 Designing a mobile app
	3.2	Software features and techniques to create immersive technology prototypes	
		Software features and techniques • Action/behaviour controls • Asset management • Drag/drop object manipulation • Environment lighting filters • Intelligent interaction controls • Layers/overlays management • Trigger controls	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 4: Test high-fidelity immersive technology prototypes	4.1	Immersive technology prototype testing	
		Testing methods • Dry run/trace table • Iterative • Test Plan	Unit 10: Human-Computer Interaction, C3 Testing and interactive solution Unit 16: Object-oriented Programming, C4 Test and review object-oriented programs
		Testing types • Functionality • Usability • Accessibility • Hardware • Immersiveness • Security • Compatibility	
		Elements of immersive technology prototypes to test • Triggers • Layers • Interactions • Tracking • Degrees of freedom • Immersiveness • Battery consumption	
		Results analysis and remedial action	
Topic Area 5: Review and improve the effectiveness of high-fidelity immersive technology prototypes	5.1	Techniques to review the effectiveness of immersive technology prototypes	
		Suitability of meeting • Client requirements • User requirements • Planning and design requirements	Unit 3: Planning and Management of Computing Projects, A2 Quality and deliverables
		Usability and Immersiveness	
		User experience and engagement	Unit 2: Fundamentals of Computer Systems, A1 Computer hardware in a computer system

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F165** **Immersive technology solution development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	5.2	Improvements to, and further developments for, immersive technology prototypes	Unit 4: Software Design and Development Project, E1 Evaluation of design
	5.2.1	Improvements Functionality Usability Accessibility Hardware Immersiveness Security Compatibility Extra features	
	5.2.2	Further development opportunities Availability of different resources/techniques Re-purposing	

OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 1: Fundamentals of software development	1.1	Software design principles	
		Stepwise Refinement	
		Abstraction • Functional • Data • Control	Unit 1: Principles of Computer Science, A3 Pattern generalisation and abstraction Unit 16: Object-Oriented Programming, A1 Paradigm of object-oriented programming
		Decomposition	Unit 1: Principles of Computer Science, A1 Decomposition
		Modularity	Unit 4: Software Design and Development Project, C1 Design Concepts Unit 16: Object-Oriented Programming, A1 Paradigm of object-oriented programming
		Object-Orientated Programming (OOP)	Unit 1: Principles of Computer Science, D2 Object-Oriented programming Unit 16: Object-Oriented Programming, A Understand the principles of object-oriented programming
		Maintainability	Unit 4: Software Design and Development Project, C1 Design concepts Unit 16: Object-Oriented Programming, C1 Developing object-oriented programs
		Encapsulation • Modules • Procedures • Functions • Classes • Properties and methods	Unit 1: Principles of Computer Science, D2 Object-oriented programming Unit 16: Object-Oriented Programming, A1 Paradigm of object-oriented programming
	1.2	Programming languages	
		Programming language types • Procedural • Object orientation • Functional • Scripting	Unit 1: Principles of Computer Science, D1 Procedural programming Unit 15: Website Development, B1 Website design Unit 15: Website Development, C1 Client-side scripting languages

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 2: Design software solutions	2.1	Tools and techniques to design software solutions	
	2.1.1	Software Design Specifications (SDS)	
		Format, layout and templates for SDSs	
		Content of SDSs • Solution overview • Client requirements • Functional requirements • Non-functional requirements • Constraints	Unit 3: Planning and Management of Computing Projects, A2 Quality and deliverables
	2.1.2	Software Design Documentation (SDD)	

		SDD components
		• Data structure design
		• Data flow diagrams
		  ○ Level 0
		  ○ Level 1
		• Architectural design
		• Interface design
		• Algorithm designs
		  ○ Input
		  ○ Process
		  ○ Storage
		  ○ Output
			Unit 18: Relational Database Development, B2 Design documentation
			Unit 22: Systems Analysis and Design, A2 Systems analysis tools and techniques
			Unit 23: Systems Methodology, A3 Systems methodology techniques

		Software design tools
		• Data structure design
		• Data flow diagrams
		• Interface design
		  ○ Navigation diagram
		  ○ Wireframe
		  ○ Visualisation diagrams
		• Algorithm design
		  ○ Flowchart
		  ○ Pseudocode
			Unit 10: Human-Computer Interaction, B2 Schematic design documentation for a HCI solution
			Unit 18: Relational Database Development, B2 Design documentation
			Unit 22: Systems Analysis and Design, A2 Systems analysis tools and techniques
			Unit 23: Systems Methodology, A3 Systems methodology techniques

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
Topic Area 3: Create software solutions	3.1	Programming techniques to develop software solutions	
	3.1.1	Variables and constants	Unit 1: Principles of Computer Science, C1 Handling data within a program Unit 4: Software Design and Development Project, D1 Handling data in a program
		Naming conventions • Kebab case • Camel case	
		Data types • Integer • Floating point • String (or equivalent) • Boolean Manipulation • Converting between data types	Unit 1: Principles of Computer Science, C1 Handling data within a program Unit 16: Object Orientated Programming, C2 Constructs and techniques Unit 17: Mobile Apps Development, C2 Developing a mobile app
	3.1.2	Operators	Unit 1: Principles of Computer Science, C2 Arithmetic Operators Unit 4: Software Design and Development Project, D1 Handling data in a program Unit 4: Software Design and Development Project, D2 Arithmetic operations
		Arithmetical • Plus: +, minus: -, multiplication: *, divide: /, modulus: MOD, quotient: DIV, exponentiation: ^, brackets: (),	
		Boolean • AND, OR, NOT	
		Relational • Less than: <, less than or equal to: <=, greater than: >, greater than or equal to: >=, equal to: ==, not equal to: !=	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	3.1.3	Selection	
		Selection routines • If Then Else • Else If/Elself • End If • Case/Switch	Unit 1: Principles of Computer Science, B1 Structured English (pseudocode) Unit 4: Software Design and Development Project, D5 Control Structures Unit 16: Object-Oriented Programming, C2 Constructs and techniques Unit 17: Mobile Apps Development, C2 Developing a mobile app
	3.1.4	Iteration	Unit 1: Principles of Computer Science, B1 Structured English (pseudocode) Unit 4: Software Design and Development Project, D5 Control Structures Unit 16: Object-Oriented Programming, C2 Constructs and techniques Unit 17: Mobile Apps Development, C2 Developing a mobile app
		Fixed loop	Unit 1: Principles of Computer Science, B1 Structured English (pseudocode) Unit 4: Software Design and Development Project, D5 Control Structures
		Conditional loop • Pre-condition • Post condition	
	3.1.5	Encapsulation Modules Procedures Functions Classes • Properties and methods Libraries Parameter passing and return values • Byref and byval • Getters and setters	Unit 1: Principles of Computer Science, D2 Object-oriented programming Unit 16: Object-Oriented Programming, C1 Developing object-oriented programs

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
	3.1.6	File Manipulation Opening and closing files Reading from, and writing, to files Managing files	Unit 16: Object-Oriented Programming, C2 Constructs and techniques
	3.1.7	Data structures Arrays Linked lists Stacks Queues	Unit 2: Fundamentals of Computer Systems, D1 Data structures Unit 4: Software Design and Development Project, D6 Data structures
	3.1.8	Other constructs and error handling	

		Other constructs
		• Input
		  ○ User input
		  ○ From file
		• Output from module or procedure as input
		  ○ To file
		  ○ To user
		  ○ To procedure or module
		• Searching
		• Sorting	

		Error handling • Try and exception • Validation rules	Unit 4: Software Design and Development Project, D4 Validating data Unit 16: Object-Oriented Programming, B1 Designing object-oriented programs
	3.2	Technical skills to create software solutions	
		Development environments	
		Version control • Version number • Date amended • Amended by • Amends	

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Source code comments • Program headers ○ Overview of purpose of code segment • Syntax comments	Unit 4: Software Design and Development Project, C2 Code readability
		Source code indentation style	Unit 4: Software Design and Development Project, C2 Code readability
Topic Area 4: Test software solutions	4.1	Software solution testing	
		Testing methods • Dry run/trace table • Iterative • Test Plan	Unit 10: Human-Computer Interaction, C3 Testing and interactive solution Unit 16: Object-oriented Programming, C4 Test and review object-oriented programs
		Testing types • Requirements testing • Component testing • Integration testing • System testing	Unit 3: Planning and Management of Computing Projects, C4 Quality management
		Elements of software solutions to test • Input • Output • Navigation • Error handling • Data storage	
		Results analysis and remedial action	
Topic Area 5: Review and improve software solutions	5.1	Techniques to review the fitness for purpose of software solutions	Unit 20: Enterprise in IT C3 Create and present a start-up plan for an IT enterprise
		Suitability for meeting: • Client requirements • Functional requirements • Non-functional requirements	Unit 3: Planning and Management of Computing Projects, A2 Quality and deliverables

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OCR Level 3 Cambridge Advanced National (AAQ) in Computing: Application Development **Unit F166** **Software development** **OCR-set assignment** **Centre-assessed and OCR-moderated** **60 marks** **70 GLH (15 GLH for set assignment)** **This set assignment has three practical tasks**			Pearson BTEC Level 3 National in Computing (first teaching September 2017)
Topic Area title	**Teaching content reference**	**Teaching content title**	**Comparable teaching content**
		Maintainability	Unit 4: Software Design and Development Project, E3 Evaluation of the software Unit 16: Object-Oriented Programming, C4 Test and review object-oriented programs
		Robustness	Unit 4: Software Design and Development Project, E2 Evaluation of software testing
	5.2	Improvements to, and further developments for, software solutions	
	5.2.1	Constraints and improvements	
		Constraints • Programming constructs • Language chosen • Skills of the developer • Development environment	Unit 3: Planning and Management of Computing Projects, B3 Identifying assumptions and constraints Unit 22: Systems Analysis and Design, B3 Threats to system success
		Improvements • Code efficiency • HCI design principles • HCI accessibility principles • Data exchange • Security	Unit 10: Human-Computer Interaction, A4 Design principles Unit 17: Mobile Apps Development, C3 Testing a mobile app
	5.2.2	Further development opportunities	
		Portability of software solution	Unit 4: Software Design and Development Project, C2 Code readability Unit 16: Object-Oriented Programming, A1 Paradigm of object-oriented programming Unit 17: Mobile Apps Development, C3 Developing a mobile app
		Code reusability	Unit 4: Software Design and Development Project, C1 Design concepts Unit 16: Object-Oriented Programming, A1 Paradigm of object-oriented programming

Next steps

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1. Get to know the specification, sample assessment materials and teaching resources on our Cambridge Advanced National (AAQ) in Computing: Application Development.
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