OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

Cambridge TECHNICALS 2016

IT

Unit 6

Application design

M/507/5005

Guided learning hours: 60

Version 1 September 2015

LEVEL 3

UNIT 6: Application design

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Guided learning hours: 60

Essential resources required for this unit: none

This unit is internally assessed and externally moderated by OCR.

UNIT AIM

The world is increasingly reliant on applications that help individuals, businesses and organisations achieve specific activities or purposes. In this unit you will explore potential ideas for a new application and develop the fundamental design for it. You will then develop the designs for an application and how users will interact with it. The application that you design can be for any sector and for any purpose. You will have the opportunity to present your ideas, prototype them, and gain feedback before refining your design.

Besides the technical knowledge that you will gain about designing an application, you will also learn key transferable skills such as liaising with clients, questioning people effectively to gain the information you need to develop successful designs, and presenting your ideas to an audience and getting feedback from them.

This unit is mandatory to the application developer specialist pathway in the Level 3 Diploma suite of qualifications as it supports the development of skills, knowledge and understanding appropriate to a wide range of job roles requiring the development of applications in mobile technology, business software, graphics, game and web design.

TEACHING CONTENT

The teaching content in every unit states what has to be taught to ensure that learners are able to access the highest grades.

Anything which follows an i.e. details what must be taught as part of that area of content. Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples in their work, although these do not need to be the same ones specified in the unit content.

For internally assessed units you need to ensure that any assignments you create, or any modifications you make to an assignment, do not expect the learner to do more than they have been taught, but must enable them to access the full range of grades as described in the grading criteria.

Learning outcomes **The Learner will:**	**Teaching content** **Learners must be taught:**
1. Understand how applications are designed	1.1 Application development models divide the process of development into distinct phases. These vary depending on the model but all include, in some form stages, i.e.: • requirements analysis • design • implementation/coding • testing • deployment • maintenance 1.2 Characteristics and features of application development models, e.g.: • waterfall model • iterative model • agile development model • rapid application development (RAD) model • spiral model • prototype model
2. Be able to investigate potential solutions for application developments	2.1 Methods of gathering user requirements, i.e.: • client and user interviews e.g. o closed and open questions o leading questions o funnelling o structure to interviews o allowing thinking time for respondents o encouraging further detail or thought • observation of tasks • analysis of existing documents and systems

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	2.2 User requirements, i.e.: • functional requirements, e.g.: o what the application should do o data and information collected and used in the existing approach o data and information to be collected and used in the new application o functions or processing that the application should perform o outputs from the application o core functional requirements o optional functional requirements o user interface requirements including accessibility requirements Functional requirements may be divided into core requirements and optional requirements. • Constraints, e.g.: o hardware or platform constraints o software constraints o development constraints e.g. development software • limitations (e.g. scope of solution, aspects that will not be developed) 2.3 Possible solutions (e.g. different ways to address the identified user need) 2.4 Feasibility study, i.e.: • technological requirements • economic or financial costs of development and potential benefits • legal issues • operational impact • scheduling and resources (e.g. time scale for development, resources needed for development)
3. Be able to generate designs for application solutions	3.1 The use of diagrams to represent aspects of the design of an application, i.e.: • functional requirements (e.g. use case diagrams) • processing and data handling (e.g. flowcharts, data flow diagrams, class diagrams, object diagrams, entity relationship diagrams) • user interface designs (e.g. wireframe diagrams and graphical mock-ups)

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	3.2 Standardisation of design, e.g.: • standard algorithms or processes • modularisation • cross-platform standards • standard protocols • standard interface widgets (appearance of buttons, dropdown menus, hyperlinks) • common user interface layouts, icons and labels throughout application 3.3 Advantages of proposed solution, e.g.: • automation • operational efficiency • cost-effectiveness • globalisation • improved communication • customisation and adaptability • increased markets • ease of access for customers • new marketing opportunities • customer or user information • real-time information • new employment 3.4 Disadvantages of proposed solution, e.g.: • financial cost • changeover costs and risks • training needs • lack of job security and job losses • security issues • privacy issues • potential customer concerns • loss of personal contact
4. Be able to present application solutions to meet client and user requirements	4.1 Pitch content, e.g.: • what is the proposed design solution? • who would be interested in it? • why is it a valuable idea? • what makes it effective? 4.2 Effective pitch delivery, e.g.: • courtesy • speak clearly and concisely • be aware of body language • accurate spelling, punctuation and grammar • engage the audience • be honest • be positive

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	4.3 Effective responses to questions, e.g.: • anticipating likely questions • giving a positive response • seeking clarification where necessary • recognising improvements and responding in a way that suggests how these can be incorporated 4.4 Prototyping, i.e.: • purpose of prototyping • features of prototypes • interviewing and questioning techniques • development formats 4.5 Aspects for user feedback, i.e.: • meeting core requirements and any optional requirements • effectiveness (e.g. how well the design meets each requirement) • usability (e.g. how easy it is to carry out actions, readability and clarity of displays or output to user, navigability) • learnability (e.g. how easy it is to learn how to use the application, clarity of the function of different components or elements) 4.6 Analysis of client feedback and discussion, i.e.: • identify distinct points in feedback • identify required changes • identification and implementation of improvements based on feedback

GRADING CRITERIA

LO	Pass	Merit	Distinction
	The assessment criteria are the Pass requirements for this unit.	To achieve a Merit the evidence must show that, in addition to the pass criteria, the candidate is able to:	To achieve a Distinction the evidence must show that, in addition to the pass and merit criteria, the candidate is able to:
1. Understand how applications are designed	P1: Describe the key stages in application development	M1: Compare and contrast different application development models	
2. Be able to investigate potential solutions for application developments	P2*: Gather client requirements for an application solution *(*Synoptic assessment from Unit 1 Fundamentals of IT, Unit 2 Global information and Unit 3 Cyber security)*	M2: Conduct a feasibility study of different solutions for the client requirements	
3. Be able to generate designs for application solutions	P3: Illustrate the requirements, functioning, and designs of an application solution, using diagrams		D1: Justify design choices identifying the advantages and disadvantages of each
4. Be able to present application solutions to meet client and user requirements	P4: Present a proposed design solution to the identified client	M3: Negotiate adaptations with the identified client to refine the design solution	
	P5: Create a prototype based on the design solution		
	P6: Gather client and/or user feedback on the prototype		D2: Implement improvements based on the analysed client and/or user feedback

SYNOPTIC ASSESSMENT

When learners are taking an assessment task, or series of tasks, for this unit they will have opportunities to draw on relevant, appropriate knowledge, understanding and skills that they will have developed through other units. We've identified those opportunities in the grading criteria (shown with an asterisk). Learners should be encouraged to consider for themselves which skills/knowledge/understanding are most relevant to apply where we have placed an asterisk.

ASSESSMENT GUIDANCE

LO1 Understand how applications are designed

P1: Learners must describe the key activities of different stages in application development. They should describe these for a named application development model. This can be in the form of a report, presentation with detailed speaker notes, user guide or tutor resource.
M1 Learners should consider similarities and differences between different application development models. They should also explain how the different application development models are appropriate for different types of project. This can be an extension of P1 or presented as a hand out for learners, presentation or report.

LO2 Be able to investigate potential solutions for application developments

P2: Learners are required to establish the requirements of the client for an application development. Learners must document the specific requirements, together with constraints and limitations on the solution or its development.
M2: Based on the client requirements established in P2, learners should identify potential solutions and undertake a feasibility study. The feasibility study should consider the client and/or user need for which the application solution is to be designed. The study must consider whether the proposed solutions are technologically possible, estimates of the likely costs of development, any laws that will apply to the proposed solutions or their development, how well each of the proposed solutions meets the identified needs of the client, the impact that each will have, and the resources required for development of each solution and likely timescales. The evidence will be the document feasibility study and proposed solutions.

LO3 Be able to generate designs for application solutions

P3: Learners must provide a series of annotated diagrams that describe their proposed application design. These should include diagrams to show the scenarios in which the application will be used with functional requirements, process and data handling and user interface designs. The evidence will be the annotated diagrams.
D1: Learners should justify their design choices, outlining the advantages and disadvantages of each. The evidence for this could be a report, presentations, or an extension to P3.

LO4 Be able to present application solutions to meet client and user requirements

P4: Learners must present their proposed design solution to the client. The presentation format must be 'fit for purpose' and they should have undertaken appropriate quality checks. It should be sufficiently detailed to enable the client to understand the key features of their proposed solution. Evidence could be in the form of a formal presentation that is either videoed or with detailed speaker notes, or could be a formal report.
M3: Learners must provide evidence of their meeting, discussion, or communication with the client. They should identify clearly the adaptations that the client wanted and what was agreed, with clear statements of the refinements to the solution design and possible implications.
Learners should make changes to their designs following the client review and negotiations. Changes should be clearly documented.
P5: Learners should create a prototype of the chosen design solution. Evidence will be the actual prototype of the design.
P6: Learners must collect client and/or user feedback. They should provide evidence of collecting feedback together with a summary of the outcomes from the feedback.
D2: Learners should analyse client and/or user feedback to identify any improvements required. They must provide evidence of implementing improvements to the design based on their analysis of user feedback. The evidence will be the analysis and implemented improvements to the prototype and/or design documentation.

Feedback to learners: you can discuss work-in-progress towards summative assessment with learners to make sure it's being done in a planned and timely manner. It also provides an opportunity for you to check the authenticity of the work. You must intervene if you feel there's a health and safety risk.

Learners should use their own words when producing evidence of their knowledge and understanding. When learners use their own words it reduces the possibility of learners' work being identified as plagiarised. If a learner does use someone else's words and ideas in their work, they must acknowledge it, and this is done through referencing. Just quoting and referencing someone else's work will not show that the learner knows or understands it. It has to be clear in the work how the learner is using the material they have referenced **to inform their** thoughts, ideas or conclusions.

For more information about internal assessment, including feedback, authentication and plagiarism, see the centre handbook. Information about how to reference is in the OCR *Guide to Referencing* available on our website: http://www.ocr.org.uk/i-want-to/skills-guides/.

EMPLOYABILITY SKILLS

Employability skills	Learning outcome
Communication	P1, P2, P3, P4, P6, M1, M2, M3, D1
Problem solving	P2, P3, P4, P5, M2, M3, D1, D2
Time management	P2, P3, P4, P5, P6, M2, M3, D2
Critical thinking	M2, M3, D1, D2
Negotiation	P2, P6
Decision making	P3, P4, P5, M2, M3, D1, D2

MEANINGFUL EMPLOYER INVOLVEMENT - a requirement for the Diploma (Tech Level) qualifications

The 'Diploma' qualifications have been designed to be recognised as Tech Levels in performance tables in England. It is a requirement of these qualifications for centres to secure for every learner employer involvement through delivery and/or assessment of these qualifications.

The minimum amount of employer involvement must relate to at least one or more of the elements of the mandatory units. This unit is a mandatory unit in the Application Developer pathway and the Application Data Technician pathway.

Eligible activities and suggestions/ideas that may help you in securing meaningful employer involvement for this unit are given in the table below.

Please refer to the *Qualification Handbook* for further information including a list of activities that are not considered to meet this requirement.

Meaningful employer involvement	Suggestion/ideas for centres when delivering this unit
1. Learners undertake structured work-experience or work-placements that develop skills and knowledge relevant to the qualification.	Learners on work experience placements could investigate the possibility of designing a solution for a user need in their work placement.
2. Learners undertake project(s), exercises(s) and/or assessments/examination(s) set with input from industry practitioner(s).	Employers could be involved in setting the scenario and context for the design of a solution to specified user need. Local businesses could be involved in reviewing proposed designs for individual students or groups of students. If this is prior to finalisation of designs, feedback from the businesses could then form the basis for learners to carry out an appropriate evaluation and modification of the application designs.
3. Learners take one or more units delivered or co-delivered by an industry practitioner(s). This could take the form of master classes or guest lectures.	Industry practitioners could provide input into sessions on: • gathering client and user requirements • feasibility studies • effective questioning of clients • making a business 'pitch' • prototyping and gathering user feedback Local businesses could provide input into sessions on how to make a successful pitch of an idea to business leaders.

To find out more
ocr.org.uk/it
or call our Customer Contact Centre on **02476 851509**

Alternatively, you can email us on **vocational.qualifications@ocr.org.uk**

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