OCR
Oxford Cambridge and RSA

Unit Title:	**Designing and developing procedural computer programs**
OCR unit number:	8
Unit reference number:	T/601/3311
Level:	4
Credit value:	15
Guided learning hours:	90

Evidence for this unit can only be achieved through actual work in a work environment. Simulation is not permissible for any competence based unit.

Unit aim

The aim of this unit is that learners will:

- Design procedural programs to address loosely-defined problems
- Produce a working procedural program which meets the design specification
- Develop procedural programs that reflect established programming and software engineering practice
- Develop test strategies and apply these to procedural programs
- Develop design documentation for use in program maintenance and end-user documentation

Learning Outcomes	**Assessment Criteria**	**Knowledge, understanding and skills**
The Learner will: 1 Design procedural programs to address loosely-defined problems	**The Learner can:** 1.1 Identify and structure procedures and functions to address problems 1.2 Select and use library functions and procedures 1.3 Structure the design with regard to coupling and cohesion 1.4 Specify the behaviour of functions and procedures to allow efficient implementation, selecting appropriate data types, data and file structures and algorithms 1.5 Record the design using well-established notations	• structure procedures and functions and how they are used to address problems • library functions and procedures • how to structure a coupled and cohesive structure to the design • the behaviours of functions and procedures which allows the efficient selection of appropriate: - data types - data - file structures - algorithms • how to record the designs using well-established notations

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
2 Produce a working procedural program which meets the design specification	2.1 Make effective use of basic programming language features and programming concepts to implement a program that satisfies the design specification 2.2 Make effective use of the features of the programming environment 2.3 Make effective use of user interface components in the implementation of the program 2.4 Make effective use of a range of debugging tools	• basic programming: - language features - concepts • the features of the programming environment and how they can be used effectively • user interface components and how they can be effectively used • the range of debugging tools and how they are used
3 Develop procedural programs that reflect established programming and software engineering practice	3.1 Apply standard naming, layout and comment conventions 3.2 Apply appropriate data validation and error handling techniques	• the conventions for: - naming - layout - comments • data validation and error handling techniques and how they are applied
4 Develop test strategies and apply these to procedural programs	4.1 Develop and apply a test strategy consistent with the design identifying appropriate test data 4.2 Apply regression testing consistent with the test strategy 4.3 Use appropriate tools to estimate the performance of the program	• how to devise and apply test strategies consistent with the design • how to apply regression testing • the tools available to estimate the performance of a program
5 Develop design documentation for use in program maintenance and end-user documentation	5.1 Record the final state of the program in a form suitable for subsequent maintenance 5.2 Provide end-user documentation that meets the user's needs	• the development of design documentation to support: - maintenance - end-user needs

Assessment

It is the assessor's role to satisfy themselves that evidence is available for all performance, knowledge and evidence requirements before they can decide that a candidate has finished a unit. Where performance and knowledge requirements allow evidence to be generated by other methods, for example by questioning the candidate, assessors must be satisfied that the candidate will be competent under these conditions or in these types of situations in the workplace in the future. Evidence of questions must include a written account of the question and the candidate's response. Observations and/or witness testimonies must be detailed and put the evidence into context i.e. the purpose of the work etc.

In addition to the recognition of other qualifications, candidates may claim accreditation of prior achievement for any of the elements assessment criteria or complete units of competence, as long as the evidence fully meets the criteria and the candidate can prove that it is all their own work. It is important also that assessors are convinced that the competence claimed is still current. If the assessors have some doubts, they should take steps to assess the candidate's competence directly. An initial assessment of candidates is recommended.

All the learning outcomes and assessment criteria must be clearly evidenced in the submitted work, which is externally moderated by OCR.

Results will be Pass or Fail.

Guidance on assessment

Evidence can reflect how the candidate carried out the process or it can be the product of a candidate's work or a product relating to the candidate's competence.

For example: The process that the candidate carries out could be recorded in a detailed personal statement or witness testimony. It is the assessor's responsibility to make sure that the evidence a candidate submits for assessment meets the requirements of the unit.

Questioning the candidate is normally an ongoing part of the assessment process, and is necessary to:

- test a candidate's knowledge of facts and procedures
- check if a candidate understands principles and theories *and*
- collect information on the type and purpose of the processes a candidate has gone through
- candidate responses must be recorded

It is difficult to give a detailed answer to how much evidence is required as it depends on the type of evidence collected and the judgement of assessors. The main principles, however, are as follows: for a candidate to be judged competent in a unit, the evidence presented must satisfy:

- all the items listed, in the section 'Learning Outcomes'
- all the areas in the section 'Assessment Criteria'

The quality and breadth of evidence provided should determine whether an assessor is confident that a candidate is competent or not. Assessors must be convinced that candidates working on their own can work independently to the required standard.

Additional information

For further information regarding administration for this qualification, please refer to the OCR document '*Admin Guide: Vocational Qualifications'* on the OCR website www.ocr.org.uk .