OCR
Oxford Cambridge and RSA

Unit Title:	**Creating a procedural computer program**
OCR unit number:	7
Unit reference number:	R/601/3171
Level:	3
Credit value:	12
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:

- Implement a software design using procedural programming
- Refine a procedural program to improve quality
- Test the operation of a procedural program
- Document a computer program

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Implement a software design using procedural programming	**The Learner can:** 1.1 Identify the program modules and data and file structures required to implement a given design 1.2 Select, declare and initialise variable and data structure types and sizes to implement design requirements 1.3 Select and implement control structures to meet the design algorithms 1.4 Select and declare file structures to meet design file storage requirements 1.5 Select and use standard input/output commands to implement design requirements 1.6 Make effective use of operators and predefined functions	• the different components of a procedure program • the use of programme modules • appropriate data and file structures • the function of variable types such as: - local - global • data structures for each variable such as: - arrays - lists - queues - stacks • how to select, declare and initialise variable and data structure types and sizes • the role of control structures and how to implement them

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
	1.7 Correctly use parameter passing mechanisms	• appropriate file structures used for file storage and be able to implement them within a design • a range of operators and pre-defined functions • the different methods used for parameter passing and use them correctly e.g.: - call/pass by value - call/pass by reference
2 Refine a procedural program to improve quality	2.1 Use an agreed standard for naming, comments and code layout 2.2 Define user functions to replace repeating code sequences 2.3 Implement data validation for inputs 2.4 Identify and implement opportunities for error handling and reporting	• naming conventions used within programming and be able to explain the key features • the purpose of comments in programming and how to implement them • the appropriate layout for programme code and be able to explain why good layout is important • user functions to replace repeating code sequences • a range of data validation methods for inputs • what mechanisms are available for error handling and reporting and be able to implement them
3 Test the operation of a procedural program	3.1 Make effective use of available debugging tools 3.2 Prepare a test strategy 3.3 Select suitable test data and determine expected test results 3.4 Record actual test results to enable comparison with expected results 3.5 Analyse actual test results against expected results to identify discrepancies 3.6 Investigate test discrepancies to identify and rectify their causes	• how to identify appropriate debugging tools and how they are used • how to develop appropriate test plans which will fully test the functionality of the program and able to identify the following: - a range of valid tests - the test data to use - the expected results from the test data • how to compare the actual test results with the expected results and: - identify discrepancies - identify how to rectify the problem

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
4 Document a computer program	4.1 Create documentation to assist the users of a computer program 4.2 Create documentation for the support and maintenance of a computer program	• how to create documentation which will aid a variety of users e.g.: - end users of the computer program - support and maintenance of the computer program

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 ie 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 .