Unit Title:	**Creating an Event-Driven Computer Program**
OCR unit number	10
Level:	3
Credit value:	12
Guided learning hours:	90
Unit reference number:	F/601/3179

Candidates undertaking this unit must complete real work activities in a work environment. Simulation is only allowed in exceptional circumstances (please refer to the centre handbook for further details).

Unit purpose and aim

This unit covers more advanced concepts of event-driven computer languages and their use to implement, refine and test computer programs.

Learning Outcomes	**Assessment Criteria**	**Knowledge, understanding and skills**
The Learner will: 1 Implement a software design using event-driven programming	**The Learner can:** 1.1 Identify the screen components 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 assign properties to screen components to implement design requirements 1.4 Select and associate events (including parameter passing) to screen components to implement design requirements 1.5 Implement event handling using control structures to meet the design algorithms 1.6 Select and declare file structures to meet design file storage requirements 1.7 Select and use standard input/output commands to implement design requirements 1.8 Make effective use of	Candidates must have an understanding of: • the different components of an event driven program including: - variables - data structures • selecting, declaring and initialising variable and data structure types and sizes to meet given requirements • screen components appropriate to the design. • appropriate data and file structures appropriate to the given design. • properties associated with screen components • selecting and assigning properties to screen components • the concept of events and how to select and assign events (including parameter passing) to screen components • control structures and how they are used to implement event handling • appropriate file structures used

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
	operators and predefined functions 1.9 Make effective use of an Integrated Development Environment (IDE) including code and screen templates	for file storage and be able to implement them within a design • input/output commands and how to use them within the design • a range of operators and pre-defined functions • the use of an Integrated Development Environment (IDE) including the use of code and templates
2 Refine an event-driven 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	Candidates must understand: • 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 an event-driven program	3.1 Make effective use of the debugging facilities available in the IDE 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	Candidates must understand: • the debugging facilities in the IDE • how to develop appropriate test plans which will fully test the functionality of the program. They should be able to identify the following: - a range of valid tests - the test data to use - the expected results from the test data Candidates must be able 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 an event-driven program	4.1 Create on-screen help to assist the users of a computer program 4.2 Create documentation for the support and maintenance of a computer program	Candidates must know how to create documentation which will aid the support and maintenance of the computer program. Candidates must know how to create on-screen help facilities to support a variety of end users.

Assessment

Candidates undertaking this unit must complete real work activities in order to produce evidence to demonstrate they are occupationally competent. Real work is where the candidate is engaged in activities that contribute to the aims of the organisation by whom they are employed, for example in paid employment or working in a voluntary capacity.

Simulation is only allowed for aspects of units when a candidate is required to complete a work activity that does not occur on a regular basis and therefore opportunities to complete a particular work activity do not easily arise. When simulation is used, assessors must be confident that the simulation replicates the workplace to such an extent that candidates will be able to fully transfer their occupational competence to the workplace and real situations.

Internal quality assurance personnel must agree the use of simulated activities before they take place and must sample all evidence produced through simulated activities.

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.

All of the assessment criteria in the unit must be achieved and clearly evidenced in the submitted work, which is externally assessed by OCR.

Evidence for the knowledge must be explicitly presented and not implied through other forms of evidence.

Evidence requirements

All aspects of the assessment criteria must be covered and evidence must be available that shows where and how the assessment criteria have been achieved.

Assessment Criterion 1

For a given scenario a candidate must identify the functionality of the programme and intended end user.

A plan of their program to include:

- selection, declaration and initialisation of variables
- data and file structure types and sizes including declaration

- screen components and appropriate associated properties
- events (including parameter passing) to be associated with the screen components
- how control structures will be used to implement event handling
- input/output commands
- operators and predefined functions

Candidates must create their program design using the code and templates available within their IDE.

Assessment Criterion 2

Candidates must provide:

Printouts of their code confirming that they have used an agreed standard for:

- naming conventions
- using comments
- code Layout

An explanation of the following:

- key features of naming conventions
- the purpose of comments in programming
- why good code layout is important

Candidates must identify and implement the following:

- user functions to replace repeating code sequences
- data validation methods for inputs
- error handling and reporting mechanisms

Assessment Criterion 3

Candidates must:

Identify and use the debugging tools that are available in the IDE.

Prepare detailed test plans identifying and selecting the following:

- a range of valid tests and the associated test data
- expected test results

Implement the test plan and provide evidence of the following:

- actual test results
- analysis of test results against expected results
- plans for the rectification of the problems identified

Assessment Criterion 4

Candidates must:

Produce program documentation to assist the support and maintenance of the computer program

Provide evidence of the on-screen help they have created which will meet the needs of a variety of end-users.

Candidates are encouraged to choose activities which will allow them to cover all or a majority of the criteria at one time. It is not necessary to use different activities for each element of the criterion.

Guidance on assessment and evidence requirements

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' (A850)* on the OCR website www.ocr.org.uk .