Unit Title:	**Creating an Event-Driven Computer Program**
OCR unit number	9
Level:	2
Credit value:	7
Guided learning hours:	60
Unit reference number:	T/601/3177

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 introduces the fundamental concepts of event-driven computer languages and their use to implement, refine and test a computer program.

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Implement software using event-driven programming	**The Learner can:** 1.1 Declare and initialise variable and data structure types and sizes to implement given requirements 1.2 Assign properties to screen components 1.3 Associate events, including parameter passing, to screen components 1.4 Implement event handling using control structures 1.5 Declare file structures 1.6 Use standard input/output commands to implement design requirements 1.7 Use of operators and predefined functions 1.8 Use an Integrated Development Environment (IDE)	Candidates must: • understand the main characteristics of software components: - data structure - input - output - process • understand the function of variable types such as: - local - global • know how to define data structures for each variable such as: - arrays - lists - queues - stacks Candidates must: • have an understanding of screen components and how to assign properties to them. • know how to associate the following to screen components:

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
		- events - parameter passing • know how to implement event handling using control structures. • understand the terminology file structures and know how to declare them. • know of and be able to use a range of standard input/output commands. • know a range of operators and pre-defined functions • know how to use an Integrated Development Environment (IDE)
2 Refine an event-driven program to improve quality	2.1 Follow an agreed standard for naming, comments and code layout 2.2 Implement data validation for inputs 2.3 Implement error handling and reporting 2.4 Create documentation for the support and maintenance of a computer program	Candidates must have an understanding of: • need for an agreed standard for naming, comments and code layout • implementing data validation on data input • implementing appropriate error handling and reporting • documentation requirements to support the maintenance of a computer program.
3 Test the operation of an event-driven program	3.1 Use the debugging facilities available in the IDE 3.2 Determine expected test results from given test data 3.3 Compare actual test results against expected results to identify discrepancies	Candidates must have an understanding of: • appropriate debugging tools and how they are used • 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 • comparing the actual test results with the expected results and: - identify any discrepancies - identify how to rectify the problem

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
- control structures
- file structure
- the properties assigned to screen components
- the events and parameter passing associated with screen components
- control structures used to implement event handling
- input/output commands
- operators and predefined functions
- use of an Integrated Development Environment
- the evidence should emphasise the use of an IDE

Candidates must create their program design.

Assessment Criterion 2

Candidates must provide printouts of their code confirming that they have used an agreed standard for:

- naming
- using comments
- code Layout

Candidates must provide 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:

- data validation for inputs
- error handling and reporting mechanisms

Candidates must produce user documentation to assist a range of users from basic to more experienced.

Assessment Criterion 3

Candidates must:

Identify the debugging tools available within the IDE and explain how they will be used.

- identify a range of valid tests
- describe the expected results from given test data
- provide evidence of using the test data to obtain actual results and compare them with their expected results
- compare the actual results to expected results and identify any discrepancies and describe how the problems may be resolved

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 .