

## SQA Advanced Unit Specification

### General information for centres

**Unit title:** Computer Operating Systems 2

**Unit code:** HR79 48

**Unit purpose:** This Unit is designed to enable candidates to gain an understanding of command line interface desktop computer operating systems. Candidates will learn how to work in this type of operating system environment and carry out file management and create automated files. It is intended for candidates undertaking a SQA Advanced Qualification in Computing or related discipline who require knowledge and skills in working in a command line interface operating system function and operation.

On completion of the Unit, the candidate should be able to:

1. Carry out file management tasks using a command line environment.
2. Perform tasks using a command line environment.
3. Create automated operations using a command line environment.

**Credit points and level:** 1 SQA Credit at SCQF level 8: (8 SCQF credit points at SCQF level 8)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from National 1 to Doctorates.*

**Recommended prior knowledge and skills:** Access to this unit will be at the discretion of the Centre. Candidates should have relevant experience using a computer operating system. Candidates may also have completed the SQA Advanced Unit *HR77 47 Multi User Operating Systems*.

**Core skills:** There may be opportunities to gather evidence towards core skills in this Unit, although there is no automatic certification of core skills or core skills components.

**Context for delivery:** If this Unit is delivered as part of a group award, it is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

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**Assessment:** All outcomes in this unit are assessed by a number of practical tasks. It is recommended that Outcome 1 be assessed before Outcomes 2 and 3. It may be possible to combine tasks for Outcome 2 and 3 into one instrument of assessment.

All outcomes are open book and should be carried out under supervised conditions. The assessor must ensure that all work carried out is the candidate's own. The assessor and the candidate must sign any pro-forma or log to confirm that the work is the candidate's own.

## **Unit specification: statement of standards**

**Unit title:** Computer Operating Systems 2

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

### **Outcome 1**

Carry out file management tasks using a command line environment

#### **Knowledge and/or skills**

- ◆ Correctly starting and exiting the command line environment
- ◆ Exploring and creating hierarchical file structures
- ◆ Copying, moving and renaming files and folders
- ◆ Using attributes to protect files and folders
- ◆ Redirecting output

#### **Evidence requirements**

Evidence to satisfy this outcome is an observation checklist signed by the assessor on completion. This open book assessment must be undertaken in supervised conditions. The checklist must cover all of the Knowledge and/or Skills section.

A candidate's performance is judged to be satisfactory where s/he:

- ◆ Demonstrates the ability to start the command line environment of an operating system correctly and to exit the system safely.
- ◆ Demonstrates ability to navigate within a hierarchical file structure and create folders using the command line environment. The file structure should include at least three levels.
- ◆ Demonstrates ability within a command line environment to copy, move and rename individually specified files, groups of files and folders.
- ◆ Demonstrates ability within a command line environment to view and alter file and folder attributes or access permissions.
- ◆ Demonstrates ability within a command line environment to redirect the output from the screen to a device or file.

The evidence for this assessment must be recorded on a pro-forma, which requires the candidate to detail the exact commands used for all tasks. The pro-forma must show the candidate's name and the date the assessment was undertaken. The assessor and the candidate must sign the pro-forma to confirm that the work is the candidate's own.

This open book assessment should be undertaken in supervised conditions.

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### **Assessment guidelines**

Elements may be assessed individually as specific tasks or may be combined as appropriate into more complex exercises.

Use should be made, wherever possible, of more complex commands and switches that provide facilities to modify whole directory trees in a single operation.

If the environment used allows access permissions to be set for entire folders or directories then this feature should be used.

Where the candidate is learning in a workplace situation, care should be taken to ensure that it could provide sufficient opportunity to meet the evidence requirements of the Unit. It may be appropriate for the assessor concerned to ensure beforehand that a particular workplace will allow candidates to generate sufficient and suitable evidence. Arrangements for adequate supervision will also be required.

### **Outcome 2**

Perform tasks using a command line environment

#### **Knowledge and/or skills**

- ◆ View system settings
- ◆ Edit system files
- ◆ Back-up and restore system files
- ◆ Add and modify user accounts
- ◆ Use online help

#### **Evidence requirements**

Evidence to satisfy this outcome is an observation checklist signed by the assessor on completion. This open book assessment must be undertaken in supervised conditions. The checklist must cover all of the Knowledge and/or Skills section.

A candidate's performance can be judged to be satisfactory where s/he:

- ◆ demonstrates ability within a command line environment to view and alter system settings
- ◆ demonstrates ability within a command line environment to view system files and carry out simple editing of system files
- ◆ demonstrates ability within a command line environment to back-up and restore selected system files to a specified location
- ◆ demonstrates ability within a command line environment to add a single user and a group of users to the system (This task may not be possible in certain platforms)
- ◆ demonstrates ability within a command line environment to modify a user account by resetting the password (This task may not be possible in certain platforms)
- ◆ demonstrates ability to use the online help effectively within a command line environment

The evidence for this assessment must be recorded on a work log. The log requires the candidate to detail how the work was carried out and the exact commands used for all tasks. The log must show the candidate's name and the date the assessment was undertaken. The assessor and the candidate must sign the log to confirm that the work is the candidate's own.

This assessment should be undertaken in supervised conditions and may be open book.

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### Assessment guidelines

Where the candidate is learning in a workplace situation, care should be taken to ensure that it could provide sufficient opportunity to meet the evidence requirements of the Unit. It may be appropriate for the assessor concerned to ensure beforehand that a particular workplace will allow candidates to generate sufficient and suitable evidence. Arrangements for adequate supervision will also be required.

Elements may be assessed individually as specific tasks or may be combined as appropriate into exercises which are more complex. Elements of this outcome may also be combined with outcome 3 (Assessment Part 1).

System settings may involve the inclusion or alteration of a path to allow legacy software to run.

Complex switches to time stamp and archive the back-up may be used where possible.

As this assessment is open book students must be encouraged to use the help system for information and available switches for the commands used.

### Outcome 3

Create automated operations using a command line environment

#### Knowledge and/or skills

- ◆ Create a batch file or shell script to carry out automated tasks
- ◆ Make use of parameter passing
- ◆ Use conditional statement
- ◆ Use loops
- ◆ Document and test the task

#### Evidence requirements

This outcome should be assessed in two parts with both assessments being open book.

#### Assessment Task1

Evidence to satisfy this part of the outcome will be recorded on a checklist. This will be supported by a hard copy listing of files created. The candidate will be required to demonstrate the working script or file. The demonstration should be carried out to satisfy previously unseen tests. The result of the demonstration should be recorded on the checklist. The checklist must show the candidate's name and the date the assessment was undertaken. The assessor and the candidate must sign the checklist to confirm that the work is the candidate's own.

A candidate's performance can be judged to be satisfactory where s/he:

- ◆ Demonstrates ability within a command line environment to write a batch file or shell script covering all of the bulleted points in the Knowledge and/or Skills Section.

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### Assessment Task 2

Evidence to satisfy this part of the outcome will be provided by a log. The log must detail steps carried out in the preparation of the task. The completed installation must be tested to ensure that all elements of the automated task work satisfactorily. Details of testing carried out must be recorded on the log. The log should be supported by a hard copy listing of the file. The log must show the candidate's name and the date the assessment was undertaken. The assessor and the candidate must sign the log to confirm that the work is the candidate's own.

A candidate's performance can be judged to be satisfactory where s/he:

- ◆ Demonstrates the ability to document the development of the task undertaken in Assessment Task 1.
- ◆ Demonstrates the ability to test the development of the task undertaken in Assessment Task 1.

This assessment should be undertaken in supervised conditions and is open book.

### **Assessment guidelines**

Where the candidate is learning in a workplace situation, care should be taken to ensure that it could provide sufficient opportunity to meet the evidence requirements of the Unit. It may be appropriate for the assessor concerned to ensure beforehand that a particular workplace will allow candidates to generate sufficient and suitable evidence. Arrangements for adequate supervision will also be required.

A possible assessment may be to create a script to perform an automated (unattended) installation of an operating system. The script may be in the form of an answer file, if this is created automatically the candidate must perform some editing to satisfy the needs of this part of the outcome.

Elements may be assessed individually as specific tasks or may be combined as appropriate into one more complex script.

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### Administrative Information

<b>Unit code:</b>	HR79 48
<b>Unit title:</b>	Computer Operating Systems 2
<b>Superclass category:</b>	CD
<b>Date of publication:</b>	August 2017
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**FURTHER INFORMATION:** Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our [Centre Feedback Form](#).

### SQA Advanced Unit specification: support notes

#### Unit title: Computer Operating Systems 2

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

#### Guidance on the content and context for this Unit

This unit is designed to give the candidate an understanding of the use of a Command Line Interface (CLI) as an alternative and often more efficient means of carrying out operating system tasks.

As modern operating systems all feature a Graphical User Interface (GUI), candidates may be unaware of the alternative interface offered by operating systems. Candidates should be made aware that many IT professionals still make use of the CLI and that for many tasks it is a more straightforward option.

The Unit has been designed to offer the candidate an insight to appropriate uses of the command line environment in today's IT support environment.

The choice of operating system used in delivery of this unit is at the discretion of the centre. The unit has been written in general terms; suitable choices would be current versions of Windows (command prompt\*) and UNIX (Linux). Where possible this unit should be delivered in a mixed operating system context giving the candidate a wider experience. It is expected that the unit will be carried out in a network environment although it could easily be carried out on a stand-alone computer.

There is no necessity to install a CLI operating system. Centres may feel that a demonstration of an installation and configuration of a CLI may be beneficial in teaching. Using a script to carry out an automated installation covers a task commonly used in industry.

Outcome 1 covers file management tasks. Candidates should create a structure of at least three levels and perform the tasks within the structure. Candidates should be aware of the difference between copy and move. Use should be made of more complex copy commands such as XCOPY or equivalent with appropriate switches in Windows.

Outcome 2 covers common tasks that would be carried out during normal system operations. Candidates should be familiar with using the command line to view system settings, at the simplest level this could be to view an IP address and request a change if DHCP is used.

Editing of system files should be carried out where there is no requirement for candidates to make major changes. Candidates should be familiar with system files and what should be included within them. Such system files should be selected and backed up; the assessor should then remove or alter a system file, which should then be restored with the back-up copy. Where possible the back-up should make use of the file attributes in particular the archive bit and time stamps.

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\* A centre may wish to revert back to previous version of MSDOS (eg 6.2) to allow the candidate to enjoy the power of these O/S commands with the variety of switches available



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The script created in Outcome 3 should include some decision making such as file existence; acting on user or system input, calling other programs etc. If the environment is suitable (a network) it may be possible to create a logon scripts.

### **Guidance on the delivery and assessment of this Unit**

This Unit is likely to form part of a group award that is primarily designed to provide candidates with technical or professional knowledge and skills related to a specific occupational area. Candidates require a significant level of prior competence which will be gained from units such as *HR77 47 Multi User Operating Systems*.

Evidence for all the knowledge and/or skills in the unit will be assessed by a number of practical tasks. All knowledge and skills bulleted points must be assessed. These could be assessed either by a separate instrument of assessment for each Outcome or by a single, workbook style instrument containing a number of assessment tasks. Candidates will be required to submit a log of each assessment task and should be observed by an assessor to ensure the work is valid. The Assessment guidelines given for each Outcome provide sufficient detail on assessment of the Unit. All assessment for the Unit should be carried out in supervised conditions.

### **Open learning**

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance.

A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes. For further information and advice, please see *Assessment and Quality Assurance for Open and Distance Learning* (SQA, February 2001 — publication code A1030).

### **Equality and inclusion**

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

### General information for candidates

#### Unit title: Computer Operating Systems 2

This unit will provide an introduction to the command line environment of a modern operating system. You will gain experience of operating a computer using a command line environment such as provided by Windows or UNIX (Linux).

On completion of this unit, you will be able to:

- ◆ Carry out file management tasks using a command line environment
- ◆ Perform tasks using a command line environment
- ◆ Create automated operations using a command line environment

This unit is practical in nature. All knowledge and skills will be assessed by practical tasks. These may be presented as a series of single tasks or may be grouped to cover a number of skills areas.

Outcome 1 covers file management tasks. You will be familiar with the tasks in a graphical environment; in this outcome you will learn the commands required to carry out the tasks in a command line environment.

Outcome 2 covers operational tasks. This will introduce you to some system files. You will view the contents and make changes. You will also create backups and carry out restoration. The addition of users and modifying user accounts may also be included in this outcome.

Outcome 3 involves the creation of a batch file or shell script. These files are created to carry out some automated or repetitive tasks.

All assessments will be carried out in supervised conditions but will be open book. You will make use of online help extensively in this unit.