

3.2 Unit AS 2: Developing ICT Solutions

This unit allows candidates to develop practical aspects of the subject and to apply their knowledge and understanding of ICT. Candidates will be expected to produce an ICT solution to task-related problems. The tasks should be self-contained problems with limited scope.

The solutions are likely to be implemented using advanced features of two standard generic application software packages, but the candidates are encouraged to use other software tools and objects as appropriate to complete their solutions.

The task could be set by the teacher who would then act as the end user, or it could be identified by the candidate in conjunction with the teacher and involve real end user(s). Candidates are encouraged to select a task appropriate to their capability and background. The teacher is advised to guide their students throughout the solutions to the problems selected.

With careful teacher guidance, this unit can provide opportunities for working collaboratively.

To gain marks in the upper band, candidates will be expected to provide detailed solutions to demanding tasks. Their solutions should reflect the use of advanced generic and package-specific skills.

Assessment for this module will be made up of:

- 1 A Data Processing Task (60 marks); and**
- 2 A Multimedia Task (60 marks).**

Candidates should prepare for these tasks by using appropriate software packages and acquiring the skills for each as outlined.

Unit Content - Skills to be Acquired

Data Processing

Feature	Skills to be acquired
Data types and formats	<ul style="list-style-type: none"> • Make use of a range of data types: General, Number, Currency, Accounting, Date, Time, Percentage, Fraction, Scientific, Text, and Boolean.
Creating formulae and using functions	<ul style="list-style-type: none"> • Use basic Mathematical operators (+ - × /). • Creating formulae. • Use a range of built-in functions including IF, Lookup, common Statistical, common Mathematical, common Date and Time functions.
Creating and using queries	<ul style="list-style-type: none"> • Create a query using one or more criteria. • Create queries which make use of parameters. • Create queries which make use of calculated fields.
Data checking	<ul style="list-style-type: none"> • Use a range of Data Validation techniques including suitable error messages.
Forms	<ul style="list-style-type: none"> • Create forms. Add, delete and update records using a form. Edit form layout. • Incorporate a range of controls on forms: buttons (including command buttons), drop down list boxes, tick boxes, combo boxes, option boxes, check boxes, text boxes and dialogue boxes. • Make use of Lookup tables.
Reports	<ul style="list-style-type: none"> • Create reports. Format reports to include sorting, subtotals/totals, headers, footers, page numbers and pagination. • Create reports using queries as the data source. • Use chart types to present data appropriately.

Multimedia

Feature	Skills to be acquired
Creating pages and layouts	<ul style="list-style-type: none"> • Create pages from a storyboard which make use of layout facilities such as layers, tables, frames and templates. • Use text and formatting which is appropriate for the medium chosen to present the package (eg web friendly fonts). • Incorporate colour and text styles which are appropriate for the audience.
Using links	<ul style="list-style-type: none"> • Develop a package-wide consistent navigation system. • Create and use links (or hyperlinks) for effective navigation through the package. • Create and use links to a variety of media. • Create and use links for file download.
Creating media and collecting assets	<ul style="list-style-type: none"> • Use appropriate software to create and edit graphics, movie, animation and sound files of suitable format and size for inclusion in the package. • Collect existing assets (such as existing images and electronic text) for use in the package.
Using media	<ul style="list-style-type: none"> • Incorporate a range of original media into the package in the form of graphics, movie, animation and sound. • Provide information for users on plug-ins required to run media files where appropriate.
Providing interaction and feedback	<ul style="list-style-type: none"> • Create an interface which provides user interaction through the use of: simple data collection, system messages, event driven code (eg rollover, click).
Design for accessibility	<ul style="list-style-type: none"> • Develop one aspect of the package for a user who has special requirements such as hearing or sight impairment.

Unit Content - Task Definitions

1 Data Processing Task (60 marks)

This task requires the candidate to use an appropriate software package to solve a realistic problem. The package should provide various software tools to produce solutions to a variety of data processing problems. Candidates may use any suitable software package that is capable of supporting the majority of skills from the checklist required to complete this task.

The context and selection of the task should involve both the teacher and the candidate, though it would be advisable to ensure an appropriately demanding task is undertaken which addresses the assessment criteria. If more than one candidate works on the same task, the teacher must ensure that they work on independent outcomes to facilitate accurate assessment and subsequent moderation.

Candidates should also understand and use:

- a variety of data types and formats to facilitate data entry;
- a range of formulae and functions;
- data validation techniques to minimise errors;
- techniques for creating forms; and
- queries and reporting techniques.

When completing this task, candidates should consider:

- producing a clear set of user requirements for their task;
- developing Technical Documentation for their solution; and
- developing User Documentation for the end user.

User Requirements

When developing a set of user requirements, candidates should:

- produce a statement outlining the background to their chosen task; and
- specify clearly the aims and objectives for the task.

Technical Documentation

This will consist of:

- **Design**

When producing the design specification, candidates should consider the design of:

- data structures;
- data checking;
- formulae and functions;
- queries;
- forms;
- reports;
- charts; and
- macros.

- **Testing**

Candidates must produce a test plan. The test plan should include testing for:

- data entry methods with valid and extremes of data;
- validation methods with valid, invalid and extremes of data;
- calculations produced by formulae or functions;
- forms;
- reports;
- charts;
- macros; and
- sorting and searching routines.

User Documentation

Candidates should create a user guide which will guide a novice user through the system including:

- brief description of what the package does;
- hardware and software requirements;
- installation of software;
- operating instructions; and
- simple troubleshooting.

2 Multimedia Task (60 marks)

This task requires the candidate to use an appropriate software package(s) to design a multimedia solution for a realistic problem. These should provide various software tools to create the main package and also to create and edit media in the form of graphics, animation and sound.

The context and selection of the task should involve both the teacher and the candidate, though it would be advisable to ensure an appropriately demanding task is undertaken which addresses the assessment criteria. If more than one candidate works on the same task, the teacher must ensure that they work on independent outcomes to facilitate accurate assessment and subsequent moderation.

Candidates should develop a finished product for electronic submission on an appropriate media. Whilst no documentation is to be submitted, candidates should be encouraged to plan the design of the package appropriately and will submit an electronic storyboard to show that planning has occurred. Candidates should use prototyping during the development phase of the package and should have an underpinning knowledge of this concept.

Candidates should also understand and use:

- storyboarding and prototyping to develop a system;
- appropriate pages and layouts;
- links or hyperlinks for navigation purposes;
- media creation and the collection of assets;
- media and plug-ins;

- interaction and feedback from users; and
- design for accessibility.

When completing this task, candidates should produce:

- a storyboard for their package;
- a multimedia package which is platform independent and which will run on any standard PC; and
- a short evaluation of the package.

Storyboard

When developing storyboard, candidates should produce:

- a statement outlining the background to their chosen task;
- an overview of the navigation structure of the package; and
- a simple visual representation of each page in the package.

Multimedia Package

The multimedia package should be prepared for electronic submission and should run on any standard PC. The package should have:

- between ten and fifteen pages connected using links and navigation menus and not inclusive of the links to the storyboard and evaluation;
- a storyboard for the package;
- the following media should be included in the presentation: graphics, animation and sound. Candidates should also be encouraged to create their own assets where applicable. These files should be suitably optimised to minimise the overall size of the package;
- page layouts which incorporate at least two of: tables, frames, layers and templates;
- user interaction;
- a page which collects data for use within the package;
- a page which demonstrates that the candidate has considered accessibility issues;
- an evaluation of the package; and
- well designed, user friendly pages which incorporate appropriate font and colour.

Evaluation of the Package

Candidates should produce an evaluation of the package against the original design outlined in the storyboard.