



National Unit specification: general information

Unit title: Programming for Mobile Devices (SCQF level 5)

Unit code: H2P5 11

Superclass: CB

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Summary

This Unit provides candidates with the knowledge and skills to develop an application for mobile devices. Candidates will gain an understanding of the basic principles of mobile application development and will develop an application for a mobile device such as a mobile phone or tablet.

This is an optional Unit within the National Progression Award (NPA) in Mobile Technology (SCQF level 5), but is also available as a freestanding Unit.

Outcomes

- 1 Design an application for a mobile device from a project brief.
- 2 Create an application for a mobile device.
- 3 Test an application for a mobile device.

Recommended entry

While entry is at the discretion of the centre, it would be beneficial if candidates possessed basic programming skills. This could be evidenced by achievement of the Unit *Computing: Programming in a High-level Language – Fundamentals* (F1K0 10), or equivalent.

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5*)

**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 Access 1 to Doctorates.*

General information (cont)

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Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes of this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

National Unit specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Design an application for a mobile device from a project brief.

Performance Criteria

- (a) Determine the basic elements for inclusion in an application for a mobile device.
- (b) Produce the final design for an application for a mobile device.

Outcome 2

Create an application for a mobile device.

Performance Criteria

- (a) Select a suitable tool for the creation of an application in accordance with the project brief.
- (b) Use a suitable development tool to produce an application for a mobile device.

Outcome 3

Test an application for a mobile device.

Performance Criteria

- (a) Test the application against the project brief criteria.
- (b) Use a pro forma error log to record faults and corrective action to address them.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Conditions of assessment for this Unit are as follows:

- ◆ The design and eventual creation of the application will be in a lab where each candidate has access to their own computer system.
- ◆ The computer system will be capable of running simulation software for an appropriate mobile operating system.
- ◆ Software requirements for the design and/or creation of the application will be supplied by centres. Candidates should have access to notepaper if they decide to design their application on paper.

For Outcome 1, written and/or oral evidence generated under open-book conditions, is required to show that candidates can:

- ◆ Produce a design for a mobile device application either on paper or using any suitable software package from a project brief.
- ◆ Produce a final design document signed off by the project supervisor.
- ◆ The design should have a minimum of five elements, the candidate will choose from text boxes, buttons and labels.

For Outcome 2, product evidence generated under open-book conditions is required to show that candidates can deliver a working application which can run on a mobile device's operating system. The working application must:

- ◆ allow input data to be entered
- ◆ allow the input to be processed in accordance with the project brief
- ◆ allow the processed information to be displayed on the screen

For Outcome 3, evidence is required to show that candidates can product test the application for faults and performance issues on a mobile device. Evidence will be recorded in a pro forma which will be signed off by the project supervisor. The pro forma should only be signed off by the supervisor once the faults identified are rectified and these resolutions are recorded on the pro forma.

- ◆ The pro forma will be paper-based.
- ◆ The evidence of testing will be screen dumps from the application which relate to the pro forma.

National Unit specification: support notes

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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 is an optional Unit within the NPA in Mobile Technology (SCQF level 5), but is also available as a freestanding Unit.

A number of available operating systems are suitable including those used by the most popular current smartphones and other mobile devices.

Drag and drop

There are a number of drag and drop software tools available for rapid software development on mobile applications. Candidates may use any tool they find suitable for their purpose. Some of these drag and drop tools use cloud computing. Many websites allow the users to produce applications using drag and drop techniques and offer free download of suitable software tools. Centres should ensure software tools are downloaded and fully operational.

Software Development Kits (SDK)

There are a number of different mobile platforms for programming. Centres may need to download the latest Software Development Kit (SDK) for the particular platform being used. In the case of some platforms, centres may need to become a 'registered developer'. In many cases these are free to download and used within the SDK agreements.

The centre should ensure the SDK is downloaded and fully operational.

Outcome 1

The first Outcome deals with the design aspect of producing an app. The simplest way is to design the app on paper, laying out the necessary components where required and determining the inputs, outputs and calculations in the margin areas. Alternatively, a simple graphics painting program could be used to lay out the components and then save the various versions. This latter method may be preferable as the user could show the development history of the app design.

Outcome 2

The second Outcome relates to the implementation of the application from the design produced in the previous Outcome. Any appropriate operating system may be used to complete the implementation stage. It is envisaged the application will not be too complex to program. Examples could include a carpet measuring system, calculating the area of a circle, calculating a worker's gross wage, or a game. This should include a minimum of two screens, eg an input screen and an output screen.

National Unit specification: support notes (cont)

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Outcome 3

The third Outcome relates to the testing of the app. Testing should be completed using the project brief/design document as a starting point.

A pro forma could be used as evidence for logging faults and/or signing off on the application. Candidates' applications may not at this point be fully functioning programs, but suggestions for corrective action should be noted.

Guidance on learning and teaching approaches for this Unit

This Unit should be taught with the idea of a project in mind and ideally integrating the three Outcomes into one project. There is scope to introduce the concept of a project team, where the project is created by the team members. In this scenario the tutor should assume the role of the project supervisor holding regular meetings with the teams. This ensures the team are working and all members are contributing to the final result.

Alternatively, each candidate could produce a proposal for an application to be vetted by the supervisor. Candidates may use any operating system the centre chooses and then can work on their own to produce the final project.

Guidance on approaches to assessment for this Unit

The ideal format for assessment of this Unit is envisaged to be via a holistic approach, with a simple design which candidates have produced individually or as a project team. The implementation of the project in Outcome 2 should be minimal with at least two inputs and one output and at least two buttons or other mechanisms, for triggering the result or to reset inputs.

With all event driven applications, termination is usually by pressing a button. It's important to note that users often determine that an application has reached its conclusion when they press a button and receive the intended or expected result.

Opportunities for the use of e-assessment

This Unit is not suitable for e-assessment.

Opportunities for developing Core Skills

In this Unit candidates will have opportunities to develop a range of Core Skills including *Communication*, *Information and Communication Technology* and *Problem Solving*.

Communication may be developed through written and/or verbal reporting throughout all assessments and practical exercises.

Information and Communication Technology may be developed through the nature of the practical activities and related software and hardware used.

Problem Solving may be developed particularly in Outcomes 2 and 3 where candidates are assigned specific tasks that require a certain level planning, evaluating and critical thinking.

National Unit specification: support notes (cont)

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Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date

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