	1.6 Adopted Well written and readable programs using disciplined coding styles and standards 1.7 Developed Maintenance schedule 1.8 Determined Maintenance tools and techniques
2. Resource Implications	***The following resources must be provided:*** 2.1 Resources the same as that of workplace are advised to be applied Networks, Hardware, Software, Data and People
3. Methods of Assessment	**Competency may be assessed through:** 3.1 Oral test 3.2 Observation 3.3 Practical demonstration
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or through a simulated work place setting
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

MOBILE APPLICATION DEVELOPMENT

UNIT CODE: IT/OS/ICT/CR/11/6

UNIT DESCRIPTION

This unit covers the competencies required to Develop Mobile Application. It involves identifying Mobile application concepts, identifying mobile application development environment, identifying Application Design Issues, developing of the mobile application, testing the developed mobile application and publishing and Commercialize the developed Application.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicised terms are elaborated in the Range)*
1. Identify Mobile application concepts	1.1.Definition of Mobile application is done 1.2.Types of mobile applications are identified 1.3.Mobile application development platforms are identified 1.4.***Mobile application development approaches*** are identified 1.5.Reasons for mobile application development are identified.
2. Identify mobile application development environment	1.1.Mobile Application Architecture and Design is identified 1.2.Mobile application development frameworks and tools are identified 1.3.Techniques and methodologies for mobile application development are introduced
3. Identify Application Design Issues	3.1.Mobile development lifecycle is explained 3.2.Overarching Design principles and Guidelines are explained 3.3.Mobile application ***navigation patterns*** are identified 3.4. User interface design is explained
4. Develop mobile application	4.1.Appropriate mobile development software is installed 4.2.Creation of the project structure is done by project wizard 4.3.Configuration of the ***AndroidManifest.XML*** file is done 4.4.***Resources*** are defined in XML. 4.5.***Framework components*** are defined 4.6.SQL lite database is introduced 4.7.Configuration of the google play SDK is done. 4.8.Project prototype is created as per the scope. 4.9.Build the project prototype into a debuggable APK That can be installed to an emulator or Android powered device.
5. Test the developed mobile application	5.1.Testing techniques and procedures are identified 5.2.Debugging techniques are identified

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicised terms are elaborated in the Range)*
	5.3.Debugging of the application is done.
6. Publish and Commercialize the developed Application	6.1.Application distribution through application stores is done 6.2.Monetizing applications through mobile money APIs is done. 6.3.Routine upgrading, and patching of the application is done.

RANGE

This section provides work environment and conditions to which the performance Criteria apply. It allows for different work environment and situations that will affect Performance.

Variable	Range *May include but is not limited to:*
1. Mobile application development approaches	1.1 Native 1.2 Hybrid Native 1.3 Hybrid web 1.4 Progressive web
2. Navigation patterns	2.1 Hamburger Menu 2.2 Tab bar 2.3 Gesture based
3. AndroidManifest.XML	3.1 Type of file that provides essential information about the android application

Variable	Range *May include but is not limited to:*
4. Resources	4.1 Res/Layout 4.2 Res/Menu 4.3 Res/Value 4.4 Res/Drawable
5. Framework components	5.1 Activity 5.2 Services 5.3 Broadcast receiver 5.4 Content provider

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

1. Fundamentals of Mobile Application Concepts
2. Mobile Application Development Cycle
3. Platforms for Mobile Application Development
4. Types of Mobile Applications
5. Types of Mobile Application Development Software
6. Categories of Mobile Application Development Approaches
7. Technology Trends in the Mobile Market
8. Techniques of Distribution and Monetizing of Mobile Applications.

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:	
• Communications (verbal and written); • Proficient in ICT; • Time management; • Analytical • Planning;	• Decision making; • Report writing;

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and understanding and range.

1. Critical Aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Identified Mobile application development platforms 1.2 Identified Mobile application development frameworks and tools 1.3 Installed and Configured Appropriate mobile development software 1.4 Built the project prototype into a debuggable APK that can be installed to an emulator or Android powered device. 1.5 Tested and Debugged the Application 1.6 Published the Application

2. Resource Implications	***The following resources must be provided:*** 2.1 Resources the same as that of workplace are advised to be applied Computer, Software, Internet, Data
3. Methods of Assessment	**Competency may be assessed through:** 3.1 Oral test 3.2 Observation 3.3 Practical demonstration
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace or through a simulated work place setting
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

PERFORM SYSTEM ANALYSIS AND DESIGN

UNIT CODE: IT/OS/ICT/CR/12/6

UNIT DESCRIPTION

This unit covers the competencies required to perform system analysis and design. It involves understanding System Analysis and Design Fundamentals, understanding approaches to system Development and Project planning, Performing System Analysis, identifying Essentials of System Design, understanding advanced Design Concepts, Performing System Implementation and understand Current Trends in System Development.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	**PERFORMANCE CRITERIA** ***(Bold and italicised terms are elaborated in the Range)***