

2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to the proposed activity or tasks.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral assessment 3.3 Portfolio of evidence 3.4 Interviews 3.5 Third party report 3.6 Written assessment 3.7 Practical assessment 3.8 Projects
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated work environment
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEVELOP DESKTOP APPLICATION

ISCED UNIT CODE: 0613 551 03 A

TVET CDACC CODE: ICT/OS/SD/CR/01/6/MA

UNIT DESCRIPTION

This unit covers the competencies required to develop desktop application. It involves designing desktop application, writing desktop application source code, debugging desktop application, testing desktop application and deploying desktop application.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace functions	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1 Design desktop application	1.1 Desktop application design tools are identified as per user needs 1.2 Desktop application functionality is designed as per user requirements. 1.3 Desktop application interface design is created as per user requirements. 1.4 Desktop application output is designed as per user requirements.
2 Write desktop application source code	2.1 Desktop application development tools are identified as per the system requirements. 2.2 Application interface is developed as per the interface design. 2.3 Database is designed according to user needs. 2.4 Database integration is performed as per application requirements. 2.5 Application functionality is implemented as per user requirements. 2.6 Workplace safety and health practices are Observed as per OSHA. 2.7 Methods of e-waste storage and disposal are identified as per OSHA. 2.8 E-waste management is demonstrated as per OSHA
3 Debug desktop application	3.1 Desktop application source code is checked for bugs and errors as per design requirements. 3.2 Debugging is performed using <i>debugging tools</i> as per application requirements. 3.3 Regression testing is performed as per application requirements. 3.4 Application source code is documented as changes are made as per application requirements.

4 Test desktop application	4.1 Desktop application testing types are identified as per user requirements. 4.2 Desktop application test plan is prepared as per work procedures. 4.3 Desktop application is tested as per test plan. 4.4 Test report is prepared as per work procedures
5 Deploy desktop application	5.1 Desktop application deployment strategy is identified as per work procedures. 5.2 Desktop application deployment tools are identified as per the user requirements. 5.3 Desktop application is packaged as per the application requirements. 5.4 Desktop application is distributed as per work procedure.

RANGE

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

Variable	Range
1. Debugging tools may include but not limited to	Debugging tools include but not limited to: ● Integrated Development Environment (IDE) debugging tools ● Breakpoints ● Step options ● Running commands eg Break, Pause & Stop ● Examining variables & expressions
2. Desktop application testing types	● Unit test ● Integration test ● Usability test ● System testing ● Security test ● Performance test ● Compatibility test

REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency.

Required knowledge

The individual needs to demonstrate knowledge of:

- Project management

- Introduction to programming
- Desktop programming
- Documentation processes
- Computerised database management
- Computer and devices settings
- System analysis and design
- Version control

Required skills

The individual needs to demonstrate the following skills:

- Communications (verbal and written);
- Proficient in ICT;
- Time management;
- Analytical
- Planning;
- Typing skills
- Creativity
- Decision making;
- Report writing;

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Designed desktop application functionality as per user requirements. 1.2 Designed desktop application interface as per user requirements. 1.3 Created user interface using user interface design tools as per user requirements. 1.4 Identified desktop application development tools as per the system requirements. 1.5 Developed application interface as per the interface design. 1.6 Designed database according to user needs. 1.7 Performed database integration as per application requirements. 1.8 Implemented application functionality as per user requirements. 1.9 Tested desktop application as per test plan. 1.10 Packaged desktop application as per the application requirements.
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3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral assessment 3.3 Portfolio of evidence 3.4 Interviews 3.5 Third party report 3.6 Written assessment 3.7 Practical assessment 3.8 Projects
4. Context of assessment	Competency may be assessed: 4.1 On-the-job 4.2 In a simulated work environment
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEVELOP MOBILE APPLICATION

ISCED UNIT CODE: 0613 551 04 A

TVET CDACC CODE: ICT/OS/SD/CR/02/5/MA

UNIT DESCRIPTION

This unit covers the competencies required to develop mobile application. It involves designing mobile application, writing mobile application source code, debugging mobile application, testing mobile application and publishing mobile application.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace functions	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1. Design mobile application	1.1 Mobile application design tools are identified as per user needs. 1.2 Mobile application functionality is designed as per user requirements. 1.3 Mobile application interface design is created as per user requirements. 1.4 Mobile application output is designed as per user requirements.
2. Write mobile application source code	2.1 Mobile application development tools are acquired as per application requirements. 2.2 Mobile application development environment is configured as per application requirements. 2.3 Mobile application interface is developed as per the interface specification design. 2.4 Mobile application functionality is implemented as per design specifications. 2.5 Mobile application backend is integrated with the front end as per application requirements. 2.6 Mobile application components are integrated with APIs as per work procedures. 2.7 Workplace safety and health practices are Observed as per OSHA 2.8 Methods of e-waste storage and disposal are identified as per OSHA 2.9 E-waste management is demonstrated as per OSHA

3. Debug mobile application	3.1 Mobile application source code is checked for bugs and errors as per design requirements. 3.2 Debugging is performed using debugging tools as per application requirements. 3.3 Regression testing is performed as per application requirements. 3.4 Mobile application debugging report is prepared as per work procedure.
4. Test mobile application	4.1 Mobile application testing types are identified as per user requirements. 4.2 Mobile application test plan is prepared as per work procedures. 4.3 Mobile application is tested as per test plan. 4.4 Mobile test report is prepared as per work procedures.
5. Publish mobile application	5.1 Mobile publishing tools are identified as per the user requirements. 5.2 Mobile application bundle is generated as per work procedure. 5.3 Mobile application is published as per work procedures.

RANGE

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

Variable	Range
1. Debugging tools may include but not limited to:	● Integrated Development Environment (IDE) ● Debuggers ● Print Statements ● Profiling Tools ● Memory Debuggers ● Browser Developer Tools ● Static Code Analysis Tools ● Remote Debugging Tools
2. Mobile application testing types may include but not limited to:	● Unit test ● Integration test ● Usability test ● System testing ● Security test ● Performance test ● Compatibility test

3. Mobile publishing tools may include but not limited to:	● Google Play Console ● Apple App Store Connect ● Microsoft Store ● Amazon Appstore ● TestFlight
4. Mobile application bundles may include but not limited to:	● Universal APK ● Android App Bundle (AAB)

REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency.

Required knowledge

The individual needs to demonstrate knowledge of:

- Techniques of system analysis and design
- Software development methodologies
- Program development techniques
- System testing debugging methods
- Project management
- Introduction to programming
- Mobile application programming
- Documentation processes
- Computerised database management
- Computer and devices settings
- System analysis and design
- Version control

Required skills

The individual needs to demonstrate the following 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 skills range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Designed mobile application functionality as per user requirements. 1.2 Created mobile application interface design as per user requirements. 1.3 Acquired mobile application development tools as per application requirements. 1.4 Configured mobile application development environment as per application requirements. 1.5 Developed mobile application interface as per the interface specification design. 1.6 Implemented mobile application functionality as per design specifications. 1.7 Integrated mobile application backend with the front end as per application requirements. 1.8 Performed debugging using debugging tools as per application requirements. 1.9 Tested mobile application as per test plan. 1.10 Generated mobile application bundle as per work procedure.
2. Resource implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place. 2.2 Appropriately simulated environment where assessment can take place. 2.3 Resources relevant to the proposed activity or tasks.
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