

CREATE WEB APPLICATION

ISCED UNIT CODE: 0613 451 10A

TVET CDACC UNIT CODE: ICT/CU/SD/CR/05/5/MA

UNIT DESCRIPTION

This unit covers the competencies required to create a web application. It involves, designing web application, writing web application source code, testing web application, debugging web application and hosting web application

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	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 web application	1.1 <i>Web application design tools</i> are identified as per user needs. 1.2 Web application functionality is designed as per user requirements. 1.3 Web application interface design is created as per user requirements. 1.4 Web application output is designed as per user requirements.

2. Write web application source code	2.1. User interface is created using <i>user interface development tools</i> as per interface design. 2.2. Version control is performed as per work procedures. 2.3. Functionality and interactivity are developed using <i>front end functionality tools</i> as per application requirements. 2.4. Responsive design is implemented as per work procedure. 2.5. <i>Front end frameworks</i> are utilised as per user requirements. 2.6. Front end components are integrated with backend <i>APIs</i> as per work procedures. 2.7. Server-side code is created using <i>server-side coding tools</i> as per application requirements. 2.8. <i>Back-end frameworks</i> are implemented as per work procedures. 2.9. Back end is connected to the database using <i>database tools</i> as per application requirements. 2.10. Back-end API is created as per application requirements. 2.11. Workplace safety and health practices are Observed as per OSHA 2.12. Methods of e-waste storage and disposal are identified as per OSHA 2.13. E-waste management is demonstrated as per OSHA
3. Test web application	3.1 <i>Web application testing types</i> is identified as per user requirements. 3.2 Web application test plan is developed as per work procedures. 3.3 Web application is tested as per web application test plan. 3.4 Test report is prepared as per work procedures.
4. Debug web application	4.1 Source code is revised for errors, bugs and inconsistencies as per design requirements. 4.2 <i>Debugging tools</i> are applied as per application requirements. 4.3 Regression testing is performed as per application requirements.

5. Host web application	5.1 Web hosting service provider is identified as per job requirements. 5.2 Domain is acquired and configured as per work procedures. 5.3 Web server is configured as per work procedures. 5.4 Web application is deployed using deployment tools as per work procedures. 5.5 Web security measures are implemented as per work procedures. 5.6 Web application maintenance and monitoring are done as per work procedures.
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RANGE

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

Variable	Range
1. Web application design tools may include but not limited to:	● Adobe Illustrator ● Adobe XD ● Canva ● Figma
2. User interface development tools may include but not limited to:	● Text editor ● VS code ● Notepad++ ● Artisteer ● Wix ● Bluevoda ● Dreamweaver ● Html ● CSS ● JavaScript
3. Front end frameworks may include but not limited to:	● React ● Angular ● Vue.js

4. API may include but not limited to:	• web APIs • Library APIs • Operating system APIs • Web socket APIs
5. Server-side coding tools may include but not limited to:	• JavaScript • Python • Ruby • PHP
6. Back-end frameworks may include but not limited to:	• Node.js • Django(python) • Ruby • Laravel
7. database tool may include but not limited to:	• MySQL • Access • Oracle • Data modeler • Microsoft Visio
8. Web application testing types may include but not limited to:	• Functional testing • Usability testing • Performance testing • Security testing
9. Debugging tools may include but not limited to:	• Integrated development environment • GDB (GNU Debugger) • Browser Developer Tools • Profiling Tools
10. Deployment tool may include but not limited to:	• GIT
11. Web security measures may include but not limited to:	• Firewalls • HTTPS • Input validation • Secure authentication and authorization

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| | <ul style="list-style-type: none"> ● Session management |
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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
- Web 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 web application functionality as per user requirements. 1.2 Designed web application interface as per user requirements. 1.3 Created user interface using user interface development tools as per interface design. 1.4 Developed functionality and interactivity using front end functionality tools as per application requirements. 1.5 Created server-side code is using server-side coding tools as per application requirements.
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	1.6 Connected back end to the database using database tools as per application requirements. 1.7 Tested web application as per web application test plan 1.8 Applied debugging tools as per application requirements. 1.9 Deployed web application using deployment tools as per work procedures. 1.10 Implemented web security measures as per work procedures.
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.