

## **DESKTOP APPLICATION**

**ISCED UNIT CODE:** 0613 551 17A

**TVET CDACC UNIT CODE:** IT/CU/ICTA/CR/03/6/MA

**Duration of Unit:** 280 Hours

### **Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Develop Desktop Application

### **Unit Description**

This unit covers the competencies required to develop desktop application. It involves assessing desktop application requirements, designing desktop application, creating desktop application, deploying desktop application and maintaining desktop application.

### **Summary of Learning Outcomes**

| <b>Learning Outcomes</b>                    | <b>Duration (Hours)</b> |
|---------------------------------------------|-------------------------|
| 1. Assess desktop application requirements. | 50                      |
| 2. Design desktop application.              | 70                      |
| 3. Create desktop application.              | 80                      |
| 4. Deploy desktop application               | 50                      |
| 5. Maintain desktop application.            | 30                      |
| <b>Total Hours</b>                          | <b>280</b>              |

### **Learning Outcomes, Content and Suggested Assessment Methods**

| <b>Learning Outcome</b>                      | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Suggested Assessment Methods</b>                                                                                                                                                                                                                            |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Assess Desktop Application Requirements . | <p>1.1 Desktop application requirements identification</p> <p>1.1.1 Key concepts and terminologies</p> <p>1.1.1.1 Importance of desktop application</p> <p>1.1.1.2 User requirements collection techniques</p> <p>1.1.1.3 User requirements analysis</p> <p>1.2 Desktop application requirements specifications documentation.</p> <p>1.2.1 Desktop application requirements specifications review</p> <p>1.2.2 Importance of desktop application requirements specifications review</p> <p>1.2.3 Desktop application user requirements specifications validation techniques</p> <p>1.3 Preparation of system requirements specifications (SRS) report.</p> | <ul style="list-style-type: none"> <li>• Practical test</li> <li>• Projects</li> <li>• Learner Portfolio of evidence</li> <li>• Oral questioning</li> <li>• Interviews</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Case study</li> </ul> |
| 2. Design Desktop Application.               | <p>2.1 Desktop application design requirements</p> <p>2.1.1 Introduction to desktop application design</p> <p>2.1.2 Identifying desktop application design tools</p> <p>2.1.2.1 Types of desktop application design tools</p> <p>2.1.2.2 Criteria for selecting tools</p> <p>2.1.2.3 Case studies of tool selection in real-world desktop application</p> <p>2.2 Desktop application design methods</p> <p>2.2.1.1 User-centred Design</p>                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Practical test</li> <li>• Projects</li> <li>• Learner Portfolio of evidence</li> <li>• Oral questioning</li> <li>• Interviews</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Case study</li> </ul> |

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|                                | <p>2.2.1.2 Visual Design</p> <p>2.2.1.3 Interaction Design</p> <p>2.2.1.4 Wireframing and Prototyping</p> <p>2.3 Desktop application visual hierarchy</p> <p>2.3.1 Importance of desktop application visual hierarchy</p> <p>2.3.2 Principles of desktop application visual hierarchy</p> <p>2.3.2.1 Graphical user interface</p> <p>2.3.2.2 Hierarchy of Elements</p> <p>2.3.2.3 Typography</p> <p>2.3.2.4 Colour</p> <p>2.3.2.5 Spacing and Layout</p>                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                |
| 3. Create Desktop Application. | <p>3.1 Setting up desktop application development environment</p> <p>3.1.1 Identifying development tools</p> <p>3.1.2 Overview of desktop application development tools</p> <p>3.1.3 Criteria for selecting tools based on system requirements</p> <p>3.1.4 Examples of popular development environments (e.g., Visual Studio, JetBrains, Eclipse)</p> <p>3.2 Desktop application programming fundamentals</p> <p>3.2.1 Introduction to programming using C++ or Python or Java languages</p> <p>3.2.2 Overview of programming languages</p> <p>3.2.3 Programming languages paradigms</p> <p>3.2.4 Program Development Life Cycle</p> <p>3.2.5 Program writing using C++ or Python or java.</p> | <ul style="list-style-type: none"> <li>• Practical test</li> <li>• Projects</li> <li>• Learner Portfolio of evidence</li> <li>• Oral questioning</li> <li>• Interviews</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Case study</li> </ul> |

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|  | <ul style="list-style-type: none"> <li>3.2.6 Basic syntax <ul style="list-style-type: none"> <li>3.2.6.1 Importance of syntax in programming</li> <li>3.2.6.2 Guidelines for naming conventions and best practices</li> <li>3.2.6.3 General program structures</li> <li>3.2.6.4 Input and output statements</li> <li>3.2.6.5 Comments</li> <li>3.2.6.6 Keywords</li> </ul> </li> <li>3.2.7 Variables <ul style="list-style-type: none"> <li>3.2.7.1 Types of variables</li> <li>3.2.7.2 Variable declaration</li> <li>3.2.7.3 Variable initialization</li> </ul> </li> <li>3.2.8 Data types</li> <li>3.2.9 Operators</li> <li>3.2.10 Program Control structures <ul style="list-style-type: none"> <li>3.2.10.1 Sequential</li> <li>3.2.10.2 Selection</li> <li>3.2.10.3 Switch statements</li> <li>3.2.10.4 Iteration</li> </ul> </li> <li>3.2.11 Objects</li> <li>3.2.12 Functions</li> <li>3.2.13 Methods</li> <li>3.2.14 Data structures <ul style="list-style-type: none"> <li>3.2.14.1 Arrays</li> <li>3.2.14.2 Pointers</li> <li>3.2.14.3 Queues</li> <li>3.2.14.4 Stack</li> <li>3.2.14.5 Classes</li> </ul> </li> <li>3.2.15 File handling</li> </ul> |  |
|  | <ul style="list-style-type: none"> <li>3.3 Desktop application development <ul style="list-style-type: none"> <li>3.3.1 Developing Application Interface</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |

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|                               | <p>3.3.1.1 Creating the interface as per design</p> <p>3.3.1.2 Design patterns and frameworks (e.g., MVC)</p> <p>3.3.1.3 User experience (UX) best practices</p> <p>3.3.2 Implementing Application Functionality</p> <p>3.3.2.1 Writing source code</p> <p>3.3.2.2 Debugging</p> <p>3.3.3 Database Integration</p> <p>3.3.3.1 Techniques for integrating databases with applications</p> <p>3.3.3.2 Using APIs and ORM (Object-Relational Mapping) tools</p> <p>3.4 Desktop application testing</p> <p>3.4.1 Identifying Testing Types</p> <p>3.4.2 Preparing Test Plan</p> <p>3.4.3 Executing Testing plan</p> <p>3.4.4 Preparing the Test Report</p> <p>3.5 Desktop application optimization</p> <p>3.5.1 Importance of desktop application optimization</p> <p>3.5.2 Desktop application optimization techniques</p> |                                                                                                                                                                                                                                          |
| 4. Deploy Desktop Application | <p>4.1 Desktop Application Packaging</p> <p>4.1.1 Overview of desktop application packaging</p> <p>4.1.2 Distribution of desktop application</p> <p>4.1.2.1 Desktop application legal and regulatory compliance requirements</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Practical test</li> <li>• Projects</li> <li>• Learner Portfolio of evidence</li> <li>• Oral questioning</li> <li>• Interviews</li> <li>• Third party report</li> <li>• Written tests</li> </ul> |

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|                                  | <p>4.1.2.2 Best practices for creating installation packages</p> <p>4.1.2.3 Methods for distributing applications (e.g., direct download, app stores)</p> <p>4.2 Developing desktop application deployment plan</p> <p>4.2.1 Importance of desktop application deployment plan</p> <p>4.2.2 Types of deployment strategies (e.g., phased, big bang)</p> <p>4.2.3 Assessing desktop application deployment requirements</p> <p>4.2.4 Developing application deployment plan</p> <p>4.3 Installation of desktop application</p> <p>4.3.1 Overview of desktop application deployment tools</p> <p>4.3.2 Executing desktop application deployment plan</p> <p>4.3.3 Troubleshooting of desktop application deployment issues</p> <p>4.4 Desktop application user training</p> <p>4.4.1 Importance of user training</p> <p>4.4.2 User training approaches</p> <p>4.4.3 User training resources</p> <p>4.4.4 Conduct user training</p> <p>4.4.5 Post-training support</p> | <ul style="list-style-type: none"> <li>• Case study</li> </ul>                                                                  |
| 5. Maintain desktop application. | <p>5.1 Desktop application maintenance scheduling</p> <p>5.1.1 Importance of desktop application maintenance schedule</p> <p>5.1.2 Types of desktop application maintenance schedules</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Practical test</li> <li>• Projects</li> <li>• Learner Portfolio of evidence</li> </ul> |

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|  | <p>5.1.3 Preparation of desktop application maintenance schedule</p> <p>5.2 Performing Desktop application maintenance</p> <p>5.2.1 Types of Desktop application maintenance</p> <p>5.2.2 Back-up and recovery procedures</p> <p>5.2.3 Desktop application troubleshooting process</p> <p>5.3 Desktop application maintenance reporting</p> <p>5.3.1 Importance of Desktop application maintenance report</p> <p>5.3.2 Identification of reporting tools and software</p> <p>5.3.3 Preparation of Desktop application maintenance report</p> | <ul style="list-style-type: none"> <li>• Oral questioning</li> <li>• Interviews</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Case study</li> </ul> |
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### Suggested Methods of Instruction

- Role playing
- Viewing of related videos
- Demonstrations
- Online Training
- Direct Instruction
- Group discussions.
- Instructor led facilitation using active learning strategies.
- Projects.
- Industry visits.

### Recommended Resources for 25 trainees

| S/No. | Category/Item      | Description/Specifications | Quantity | Recommended Ratio<br>(Trainee: Item) |
|-------|--------------------|----------------------------|----------|--------------------------------------|
| A     | Learning Materials |                            |          |                                      |

|     |                                                                                                    |                   |        |       |
|-----|----------------------------------------------------------------------------------------------------|-------------------|--------|-------|
| 1.  | Textbooks                                                                                          |                   | 5 pcs  | 1:5   |
| 2.  | Installation manuals                                                                               |                   |        |       |
| 3.  | Charts                                                                                             |                   |        |       |
| 4.  | PowerPoint presentations                                                                           | For trainer's use |        |       |
| 5.  | Assorted colour of whiteboard markers                                                              | For trainer's use |        |       |
| 6.  | e-Didactics                                                                                        | For trainer's use |        |       |
| B   | Learning Facilities & infrastructure                                                               |                   |        |       |
| 7.  | Lecture/theory room                                                                                |                   | 1      | 1:25  |
| 8.  | Computer Laboratory                                                                                |                   | 1      | 1:25  |
| C   | Consumable materials                                                                               |                   |        |       |
| 9.  | Printing Papers                                                                                    |                   | 1 ream | 1:20  |
| 10. | Toners                                                                                             |                   | 2 pcs  | 13: 1 |
| 11. | Internet connection                                                                                |                   |        |       |
| D   | Tools and Equipment                                                                                |                   |        |       |
| 12. | Projectors                                                                                         |                   | 1      | 25:1  |
| 13. | Printers                                                                                           |                   | 4      | 6:1   |
| 14. | Flash drives                                                                                       |                   | 5 pcs  | 5:1   |
| 15. | Computers                                                                                          |                   | 25 pcs | 1:1   |
| 16. | Integrated Development Environment (IDEs) – C++, Java and Visual Studio, IntelliJ IDEA, Python IDE |                   | 25 pcs | 1:1   |

