**SISEKELO SUSTAINABILITY INSTITUTE**

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**National Certificate: Information and Communications Technology (ICT) Software**

**SAQA 83026 -LEVEL 5- 138 CREDITS**

**Learner Workbook: Apply principles of creating computer software by developing a complete programme to meet given business specifications, NQF level 5, 12 credits**

**SAQA ID 115392: Apply principles of creating computer software by developing a complete programme to meet given business specifications, NQF level 5, 12 credits**

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# **ABOUT SISEKELO SUSTAINABILITY INSTITUTE**

Sisekelo Sustainability Institute (Sisekelo) is a dynamic business consulting, training and research & development company. and technologies

**Business Consulting** offers advisory and practical technology solutions. We strive to deliver quality and remarkable solutions and end to end IT services across industries where we align technology requirements with business strategic goals. We take time to understand business requirements, current processes, infrastructure, applications, data, hardware and technologies to deliver remarkable solutions that contribute to business performance.

**Training** covers both accredited and non-accredited training programmes in the form of qualifications, skills programmes and short business education courses. Through our combined experience within business and education, we seek to enhance the knowledge and skills of individuals and organizations for improved business understanding. We use an outcomes-focused approach to learning and development by using well-informed industry experts across all sectors, drawing experiences and cutting edge methods informed by world-class critical thinking and research.

**Research and Development** services aim to assist companies to achieve strategic business results through relevant, accurate & leading business intelligence information, business growth and training services. We conduct specific custom research across Industries and training based on the challenges faced by organizations.

# OVERVIEW

| **About the Learner Workbook** | This Learner Exercise Workbook has been designed and developed to evaluate learners’ level of understanding of the It forms part of a series of Learner Workbooks that have been developed for **NATIONAL CERTIFICATE: INFORMATION TECHNOLOGY: SOFTWARE TESTING: SAQA 83026 -LEVEL 5- 138 CREDITS** | | |
| --- | --- | --- | --- |
| **Purpose** | The purpose of this Learner Exercise Workbook is to evaluate learners understanding on the specific outcomes and/or assessment criteria of the following SAQA Registered Unit Standards: | | |
| **US No** | **US Title** | **Level** | **Credits** |
| **115392** | **Apply principles of creating computer software by developing a complete programme to meet given business**  **specifications** | **5** | **12** |
| **Context** | This assessment represents the Formative Assessment component of Function in a business environment**,** for the **NATIONAL CERTIFICATE: INFORMATION TECHNOLOGY: SOFTWARE TESTING: SAQA 83026 -LEVEL 5- 138 CREDITS** and should be completed in the classroom/training room. | | |
| **Resources** | The following are resources needed for this assessment:   1. Learner Guide; and 2. Assessment Preparation. | | |
| **Instructions to Facilitators** | Facilitators will be required to:   * Explain the completion of the workbook to each learner; and * Interview the learner on similar questions, should he/she not be able to write. | | |
| **Instructions to Learners** | Learners will be required to:   * Complete the workbook as per the instructions; * Ensure that all questions are completed; * Ensure that the completion of the workbook is their own work; * Ensure that all annexure are attached to the workbook and clearly referred to; | | |
| **Assessment Time** | Learners are required to complete this assessment within the allocated time frame of.... hours. | | |
| **Total Mark** | This formative assessment carries a total mark of **65\_Marks**. In order to meet the pass mark, learners are required to achieve a minimum of 10**0%** of the total marks. | | |
| **Equipment** | Learners are required to have the following equipment in order to complete this workbook:   * Pen and Pencil; * Ruler; and * Exam Pad – for additional paper. | | |

# GENERAL INFORMATION

| **LEARNER DETAILS** | | |
| --- | --- | --- |
| **Learner Full Names** |  | |
| **Learner ID No.:** |  | |
| **Organisation:** |  | |
| **Unit/Dept:** |  | |
| **Contact Details:** | **Telephone /Cell Numbers:** | **Email Address:** |
|  |  |
| **WORKSHOP DETAILS** | | |
| **Workshop Venue:** |  | |
| **Facilitator Name:** |  | |
| **Date Started:** |  | |
| **Date Completed:** |  | |

# ASSESSMENT PREPARATION CHECKLIST

| **DESCRIPTION** | **YES** | **NO** | **COMMENTS/CONTINGENCY** |
| --- | --- | --- | --- |
| This assessment is a formative assessment and it is based on the outlined unit standard/s for **Apply principles of creating computer software by developing a complete programme to meet given business specifications** module. |  |  |  |
| Your assessment evidence for **Apply principles of creating computer software by developing a complete programme to meet given business specifications** module needs to be submitted on....... (day) of...............(month)...........(year) at the following address/place................................................................ |  |  |  |
| You will be assessed based on the outlined Unit Standards. The assessment activities are linked to specific outcomes/assessment criteria of the outlined Unit Standards. |  |  |  |
| To determine your competence level, the following are the methods to be used for this assessment:   1. .Written Evidence.................................................... 2. ..Observation................................................... |  |  |  |
| To be declared competent on **Apply principles of creating computer software by developing a complete programme to meet given business specifications** module (formative assessment), you should have obtained at least 100% of the total mark of this assessment. |  |  |  |
| You will be provided with detailed feedback on your performance of this assessment as follows:   1. Written Feedback 2. Verbal Feedback |  |  |  |
| Should you be declared “not yet competent” on this assessment, you will be entitled for re-assessment opportunity/ies. |  |  |  |
| You will be required to re-submit evidence (only for areas) you were declared not yet competent. A date for re-submission will be agreed with the assessor. |  |  |  |
| You will be entitled to lodge an appeal should you not be satisfied with the assessment decision of your assessment. |  |  |  |
| You will be required to provide the assessor feedback on assessment procedure – this is to assist in improving the assessment practices. |  |  |  |
| Your results of assessment and portfolio of evidence information will not be provided to any person without your written consent. |  |  |  |

| **Learner’s Declaration** | | | |
| --- | --- | --- | --- |
| I…………………………………………………. herewith declare that I am ready for the assessment, that we have reviewed the assessment preparation and plan, I understand the assessment process and I am happy that the assessment will be conducted in a fair manner. | | | |
| **Learner Signature:** | **Date:** | **Facilitator Signature:** | **Date:** |
|  |  |  |  |

| SPECIFIC OUTCOME 1:Interpret a given specification to plan a computer program solution. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The plan proposes a description of the problem to be solved by the development of the computer program that is understandable by an end-user and meets the given specification. * The plan integrate the research of problems in term of data and functions * The plan includes an evaluation of the viability of developing a computer program to solve the problem identified and compares the costs of developing the program with the benefits to be obtained from the program. * The plan concludes by choosing the best solution and documenting the program features that will contain the capabilities and constraints to meet the defined problem. | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **1** | * 1. **Explain why a program needs to use different data types (e.g., integers, strings, floats) instead of storing everything as text. Give two examples of how the wrong choice of data type could cause problems in a program(5)**   **1.2 A student database program asks users to enter student names and marks.**   * **What type of data is expected for the student name?** * **What type of data is expected for the marks?** * **Why is it important to validate user input?  (9)** | 1 | 1-4 | |

| SPECIFIC OUTCOME 2:Design a computer program to meet a business requirement. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The design incorporates development of appropriate design documentstion and is desk-checked. * The design of the program includes program structure components. * The design of the program includes program logical flow components. * The design of the program includes data structures and access method components. | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **2** | **A farmer’s produce app needs to save sales records into a file.**   * **What is the advantage of storing the data in a file instead of keeping it only in memory?** * **Give one risk of file handling that programmers should watch out for.**   **(5)** | 2 | 1-4 | |

| SPECIFIC OUTCOME 3:Create a computer program that implements the design. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The creation includes coding from design documents, to meet the design specifications * Names created in the program describe the purpose of the items named * The creation includes conformance with the design documentation, and differences are documented with reasons for deviations | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **3** | **A retail store requested a program to track inventory and alert when stock falls below 10 units. After development, the system generates daily stock reports but does not provide alerts.**  **Task:**   * **Explain whether the program fully meets the business requirement.** * **Suggest one improvement to ensure the requirement is met.**   **(10)** | 3 | 1-3 | |

| SPECIFIC OUTCOME 4:Test a computer program against the business requirements. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The testing includes assessment of the need to develop a testing program to assist with stress testing * The testing includes the planning, developing and implementing a test strategy that is appropriate for the type of program being tested. * The testing includes the recording of test results that allow for the identification and validation of test outcomes. | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **4** | **You have finished creating a program based on a design for a school timetable system.**  **Task:**   * **List two types of documentation you would provide (e.g., for users, for future developers).** * **Explain why each type is important in ensuring the program can be used and maintained successfully.**   **(10)** | 4 | 1-3 | |

| SPECIFIC OUTCOME 5:Implement the program to meet business requirements. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The implementation involves checking the program for compliance with user expectations and any other applicable factors * The implementation involves training of users to enable them to use the software to their requirements * The implementation involves planning of installation of the program that minimises disruption to the user | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **5** | **Explain with an example scenario (no code) where a business might use an if-elif-else structure rather than just a simple if statement.**  **(5)** | 5 | 1-3 | |

| SPECIFIC OUTCOME 6:Document the program according to industry standards. | | | |
| --- | --- | --- | --- |
| **ASSESEMENT CRITERIA** | | | |
| * The documentation includes annotation of the program with a description of program purpose and design specifics. * The documentation includes the layout of the program code including indentation and other acceptable industry standards * The documentation includes full internal and external documentation, with a level of detail that enables other programmers to analyse the program * The documentation reflects the tested and implemented program, including changes made during testing of the program | | | |
| **Activity** | **Question** | **SO** | **AC** | |
| **6** | **Write short notes on why it is important to write comments in your code(6)** | 6 | 1-4 | |

| SELF-ASSESSMENT |
| --- |

The learner must make use of the following self-evaluation checklist to rate himself against the learning outcomes of this particular training module in establishing the level of mastery of the information.

1. Not able to comply

2. Reasonable compliance (Not acceptable for final evaluation)

3. Able to comply fully

| **LEARNING OUTCOMES** | | **1** | **2** | **3** |
| --- | --- | --- | --- | --- |
| **1** | Interpret a given specification to plan a computer program solution |  |  |  |
| **2** | Design a computer program to meet a business requirement |  |  |  |
| **3** | Create a computer program that implements the design |  |  |  |
| **4** | Test a computer program against the business requirements |  |  |  |
| **5** | Implement the program to meet business requirements |  |  |  |
| **6** | Document the program according to industry standards |  |  |  |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Learner Signature Date**

**Facilitators’ Signature Date**

# ASSESSMENT FEEDBACK REPORT

| **FACILITATOR FEEDBACK & REMARKS** |
| --- |
|  |

| **ASSESSMENT JUDGEMENT** |
| --- |
| **Learner’s Total Mark: Requirements met ☐ Requirements not met ☐** |
| **Action/s required:**  **By when:** |

| **LEARNER FEEDBACK & COMMENTS** |
| --- |
|  |

| **DECLARATION BY THE FACILITATOR** |
| --- |
| I ……………………………………………............. (Facilitator) hereby certify that I have examined the learner workbook and I am satisfied with the evidence provided by the learner. |

| **DECLARATION BY LEARNER** | |
| --- | --- |
| I, ……………………………………………………………………. declare that I am satisfied that the feedback given to me by the Facilitator was relevant, sufficient and done in a constructive manner. I accept the assessment judgment and have no further questions relating to this particular assessment event. | |
|  |  |
| **Learner Date** | **Facilitator Date** |

| **DECLARATION BY THE ASSESSOR** | |
| --- | --- |
| I ……………………………………………............. (Assessor) hereby certify that I have examined the learner workbook and I am satisfied with the Facilitator Judgment of this assessment. | |
|  |  |
| **Assessor Date** | **Moderator Date** |