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| **FURTHER EDUCATION AND TRAINING CERTIFICATE: INFORMATION TECHNOLOGY: SYSTEMS DEVELOPMENT**  **ID 78965 LEVEL 4 – CREDITS 165** |
| **SUMMATIVE ASSESEMENT**  **SAQA: 14918**  **DESCRIBE THE PRINCIPLES OF COMPUTER PROGRAMMING** |

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| **FULL NAME & SURNAME** | Mila Mihlali Ngewu |
| **ID NUMBER:** | 9909106615084 |
| **NAME OF ASSESSOR** | Anneline Nombeko |
| **DATE OF ASSESSMENT** | 18/09/2023 |
| **VENUE** | NMB iHUB |

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|  | **ACHIEVED** | **NOT ACHIEVED** |
| **KNOWLEDGE** |  |  |
| **SKILLS** |  |  |

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| **Signature of learner** | **Signature of Assessor** |

**ASSESSMENT PACK**

**Please complete the following sections (A and B) before commencing with this assessment. The moderator of this assessment will complete section C.**

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| **Section A Learner Information** | | | | | | | | | | | | | | | | |
| **Name:** | | | | | | |  | | | | | | | | | |
| **Surname:** | | | | | | |  | | | | | | | | | |
| **Date:** | | | | | | |  | | | | | | | | | |
| **Contact telephone no:** | | | | | | |  | | | | | | | | | |
| **Learnership agreement no:** | | | | | | |  | | | | | | | | | |
| **Company:** | | | | | | | **Site:** | | | | | | | | | |
| **ID** |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |

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| **Section B Assessor Information** | | | | | | | | | | | | | | | | |
| **Name:** | | | | | | |  | | | | | | | | | |
| **Surname:** | | | | | | |  | | | | | | | | | |
| **Date:** | | | | | | |  | | | | | | | | | |
| **Contact telephone no:** | | | | | | |  | | | | | | | | | |
| **Assessor no:** | | | | | | |  | | | | | | | | | |
| **Provider no:** | | | | | | | **Site:** | | | | | | | | | |
| **ID** |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |

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| **Section C Moderator Information** | | | | | | | | | | | | | | | | |
| **Name:** | | | | | | |  | | | | | | | | | |
| **Surname:** | | | | | | |  | | | | | | | | | |
| **Date:** | | | | | | |  | | | | | | | | | |
| **Contact telephone no:** | | | | | | |  | | | | | | | | | |
| **Moderator no:** | | | | | | |  | | | | | | | | | |
| **Provider no:** | | | | | | | **Site:** | | | | | | | | | |
| **ID** |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |

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| **Results:** |
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**1. INSTRUCTIONS TO ASSESSOR**

**Introduction:**

This assessment guide has been designed as a generic assessment guide and is intended for use by the accredited Training Providers.

**Purpose of the assessment**

The purpose of summative assessment against this unit standard is to:

♦ Award credits to the NQF to learners who are able to start and run their businesses.

**Learning assumptions**

The following knowledge, skills, attitude and/or equivalent:

♦ Demonstrate knowledge of communication and numeracy at Abet Level 3

**Assessment methods**

The following assessment methods will be used for the summative assessments:

♦ written and/or/verbal questioning

♦ Product sample and on site assessment

**2. Assessment Process**

**General**

* Use the assessment guide and your latest company policies and standard operating procedures to assess the evidence received from the learner.
* Use the section: Addition Comments/Questions to note down any further comments or questions on the evidence assessed.
* Use the model answers as a guideline to assess the learner’s answers to the assessment questionnaire.
* The learner can complete the assessment questionnaire orally. In this case, agree a date, time and venue.
* Provide the learner with a feedback within 10 working days of receiving the evidence.

**Step 1 - Planning for the Assessment**

Review this assessment guide to:

* Ensure that you understand all the requirements of the assessment in terms of evidence required to prove competence.
* Identify and prepare the learner for the assessment by:
  + Completing the Assessment Plan with the learner to discuss and agree the details regarding the assessment.
  + Completing the Assessment Preparation Checklist and getting the learner to sign.
* Ensure that you have familiarized yourself with the following:
  + The various patrolling functions and standard operating procedures within the company.

**Step 2: Complete the Assessment**

* Collect the evidence in accordance with the methods and evidence requirements specified.
* Mark each question as correct or incorrect in the “Office Use” column.
* Record the evidence on the assessment guide and indicate “Competent”, “Not Yet Competent” or “Not Assessed” for each assessment criterion. Note down any comments at the back of the assessment guide.
* Ask the learner additional questions, if necessary, to clarify points. Record these on the guide.
* All questions must be complete as per the criteria specified.
* Answers provided must be similar to the model answers.

**Step 3 - After the Assessment**

* Prepare the feedback by writing comprehensive, developmental feedback after each section on the Assignment Sheets. In addition to this, you are required to write a summary overall feedback on the Assessment Guide.
* Provide the feedback to the learner in a safe, undisturbed in nature.
* Ensure that your feedback is developmental and supportive in nature.
* Advise the learner on what action to follow in the event of a “Not Yet Competent” rating.
* Advise the learner on what action to take where he/she feels the need to appeal against your decision.
* Allow the learner time to provide you with feedback relevant to the process.
* Record the learner’s feedback in the guide and ensure that it is given to the person responsible for the quality assurance of assessment tools.
* Ensure that the learner co-signs the assessment guide to indicate agreement with the feedback.

**3. Assessment documentation required:**

**Step 1: Planning for the Assessment**

♦ Assessment Plan

♦ Assessment Preparation Checklist

♦ Assessment Policy (including Appeals)

♦ Evidence Matrix

♦ Assessment Instruments

**Step 2: Conducting the Assessment**

♦ Assessor Guide

♦ Learner’s workbook

♦ Summative assessment pack

**Step 3: After the Assessment**

♦ Assessment Comments

♦ Feedback Report

**4. Specific Instructions**

Please note that Part 3 Assessment Instruments are not included in this guide and are to be included by the assessor on an individual basis.

The actual summative assessments need to be completed and signed off by both learner and assessor. The assessor will take control of the completed assessment instruments and will file them under the tab for Assessment Evidence.

The completed assessment pack will be kept in safekeeping at the training provider for three months after endorsement by SETA and will then be returned to the learner.

**Guidelines where** a**n appeal is lodged**

* The normal appeal procedure prescribed by SETA and described by the provider’s Quality Management System will be followed.

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**ASSESSMENT PLAN**

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| **ASSESSMENT DETAILS** | | | | | | | | | | | |
| **Date of Assessment** | | | | **Option 1** | **Option 2** | | | | **Option 3** | **Option 4** | |
| **18/09/2023** |  | | | |  |  | |
| **TIME OF ASSESSMENT** | | | | | | | | | | | |
| **Start:** | **12:30** | | | | | **End:** | | **16:30** | | | |
| **VENUE** | **NMB iHUB** | | | | | **Contact**  **person** | |  | | | |
| **LANGUAGE MEDIUM**  **METHOD OF** | | | | | | **English** | | | | | |
| **METHOD OF ASSESSMENT (please tick off the one to be used)** | | | | | | | | | | | |
| **OBSERVATION** | | | **ORAL** | | | | | **WRITTEN** | | | |
| **Simulation** | |  | **Knowledge test** | | | |  | **Knowledge test** | | |  |
| **Product** | |  | **Interview** | | | |  |  | | |  |

**PRE-ASSESSMENT MEETING CHECKLIST**

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| **ACTION** | **YES/NO** | **COMMENTS** |
| Set learner at ease; be friendly, polite and professional. | **✓** |  |
| Explain to the learner and agree on the following issues.   1. The unit standard that will be assessed 2. Date, time, venue and process to be followed during the assessment. 3. Summative assessment tools to be used for the assessment. 4. The assessment plan 5. Purpose of assessment | **✓** |  |
| Explain to the learner and agree on the role of all involved during the assessment process. | **✓** |  |
| Identify possible barriers and or disabilities of the learner. | **✓** |  |
| Explain the meaning and application of RPL. | **✓** |  |
| Explain, discuss and provide one complete set of the Appeals process documentation. | **✓** |  |
| Explain to the learner when final results will be available and how feedback will be provided. | **✓** |  |
| Discuss previous assessment results if applicable. | **✓** |  |

I, MM Ngewu (initials and surname of learner), DECLARE THE FOLLOWING:

A copy of the unit standard(s) involved has been given to me prior to this meeting. I know I will be assessed against the criteria, which have been set to the applicable unit standards. The criteria have been discussed with me, and the procedures and purpose of the assessment has been clearly explained to me.

I am well aware of the venue, date and time that I will be assessed. I consider the period of time given to me to prepare myself for the assessment to be fair.

I understand clearly that I have the right to appeal against any decision made by the assessor during the assessment of the evidence provided by me, and that I have free access to the appeals procedures attached to this assessment pack. I understand that I have the right to be accompanied by another person during all procedures, and that I have free access to the Training Division of SBV’S Health and Safety Procedures- filed at the offices.

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|  | **18/09/2023** |
| **Signature of learner** | **Date** |

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**Assessment Instruments**

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| **TAKE NOTE** |
| **The assessment instruments included in this assessment pack are all summative assessment instruments and are to be read in conjunction with the formative assessment instruments contained in the learner workbook. Both formative (workbook) and summative assessments are to be retained as part of the learner’s portfolio of evidence.** |

**A number of the assessment instruments contained in this assessment are workplace knowledge based questions. This means that you will arrange with the learner, a time that is suitable, during which the learner will complete each questions.**

**Complete the following activities according to the instructions provided**

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| **Activity** |  | **Mark** |
| **1** | **Describe and explain different problem analysis techniques (at least 2) in computer program design.** | **7** |

1. **Structured Systems Analysis:**

Structured Systems Analysis, often associated with Structured Analysis and Design Technique (SADT) or Structured Systems Analysis and Design Methodology (SSADM), is a systematic approach to analyzing and designing computer-based systems.

Data Flow Diagrams (DFD): DFDs are used to represent the flow of data within a system. They consist of processes, data stores, data flow, and external entities. DFDs help visualize how data moves through a system and how processes transform it.

1. **Use Case Analysis:**

Use case analysis is a technique commonly used in object-oriented software design to capture and define the interactions between a system and its users or external systems.

Use Case Diagrams: Use case diagrams visually represent the interactions between different actors (users, systems, or external entities) and the system under consideration. Actors are depicted as stick figures, and use cases represent specific functionalities or actions.

✓ ……..(7)

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| **Activity** |  | **Mark** |
| **2** | **Demonstrate understanding of documenting the Program** | **5** |

Creating clear, organized, and thorough documentation for a program is an essential component of software development that will aid users, developers, and maintainers in comprehending and using the software.

Examples:

1. Readme Files:

* Include installation instructions, usage examples, and any prerequisites.
* Explain how to run the program and any configuration options.

1. User Manuals and Guides:

* Include step-by-step instructions, screenshots, and troubleshooting tips.
* Provide context on how the software addresses the user's needs or solves specific problems.

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| **Activity** |  | **Mark** |
| **3** | **Describe and explain different numeric data types (at least 3).** | **10** |

1. **Integer Data Type:**

Integers are whole numbers without a decimal point. They can be positive, negative, or zero.

Examples: -10, 0, 42, 1001

Integers are typically represented using fixed amounts of memory, and the range of values they can hold depends on the number of bits allocated.

1. **Floating-Point Data Type:**

Floating-point numbers represent real numbers with a decimal point. They can have both integer and fractional parts.

Examples: -3.14, 0.001, 2.71828

Floating-point numbers are typically implemented using a fixed number of bits to represent the significand (also called mantissa) and the exponent.

Common floating-point data types include float, double, and long double, with different levels of precision.

1. **Decimal (Fixed-Point) Data Type:**

Decimal data types are used for representing fixed-point decimal numbers with a specified number of decimal places.

Examples: 3.14159, 2.50, -0.005

Unlike floating-point numbers, which use binary representation and may not precisely represent some decimal values, decimal data types store numbers in base 10.

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| **Activity** |  | **Mark** |
| **4** | **Describe different internal representations of data types.** | **8** |

1. **Integers:**

For signed integers, the majority of current computers employ two's complement encoding. The sign bit (0 for positive, 1 for negative) is the most significant bit (MSB) in this encoding, while the remaining bits stand in for the size of the number.For signed integers, the majority of current computers employ two's complement encoding. The sign bit (0 for positive, 1 for negative) is the most significant bit (MSB) in this encoding, while the remaining bits stand in for the size of the number.

1. **Strings:**

Character Arrays: Strings are often stored as arrays of characters, where each character is represented using its internal ASCII or Unicode code point.

1. **Boolean:**

Booleans can be represented using a single bit, where 0 typically represents false, and 1 represents true.

1. **Characters:**

ASCII: A popular character encoding scheme is called ASCII (American scheme Code for Information Interchange). A 7-bit or 8-bit binary number, with extra control characters included in the 8-bit version, is used to represent each character.

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| **Activity** |  | **Mark** |
| **5** | **Briefly describe good program documentation principles.** | **10** |

Documentation, especially internal documentation, should be an integral part of the coding process. Often, students write code first and add documentation as an afterthought, which can make documentation appear dull and tiresome. Rushing documentation at the last minute usually results in subpar quality.

• Simplify: People don't enjoy reading lengthy documentation, so omit unnecessary details like theoretical explanations. In the initial documentation release, focus on the 20% of use cases that cover the majority, and consider it an essential practice.

• Visuals are powerful: Instead of relying solely on text, use screenshots or even screencasts to demonstrate actions and processes. When contemplating a numbered list, think about creating a brief screencast instead or in addition.

• Improve the software: If you struggle to explain a feature in documentation, it might be a sign that the software itself needs revision. The best documentation is that which isn't required because the software is intuitive.

• Learn from others: Examine documentation from software you admire or competitors, and borrow formatting, graphical elements, or methods for clarifying complex concepts.

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| **Activity** |  | **Mark** |
| **6** | **Briefly describe and explain techniques used to research problems in terms of inputs and outputs.** | **10** |

**Surveys:**

Inputs: Questionnaires or interviews with participants.

Outputs: Quantitative or qualitative data, insights into attitudes or behaviors.

**Experiments:**

Inputs: Controlled variables, experimental design.

Outputs: Experimental results, statistical data, causal relationships.

**Observations:**

Inputs: Direct or participant observations.

Outputs: Descriptive data, patterns, insights into natural behavior.

**Case Studies:**

Inputs: Detailed examination of a specific case or situation.

Outputs: In-depth understanding, context-specific insights.

**Literature Review:**

Inputs: Existing academic or published literature.

Outputs: Synthesized information, identification of gaps or trends.

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| **Activity** |  | **Mark** |
| **7** | **Briefly describe and explain the relationship between files, records and fields.** | **10** |

**Fields:**

Fields are the smallest units of data in a database or file. They represent individual pieces of information, such as a person's name, age, or address.

Fields are typically organized by data types (e.g., text, number, date) and have a defined format.

**Records:**

Records, also known as rows or entries, are collections of related fields. Each record contains a set of fields that together represent a single entity or item.

For example, in a database of customers, each record might include fields for the customer's name, contact information, and purchase history.

**Files:**

Files are collections of records. A file can be thought of as a table or a list where each row represents a record, and each column represents a field.

Files are used to store and organize large amounts of related data. They are often organized around a common theme or purpose, such as a customer database file or an inventory file.

✓ ……..(10)

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| **ASSESSOR REPORT** |
| **ASSIGNMENT**  CANDIDATE NAME:  DATE OF FEEDBACK: |
| OVERALL ASSESSMENT DECISION:  I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the assessor, declare the candidate **Competent / Not Yet Competent** (circle relevant) on all the criteria within the assignment. |
| STRENGTHS: |
| WEAKNESSES: |
| LEARNER COMMENTS: |
| DEVELOPMENT PLAN: |
| CANDIDATE DECLARATION:  I Mila Ngewu, the candidate, declare that I have received feedback and been informed of my overall competence for the criteria within the assignment. |
| ASSESSOR SIGNATURE LEARNER SIGNATURE  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |