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

**Learner Information:**

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| **Details** | **Please Complete this Section** |
| Name & Surname: |  |
| Organisation: |  |
| Unit/Dept: |  |
| Facilitator Name: |  |
| Date Started: |  |
| Date of Completion: |  |

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**OVERVIEW**

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| **About the Learner Workbook** | This Learner Exercise Workbook has been designed and developed to evaluate learners’ level of understanding of the  **Describe the principles of Computer Programming.** It forms part of a series of Learner Workbooks that have been developed for **FURTHER EDUCATION AND TRAINING CERTIFICATE: INFORMATION TECHNOLOGY: SYSTEMS DEVELOPMENT ID 78965 LEVEL 4 – CREDITS 165** | | |
| **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** |
| **14918** | **Describe the principles of Computer Programming** | **3** | **5** |
| **Context** | This assessment represents the Formative Assessment component of the **FURTHER EDUCATION AND TRAINING CERTIFICATE: INFORMATION TECHNOLOGY: SYSTEMS DEVELOPMENT**  **ID 78965 LEVEL 4 – CREDITS 165** 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 **\_ points**. In order to meet the pass mark, learners are required to achieve a minimum of **80%** 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**

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

# **ASSESSMENT PREPARATION CHECKLIST**

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| **DESCRIPTION** | **YES** | **NO** | **COMMENTS/CONTINGENCY** |
| This assessment is a formative assessment and it is based on the outlined unit standard/s for the **Describe the principles of Computer Programming** module. |  |  |  |
| Your assessment evidence for **Describe the principles of Computer Programming** 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. ..................................................... 2. ..................................................... |  |  |  |
| To be declared competent on **Describe the principles of Computer Programming** module (formative assessment), you should have obtained at least 80% 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. |  |  |  |

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| **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:** |
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Learning Unit1

**UNIT STANDARD NUMBER :** 14918

**Describe the principles of Computer Programming**

**LEVEL ON THE NQF :** 3

**CREDITS :** 5

**FIELD :** Physical, Mathematical, Computer and Life Sciences

**SUB FIELD :** Construction Information Technology and Computer Sciences

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| **PURPOSE:** | This unit standard is intended:  • to provide a conceptual knowledge of the areas covered  • for those entering the workplace in the area of systems development  • as additional knowledge for those wanting to understand the areas covered  People credited with this unit standard are able to:  • describe problem analysis and program design techniques  • describe different data representations used in computer programs  • describe basic programming principles  • described the principles used in designing a computer program  The performance of all elements is to a standard that allows for further learning in this area |
| **LEARNING ASSUMED TO BE IN PLACE:** | |
| Open.  The credit value of this unit is based on a person having the prior knowledge and skills to:  • Demonstrate an understanding of fundamental mathematics (at least NQF level 3)  • Demonstrate PC competency skills (End User Computing unit standards up to Level 3). | |

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| **SESSION 1.**  **Describe problem analysis and program design techniques.** |
| **Learning Outcomes** |
| * The description provides an appreciation of the steps and techniques of program maintenance. * The description identifies different problem analysis techniques (at least 2). * The description identifies different programming design techniques. |

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| http://3.bp.blogspot.com/_0EodaYtqevU/TMun5XOj03I/AAAAAAAAAIU/lzrnWelQjgc/s1600/group-discussion.jpg | **Answer the following questions according to the instructions provided** |

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| **Activity** | **Questions Description** | **Mark** |
| **1** | **List the steps and techniques of program maintenance.** | **5** |

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| **Activity** | **Questions Description** | **Mark** |
| **2** | **What Is Pseudocode?** | **5** |

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| **SESSION 2.**  **Describe different data representations used in computer programs.** |
| **Learning Outcomes** |
| * The description distinguishes between different numeric data types (at least 3). * The description identifies different logical data types. * The description distinguishes between different internal representations of data types. * The description identifies different logical operators. |

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| **Activity** | **Questions Description** | **Mark** |
| **3** | **Identify different logical data types.** | **8** |

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| **Activity** | **Questions Description** | **Mark** |
| **4** | **Identify and describe different logical operators.** | **7** |

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| **SESSION 3.**  **Describe the basic principles of Computer Programming.** |
| **Learning Outcomes** |
| * 1. The description identifies different algorithmic structures of programming languages. * 2. The description identifies good program documentation principles (at least 3). * 3. The description identifies programming quality assurance (QA) principles. * 4. The description distinguishes between validation and verification. * 5. The description explains the relationship between files, records and fields. |

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| **Activity** | **Questions Description** | **Mark** |
| **5** | **Identify and describe different algorithmic structures of programming languages** | **8** |

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| **Activity** | **Questions Description** | **Mark** |
| **6** | **Identify and describe programming quality assurance (QA) principles.** | **8** |

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| **Activity** | **Questions Description** | **Mark** |
| **7** | **Distinguishes between validation and verification** | **4** |

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| **SESSION 4.**  **Describe the principles used in designing a computer program.** |
| **Learning Outcomes** |
| * The description identifies methods of specifying problems. * The description explains techniques used to research problems in terms of inputs and outputs. * The description includes an evaluation of the viability of developing computer programs to solve problems and it identifies the issues in assessing the viability. * The description explains the features of a computer program that could solve a given problem. |

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| **Activity** | **Questions Description** | **Mark** |
| **8** | **Identify methods of specifying problems in designing a computer program.** | **4** |

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| **Activity** | **Questions Description** | **Mark** |
| **9** | **Identify features of a computer program that could solve a given problem.** | **7** |

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| **10** | **Demonstrate understanding of carrying out an evaluation of the viability of developing computer programs to solve problems and identifies the issues in assessing the viability.** | **5** |

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