higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PRINCIPLES OF COMPUTER PROGRAMMING

(First paper)

NQF LEVEL 3

22 November 2023

This marking guideline consists of 6 pages.

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SECTION A

QUESTION 1

1.1 C
1.2 A
1.3 D
1.4 B
1.5 A
1.6 C
1.7 A
1.8 C
1.9 D
1.10 D (10 × 1) **[10]**

QUESTION 2

2.1 True
2.2 False
2.3 True
2.4 True
2.5 True
2.6 True
2.7 False
2.8 False
2.9 False
2.10 True

(10 × 1) **[10]**

QUESTION 3

3.1 Exceptions
3.2 Structured Query Language (SQL)
3.3 Event-driven
3.4 Progress bar
3.5 Dimension (Dim)

(5 × 1) **[5]**

QUESTION 4

4.1 F
4.2 D
4.3 H
4.4 E
4.5 G (5 × 1) **[5]**

TOTAL SECTION A: 30

SECTION B

QUESTION 5

5.1 5.1.1
- Flip flop
- Latch
- Bi-stable multivibrator (Any 2 × 1) (2)

5.1.2
- A flip flop is an electronic circuit with two stable states that can be used to store binary data.
- The stored data can be changed by applying varying inputs.
- Flip-flops and latches are fundamental building blocks of digital electronics systems used in computers, communications, and many other types of systems.
- Flip-flops and latches are used as data storage elements as they can store a single bit (binary digit) of data. (Any 2 × 2) (4)

5.2 5.2.1 3 (1)
5.2.2 NOT ✓ ((NOT A) OR ✓ (B AND C))✓ (3)
[10]

QUESTION 6

6.1 6.1.1 Data values that stay the same every time a program is executed are known as constants. (2)

6.1.2 (a) str
(b) Char
(c) True or False / Yes or No / 1 or 0
(3 × 1) (3)

6.1.3
- Byte
- Short
- Integer
- Long Integer
- Single
- Double
- Decimal
- SByte
- UShort
- Uinteger
- ULong (Any 4 × 1) (4)

6.2 6.2.1 A sequence of instructions that are continually repeated either a certain number of times or until/when a certain condition(s) is reached. (2)

6.2.2 FIGURE 3 – For Loop
FIGURE 4 – Do While Loop
FIGURE 5 – While Loop (3)

6.2.3 Do until.
For each (Any ONE) (1)

6.2.4
- While loop checks the condition first and then executes the statement(s), whereas do while loop will execute the statement(s) at least once, and then the condition is checked.
- While loop is an entry-controlled loop whereas do while is exit controlled loop. (2 × 2) (4)

6.3 6.3.1 Lst. (1)

6.3.2 MyListBox.Items.Add ✓ (“Visual Studio 2019”) ✓ (2)

6.3.3 MyListbox.Items.Remove ✓ ("VB2012") ✓

OR

MyListbox.Items.RemoveAt ✓ (4) ✓ (2)

6.3.4
- A list box occupies more space on the interface and displays more than one value, whereas a combo box occupies less space but shows only one value for visibility.
- A combo box allows the user to edit the selected value while a list box only allows the user to choose from the given list
- More than one value can be selected in a list box whereas only one value can be selected in a combo box. (Any 2 × 2) (4)

6.3.5 SelectedIndexChanged. (2)
[30]

QUESTION 7

7.1 7.1.1 Bubble Sort
Recursive Bubble Sort
Insertion Sort
Recursive Insertion Sort
Merge Sort
Iterative Merge Sort
Quick Sort
Iterative Quick Sort
Heap Sort
Counting Sort
Radix Sort
Bucket Sort
ShellSort
TimSort
Comb Sort
Pigeonhole Sort
Cycle Sort
Cocktail Sort
Strand Sort
Bitonic Sort
Pancake sorting
Binary Insertion Sort
BogoSort or Permutation Sort
Gnome Sort
Stooge Sort
Tag Sort (To get both sorted and original)
Tree Sort
Cartesian Tree Sorting
Odd-Even Sort/Brick Sort. (Any 2 × 1) (2)

7.1.2 A CSV (comma-separated values) file is a text file that has a specific format which allows data to be saved in a tabular/column format. (2)
[OR ANY OTHER APPLICABLE DEFINITION]

7.1.3 System.IO (2)

7.2 7.2.1 Dynamic Array (1)

7.2.2 The *StreamReader* class provides the necessary methods that can be used for reading data from text files. (2)

7.2.3 Identifies a *Try* block.

OR

Used in exception handling. (1)
[10]

QUESTION 8

8.1 8.1.1 Tables are essential objects in a database because they hold all the information or data. The database table is where all the data in a database is stored, which is made up of rows and columns.
[OR ANY OTHER APPLICABLE EXPLANATION] (2)

8.1.2
- The primary advantage is that a database allows you to capture relationships across single data files.
- A database is generally used for storing related, structured data, with well-defined data formats, in an efficient manner for insert, update and/or retrieval.
- Well-designed and structured databases will reduce data anomalies.
- Improves data access to many users.
- Improves data security. (Any 2 × 2) (4)

8.1.3 RNO. (1)

8.1.4 STUDENT (1)

8.1.5 NAME
CLASS
SECTION
GENDER
MARKS (Any 2 × 1) (2)

8.1.6 A Max value of 100. (1)

8.1.7 The maximum assessment score is 100 marks. (1)

8.1.8 INSERT✓ INTO STUDENT✓

(RNO, NAME, CLASS, SECTION, GENDER, MARKS) ✓

VALUES (22, “THABISO”, 12, “B”, “MALE”, 88) ✓ (4)

8.2 8.2.1 One to Many.

OR

One supplier, many products. (2)

8.2.2
- It establishes a connection between) ✓ a pair of tables that are logically related to each other. ✓
- Relationships allow relational databases) ✓to split and store data in different tables while linking disparate) ✓ data items.

(Any 2x1) (2)
[20]

TOTAL SECTION B: 70
GRAND TOTAL: 100

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