

UNIVERSITY OF FORT HARE

EAST LONDON CAMPUS

IFS222E

DEGREE EXAMINATIONS – PAPER 1

November 2019

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Time: 3 Hours

Marks: 80

Subject: Information Systems 2- Systems Design and Implementation

This paper consists of five (5) pages including the cover page

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GENERAL INSTRUCTIONS TO CANDIDATES

1. This paper consists of two (2) sections. Answer **ALL** questions in both sections.
2. It is in the candidate's interest to write legibly.
3. Time management is very important. The value of the mark for each question should be used as a rough guide to the amount of time allocated to answer the question (100 marks in 180 minutes).
4. At the end of the examination place all answer books inside the first answer book used.

Question 1 (20 marks)

Answer the question by selecting the correct option from the list provided. Write down only the corresponding letter.

1.1. What is the length of the following array: [2]

```
string [ ] data = { 12, 34, 9, 0, -62, 88 };
```

- a. 1
- b. 5
- c. 6
- d. 12

1.2. Examine the code below and state what value/values will be displayed on the label called **lblAnswer**? [2]

```
string [ ] sArray = { 2, 4, 6, 8, 10, 1, 3, 5, 7, 9 };  
for ( int index= 0 ; index < 5 ; index++ )  
    lblAnswer.Text = sArray[ index ] + " " ;
```

- a. 2 4 6 8
- b. 2 4 6 8 10
- c. 2 4 6 8 10 1
- d. 2 4 6 8 10 1 3 5 7 9

1.3. Examine the code below and state values will be displayed on the label called **lblAnswer**? [2]

```
int[] egArray = { 2, 4, 6, 8, 10, 1, 3, 5, 7, 9 };  
for ( int index= 0 ; index < egArray.length ; index++ )  
    lblAnswer.Text = egArray[ index ] + " " ;
```

- a. 2 4 6 8
- b. 2 4 6 8 10
- c. 2 4 6 8 10 1
- d. 2 4 6 8 10 1 3 5 7 9

1.4. Examine the code fragment below. What value will be displayed on the label called **lblAnswer**? [2]

```
int[ ] egArray = { 2, 4, 6, 8, 10, 1, 3, 5, 7, 9 };  
  
for ( int index= 0 ; index < egArray.length ; index = index + 2 )  
    lblAnswer.Text = egArray[ index ] + " " );
```

- a. 2 4 6 8 10 1 3 5 7 9
- b. 4 8 1 5 9
- c. 2 6 10 3 7
- d. 2 6 10 3 7 0

1.5. Does a programmer always know how long an array will be when the program is being written? [2]

- a. Yes---the program will not compile without the length being declared.
- b. No---the array object is created when the program is running, and the length might change from run to run.
- c. Yes---otherwise the program will not run correctly.
- d. No---arrays can grow to whatever length is needed.

1.6. Fill in the blanks of the following code fragment so that the elements of the array are printed in reverse order, starting with the last element. [2]

```
int[] egArray = { 2, 4, 6, 8, 10, 1, 3, 5, 7, 9 };  
for ( int index= _____ ; _____ ; _____ )  
    lblAnswer.Text = ( egArray[ index ] + " " );
```

- a. index = 0; index < egArray.length; index--
- b. index = length; index < 0; index--
- c. index = length-1; index > 0; index--
- d. index = egArray.length-1; index >= 0; index--

1.7. Observe the code fragment below. What value will be displayed on the label called **lblAnswer**? [2]

```
int[] array = { 1, 4, 3, 6, 8, 2, 5 };  
int what = array[0];  
  
// scan the array  
for ( int index=0; index < array.length; index++ )  
{  
    if ( array[ index ] > what )  
        what = array[ index ];  
}  
lblAnswer.Text = what.ToString();
```

- a. 1
- b. 5
- c. 1 4 3 6 8 2 5
- d. 8

1.8. Examine the following code fragment and state what will be displayed on the label called **lblAnswer**. [2]

```
int[] array = { 1, 4, 3, 6, 8, 2, 5 };  
int what = array[0];  
for ( int index=0; index < array.length; index++ )  
{  
    if ( array[ index ] < what )  
        what = array[ index ];  
}
```

```
lblAnswer.Text = what.ToString();
```

- a. 1
- b. 5
- c. 1 4 3 6 8 2 5
- d. 8

1.9. What is the output of the following code fragment?

[2]

```
int[] array = { 1, 4, 3, 6 };
int what = 0;

// scan the array
for ( int index=0; index < array.length; index++ )
{
    what = what + array[ index ];
}
MessageBox.Show( what.ToString( );
```

- a. 14
- b. 1
- c. 6
- d. 1 4 3 6

1.10. Fill in the blank in the following code fragment so that each element of the array is assigned twice the value of its index.

[2]

```
int[] array = new int[10];

for ( int index=0; index < array.length; index++ )
{
    _____
}
```

- a. `index = 2*index;`
- b. `array[2*index] = 2*index;`
- c. `array[index] = 2*array[index];`
- d. `array[index] = 2*index;`

Question 2 (60 Marks)

2.1. Complete the code below by answering the questions that follow:

```
string FirstName = "Siya";
string Surname = "Nkosi";
string FullName = (2.1.1) _____;
```

```
int iLength = (2.1.2) _____;
```

-
- 2.1.1. Provide the C# Code to concatenate the value of the variables **FirstName** and **Surname** (With a space separating the two). [1]
 - 2.1.2. Provide the C# Code to count how many characters are in the full name (i.e. name and surname). [1]
 - 2.1.3. Provide the C# code to add the value of the variable called **FullName** to a ListBox called lstStudents. [2]
 - 2.1.4. Provide the C# code to sort the ListBox called lstStudents. [2]

 - 2.2. List and briefly describe four important parameters that make up an SQL connection String. [8]
 - 2.3. Name and explain the three categories of testing that take place according to the phases of the Software Development Lifecycle [9]
 - 2.4. Discuss the three main underlying principles (known as the Object Oriented Trilogy) upon which Object Oriented Programming is based. [9]
 - 2.5. Compare and contrast the following concepts:
 - 2.5.1. Objects, properties and methods [3]
 - 2.5.2. Exception handling and input validation [2]
 - 2.5.3. User Interface Design and User Experience [2]
 - 2.5.4. SqlServer Authentication and Windows Authentication [2]
 - 2.5.5. The Remove() and the RemoveAt() methods of a ListBox [2]
 - 2.6. List and describe 4 types of input validation checks that should be done in the process of validating input. [8]

 - 2.7. Name and describe the 3 aspects of a user interface [6]
 - 2.8. List and explain the qualities of a well behaved loop. [3]

-END OF PAPER-