



Vavuniya Campus of the University of Jaffna

First Examination in Information Technology - 2018

First Semester - September/October 2019

IT1134 Fundamentals of Programming (Theory)

Answer Four Questions only

Time : Two hours

1. (a) Define each of the following terms:

i. Pseudo code

ii. Algorithm

[10%]

(b) Write an algorithm to find the maximum number of three given distinct numbers.

[25%]

(c) Draw the symbols used in flowchart for each of the following operations with suitable examples:

i. input a value

ii. termination

iii. decision making

iv. calculation

v. connectivity

[20%]

(d) Explain the structure of a C++ program.

[20%]

[This question is continued on the next page]

- (e) You are required to read a string and display whether the string is a palindrome or not. Draw the flowchart to solve the problem. [25%]
2. (a) State the purpose of using the *iostream* header file in C++. [15%]
- (b) What is meant by variables in C++? Discuss the difference between variable declaration and initialization using suitable examples. [20%]
- (c) State the purpose of using *bool* data type in C++. [10%]
- (d) Discuss the differences between *Local* and *Global* variables using suitable examples. [20%]
- (e) Explain the errors of each of the following program segments:

i.

```
int main()
{
    for (int 3=i; i<=5;++i)
    {
        Cout>>"hello world";
    }
    return 0;
}
```

ii.

```
int main()
{
    float pi=22/7;
    Int Area=pi*r*r;
    Cout<<
    return 0;
}
```

[20%]

- (f) List down the relational operators used in C++. [15%]

3. (a) Explain how a one dimensional array is declared and initialized in C++. [15%]
- (b) Distinguish sorted array and unsorted array used in C++. [15%]
- (c) You are required to write a program to perform the following tasks using an array:
- Read ten integer values from a user and store them in an array.
 - Read any stored value from a user and display the number of occurrences in the array.
 - Find and display the minimum value of the array.
 - Display all the values in the array. [50%]
- (d) Explain the use of two-dimensional array with a suitable example. [20%]
4. (a) Briefly describe each of the following control structures with suitable examples:
- if
 - Nested if...else [20%]
- (b) Compare and contrast the *switch* and *if...else* structures with suitable examples. [20%]
- (c) Write down the output for the following program segment.

```
int i, j;
for (i = 6; i >= 1; i--)
{
    for (j = 1; j <= 6-i; j++)
        cout << " ";
    for (j = 1; j <= i; j++)
        cout << j;
    cout << endl;
}
```

[20%]

[This question is continued on the next page]

- (d) i. Describe the C++ syntax of a *while* loop and briefly explain the major difference with *do...while* loop. [20%]
- ii. Write a C++ program segment to print the following pattern using *while* loop only:

```
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
```

[20%]

5. (a) State the importance of *Functions* in a computer program, and how it is defined in C++ programs. [20%]
- (b) Explain what is meant by recursive programming technique. [15%]
- (c) Discuss the difference between arguments passed by value and passed by reference using suitable examples. [25%]
- (d) You are required to write a C++ program to read a three digit integer and display the reverse digits using a function.

Sample input and output:

Enter the value: 654

The reverse value: 456

[40%]