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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
First Year - Semester I Examination – March 2021

COM 1201 – Principles of Program Design

Answer all questions **Time: Two (02) hours**

1.

(a) Briefly describe three (3) benefits of flow charts.

(06 marks)

(b) Briefly discuss following data types with examples.

I. Integer
II. Character
III. Boolean

(06 marks)

(c) What will be the output of the following pseudocodes?

I.

```
integer i
set i = 5
do
print i + 5
i = i – 1
while (i not equal to 0)
end while
```

(02 marks)

II.

```
integer n
string a
set a = "rajarata"
n = stringLength(a)
print (n+5)
```

(02 marks)

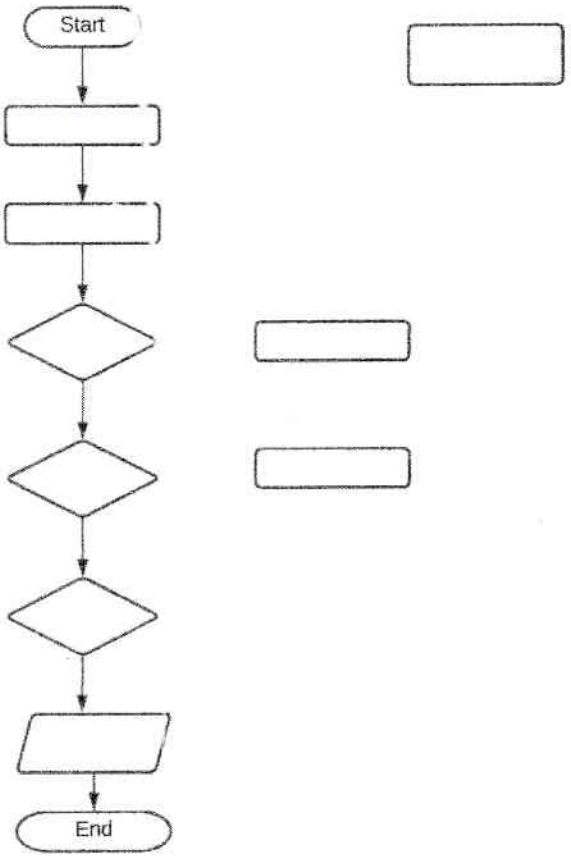
III.

```
integer a, b
set a = 17, b = 9
a = a mod (a-3)
b = b mod (b-3)
a = a mod 1
b = b mod 1
print a + b
```

(02 marks)

(d) The following incomp ete flowchart shows a snake and ladder game. Use the information given belo / to fill in the blocks and to draw the missing arrows to complete the flowchart.

I. Move up the ladd r
II. Reached the last b ock of the game
III. Give dice to next p ayer
IV. Move the coin
V. You are the winner
VI. Throw the dice
VII. Landed on snake hea l
VIII. Slide down to the tail of the snake
IX. Landed on the bottom of the ladder



(07 marks)

2. Draw a flowchart and write the pseudocode to perform the following operations.

   (a) Insert numbers 7, 5,8,2,1 into a list.

   (10 marks)

   (b) Sort the above list in descending order.

   (10 marks)

   (c) Delete number 5 from the ordered list.

   (10 marks)

3. Draw a flowchart and write the pseudocode to display following patterns.
   (Hint :Use loops)

   (a)
   ```
   * * * * * *
   * * * * * *
   * * * * * *
   * * * * * *
   ```

   (10 marks)

   (b)
   ```
   * * * * * * *
    * * * * * *
     * * * * *
      * * * *
       * * *
        * *
         *
   ```

   (10 marks)

(c)
```
* * * *
 * * *
  * *
   *
  * *
 * * *
* * * *
```

(10 marks)

4.

(a) Briefly discuss the following ter ns.

I. Imperative programming
II. Procedural programming
III. Object Oriented Programming

(03 marks)

(b) Compare and state the differences between functional programing and mathematical programming?

(02 marks)

(c) Write a pseudocode and draw the flowchart to implement a program that performs the following:

I. Ask user to enter a number.
II. If the number is between 0 and 10, write the word blue.
III. If the number is between 10 and 20, write the word red.
IV. If the number is between 20 and 30, write the word green.
V. If it is any other number, write that it is not a correct color option

(10 marks)

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