**Year 2**

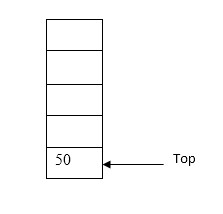
**BSc (Hons) in Information Technology**



## Data Structures and Algorithms – IT2070

# Tutorial 1 – Stacks 2020

## Question 1

a) Consider the following Stack and draw the Stack frames after executing each statement given below.

int a = 22, b = 44;

1. theStack.push(2);
2. theStack.push(a);
3. theStack.push(a + b);
4. theStack.pop();
5. theStack.push(b);
6. theStack.push(a –b );

## Question 2

1. Implement isEmpty() and isFull() methods of the stack class.

1. A stack class has already been implemented with push() , pop() and peek() methods. It is

used to store characters. Write a code segment to insert following characters to a ’myStack’ object created from the stack class.

‘g’ , ‘t’, ‘o’, ‘p’

1. Write code segment to display all the values in a stack by removing them.
2. What is the result of section iii) above?

## Question 3

A stack class called StackX has been created to store characters. ‘push’ and ‘pop’ methods have been implemented. Implement the peek method using push and pop methods.

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**Year 2**

## Data Structures and Algorithms – IT2070

# Tutorial 1 – Stacks 2019

## Additional Exercises:

## Question 1

1. Implement a class called StackX to store a set of characters.

1. Create a class called Reverser to reverse a given string using the stack class created above.

class Reverser

{

private String input;

private String output;

…….. }

(Hint: Pass the string to be reversed as an argument to the constructor and store it in input)

1. In main() get a string from the user and reverse the string using the Reverser class.

## Question 2

Use the stack class created in Question1 (i) and check whether a user entered expression is correctly parenthesized.

Ex: 3 + (( 6 \* 2) – 3)  valid

5 \* 6 + (2 - 5  not valid

2