SLIIT
Discover Your Future

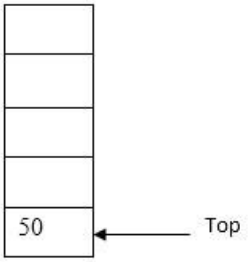
BSc (Hons) in Information Technology
Year 2
Data Structures and Algorithms – IT2070

Tutorial 1 – Stacks **2023**

Question 1

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

```
int a = 22, b = 44;
i)    theStack.push(2);
ii)   theStack.push(a);
iii)  theStack.push(a + b);
iv)   theStack.pop();
v)    theStack.push(b);
vi)   theStack.push(a –b );
```



Question 2

Consider the stackX class given below.

int top int maxSize int stackArr[]
StackX(int size) void push(int no) int pop() boolean isEmpty() boolean isFull() int getCount()

i) Implement isEmpty() and isFull() methods of the stack class.
ii) Implement getCount() method to return the no of items in the stack.

Question 3

Constructor of the stack class is implemented as follows,

```
public StackX()
{
   stArr = new double[10];
   maxSize = 10;
   top = -1;
}
```

i) Mention one disadvantage of having the above constructor.

ii) Rewrite the constructor to avoid the disadvantage mentioned above.

Question 4

i) 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'

ii) Write code segment to display all the values in a stack by removing them.

iii) What is the result of section ii) above?