Bangladesh University of Business and Technology
Department of Computer Science and Engineering

CSE 232: Data Structures Lab

Lab 06 Tasks

Task 1

Stacks are dynamic data structures that follow the Last In First Out (LIFO) principle. The Insertion and Deletion of an element from the stack are defined by the two corresponding operations - Push() and Pop().

Your task is to use an array of size **N** and the number of times the user wants to do any operation in the stack, **T**. Each time of the **T** operations, the user will choose whether s/he wants to do push/pop. If the operation is Push, the system will ask one more value **item** from the user. For each test case, the system will show the state & size of the stack. If the stack is empty, the state will be (size=0,items=NULL).

For ease of implementation, let's assume that Push is represented by 1 and pop is represented by 2.

Sample Input:	**Sample Output:**
10 7	
1 10	size=1 items=10
1 20	size=2 items=10 20
2	size=1 items=10
1 50	size=2 items=10 50
2	size=1 items=10
2	size=0 items=NULL
1 25	size=1 items=25

Task 2

C++ has a header file called ¡stack¿ which has built-in functionalities already implemented as library functions. Follow this link and try to understand the usage of each function.

Using these STL library functions, write a program which will take **N** strings as input and print the reverse of them using Stack. Input will be the number of test cases, **N**, followed by N strings.

Sample Input:	**Sample Output:**
3	
BUBT	TBUB
data	atad
mozzarella	allerazzom

Task 3

Write a program which will take an expression represented using postfix notation as input and evaluate the expression using stack.

Input expression may contain addition (+), subtraction (-), multiplication (*) and division (/) as operators and numbers between (0 9).

Sample Input:	**Sample Output:**
345*+6-	17
225+*1+5-52**	100