National University of Computer & Emerging Sciences (NUCES) Islamabad,
Department of Computer Science

DATA STRUCTURES – FALL 2021

LAB 08

Learning Outcomes

In this laboratory, you will implement the Stack using Linked List.

Stack ADT

A stack is an abstract data type that serves as a collection of elements. Stack ADT allows all data operations at one end only. At any given time, we can only access the top element of a stack. This feature makes it LIFO data structure.

TASK 1

Note: This is linked list based implementation

Implement Class Stack, its data members, getters and setters. Implement stack operations listed below in Stack Class.

Stack ()
Constructor. Creates an empty stack.

push ()
Push the element at top of the stack.

pop ()
Removes the element from the top of the stack.

peek()
Returns the value of the element at top of the stack.

isEmpty ()
Returns True if stack is empty else returns False.

TASK 2

Write a function(in Main Class) that takes input a stack and prints it, bottom up.

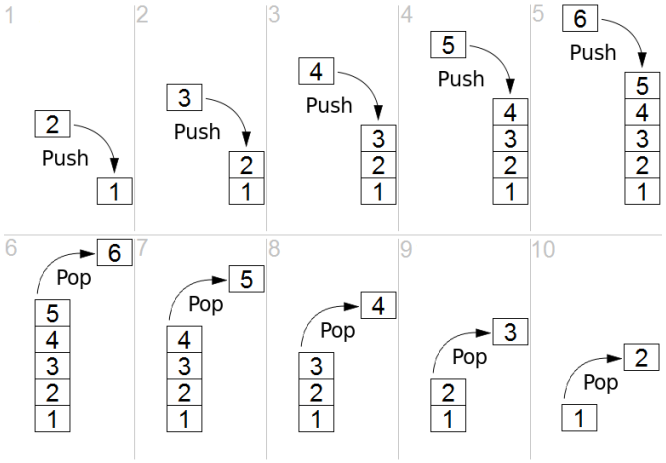

Figure 1

Referring to the Figure 1, your function must print elements of the shown stack in the following order:

1 2 3 4 5 6

TASK 3

Write a function(in Main Class) that takes input a string and checks whether it is palindrome using stack. The function returns Boolean value as output.