Lab 4 Collection

**Q1.**

package Stack;

public class Stack

{

private Integer[] stackArray;

private int top;

private int capacity;

// defining size of stack

public Stack(int size)

{

stackArray = new Integer[size];

capacity = size;

top = -1;

}

// performing insertion

public void push(Integer item)

{

if (top == capacity - 1)

{

System.out.println("Stack Overflow");

return;

}

stackArray[++top] = item;

}

// removing element

public Integer pop()

{

if (top == -1)

{

System.out.println("Stack Underflow");

return null;

}

return stackArray[top--];

}

// top element

public Integer peek()

{

if (top == -1)

{

System.out.println("Stack is empty");

return null;

}

return stackArray[top];

}

// checking stack empty

public boolean isEmpty()

{

return top == -1;

}

}

public class Main

{

public static void main(String[] args)

{

//creating object of stack class perform operation

Stack stack = new Stack(5);

// performing insertion

stack.push(1);

stack.push(2);

stack.push(3);

// getting top element

System.out.println("Peek: " + stack.peek());

// remove and return element

System.out.println("Pop: " + stack.pop());

System.out.println("Peek: " + stack.peek());

// checking stack is empty

System.out.println("Is Empty: " + stack.isEmpty());

}

}

**// Output**

**Peek: 3**

**Pop: 3**

**Peek: 2**

**Is Empty: false**

**Q2.**

package Stack;

import java.util.Stack;

import java.util.Scanner;

public class StringReversal

{

public static String reverseString(String input)

{

// creating character stack

Stack<Character> stack = new Stack<>();

StringBuilder reversed = new StringBuilder();

// inserting the character in stack

for (char c : input.toCharArray())

{

stack.push(c);

}

// checking stack is empty

while (!stack.isEmpty())

{

reversed.append(stack.pop());

}

// return reverse string

return reversed.toString();

}

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

System.out.println("Enter String for Reverse: ");

// getting the input from user

String input = sc.nextLine();

String reversedString = reverseString(input);

// original string

System.out.println("Original String: " + input);

// reverse string

System.out.println("Reversed String: " + reversedString);

}

}

**// Output**

**Enter String for Reverse:**

**Hello World ! by Test**

**Original String: Hello World ! by Test**

**Reversed String: tseT yb ! dlroW olleH**