

EXP.NO:06	ADT APPLICATION
DATE:19.08.19	

AIM:

To design a java program for ADT stack and to implement this interface using array by providing necessary handling in both the implementatin by pushing and popping string data

REQUIREMENT:

- knowledge of push and pop
- Exception handling
- Handling of array
- Interface implementation

ALGORITHM:

STEP 1: Start

STEP 2: create classes Mystack,Stack,Calculation and StackException

STEP 3: Define StackException with string in it

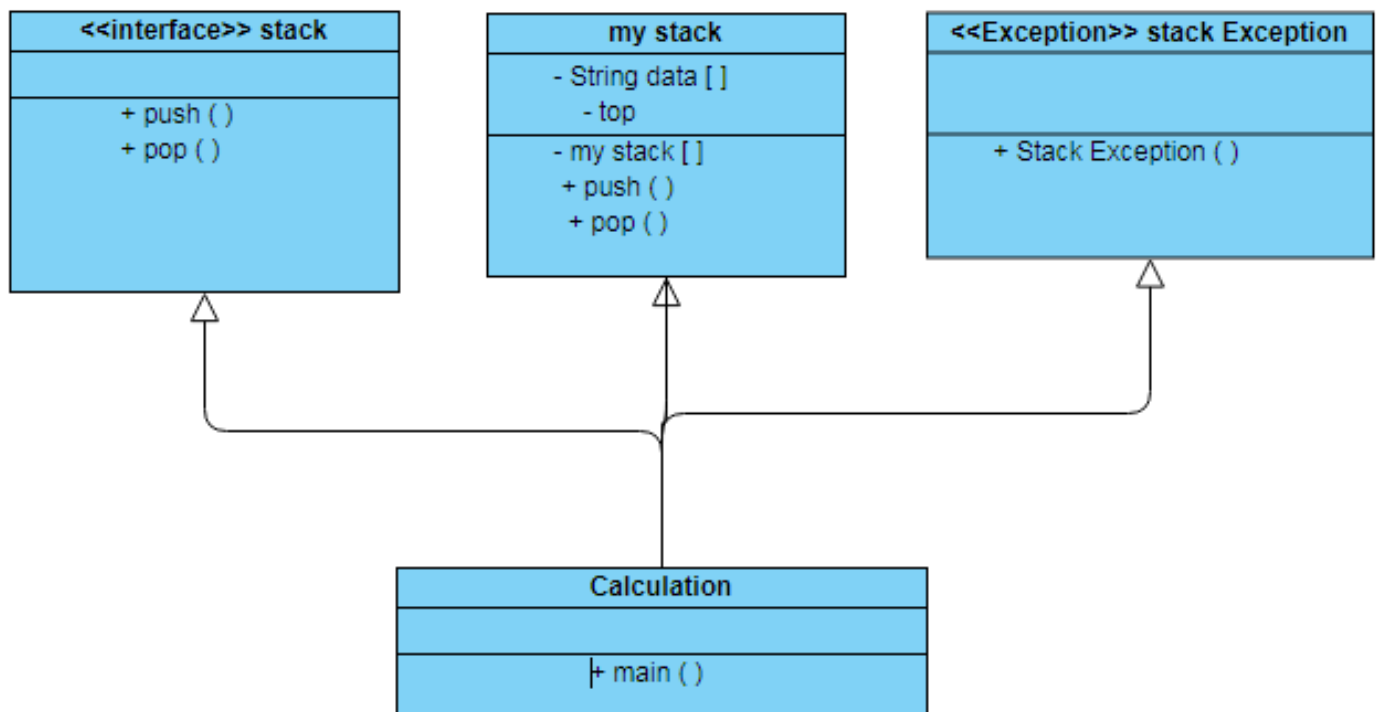
STEP 4: Define the interface by using throw exception

STEP 5:To add data define the data type i.e. string for describing different cases define the operation of each case to meet the requirement

STEP 6:Finish the coding with calculation class coding for the required output

STEP 7: Stop

CLASS DIAGRAM:



PROGRAM:

/**created by A.Santhosh

```

* EEE-B, 212217105053
*
*/
package mystack;
public interface Stack {
    public void push(String v) throws StackException;
    public String pop() throws StackException;
}
package mystack;
public class StackException extends Exception {
    public StackException(String m)
    {
        super(m);
    }
}
package mystack;
public class MyStack implements Stack {
    private String data[];
    private int top;
    public MyStack(int s)
    {
        top=-1;
        data=new String[s];
    }
    @Override
    public void push(String v) throws StackException
    {
        if(top>=(data.length-1))
        {
            throw new StackException("Stack Full: It is already having "+(top+1)+"
elements");
        }
        top=top+1;
        data[top]=v;
    }
    @Override
    public String pop()throws StackException
    {
        String result;
        if(top<0)
        {
            throw new StackException("Stack is empty");
        }
        result=data[top];
        top=top-1;
        return result;
    }
}

```

```

package mystack;
import java.util.Scanner;
public class Calculation {
public static void main(String[] args) {
    String value1;
    int option;
    Stack st;
Scanner sc=new Scanner(System.in);
    st=new MyStack(5);
    while(true)
    {
        try
        {
            System.out.println("1. Push a String");
            System.out.println("2. Pop a String");
            System.out.println("3. Exit");
            System.out.print("Enter your choice:");
            option=sc.nextInt();
            switch(option)
            {
                case 1:
                    System.out.print("Enter a String:");
                    value1=sc.next();
                    st.push(value1);
                    System.out.println("Push completed.");
                    break;
                case 2:
                    value1=st.pop();
                    System.out.printf("Stack top value=%s\n",value1);
                    break;
                default:
                    System.out.print("Please enter a valid number !!!");
            }
            if(option==3)
            {
                System.out.print("Thankyou for using stack application !!!");
                break;
            }
        }catch(StackException e1)
        {
            System.out.println("Error:"+e1.getMessage());
        }catch(NumberFormatException e2)
        {
            System.out.println("Error:"+e2.getMessage());
        }
    }
}
}

```

OUTPUT:

1. Push a String
2. Pop a String
3. Exit

Enter your choice:1

Enter a String:santhosh

Push completed.

1. Push a String
2. Pop a String
3. Exit

Enter your choice:1

Enter a String:harish

Push completed.

1. Push a String
2. Pop a String
3. Exit

Enter your choice:1

Enter a String:bharath

Push completed.

1. Push a String
2. Pop a String
3. Exit

Enter your choice:2

Stack top value=bharath

1. Push a String
2. Pop a String
3. Exit

Enter your choice:2

Stack top value=harish

1. Push a String
2. Pop a String
3. Exit

Enter your choice:3

Please enter a valid number !!!Thankyou for using stack application !!!

RESULT:Hence,A java program for ADT stack and to implement this interface using array by providing necessary handling in both the implementatin by pushing and poping string data is done