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 poping string data

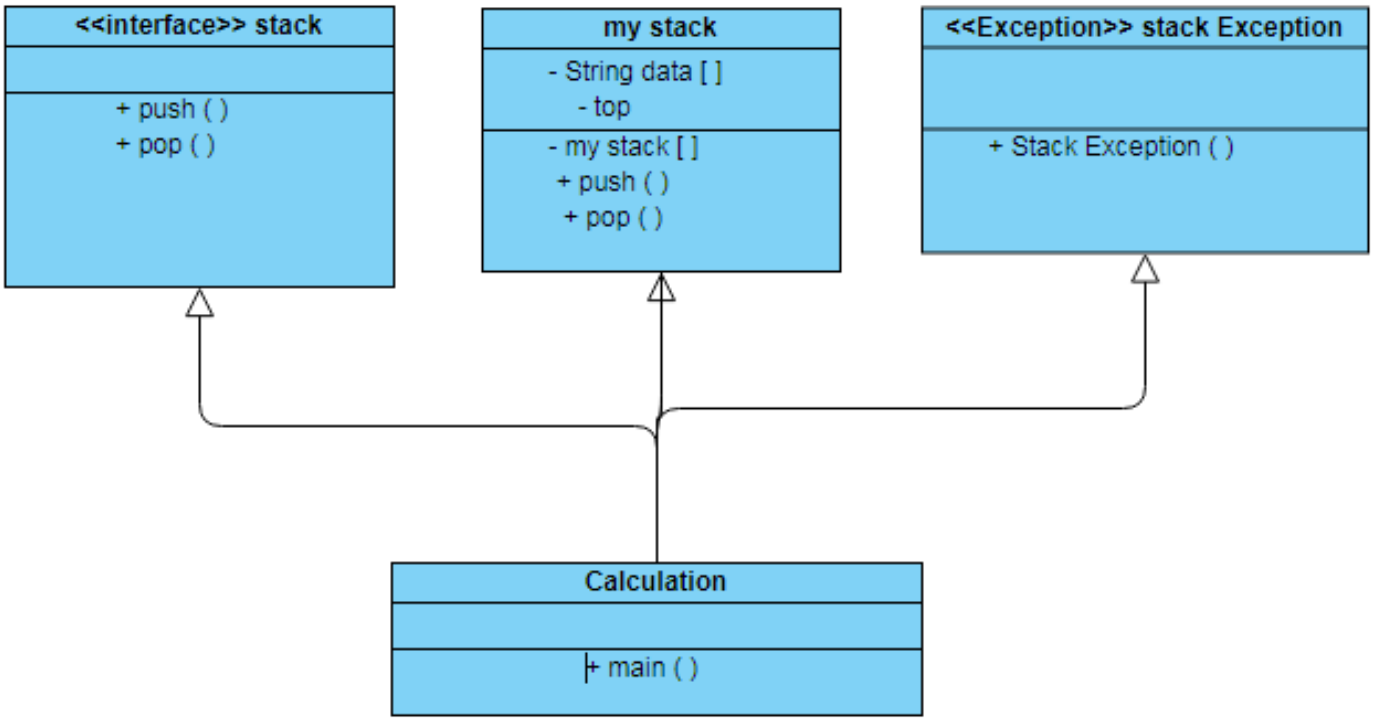
REQUIREMENT:

-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:

```
*/
*devloped by N.Guru Sai Babu
*eee-b
*212217105301
*/
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.*;

public class Calculation {

        public static void main(String[] args) {
                String value1;
                int option;
                Mystack 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:GURU
Push completed.
1. Push a string
2. Pop a string
3. Exit
Enter your choice:2
Stack top value=GURU
1. Push a string
2. Pop a string
3. Exit
Enter your choice:1
Enter a string:2SA
Push completed.
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