EXP	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

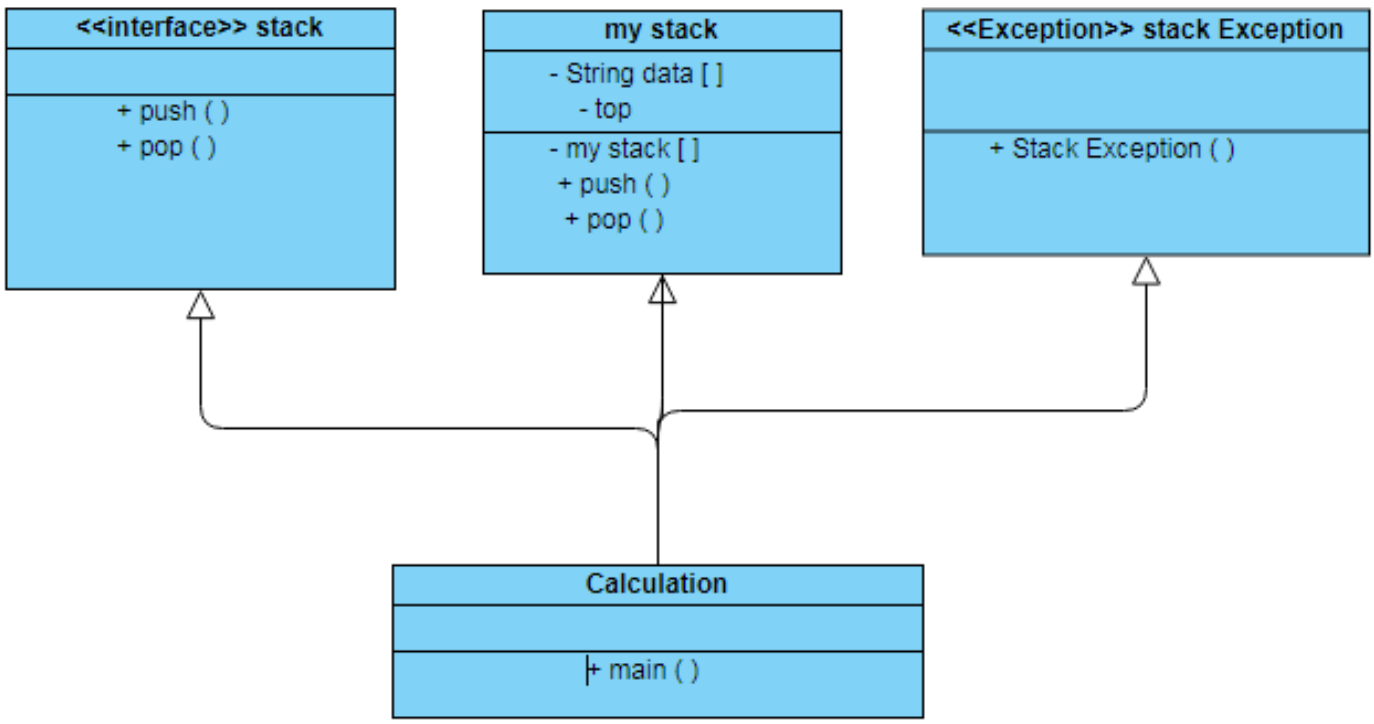
STEP 4: Define the interface by using throw exception

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:

```
/**created by S.sakthi
 * EEE-B, 212217105051
 *
 */
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:sakthi
Push completed.
1. Push a String
2. Pop a String
3. Exit
```

Enter your choice:1
Enter a String:ram
Push completed.
1. Push a String
2. Pop a String
3. Exit
Enter your choice:1
Enter a String:balu
Push completed.
1. Push a String
2. Pop a String
3. Exit
Enter your choice:2
Stack top value=balu
1. Push a String
2. Pop a String
3. Exit
Enter your choice:2
Stack top value=ram
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