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

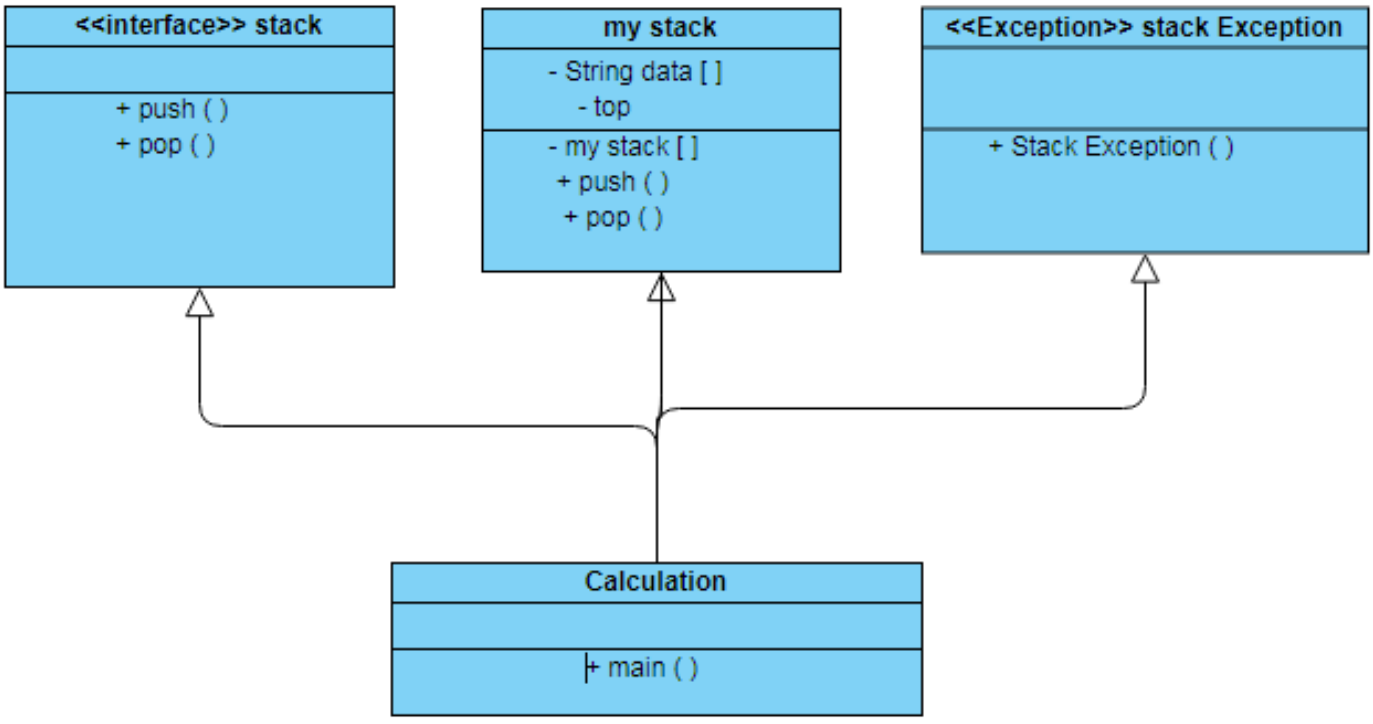
REQUIREMENT:

-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:

/**created by:
aharish.m

```
 */
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:vijay
Push completed.
1. Push a String
2. Pop a String
3. Exit
Enter your choice:1
Enter a String:aharish
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=aharish
1. Push a String
2. Pop a String
3. Exit
Enter your choice:3
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.