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

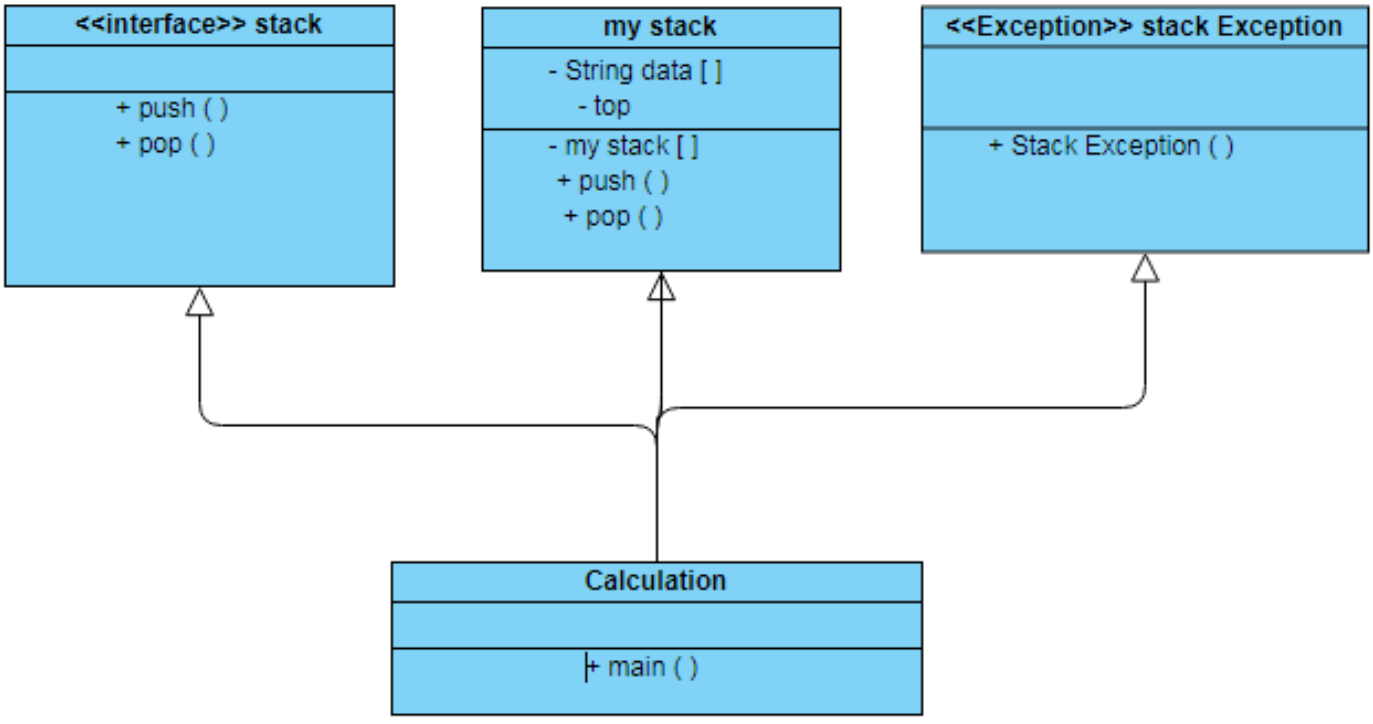
REQUIREMENT:

-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 m.uday kanth,
 * eee-b, 212217105037
```

```
 *
 */
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:uday
Push completed.
1. Push a String
2. Pop a String
3. Exit
Enter your choice:1
Enter a String:hari
Push completed.
1. Push a String
2. Pop a String
```

```
3. Exit
Enter your choice:1
Enter a String:jaswanth
Push completed.
1. Push a String
2. Pop a String
3. Exit
Enter your choice:2
Stack top value=jaswanth
1. Push a String
2. Pop a String
3. Exit
Enter your choice:2
Stack top value=hari
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