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| **EX: 06** | **ADT STACK** |
| **31-08-2019** |

**Aim:**

To write a java console application to design a java interface for ADT Stack. Implement this

interface using array and to verify the implementation by pushing a string.

**Requirement:**

Design a java interface for ADT Stack.

Implement this interface using array.

Provide necessary exception handling in both the implementation.

Verify the implementation by pushing a string data.

**Algorithm:**

Step 1: Create a mystack package.

Step 2: Create a separate class for calculation, mystack and stackexception.

Step 3: Create an interface class stack and implement it to all other class.

Step 4: Create the exception for seperate stackexception in the interface stack.

Step 5: Create a public void push() and string pop() and throw stack exception.

Step 6: Display the results.

**Class Diagram:**



**Program:**

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\*/

Calculation.java

package mystack;

import java.util.\*;

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());

}}

}

}

MyStack.java

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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;

}

}

Stack.java

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\*/

package mystack;

public interface Stack {

public void push(String v) throws StackException;

public String pop() throws StackException;

}

StackException.java

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\*/

package mystack;

public class StackException extends Exception {

public StackException(String m)

{

super(m);

}

}

**Output:**

1. Push a String

2. Pop a String

3. Exit

Enter your choice:1

Enter a String:Name

Push completed.

1. Push a String

2. Pop a String

3. Exit

Enter your choice:1

Enter a String:Class

Push completed.

1. Push a String

2. Pop a String

3. Exit

Enter your choice:2

Stack top value=Class

1. Push a String

2. Pop a String

3. Exit

Enter your choice:2

Stack top value=Name

1. Push a String

2. Pop a String

3. Exit

Enter your choice:3

Thanks for using the application!

**Result:**

Thus the java console application for performing the string operation to push and pop using arraylist and thus the output is verified.