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Lab 6

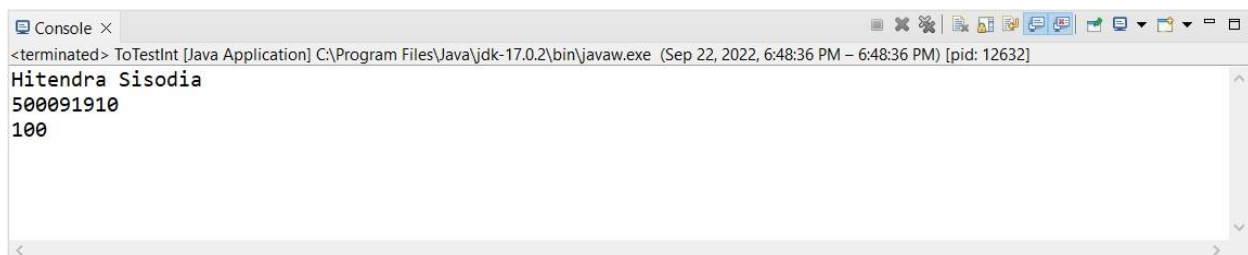
Ques1: Write a program to create interface named test. In this interface the member function is square. Implement this interface in arithmetic class. Create one new class called ToTestInt. In this class use the object of arithmetic class.

Source Code

```
package Lab6;

interface Test{
    int square(int n);
}
class Arithmetic implements Test{
    public int square(int n) {
        return n*n;
    }
}
class ToTestInt{
    public static void main(String args[]) {
        System.out.println("Hitendra Sisodia");
        System.out.println("500091910");
        Arithmetic ob = new Arithmetic();
        System.out.println(ob.square(10));
    }
}
```

Output

A screenshot of a Java IDE's console window. The title bar reads "Console x". The text area shows the output of the program: "<terminated> ToTestInt [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:48:36 PM - 6:48:36 PM) [pid: 12632]" followed by three lines of output: "Hitendra Sisodia", "500091910", and "100". The console has a scrollbar on the right side.

```
<terminated> ToTestInt [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:48:36 PM - 6:48:36 PM) [pid: 12632]
Hitendra Sisodia
500091910
100
```

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Ques2: Write a program to create interface A, in this interface we have two method meth1 and meth2. Implements this interface in another class named MyClass.

Source Code

```
package Lab6;
interface A{
    void meth1();
    void meth2();
}
class Mclass implements A{
    public void meth1() {
        System.out.println("This is Method1");
    }
    public void meth2() {
        System.out.println("This is Method2");
    }
}
public class MyClass {
    public static void main(String args[]) {
        System.out.println("Hitendra Sisodia");
        System.out.println("500091910");
        Mclass ob = new Mclass();
        ob.meth1();
        ob.meth2();
    }
}
```

Output

A screenshot of a Java console window titled "Console X". The window shows the output of a Java application. The first line is "<terminated> MyClass [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:27:40 PM - 6:27:40 PM) [pid: 8632]". The subsequent lines are "Hitendra Sisodia", "500091910", "This is Method1", and "This is Method2". The console window has a standard Windows taskbar at the bottom with various icons and a scroll bar on the right side.

```
<terminated> MyClass [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:27:40 PM - 6:27:40 PM) [pid: 8632]
Hitendra Sisodia
500091910
This is Method1
This is Method2
```

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Ques3: Write a program in Java to show the usefulness of Interfaces as a place to keep constant value of the program.

Source Code

```
package Lab6;
import java.util.Random;
interface SharedConstants{
    int NO = 0;
    int YES = 1;
    int MAYBE = 2;
    int LATER = 3;
    int SOON = 4;
    int NEVER = 5;
}
class Question implements SharedConstants{
    Random rand = new Random();
    int ask() {
        int prob = (int)(100 * rand.nextDouble());
        System.out.print(prob+" ");
        if(prob < 30) {
            return NO;
        }
        else if(prob < 60) {
            return YES;
        }
        else if(prob < 75) {
            return LATER;
        }
        else if(prob < 98) {
            return SOON;
        }
        else {
            return NEVER;
        }
    }
}
public class AskMe implements SharedConstants{
    static void answer(int result) {
        System.out.print(" "+result+" ");
        switch(result) {
            case NO:
                System.out.println("No");
                break;
            case YES:
```

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```
        System.out.println("Yes");
        break;
    case MAYBE:
        System.out.println("Maybe");
        break;
    case SOON:
        System.out.println("Soon");
        break;
    case NEVER:
        System.out.println("Never");
        break;
    }
}

public static void main(String args[]) {
    System.out.println("Hitendra Sisodia");
    System.out.println("500091910");
    Question q = new Question();
    answer(q.ask());
    answer(q.ask());
    answer(q.ask());
    answer(q.ask());
}
}
```

Output



The screenshot shows a Java console window titled "Console x". The window contains the following text: Hitendra Sisodia, 500091910, Yes, No, Soon, Yes. The window also shows the command prompt path: C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:34:05 PM - 6:34:05 PM) [pid: 15532].

```
<terminated> AskMe [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:34:05 PM - 6:34:05 PM) [pid: 15532]
Hitendra Sisodia
500091910
Yes
No
Soon
Yes
```

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Ques4: Write a program to create an Interface having two methods division and modules. Create a class, which overrides these methods.

Source Code

```
package Lab6;

interface interface1{
    void division(int n1,int n2);
    void modules(int n1,int n2);
}
class SampleClass implements interface1{
    @Override
    public void division(int n1,int n2) {
        System.out.println(n1+" / "+n2+": "+(n1/n2));
    }
    @Override
    public void modules(int n1,int n2) {
        System.out.println(n1+" % "+n2+": "+(n1%n2));
    }
}
public class OverrideInterface {
    public static void main(String args[]) {
        System.out.println("Hitendra Sisodia");
        System.out.println("500091910");
        SampleClass obj = new SampleClass();
        obj.division(36,2);
        obj.modules(23, 4);
    }
}
```

Output

A screenshot of a Java console window titled "Console x". The window shows the output of a Java application. The first line is "<terminated> OverrideInterface [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:53:40 PM - 6:53:40 PM) [pid: 4404]". The subsequent lines are the output of the program: "Hitendra Sisodia", "500091910", "36 / 2: 18", and "23 % 4: 3". The console window has a standard Windows-style title bar and a scroll bar on the right side.

```
<terminated> OverrideInterface [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:53:40 PM - 6:53:40 PM) [pid: 4404]
Hitendra Sisodia
500091910
36 / 2: 18
23 % 4: 3
```

Ques4: Write program to create an interface StackInterface having methods push (), pop () and display (). StackClass implements StackInterface. Class StackClass contains the main method which is having a switch case for selecting the particular operation of the stack.

Source Code

```
package Lab6;
import java.util.*;

interface StackInterface{
    void push(int n);
    int pop();
    void display();
}

class StackClass implements StackInterface{
    int arr[] = new int[5];
    int top = -1;
    public void push(int n) {
        if(top >= arr.length) {
            System.out.println("Stack OverFlow");
        }
        else {
            top++;
            arr[top] = n;
        }
    }
    public int pop(){
        int temp = arr[top];
        if(top < 0) {
            System.out.println("Stack UnderFlow");
        }
        else {
            top--;
        }
        return temp;
    }
    public void display() {
        if(top == -1) {
            System.out.println("Stack is Empty");
        }
        else {
            for(int i = 0 ; i <= top ; i++) {
                System.out.print(arr[i]+" ");
            }
        }
    }
}
```

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```
    }
    System.out.println();
}
}
public static void main(String args[]) {
    System.out.println("Hitendra Sisodia");
    System.out.println("500091910");
    Scanner sc = new Scanner(System.in);
    StackClass obj = new StackClass();
    Boolean bool = true;
    while(bool) {
        System.out.print("Press 1 for pushing into stack, ");
        System.out.print("Press 2 for pop from stack, ");
        System.out.print("Press 3 for display, ");
        System.out.print("Press 4 for Exit ");
        int n = sc.nextInt();
        switch(n)
        {
            case 1:
                System.out.print("Enter a num to push in
stack: ");

                int num = sc.nextInt();
                obj.push(num);
                break;
            case 2:
                System.out.println("Pop item is:
"+obj.pop());

                break;
            case 3:
                obj.display();
                break;
            case 4:
                bool = false;
                break;
            default:
                System.out.println("Choose Valid Option");
        }
    }
}
```

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Output

```
Console x
<terminated> StackClass [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (Sep 22, 2022, 6:57:49 PM – 6:58:11 PM) [pid: 12484]
Hitendra Sisodia
500091910
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 1
Enter a num to push in stack: 20
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 1
Enter a num to push in stack: 30
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 1
Enter a num to push in stack: 40
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 1
Enter a num to push in stack: 50
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 3
20 30 40 50
Press 1 for pushing into stack, Press 2 for pop from stack, Press 3 for display, Press 4 for Exit 4
```