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Section: **CSE-A**

Roll No: **68**

Aim: **Create a class Stack and implement the functionalities of the Stack Class.**

Code:

**(CLASSES)**

```
package stackclassproblem;

public class Stack{

    int s;
    int top;
    int[] a;
    Stack(int s){
        this.s=s;
        this.a=new int[s];
        top=-1;
    }

    boolean isfull(int top){
        if(top==s-1)
            return true;
        else
            return false;
    }

    boolean isempty(int top){
        if(top==-1)
            return true;
        else{
            return false;
        }
    }

    void push(int d){
        if(isfull(top))
            System.out.println("Stack is full");
        else{
```

```

        top++;
        a[top]=d;
    }
}

void pop() {
    if(isempty(top))
        System.out.println("Stack is empty");
    else{
        int d=a[top];
        a[top]=0;
        top--;
        System.out.println(d);
    }
}

void peek() {
    if(isempty(top))
        System.out.println("Stack is empty");
    else{
        int d=a[top];
        System.out.println(d);
    }
}

void display() {
    if(isempty(top))
        System.out.println("Stack is empty");
    else{
        for(int i=0;i<=top;i++){
            System.out.println(a[i]);
        }
    }
}
}
}

```

**(MAIN):**

```

package stackclassproblem;

public class Main{
    public static void main(String[] args) {
        Stack s=new Stack(5);
    }
}

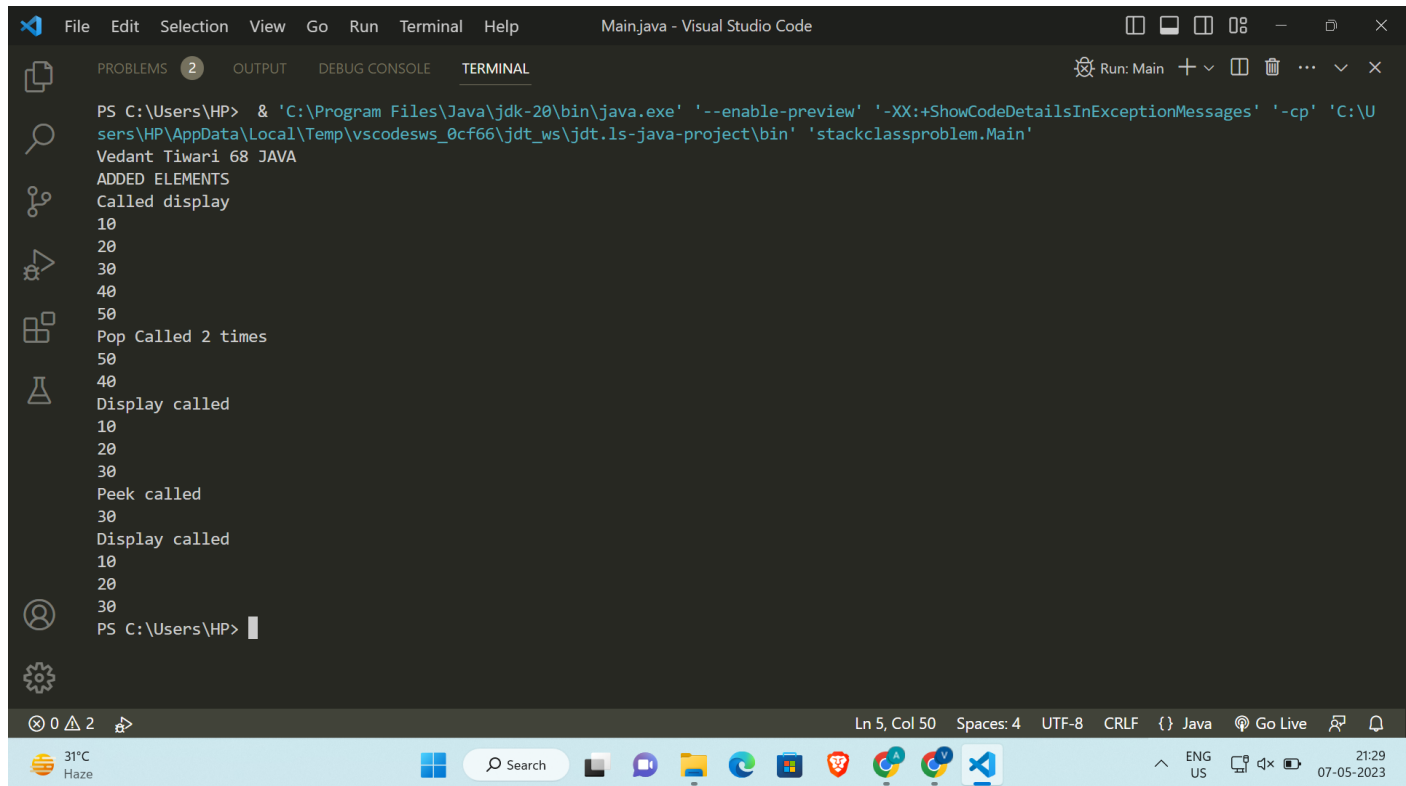
```

```
System.out.println("Vedant Tiwari 68 JAVA");
System.out.println("ADDED ELEMENTS");

s.push(10);
s.push(20);
s.push(30);
s.push(40);
s.push(50);
System.out.println("Called display");
s.display();
System.out.println("Pop Called 2 times");
s.pop();
s.pop();
System.out.println("Display called");

s.display();
System.out.println("Peek called");
s.peek();
System.out.println("Display called");
s.display();
}
}
```

**Output:**

A screenshot of the Visual Studio Code interface. The terminal window at the bottom shows the execution of a Java program. The command prompt is 'PS C:\Users\HP> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\HP\AppData\Local\Temp\vscodesws\_0cf66\jdt\_ws\jdt.ls-java-project\bin' 'stackclassproblem.Main''. The output shows 'Vedant Tiwari 68 JAVA', 'ADDED ELEMENTS', 'Called display', and a list of numbers: 10, 20, 30, 40, 50. It then shows 'Pop Called 2 times', 'Display called', and another list of numbers: 10, 20, 30. Finally, it shows 'Peek called', 'Display called', and another list of numbers: 10, 20, 30. The terminal ends with 'PS C:\Users\HP>'. The status bar at the bottom indicates 'Ln 5, Col 50', 'Spaces: 4', 'UTF-8', 'CRLF', and 'Java'. The system tray shows '31°C Haze', a search bar, and the date '07-05-2023'.

**Aim: Write a program to demonstrate method overloading. Create a class 3DShape and overload a method named volume() to calculate volume of different geometric shapes like sphere, cube, cuboid and cylinder. Create a main() to implement all the methods.**

## CODE:

```
package ThreeDvolume;
import java.lang.Math;
public class Volume {
    Volume(int r) {
        double x=4*(Math.PI)*r*r*r;
        System.out.println("The Volume Sphere: "+x/3);
    }
    Volume(Double l) {
        double y=l*l*l;
        System.out.println("The Volume Cube: "+y);
    }
}
```

```

    }

    Volume(int l,int b,int h){
        double y=l*b*h;
        System.out.println("The Volume Cuboid: "+y);
    }

    Volume(int r,int h){
        double z=2*Math.PI*h*r;
        System.out.println("The Volume Cylinder: "+z);
    }
}

```

## MAIN:

```

package ThreeDvolume;
public class Main {
    public static void main(String[] args) {
        Volume a=new Volume(3);
        Volume b=new Volume(3,4,5);
        Volume c=new Volume(1, 1);
        Volume d=new Volume(8.0);
    }
}

```

## OUTPUT:

```
File Edit Selection View Go Run Terminal Help Main.java - Java - Visual Studio Code

J Volume.java J Main.java 4 X

ThreeDVolume > J Main.java > ...
1 package ThreeDVolume;
2 public class Main {
3     public static void main(String[] args) {
4         Volume a=new Volume(r:3);
5         Volume b=new Volume(l:3,b:4,h:5);
6         Volume c=new Volume(r:1, h:1);
7         Volume d=new Volume(l:8.0);
8     }
9 }
10

Run | Debug

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL

PS E:\RCOEM 4TH Semester\Java> e;; cd 'e:\RCOEM 4TH Semester\Java'; & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-X
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\HP\AppData\Roaming\Code\User\workspaceStorage\e77cbf94b34f434d5
3ca88934d03e8be\redhat.java\jdt_ws\Java_cc94c46d\bin' 'ThreeDVolume.Main'
The Volume Sphere: 113.09733552923255
The Volume Cuboid: 60.0
The Volume Cylinder: 6.283185307179586
The Volume Cube: 512.0
PS E:\RCOEM 4TH Semester\Java>
```

**Result:**  
**Program executed.**