Experiment 3a

Aim: WAP using the concept of method overloading to calculate and print the volume of different objects like Cube, Cuboid, Cylinder, Cone. Create multiple overloads for a method name which are differentiated by the number of their parameters. Input the details from the user and print the volume of the object

Theory: method overloading means using the same method name, but changing the data type of the parameters or the number of parameters to differentiate between the methods. Constructor overloading means same as method overloading as constructors are also essentially methods.

Algorithm:
1) public class Volume{ public static void main(String[] args){
2) sout(1.cube,2.cuboid,3.cylinder,4.cone)
3) while(true){ask user for their choice and store in int n
4) switch(n){case 1: ask for side of the cube and store in int a
5) volume v1 = new volume(a), vol(a);
6) case 2:ask for length breadth and height of the cuboid,volume v2 = new volume(l, b, h), vol(l,b,h);
7) case 3: ask for radius and height and store in r, s. volume v3 = new volume(r, s), vol(r,s)
8) case 4: ask for radius and height and store in x and i.volume v = new volume(x, i, 1), vol(x,i,1);

9)inside class volume{ int l,b,h;
    double r;

    volume(int a){
        this.l=a;
    }

    volume(int l , int b, int h){
        this.l=l;
        this.b=b;
        this.h=h;
    }

    volume(double r, int s){
        this.r=r;
        this.h=s;
    }

    volume(double r, int s, int c){
        this.r=r;
        this.h=s;
    }

```java
10)public static void vol(int a){
    int vo=a*a*a;
    System.out.println("the volume of the cube is "+vo);
}
public static void vol(int l, int b , int h){
    int vo = l*b*h;
    System.out.println("the volume of the cuboid is "+vo);
}
public static void vol(double r, int h){
    double vo = 3.14*r*r*h;
    System.out.println("the volume of cylinder is "+vo);

}
public static void vol(double r, int h, int c){
    double vo = 0.33*3.14*r*r*h;
    System.out.println("the volume of cone is "+vo);

}
```

Code:

```java
import java.util.Scanner;

public class Volume {
    public static void main(String[] args) {
        System.out.println("1. Cube");
        System.out.println("2. Cuboid");
        System.out.println("3. Cylinder");
        System.out.println("4. Cone");
        while(true){
            Scanner sc = new Scanner(System.in);
            System.out.print("enter your choice: ");
            int n = sc.nextInt();

            switch(n) {
                case 1:
                    System.out.print("enter side= ");
                    int a = sc.nextInt();
                    volume v1 = new volume(a);
                    vol(a);
                    break;
                case 2:
                    System.out.print("enter length, breadth and
height= ");
                    int l = sc.nextInt();
```

```java
                    int b = sc.nextInt();
                    int h = sc.nextInt();
                    volume v2 = new volume(l, b, h);
                    vol(l, b, h);
                    break;

                case 3:
                    System.out.print("enter radius and height= ");
                    double r = sc.nextDouble();
                    int s = sc.nextInt();
                    volume v3 = new volume(r, s);
                    vol(r, s);
                    break;

                case 4:
                    System.out.print("enter radius and height= ");
                    double x = sc.nextDouble();
                    int i = sc.nextInt();
                    volume v = new volume(x, i, 1);
                    vol(x, i, 1);
                    break;
            }

            System.out.print("enter 0 to exit or any key to continue: ");

            int g=sc.nextInt();
            if(g==0){
                break;
            }
        }
    }
    public static void vol(int a){
        int vo=a*a*a;
        System.out.println("the volume of the cube is "+vo);
    }
    public static void vol(int l, int b , int h){
        int vo = l*b*h;
        System.out.println("the volume of the cuboid is "+vo);
    }
    public static void vol(double r, int h){
        double vo = 3.14*r*r*h;
        System.out.println("the volume of cylinder is "+vo);

    }
    public static void vol(double r, int h, int c){
        double vo = 0.33*3.14*r*r*h;
        System.out.println("the volume of cone is "+vo);

    }
```

```java
}

class volume{
    int l,b,h;
    double r;

    volume(int a){
        this.l=a;
    }

    volume(int l , int b, int h){
        this.l=l;
        this.b=b;
        this.h=h;
    }

    volume(double r, int s){
        this.r=r;
        this.h=s;
    }

    volume(double r, int s, int c){
        this.r=r;
        this.h=s;
    }
}
```

Output:

```
1. Cube
2. Cuboid
3. Cylinder
4. Cone
enter your choice: 1
enter side= 5
the volume of the cube is 125
enter 0 to exit or any key to continue: 1
enter your choice: 2
enter length, breadth and height= 3 4 5
the volume of the cuboid is 60
enter 0 to exit or any key to continue: 1
enter your choice: 3
enter radius and height= 3 4
the volume of cylinder is 113.03999999999999
enter 0 to exit or any key to continue: 1
enter your choice: 4
enter radius and height= 3 4
the volume of cone is 37.303200000000004
enter 0 to exit or any key to continue: 0
```

Conclusion:

after writing this program, I learnt how to use method and constructor overloading and understood its purpose.

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