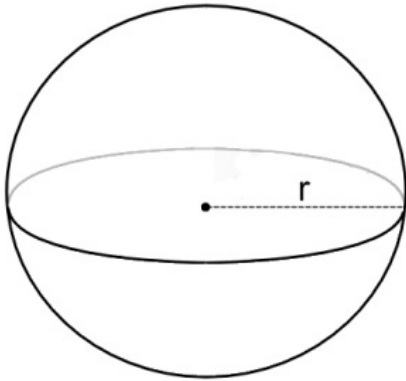


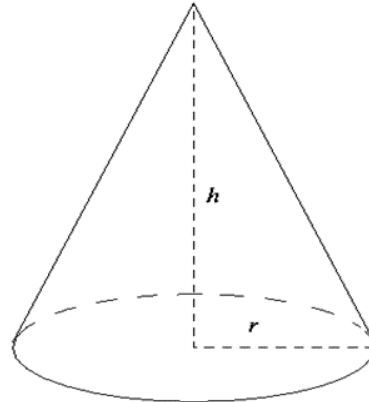
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Practical 05

ICT2132 – Object Oriented Programming Practicum

1. By using your knowledge in Object Oriented Programming write a java program to calculate the volume of Sphere and Cone, requirements are given below.

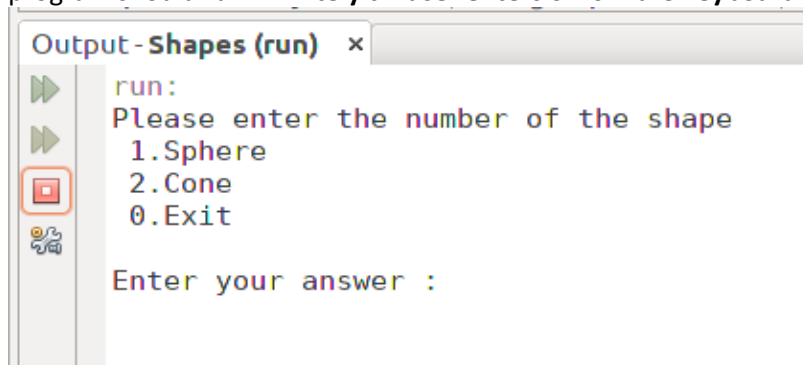


Sphere Volume = $(4/3) \pi r^3$



Cone Volume = $(1/3) \pi r^2 h$

- You should get all **radius(r)** and **height(h)** values as **double** values as **user inputs** for each object from **keyboard**.
- You should prompt the following screen at the beginning of the program and program should **run infinitely till user enters 0** from the **keyboard**.



- In your program you must write **two separate methods** as given below.

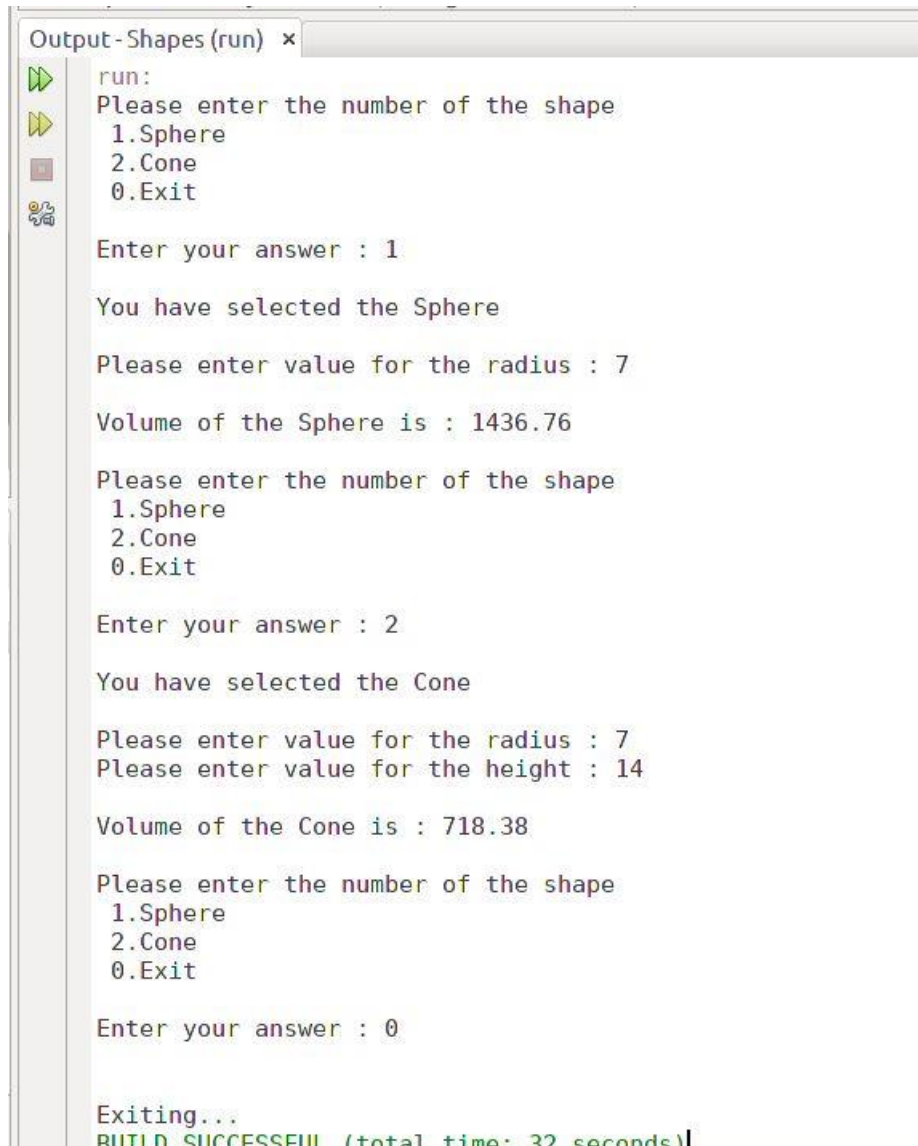
```
private double getSphereVolume(double radius);
private double getConeVolume(double radius, double height);
```

(Hint: use Math.PI as π value for calculations)

Complete flow of the program is shown below for your reference.

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```
Output - Shapes (run) x
run:
Please enter the number of the shape
1.Sphere
2.Cone
0.Exit

Enter your answer : 1

You have selected the Sphere

Please enter value for the radius : 7

Volume of the Sphere is : 1436.76

Please enter the number of the shape
1.Sphere
2.Cone
0.Exit

Enter your answer : 2

You have selected the Cone

Please enter value for the radius : 7
Please enter value for the height : 14

Volume of the Cone is : 718.38

Please enter the number of the shape
1.Sphere
2.Cone
0.Exit

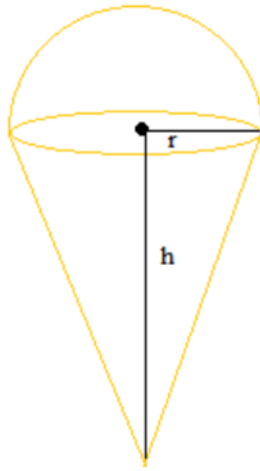
Enter your answer : 0

Exiting...
BUILD SUCCESSFUL (total time: 32 seconds)
```

- **Modify** your program to calculate the volume of the following shape by adding an additional item to your menu called **"MyShape"**, and a method called **"private double getMyShapeVolume(double radius)"** to your program.

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Modified flow of the program is shown below for your reference.

```
Output-Shapes (run) x
run:
Please enter the number of the shape
1.Sphere
2.Cone
3.MyShape
0.Exit

Enter your answer : 3

You have selected the MyShape

Please enter value for the radius : 7
Please enter value for the height : 14

Volume of the Cone is : 1436.76

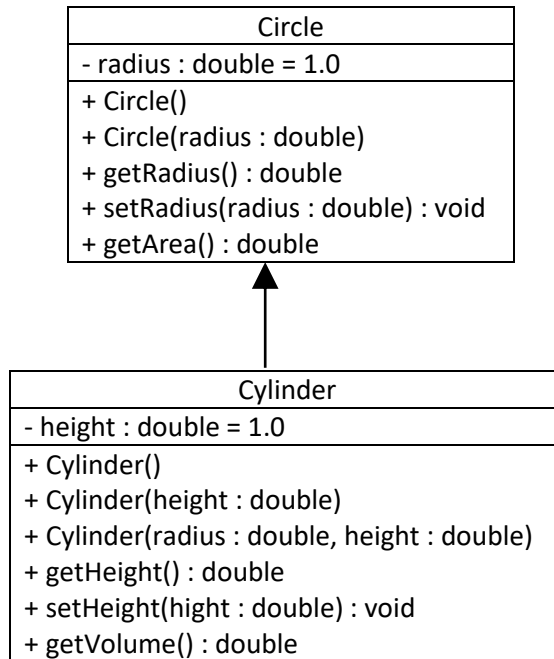
Please enter the number of the shape
1.Sphere
2.Cone
3.MyShape
0.Exit

Enter your answer :
```

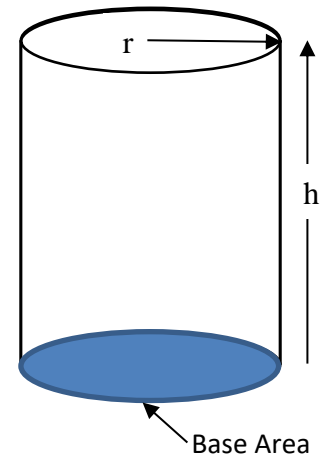
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2. a. Write a java program to implement the following classes in the “**Class Diagram 1**” and a “**Demo**” class including the following code segments given in the “**Table 1**” to demonstrate it.



Class Diagram 1



Area of a Circle : πr^2
 (r – radius)
 Volume of a Cylinder : $\pi r^2 h$
 (h – height)

Code
Cylinder c1 = new Cylinder();
Cylinder c2 = new Cylinder(10.0);
Cylinder c3 = new Cylinder(7.0, 10.0);

Table 1

- b. Test the cylinder with the following code segments and write down answers.

Code	Radius	Height	Base Area	Volume
Cylinder c1 = new Cylinder();				
Cylinder c2 = new Cylinder(10.0);				
Cylinder c3 = new Cylinder(7.0, 10.0);				

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3. Assume that the below given two arrays are about monthly remuneration details of 05 employees in a company.

```
double[] salary = {10000.00, 20000.00, 10000.00, 15000.00, 25000.00}  
double[] bonus = {10.0, 5.0, 15.0, 20.0, 10.0}
```

Note : bonus are given as percentage (ex : 10.0 -> 10%)

- a. Create a class called **"Remuneration"** and include **"salary"** and **"bonus"** arrays as **attributes**.
- b. Create a method in **"Remuneration"** called **"calcSalary"** to calculate the salary for the employees using,

$$\text{salary} = \text{salary} + (\text{salary} * \text{bonus})$$

and store it back in the same **"salary"** array.
- c. Create a method in **"Remuneration"** called **"printSalary"** to print the salary for the employees.
- d. Create a class called **"RemunerationDemo"** and print the updated salary of employees to the console.

4. write a java program to create a simple division calculator as shown in below figure A.

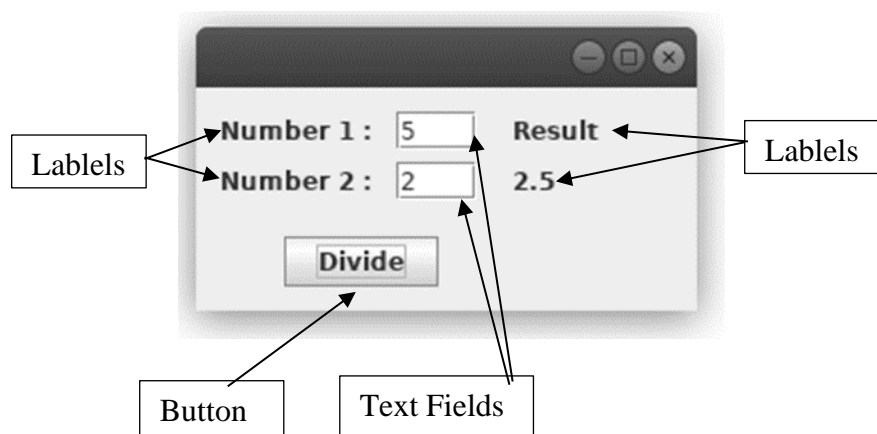


Figure: A

- When user clicks the divide button after entering two(02) numbers you need to display the answer in the label underneath the result area as shown in the above figure A

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- When user enters 0 for “Number 2” and clicks the divide button
 - You must empty the result area as shown in the below given figure B
 - you must display a message “You can’t enter 0 for second number” as shown in the below given figure C

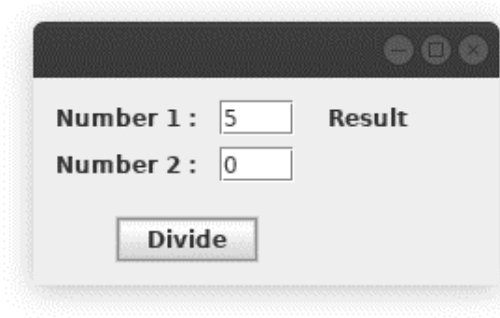


Figure: B



Figure: C