Week-8 :

Extra programs

1.
```
import java.util.Scanner;
abstract class Solid
{ double radius, sa, vol;
  abstract void SA();
  abstract void Vol();
}
class Cylinder extends Solid
{ double height;
  void setData (double r, double h)
  { radius=r;
    height=h;
  }
  void SA()
  { sa= 2*3.14* radius*(radius + height);
  }
  void Vol()
  { vol=3.14 * radius * radius * height;
  }
  void display()
  { System.out.println("The surface area of
    the cylinder is :" +sa);
    System.out.println("The volume of the
    cylinder is:" +vol);
  }
}
class Cone extends Solid
{ double height;
  void setData( double r, double h)
  { radius=r;
    height=h;
  }
  void SA()
  { sa = 3.14*radius*(Math.sqrt((height*height)
    +(radius*radius))+radius); }
```

```
    void vol()
    { vol= (3.14* radius * radius * height)/3;
    }
    void display()
    { System.out.println(" The surface area of the
      cone is: "+sa);
      System.out.println(" The volume of the cone
      is: " +vol);
    }
}
class sphere extends Solid
{
  void setData(double r)
  { radius=r;
  }
  void SA()
  { sa= 3.14 * 4 * radius * radius;
  }
  void vol()
  { vol= 4* 3.14 * radius * radius * radius)/3;
  }
  void display()
  { System.out.println(" The surface area of
    the sphere is:" +vol);
  }
}
class SolidMain
{
  public static void main(String args[])
  {
    double r,h;
    Scanner sc=new Scanner(System.in);
    Cylinder ob1= new Cylinder();
    Cone ob2 = new Cone();
    Sphere ob3 = new Sphere();
```

```
System.out.println("Enter the radius and
height of the cylinder");
r= sc.nextDouble();
h= sc.nextDouble();
ob1.setData(r,h);
ob1.SA();
ob1.Vol();
ob1.display();
System.out.println("enter the radius and
height of the cone");
r= sc.nextDouble();
h= sc.nextDouble();
ob2.setData(r,h);
ob2.SA();
ob2.Vol();
ob2.display();
System.out.println("Enter the radius of the
sphere");
r=sc.nextDouble();
ob3.setData(r);
ob3.SA();
ob3.Vol();
ob3.display();
}
}
```

```
import java.util.Scanner;
abstract class Solid
{
  double radius,sa,vol;
  abstract void SA();
  abstract void Vol();
}
class Cylinder extends Solid
{
  double height;
  void setData(double r, double h)
  {
    radius=r;
    height=h;
  }
  void SA()
  {
    sa=2*3.14*radius*(height+radius);
  }
  void Vol()
  {
    vol=3.14*radius*radius*height;
  }
  void display()
  {
    System.out.println("The surface area of the cylinder is: "+sa);
    System.out.println("The volume of the cylinder is: "+vol);
  }
}
```

```
class Cone extends Solid
{
  double height;
  void setData(double r, double h)
  {
    radius=r;
    height=h;
  }
  void SA()
  {
    sa=3.14*radius*(Math.sqrt((height*height)+(radius*radius))+radius);
  }
  void Vol()
  {
    vol=(3.14*radius*radius*height)/3;
  }
  void display()
  {
    System.out.println("The surface area of the cone is: "+sa);
    System.out.println("The volume of the cone is: "+vol);
  }
}
class Sphere extends Solid
{
  void setData(double r)
  {
    radius=r;
  }
  void SA()
```

```
  {
    sa=3.14*4*radius*radius;
  }
  void Vol()
  {
    vol=(4*3.14*radius*radius*radius)/3;
  }
  void display()
  {
    System.out.println("The surface area of the sphere is: "+sa);
    System.out.println("The volume of the sphere is: "+vol);
  }
}
class SolidMain
{
  public static void main(String args[])
  {
    double r,h;
    Scanner sc=new Scanner(System.in);
    Cylinder ob1=new Cylinder();
    Cone ob2=new Cone();
    Sphere ob3=new Sphere();
    System.out.println("Enter the radius and height of the cylinder");
    r=sc.nextDouble();
    h=sc.nextDouble();
    ob1.setData(r,h);
    ob1.SA();
    ob1.Vol();
    ob1.display();
```

```
    System.out.println("Enter the radius and height of the cone");
    r=sc.nextDouble();
    h=sc.nextDouble();
    ob2.setData(r,h);
    ob2.SA();
    ob2.Vol();
    ob2.display();
    System.out.println("Enter the radius of the sphere");
    r=sc.nextDouble();
    ob3.setData(r);
    ob3.SA();
    ob3.Vol();
    ob3.display();
  }
}
```

```
C:\Users\Adithi\Desktop\java_prgs>java SolidMain
Enter the radius and height of the cylinder
2.4
3.9
The surface area of the cylinder is: 94.9536
The volume of the cylinder is: 70.53696
Enter the radius and height of the cone
2
9.4
The surface area of the cone is: 72.91338121431144
The volume of the cone is: 39.35466666666667
Enter the radius of the sphere
3
The surface area of the sphere is: 113.03999999999999
The volume of the sphere is: 113.04

C:\Users\Adithi\Desktop\java_prgs>
```