Solid:

```
import java.util.*;
abstract class Solid
{   int dim1, dim2;
    abstract void printArea();
    abstract void printVolume();
    Solid (int a, int b)
    {  dim1 = a, dim2 = b; }
}
class Cylinder extends Shape
{ Cylinder (int a, int b)
    { super (a,b); }
    void printArea()
  { System.out.println(" The surface area of
  cylinder = " + (6.283185 * (dim1 * dim2) * (dim1
    + dim2)) + " sq. units ");
  }
  void printVolume()
{ System.out.println(" The volume of the
    cylinder = " + (3.141592 * dim1 * dim1 * dim 2) + "
    cubic units");
  }
class Cone extends Shape
{   Cone (int a, int b)
      { super (a, b); }
      void printArea()
```

```
double l = Math.sqrt (dim1 * dim1 + dim2 * dim2);
System.out.println ("The surface area of cone
= " + (3.141592 dim1 * l) + " sq. units" }
}

Void printVolume ()
{ System.out.println (" The volume of cone
= " + (3.141592 * dim1 * dim1 * dim2/3) + "
cubic units. ");
}
class Sphere extends Shape
{ Sphere (int a, int b)
  { super (a, b); }
  void printArea ()
  { ~~double~~ System.out.println (" The surface
area of sphere = " + (4 * 3.141592 * (dim1 * dim1)
+ " sq. units "); }
void printVolume ()
{ System.out.println (" The volume of sphere
= " + (4 * 3.141592 * dim1 * dim1 * dim1/3)
" cubic units" ); }

}
```

```
class SolidMain
{
    public static void main (String args[])
    {
        int a,b;
        Scanner in = new Scanner (System.in);
        System.out.println(" Enter the radius and
        height of Cylinder ");
        a = in.nextInt();
        b = in.nextInt();
        Cylinder r = new Cylinder (a, b);
        System.out.println(" Enter the radius and height
        Cone ");
        a = in.nextInt();
        b = in.nextInt();
        Cone t = new Cone(a, b);
        System.out.println(" Enter the radius of sphere
        a = in.nextInt();
        Sphere c = new Sphere (a, a);
        r.printArea();
        r.printVolume();
        t.printArea();
        t.printVolume();
        c.printArea();
        c.printVolume();
    }
}
```

Person

```
import java.util.*;
class Person
{
    int status;
    Scanner in = new Scanner(System.in);
    void inp()
    {
        System.out.println("Enter the status of
        person: 1. for Student and 2. for
        Employee");
        status= in.nextInt();
    }
}
class Student extends Person
{   int deg;
    Scanner in =new Scanner(System.in);
    void inp()
    {  System.out.println("Enter the education
       status of person: 1 for UG and 2. for PG");
       deg = in.nextInt();
    }
}
class Employee extends Person
{
  int deg;
  Scanner in = new Scanner(System.in);
```

```
void inp()
{ System.out.println("Enter the employment
status of person: 1. for Teaching and 2. for
Non-Teaching");
  deg = in.nextInt();
}
}
class PersonMain
{ public static void main(String args[])
  { Person p = new Person();
    p.inp();
    Student s = new Student();
    Employee e = new Employee();
    if (p.status == 1)
        s.inp();
    else
        e.inp();

    System.out.println("Details of person");
    if (p.status == 1)
    { System.out.println("Status: Student");
    if (s.deg == 1)
        System.out.println("Degree: UG");
    else
        System.out.println("Degree: PG");
    }
```

```
else
{   System.out.println("Status: Em
    if (e.dey == 1)
    System.out.println("Profession
                        : Teaching");
    else
    System.out.println("Professon -
                : non-Teaching");
  }
}
}.
```