```java
import java.util.Scanner;

abstract class solid
{ int d1,d2;
  abstract void surface_area();
  abstract void volume();
  }

class cylinder extends solid
{ double area,vol;

  void surface_area()
  { area=2*3.1415*d2*(d2+d1);
    System.out.println("\nArea: "+area);
    }
  void volume()
  { vol=3.1415*d2*d2*d1;
    System.out.println("Volume: "+vol);
    }
}

class cone extends solid
{ double area,vol;

  void surface_area()
  { area=3.1415*d2*(d2+Math.pow((d1*d1+d2*d2),0.5));
    System.out.println("\nArea: "+area);
    }
  void volume()
  { vol=3.1415*d2*d2*d1/3;
    System.out.println("Volume: "+vol);
    }
}

class sphere extends solid
{ double area,vol;

  void surface_area()
  { area=4*3.1415*d2*d2;
    System.out.println("\nArea: "+area);
    }
  void volume()
```

```java
  void volume()
  { vol=4*3.1415*d2*d2*d2/3;
    System.out.println("Volume: "+vol);
    }
}

class SolidMain
{ public static void main(String args[])
  { Scanner get=new Scanner(System.in);
    int ch;
    cylinder cy= new cylinder();
    cone co= new cone();
    sphere s =new sphere();
    do
    {
    System.out.println("1. Cylinider\n2. Cone\n3. Sphere");
    System.out.println("\nEnter the no of choice: ");
    ch=get.nextInt();
    switch(ch)
    { case 1 :
              System.out.println("\nEnter height and radius:");
              cy.d1= get.nextInt();
              cy.d2= get.nextInt();
              cy.surface_area();
              cy.volume();
              break;
      case 2 :
              System.out.println("\nEnter altitude and radius:");
              co.d1= get.nextInt();
              co.d2= get.nextInt();
              co.surface_area();
              co.volume();
              break;
      case 3 :
              System.out.println("Enter the radius :");
              s.d2=get.nextInt();
              s.surface_area();
              s.volume();
              break;
      default : if(ch!=4)
                System.out.println("Inalid Input");
      }
    }while(ch!=4);
}
```

```
Command Prompt - java SolidMain                                                            —  ☐  ✕

D:\Java\jdk1.8.0_261\bin\prog>javac SolidMain.java

D:\Java\jdk1.8.0_261\bin\prog>java SolidMain
1. Cylinider
2. Cone
3. Sphere

Enter the no of choice:
1

Enter height and radius:
1
2

Area: 37.698
Volume: 12.566
1. Cylinider
2. Cone
3. Sphere

Enter the no of choice:
2

Enter altitude and radius:
3
5

Area: 170.12717688828258
Volume: 78.53750000000001
1. Cylinider
2. Cone
3. Sphere

Enter the no of choice:
3
Enter the radius :
3

Area: 113.094
Volume: 113.094
1. Cylinider
2. Cone
3. Sphere
```