EXTRA PROGRAMS

Program – 1

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Solidmain.java   Personmain.java

```java
import java.util.Scanner;

class Person
{
    String name;
    int age;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        System.out.println("Enter the NAME : ");
        name = ss.next();
        System.out.println("Enter the AGE : ");
        age = ss.nextInt();
    }

    void display()
    {
        System.out.println("NAME : "+name);
        System.out.println("AGE : "+age);
    }
}

class Employee extends Person
{
    int salary;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        super.accept();
        System.out.println("Enter the SALARY : ");
        salary = ss.nextInt();
    }

    void display()
```

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Solidmain.java   Personmain.java

```java
    {
        super.display();
        System.out.println("SALARY : "+salary);
    }
}

class Student extends Person
{
    int fees;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        super.accept();
        System.out.println("Enter the FEES : ");
        fees = ss.nextInt();
    }

    void display()
    {
        super.display();
        System.out.println("FEES : "+fees);
    }
}

class Teaching extends Employee
{
    String subject;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        super.accept();
        System.out.println("Enter the SUBJECT TAUGHT : ");
        subject = ss.next();
    }
```

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Solidmain.java   Personmain.java

```java
    void display()
    {
        super.display();
        System.out.println("SUBJECT TAUGHT : "+subject);
    }
}

class Non_Teaching extends Employee
{
    String job;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        super.accept();
        System.out.println("Enter the JOB : ");
        job = ss.next();
    }

    void display()
    {
        super.display();
        System.out.println("JOB : "+job);
    }
}

class Ug extends Student
{
    int no_of_sub;
    Scanner ss = new Scanner(System.in);

    void accept()
    {
        super.accept();
        System.out.println("Enter the NUMBER OF SUBJECTS : ");
        no_of_sub = ss.nextInt();
    }
}
```

```java
111
112         void display()
113         {
114             super.display();
115             System.out.println("NUMBER OF SUBJECTS : "+no_of_sub);
116         }
117     }
118
119     class Pg extends Student
120     {
121         String sub_of_spec;
122         Scanner ss = new Scanner(System.in);
123
124         void accept()
125         {
126             super.accept();
127             System.out.println("Enter the SUBJECT OF SPECIALIZATION : ");
128             sub_of_spec = ss.next();
129         }
130
131         void display()
132         {
133             super.display();
134             System.out.println("NAME : "+name);
135             System.out.println("FEES : "+fees);
136             System.out.println("SUBJECT OF SPECIALIZATION : "+sub_of_spec);
137         }
138     }
139
```

```java
140     class Personmain
141     {
142         public static void main(String[] args)
143         {
144             System.out.println("\n<-----ENTER TEACHING EMPLOYEE DETAILS----->");
145             Teaching t = new Teaching();
146             t.accept();
147             System.out.println("\n<-----ENTER NON-TEACHING EMPLOYEE DETAILS----->");
148             Non_Teaching nt = new Non_Teaching();
149             nt.accept();
150             System.out.println("\n<-----ENTER UG STUDENT DETAILS----->");
151             Ug u = new Ug();
152             u.accept();
153             System.out.println("\n<-----ENTER PG STUDENT DETAILS----->");
154             Pg p = new Pg();
155             p.accept();
156
157             System.out.println("\n\n<-----DETAILS OF TEACHING EMPLOYEE----->");
158             t.display();
159             System.out.println("\n<-----DETAILS OF NON-TEACHING EMPLOYEE----->");
160             nt.display();
161             System.out.println("\n<-----DETAILS OF UG STUDENT----->");
162             u.display();
163             System.out.println("\n<-----DETAILS OF PG STUDENT----->");
164             p.display();
165         }
166     }
```

OUTPUT:

```
C:\Users\91944\OneDrive\Desktop\OOJLAB\Lab_8>java Personmain

<-----ENTER TEACHING EMPLOYEE DETAILS----->
Enter the NAME :
aaa
Enter the AGE :
40
Enter the SALARY :
25000
Enter the SUBJECT TAUGHT :
OOJ

<-----ENTER NON-TEACHING EMPLOYEE DETAILS----->
Enter the NAME :
bbb
Enter the AGE :
35
Enter the SALARY :
30000
Enter the JOB :
Maths

<-----ENTER UG STUDENT DETAILS----->
Enter the NAME :
ccc
Enter the AGE :
20
Enter the FEES :
80000
Enter the NUMBER OF SUBJECTS :
8

<-----ENTER PG STUDENT DETAILS----->
Enter the NAME :
ddd
Enter the AGE :
25
Enter the FEES :
150000
Enter the SUBJECT OF SPECIALIZATION :
```

Astrophysics

<-----DETAILS OF TEACHING EMPLOYEE---->
NAME : aaa
AGE : 40
SALARY : 25000
SUBJECT TAUGHT : OOJ

<-----DETAILS OF NON-TEACHING EMPLOYEE----->
NAME : bbb
AGE : 35
SALARY : 30000
JOB : Maths

<-----DETAILS OF UG STUDENT----->
NAME : ccc
AGE : 20
FEES : 80000
NUMBER OF SUBJECTS : 8

<-----DETAILS OF PG STUDENT----->
NAME : ddd
AGE : 25
FEES : 150000
NAME : ddd
FEES : 150000
SUBJECT OF SPECIALIZATION : Astrophysics

C:\Users\91944\OneDrive\Desktop\OOJLAB\Lab_8>

PROGRAM – 2

INPUT:

```java
import java.util.Scanner;

abstract class Solid
{
    double r, h, area, vol;
    double pi = 22.0 / 7;
    abstract void printareavol();
}

class Cylinder extends Solid
{
    void printareavol()
    {
        Scanner ss = new Scanner(System.in);
        System.out.println("\n-----CYLINDER DETAILS-----\n");
        System.out.println("Enter the RADIUS : ");
        r = ss.nextDouble();
        System.out.println("Enter the HEIGHT : ");
        h = ss.nextDouble();
        area = (2 * pi * r * r) + (2 * pi * r *h);
        vol = pi * r * r * h;
        System.out.printf("\nSURFACE AREA %.3f sq. units \n", area);
        System.out.printf("\nVOLUME %.3f cube units \n", vol);
        System.out.println("\n<----------------------------->\n");
    }
}

class Cone extends Solid
{
    void printareavol()
    {
        Scanner ss = new Scanner(System.in);
        System.out.println("\n-----CONE DETAILS-----\n");
        System.out.println("Enter the RADIUS : ");
        r = ss.nextDouble();
        System.out.println("Enter the HEIGHT : ");
```

```java
            h = ss.nextDouble();
            area = (pi * r * r) + ((pi * r) * (Math.sqrt(r*r+h*h)));
            vol = (1.0 / 3) * pi * r * r * h;
            System.out.printf("\nSURFACE AREA %.3f sq. units \n", area);
            System.out.printf("\nVOLUME %.3f cube units \n", vol);
            System.out.println("\n<----------------------------->\n");
        }
    }

    class Sphere extends Solid
    {
        void printareavol()
        {
            Scanner ss = new Scanner(System.in);
            System.out.println("\n-----SPHERE DETAILS-----\n");
            System.out.println("Enter the RADIUS : ");
            r = ss.nextDouble();
            area = (4 * pi * r * r);
            vol = (4.0 / 3)  * pi * r * r * r;
            System.out.printf("\nSURFACE AREA %.3f sq. units \n", area);
            System.out.printf("\nVOLUME %.3f cube units \n", vol);
            System.out.println("\n<----------------------------->\n");
        }
    }

    class Solidmain
    {
        public static void main(String[] args)
        {
            Cylinder c = new Cylinder();
            c.printareavol();
            Cone cc = new Cone();
            cc.printareavol();
            Sphere s = new Sphere();
            s.printareavol();
        }
    }
```

OUTPUT:

```
C:\Users\91944\OneDrive\Desktop\OOJLAB\Lab_8>java Solidmain

-----CYLINDER DETAILS-----

Enter the RADIUS :
3
Enter the HEIGHT :
5

SURFACE AREA 150.857 sq. units

VOLUME 141.429 cube units

<----------------------------->


-----CONE DETAILS-----

Enter the RADIUS :
3
Enter the HEIGHT :
5

SURFACE AREA 83.263 sq. units

VOLUME 47.143 cube units

<----------------------------->


-----SPHERE DETAILS-----

Enter the RADIUS :
2

SURFACE AREA 50.286 sq. units

VOLUME 33.524 cube units

<----------------------------->
```