Program 1:

```
/*
Write a program to implement single inheritance. Declare super class
‘Employee’ with emp_no and emp_name.Declare subclass ‘Fitness’
with height and weight. Accept and display data for five employees.
*/

import java.util.Scanner;

class Employee{

    private int emp_no;
    private String emp_name;

    Scanner scanner = new Scanner(System.in);

    //Method to display employee name and id
    public void getData(){
        System.out.println("The name of Employee is:" + emp_name);
        System.out.println("The ID of Employee is:" + emp_no);
    }
    //Method to enter employee name and id
    public void putData(){
        System.out.println("Enter Employee name:");
        emp_name = scanner.nextLine();
        System.out.println("Enter Employee number:");
        emp_no = scanner.nextInt();
    }
}
//Class fitness extends Employee class
class Fitness extends Employee{

    private float height, weight;

    Scanner scanner = new Scanner(System.in);
    //Method to enter employee height
    public void setHeight() {
        System.out.println("Enter Employee height in centimeters:");
```

```
        height = scanner.nextFloat();
    }
    //Method to enter employee weight
    public void setWeight() {
        System.out.println("Enter Employee weight kilograms:");
        weight = scanner.nextFloat();
    }
    //Method to display employee height and weight
    public void display(){
        super.getData();
        System.out.println("The height of Employee is:" + height);
        System.out.println("The weight of Employee is:" + weight);
    }
}
public class Exp3_1 {
    public static void main(String[] args) {
        System.out.println("Enter details");
        //Instantiating object array of fitness class
        Fitness emp[] = new Fitness[5];
        //creating employee objects using constructor
        for (int i = 0; i < 5; i++) {
            emp[i] = new Fitness();
        }
        //initializing employee details
        for (int i = 0; i < 5; i++) {
            System.out.println("Employee " + (i+1));
            emp[i].putData();
            emp[i].setHeight();
            emp[i].setWeight();
            System.out.println("\n");
        }
        System.out.println("Displaying Employee Details:");
        //Displaying employee details
        for (int i = 0; i < 5; i++) {
            System.out.println("\n");
            emp[i].display();
        }
    }
}
```

Output

```
D:\College\JAVA\Experiments\Exp3>javac Exp3_1.java

D:\College\JAVA\Experiments\Exp3>java Exp3_1
Enter details
Employee 1
Enter Employee name:
John
Enter Employee number:
1
Enter Employee height in centimeters:
180
Enter Employee weight kilograms:
80


Employee 2
Enter Employee name:
Jane
Enter Employee number:
2
Enter Employee height in centimeters:
150
Enter Employee weight kilograms:
50


Employee 3
Enter Employee name:
Joseph
Enter Employee number:
3
Enter Employee height in centimeters:
160
Enter Employee weight kilograms:
60
```

```
Employee 4
Enter Employee name:
Vincent
Enter Employee number:
4
Enter Employee height in centimeters:
170
Enter Employee weight kilograms:
70


Employee 5
Enter Employee name:
Maya
Enter Employee number:
165
Enter Employee height in centimeters:
165
Enter Employee weight kilograms:
65


Displaying Employee Details:


The name of Employee is:John
The ID of Employee is:1
The height of Employee is:180.0
The weight of Employee is:80.0


The name of Employee is:Jane
The ID of Employee is:2
The height of Employee is:150.0
The weight of Employee is:50.0
```

```
The name of Employee is:Joseph
The ID of Employee is:3
The height of Employee is:160.0
The weight of Employee is:60.0


The name of Employee is:Vincent
The ID of Employee is:4
The height of Employee is:170.0
The weight of Employee is:70.0


The name of Employee is:Maya
The ID of Employee is:165
The height of Employee is:165.0
The weight of Employee is:65.0

D:\College\JAVA\Experiments\Exp3>
```

Program 2:

```java
/*
Create a Teacher class and derive Professor and Associate_Professor class
from Teacher class. Define appropriate constructor for all the classes. Also
define a method to display information of Teacher. Make necessary
assumptions as required.
*/
import java.util.Scanner;
//Defining class Teacher
class Teacher{
    private String name, dept, code;
    Scanner scanner = new Scanner(System.in);
    public void getData(){
        System.out.println("Teacher name is:" + name);
        System.out.println("Teacher department is:" + dept);
        System.out.println("Teacher subject code is:" + code);
    }
    //Constructor of class Teacher
    Teacher(){
        System.out.println("Enter teacher name :");
        name = scanner.nextLine();
        System.out.println("Enter teacher department :");
        dept = scanner.nextLine();
        System.out.println("Enter teacher subject code :");
        code = scanner.nextLine();
    }
    public String getName() {
        return name;
    }
    public String getDept() {
        return dept;
    }
    public String getCode() {
        return code;
    }
}
//Class professor inherits class Teacher
class Professor extends Teacher {
    //Constructor of class Professor
```

```
    Professor(){
        super();
        System.out.println("Professor's Information:");
        System.out.println("Name of Professor : "+getName());
        System.out.println("Professor Code : "+getCode());
        System.out.println("Department of Professor : "+getDept());
    }
}
//Class Associate_Professor inherits class Teacher
class Associate_professor extends Teacher {
    //Constructor of class associate professor
    Associate_professor(){
        super();
        System.out.println("Associate Professor's Information:");
        System.out.println("Name of Associate Professor : "+getName());
        System.out.println("Associate Professor Code : "+getCode());
        System.out.println("Department of Associate Professor : "+getDept());
    }
}
//Driver class
public class Exp3_2 {
    public static void main(String[] args) {

        //Instantiating object of class Teacher
        Teacher teacher = new Teacher();
        teacher.getData();
        new Professor();
        new Associate_professor();
    }
}
```

Output:

```
D:\College\JAVA\Experiments\Exp3>javac Exp3_2.java

D:\College\JAVA\Experiments\Exp3>java Exp3_2
Enter teacher name :
Vincent
Enter teacher department :
MECH
Enter teacher subject code :
1234
Teacher name is:Vincent
Teacher department is:MECH
Teacher subject code is:1234
Enter teacher name :
Charles
Enter teacher department :
IT
Enter teacher subject code :
5678
Professor's Information:
Name of Professor : Charles
Professor Code : 5678
Department of Professor : IT
Enter teacher name :
Josh
Enter teacher department :
CMPN
Enter teacher subject code :
7879
Associate Professor's Information:
Name of Associate Professor : Josh
Associate Professor Code : 7879
Department of Associate Professor : CMPN

D:\College\JAVA\Experiments\Exp3>
```

Questions:

Question 1:

```java
import java.util.Scanner;
//Class Emp is base class
class Emp{
    private String emp_name, emp_id;
    //Method to get employee name and id
    public void getData(){
        System.out.println("The Employee Name is: " + emp_name);
        System.out.println("The Employee ID is: " + emp_id);
    }
    //Method to set employee name and id
    public void putData(String emp_name, String emp_id){
        this.emp_name = emp_name;
        this.emp_id = emp_id;
    }
}
//Class salary inherits Emp class
class Salary extends Emp{
    private Double basic;
    //Method to get basic salary
    public Double getBasic() {
        return basic;
    }
    //Method to set basic salary
    public void setBasic(Double basic) {
        this.basic = basic;
    }
    //Method to calculate salary
    public void calculateSalary(){
        Double HRA = basic*0.3, DA = basic*0.7, CLA = 0.5*basic;
        Double salary = basic + HRA + DA + CLA;
        System.out.println("The salary of Employee is: " + salary);
    }
}
//Driver class
public class Emp_Salary{
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
        String name, id;
        Double base_salary;
        System.out.println("Enter Employee name:");
        name = scanner.nextLine();
        System.out.println("Enter Employee ID:");
        id = scanner.next();
        System.out.println("Enter base Salary of Employee:");
        base_salary = scanner.nextDouble();
        //Object of employee class
        Emp emp = new Emp();
        emp.putData(name, id);
        emp.getData();
        //Object of salary class
        Salary salary = new Salary();
        salary.setBasic(base_salary);
        salary.calculateSalary();
        scanner.close();
    }
}
```

Output:

```
D:\College\JAVA\Experiments\Exp3>javac Emp_Salary.java

D:\College\JAVA\Experiments\Exp3>java Emp_Salary
Enter Employee name:
James
Enter Employee ID:
12
Enter base Salary of Employee:
250000
The Employee Name is: James
The Employee ID is: 12
The salary of Employee is: 625000.0

D:\College\JAVA\Experiments\Exp3>
```