LAB3

1.

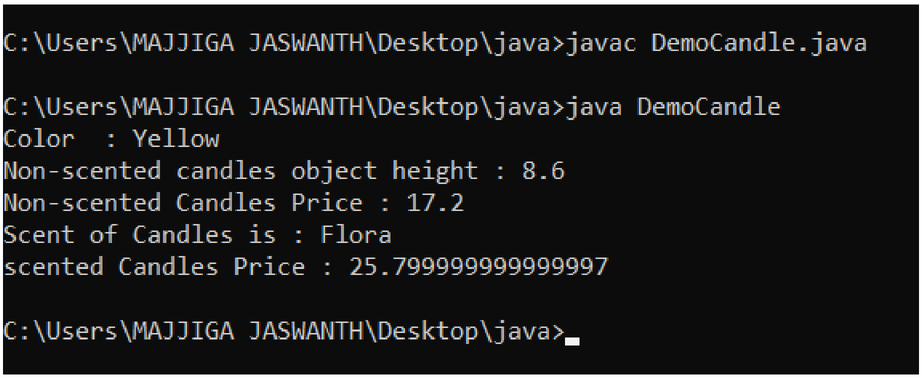
Mick’s Wicks makes candles in various sizes. Create a class for the business named Candle that contains data fields for color, height, and price. Create get methods for all three fields. Create set methods for color and height, but not for price. Instead, when height is set, determine the price as $2 per inch. Create a child class named ScentedCandle that contains an additional data field named scent and methods to get and set it. In the child class, override the parent’s setHeight() method to set the price of a ScentedCandle object at $3 per inch. Write an application that instantiates an object of each type and displays the details. Save the files as Candle.java, ScentedCandle.java, and DemoCandles.java.

CODE:

```
class Candle
{
        String color;
        double height,price;
        void setHeight(double height)
        {
                this.height=height;
                this.price=height*2;
        }

        void setColor(String color)
```

```
	{
		this.color=color;
	}

	String getColor()
	{
		return color;
	}
	double getHeight()
	{
		return height;
	}
	double getPrice()
	{
		return price;
	}
}
class ScentedCandle extends Candle
{
	String scent;
	void setScent(String a)
	{
		this.scent=a;
	}
	String getScent()
	{
		return scent;
	}
	double setHeight()
	{

		price=height*3;
		return price;
	}
}


public class DemoCandle
{
	public static void main(String args[])
	{
		ScentedCandle ob2=new ScentedCandle();
		ob2.setHeight(8.6);
		ob2.setColor("Yellow");
		ob2.setScent("Flora");


		System.out.println("Color  : "+ob2.getColor());
		System.out.println("Non-scented candles object height : "+ob2.getHeight());
		System.out.println("Non-scented Candles Price : "+ob2.getPrice());
		System.out.println("Scent of Candles is : "+ob2.getScent());
		System.out.println("scented Candles Price : "+ob2.setHeight());


	}
}
```

OUTPUT:



```
C:\Users\MAJJIGA JASWANTH\Desktop\java>javac DemoCandle.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>java DemoCandle
Color  : Yellow
Non-scented candles object height : 8.6
Non-scented Candles Price : 17.2
Scent of Candles is : Flora
scented Candles Price : 25.799999999999997

C:\Users\MAJJIGA JASWANTH\Desktop\java>
```

2.

Create a class named Poem that contains fields for the name of the poem and the number of lines in it. Include a constructor that requires values for both fields. Also include get methods to retrieve field values. Create three subclasses:

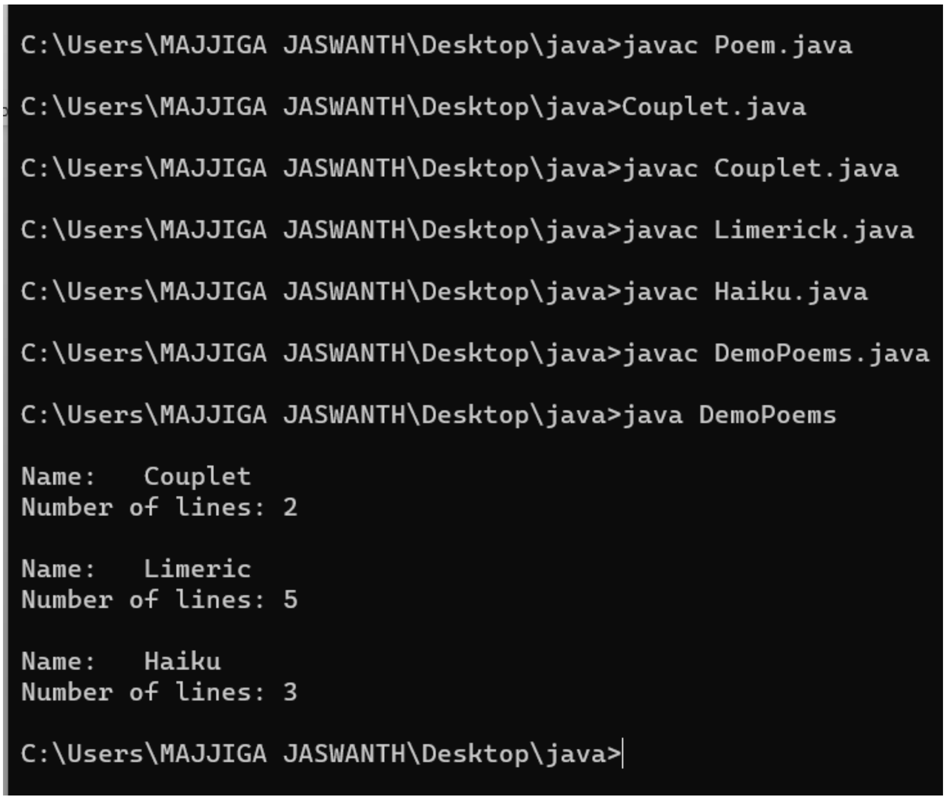
Couplet, Limerick, and Haiku. The constructor for each subclass requires only a title; the lines field is set using a constant value. A couplet has two lines, a limerick has five lines, and a haiku has three lines. Create an application that demonstrates usage of an object of each type. Save the files as Poem.java, Couplet.java, Limerick.java, Haiku.java, and DemoPoems.java.

CODE:

```
public class Poem
{
String NP;
int LP;
Poem(){
}
Poem(String PName,int PLine)
{
NP=PName;
LP=PLine;
}
public String Get_Pname()
{
return NP;
}
public int Get_Pline()
{
return LP;
}
}
public class Couplet extends Poem
{
String CPN;
int CPL;
```

```
Couplet(String Title)
{
super(Title,2);
}
void display(){
      System.out.printf("\nName:  %s\nNumber of lines: %d\n", 
Get_Pname(), Get_Pline());
}
}
public class Limerick extends Poem
{
String LT;
int LPL;
Limerick(String Title)
{
super(Title,5);
}
void display(){
      System.out.printf("\nName:  %s\nNumber of lines: %d\n", 
Get_Pname(), Get_Pline());
}
}
public class Haiku extends Poem
{
String HT;
int HPL;
Haiku(String Title)
{
super(Title,3);
}
void display(){
      System.out.printf("\nName:  %s\nNumber of lines: 
%d\n",Get_Pname(), Get_Pline());

}

}

public class DemoPoems

{

public static void main(String args[])

{

       Haiku h = new Haiku(" Haiku");

        Couplet c = new Couplet(" Couplet");

        Limerick l = new Limerick(" Limeric");


        c.display();

        l.display();

        h.display();

    }

}
```

Output:



```
C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Poem.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>Couplet.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Couplet.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Limerick.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Haiku.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac DemoPoems.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>java DemoPoems

Name:   Couplet
Number of lines: 2

Name:   Limeric
Number of lines: 5

Name:   Haiku
Number of lines: 3

C:\Users\MAJJIGA JASWANTH\Desktop\java>
```

3.

Create a class named CollegeCourse that includes data fields that hold the

department (for example, ENG), the course number (for example, 101), the

credits (for example, 3), and the fee for the course (for example, $360). All of the

fields are required as arguments to the constructor, except for the fee, which is

calculated at $120 per credit hour. Include a display() method that displays

the course data. Create a subclass named LabCourse that adds $50 to the course

fee. Override the parent class display() method to indicate that the course is

a lab course and to display all the data. Write an application named UseCourse

that prompts the user for course information. If the user enters a class in any of

the following departments, create a LabCourse: BIO, CHM, CIS, or PHY. If the

user enters any other department, create a CollegeCourse that does not include

the lab fee. Then display the course data. Save the files as CollegeCourse.java,

LabCourse.java, and UseCourse.java.

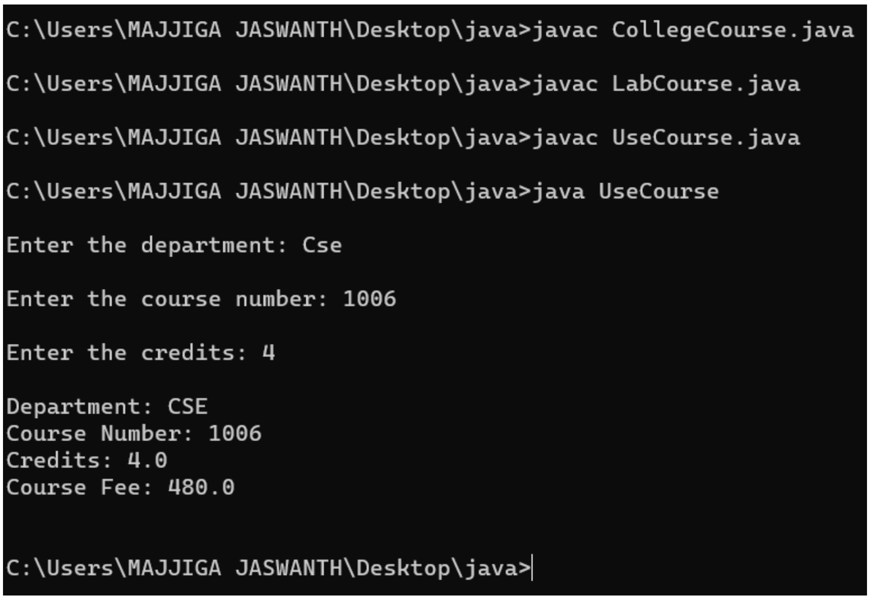
CODE:

```
public class CollegeCourse
{
String Dep;
int CNo;
double Cred;
double CFee;
final double FeePCH=120.00;
CollegeCourse(String D,int Cn,double C)
```

```
{
     Dep=D.toUpperCase();
     CNo=Cn;
     Cred=C;
     CFee=FeePCH*Cred;
}
public String getDept()
{
     return Dep;
}
public int getCourseNo()
{
     return CNo;
}
public double getCredit()
{
     return Cred;
}
public double getCourFee()
{
     return CFee;
}
public void display()
{
System.out.println("\nDepartment: "+Dep+"\nCourse Number:
"+CNo+"\nCredits: "+Cred+"\nCourse Fee: "+CFee);
}
}
public class LabCourse extends CollegeCourse
{
final double LFee=50.00;
```

```
double LCFee;
LabCourse(String D,int Cn,double C)
{
  super(D,Cn,C);
  LCFee=super.getCourFee()+LFee;
}
public double getLCFee()
{
     return LCFee;
}
public void display()
{
System.out.println("\n Lab Course:-\n\nDepartment: 
"+Dep+"\nCourse Number: "+CNo+"\nCredits: "+Cred+"\nCourse 
Fee: "+LCFee);
}
}
import java.util.*;
public class UseCourse
{
     public static void main(String args[])
     {
       Scanner sc = new Scanner(System.in);
       System.out.print("\nEnter the department: ");
       String department = sc.nextLine();
       System.out.print("\nEnter the course number: ");
       int number = sc.nextInt();
       System.out.print("\nEnter the credits: ");
       double credit = sc.nextDouble();
        department=department.toUpperCase();
        if (department.equals("BIO") ||
                department.equals("CHM") ||

                department.equals("CIS") ||

                department.equals("PHY") ) {

            LabCourse  LC= new LabCourse(department, number,
credit);

               LC.display();

        }

         else {

            CollegeCourse CC= new CollegeCourse(department,
number, credit);

            CC.display();

       }

       System.out.println("");


    }

}
```

Output:



```
C:\Users\MAJJIGA JASWANTH\Desktop\java>javac CollegeCourse.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac LabCourse.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac UseCourse.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>java UseCourse

Enter the department: Cse

Enter the course number: 1006

Enter the credits: 4

Department: CSE
Course Number: 1006
Credits: 4.0
Course Fee: 480.0


C:\Users\MAJJIGA JASWANTH\Desktop\java>
```

4.

Develop a set of classes for a college to use in various student service and

personnel applications. Classes you need to design include the following:

•• Person—A Person contains a first name, last name, street address, zip code, and phone number. The class also includes a method that sets each data field, using a series of dialog boxes and a display method that displays all of a Person's information on a single line at the command line on the screen.

•• CollegeEmployee—CollegeEmployee descends from Person. A CollegeEmployee also includes a Social Security number, an annual salary, and a department name, as well as methods that override the Person methods to accept and display all CollegeEmployee data.

•• Faculty—Faculty descends from CollegeEmployee. This class also includes a Boolean field that indicates whether the Faculty member is tenured, as well as methods that override the CollegeEmployee methods to accept and display this additional piece of information.

•• Student—Student descends from Person. In addition to the fields available in Person, a Student contains a major field of study and a grade point average as well as methods that override the Person methods to accept and display these additional facts.

Write an application named CollegeList that declares an array of four "regular" CollegeEmployees, three Faculty, and seven Students. Prompt the user to specify which type of person's data will be entered (C, F, or S), or allow the user to quit (Q). While the user chooses to continue (that is, does not quit), accept data entry for the appropriate type of Person. If the user attempts to enter data for more than four CollegeEmployees, three Faculty, or seven Students, display an error message. When the user quits, display a report on the screen listing each group of Persons under the appropriate heading of "College Employees," "Faculty," or "Students." If the user has not entered data for one or more types of Persons during a session, display an appropriate message under the appropriate heading. Save the files as Person.java, CollegeEmployee.java, Faculty.java, Student.java, and CollegeList.java.

Output:

```
import java.util.*;

public class Person

{

String FName;

String LName;

String StAddr;

double ZC;

double PNo;

public void SetData()

{

Scanner sc= new Scanner(System.in);

System.out.print("\nEnter Your First Name:");

FName=sc.nextLine();

System.out.print("\nEnter Your Last Name:");

LName=sc.nextLine();

System.out.print("\nEnter Your Street Address:");

StAddr=sc.nextLine();

System.out.print("\nEnter Your Area Zip Code:");

ZC=sc.nextDouble();

System.out.print("\nEnter Your Phone Number:");

PNo=sc.nextDouble();

}

public void display()

{

System.out.println("\nFirst Name: "+FName+"\n Last Name: 
"+LName+"\nStreet Address: "+StAddr+"\nZip Code: "+ZC+"\nPhone 
Number: "+PNo);

}

}
```

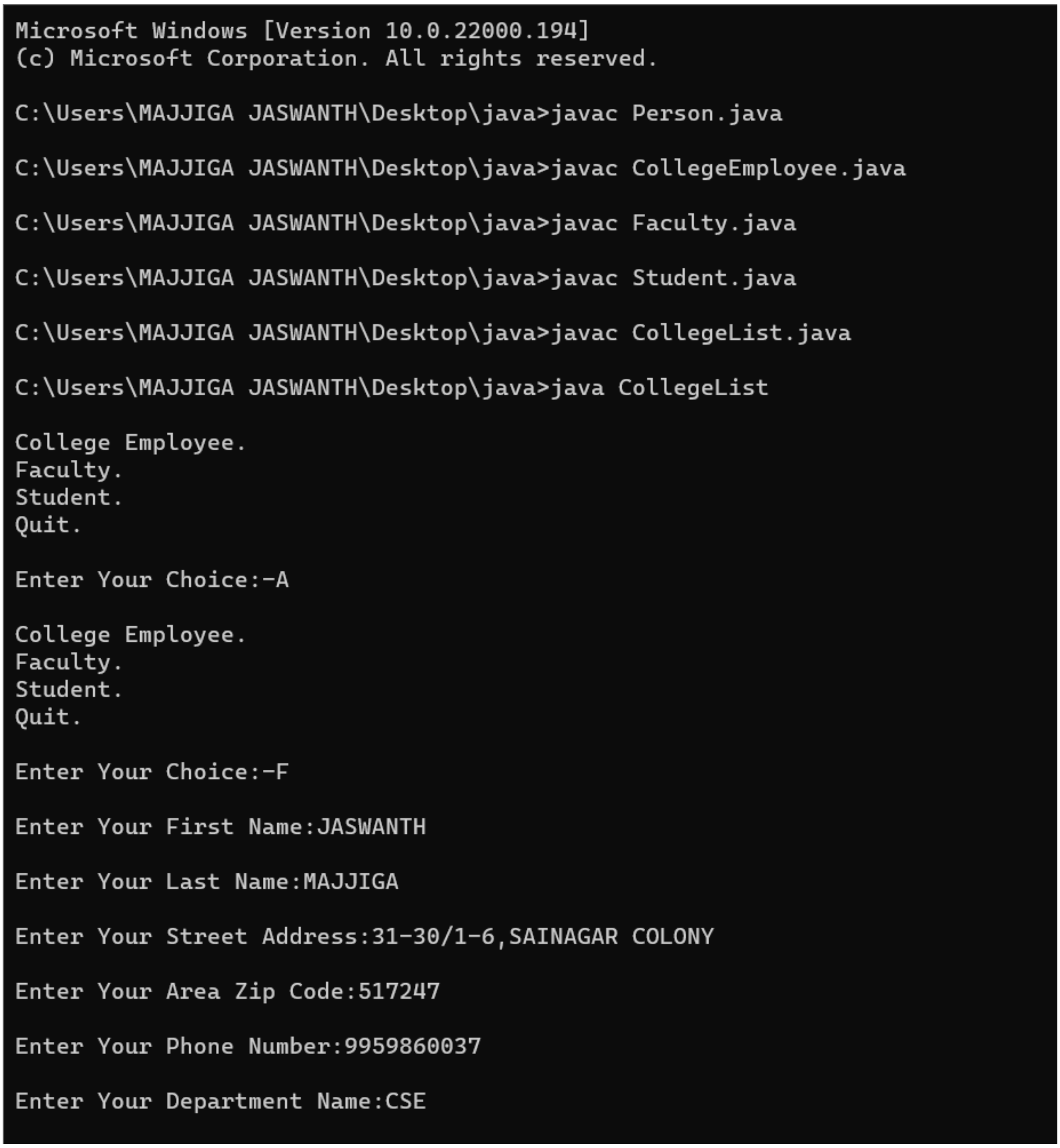
```
import java.util.*;
public class CollegeEmployee extends Person
{
 double SSN;
 double AS;
 String Dep;
 public void SetData()
{
Scanner sc=new Scanner(System.in);
super.SetData();
System.out.print("\nEnter Your Department Name:");
Dep=sc.nextLine();
System.out.print("\nEnter Your Social Security Number:");
SSN=sc.nextDouble();
System.out.print("\nEnter Your Annual Salary:");
AS=sc.nextDouble();
}
public void display()
{
super.display();
System.out.println("\nSocial Security Number: "+SSN+"\nAnnual
Salary: "+AS+"\nDepartment Name: "+Dep);
}
}
import java.util.*;
public class Faculty extends CollegeEmployee
{
boolean Tenured;
  public void SetData()
  {Scanner sc=new Scanner(System.in);
    super.SetData();
    System.out.print("\nIs the Faculty member tenured: ");
    String Tenured = sc.nextLine();
    if(Tenured.equals("Yes"))
      this.Tenured = true;
    else
      this.Tenured = false;

  }
  public void display()
  {
    super.display();
    if(Tenured == true)
    {
      System.out.println("Faculty member is tenured");
    }
    else
    {
      System.out.println("Faculty member is not tenured");
    }

  }
  }
  import java.util.*;
  public class Student extends Person
  {
  String Major;
  double GPA;
  public void SetData()
  {
  Scanner sc =new Scanner(System.in);
  super.SetData();
```

```
System.out.print("\nEnter Your Major: ");
Major=sc.nextLine();
System.out.print("\nEnter Your GPA: ");
GPA=sc.nextDouble();
}
public void display()
{
super.display();
System.out.println("\nMajor: "+Major+"\nGPA: "+GPA);
}
}
import java.util.*;
public class CollegeList
{
public static void main(String args[])
{
char C,QC='Y';
CollegeEmployee[] CE=new CollegeEmployee[4];
Faculty[] F=new Faculty[3];
Student[] S=new Student[7];
Scanner sc=new Scanner(System.in);
int CC=0,FC=0,SC=0;
do{
System.out.println("\nC)ollege Employee.\n" + "F)eculty.\n"
+ "S)tudent.\n" + "Q)uit.");
System.out.print("\nEnter Your Choice:-");
C=sc.next().charAt(0);
switch(C)
{
case 'C':
if (CC<4)
```

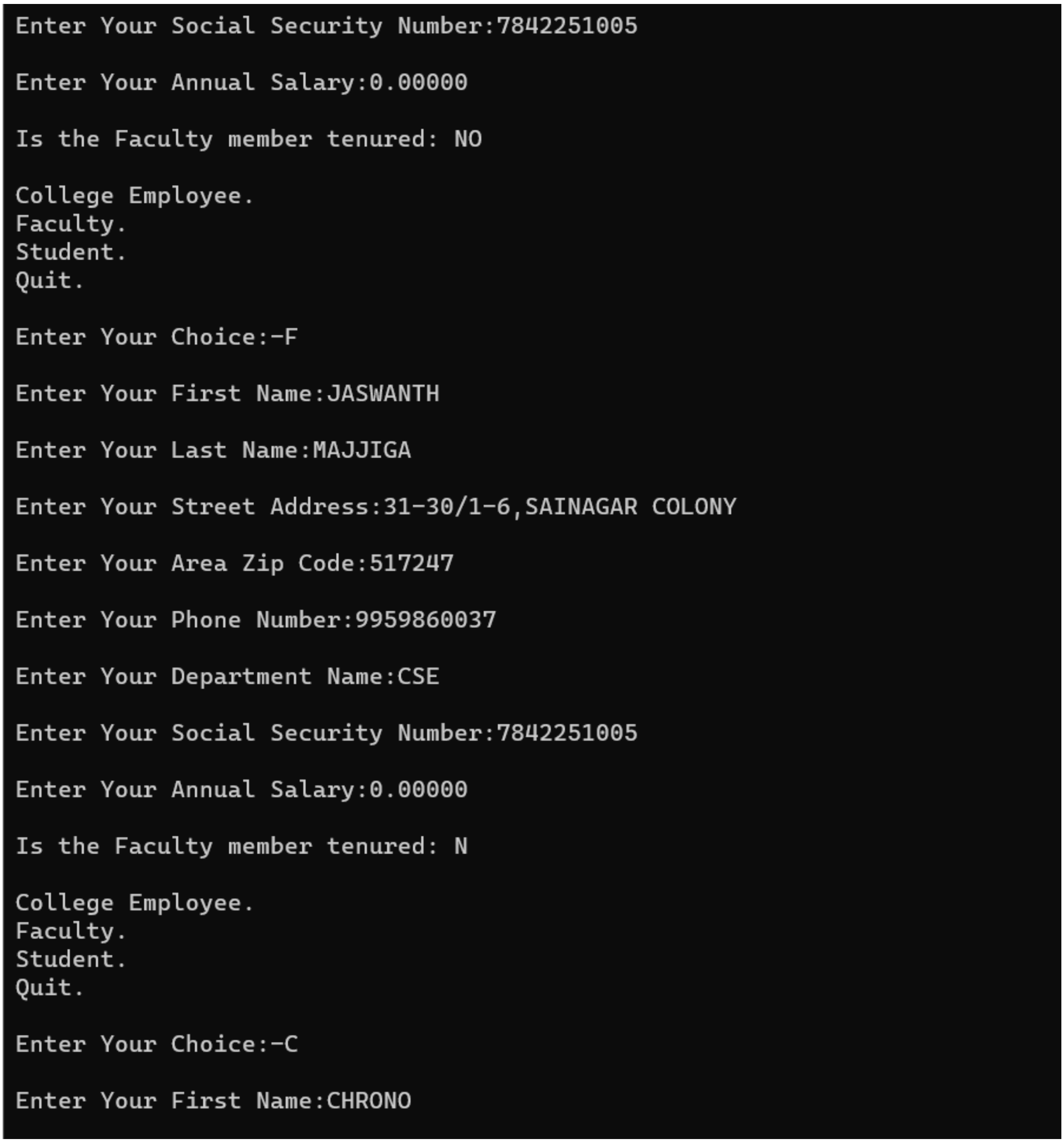
```
  {
     CollegeEmployee ce=new CollegeEmployee();
     ce.SetData();
  CE[CC]=ce;
  CC++;
  }
  else
  System.out.print("\n Sorry - too many Employee records have been entered!!");
  break;
  case 'F':
  if(FC<3)
  {
  Faculty f = new Faculty();
  f.SetData();
  F[FC]=f;
  FC++;
  }
  else
     System.out.print("\n Sorry - too many faculty records have been entered!!");
  break;
  case 'S':
  if (SC<7)
  {
  Student s = new Student();
  s.SetData();
  S[SC]=s;
  SC++;
  }
  else
  System.out.print("\n Sorry - too many student records have been entered!!");

  break;

  case 'Q':

  System.out.println("Really want to exit?(Y/N)");

  QC=sc.next().charAt(0);

  if(QC=='Y')

     C=QC;

  break;

  }

  }

   while (C!='Y');

   System.out.println("\nCollege Employees:");

  if(CC == 0)

  System.out.println("No employees entered");

  else

  {for(int x = 0; x < CC; ++x)

  {

  System.out.println((x+1)+")");

  CE[x].display();

  }

  }

  System.out.println("\nFaculty:");

  if(FC == 0)

  System.out.println("No faculty entered");

  else

  {

  for(int x = 0; x < FC; ++x)

  {

  System.out.println((x+1)+")");

  F[x].display();
```

```
}
}
System.out.println("\nStudents:");
if(SC == 0)
System.out.println("No students entered");
else
{
for(int x = 0; x < SC; ++x)
{
System.out.println((x+1)+")");
S[x].display();
}
}
}
}
```

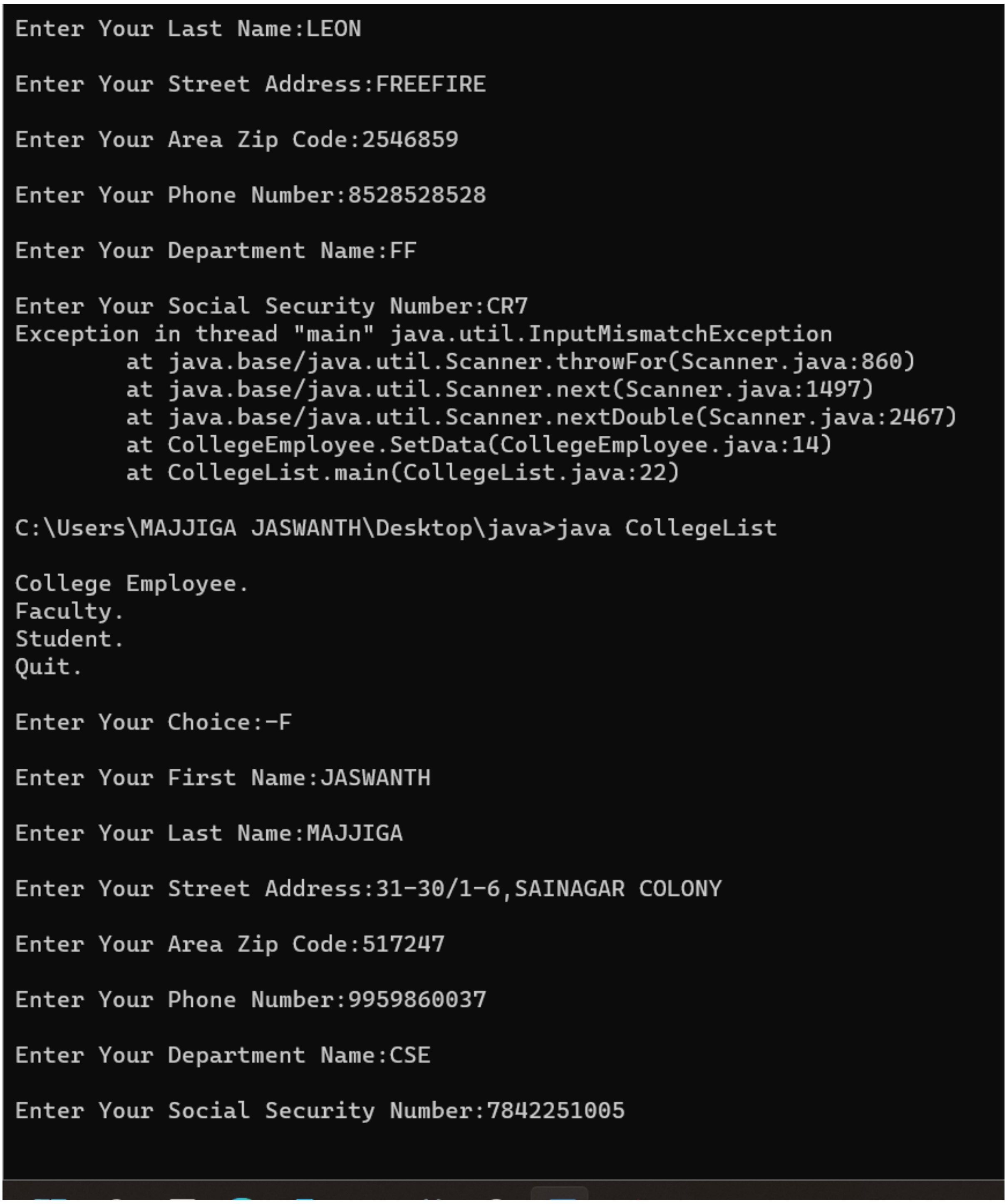
OUTPUT:



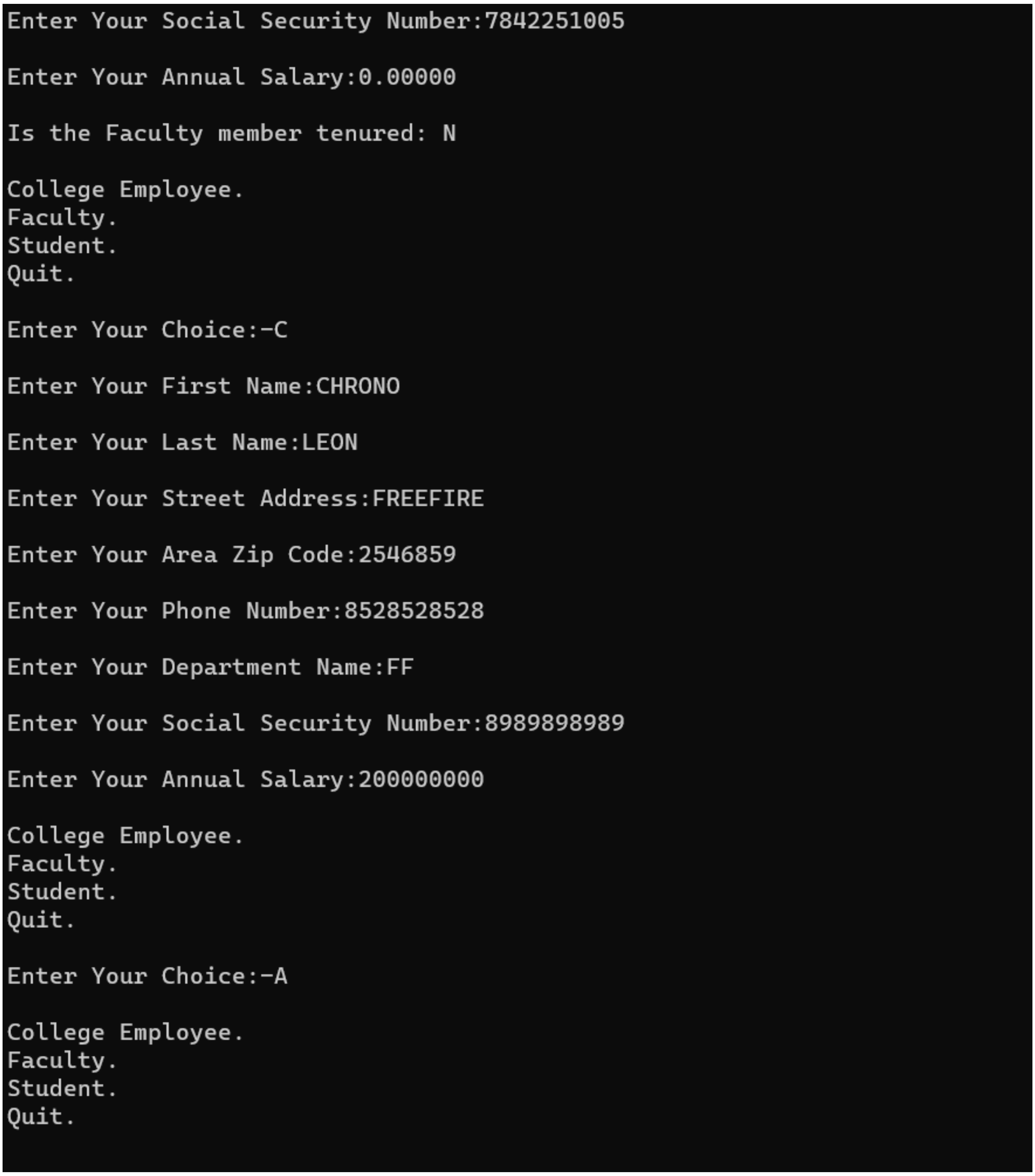
```
Microsoft Windows [Version 10.0.22000.194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Person.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac CollegeEmployee.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Faculty.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac Student.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>javac CollegeList.java

C:\Users\MAJJIGA JASWANTH\Desktop\java>java CollegeList

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-A

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F

Enter Your First Name:JASWANTH

Enter Your Last Name:MAJJIGA

Enter Your Street Address:31-30/1-6,SAINAGAR COLONY

Enter Your Area Zip Code:517247

Enter Your Phone Number:9959860037

Enter Your Department Name:CSE
```



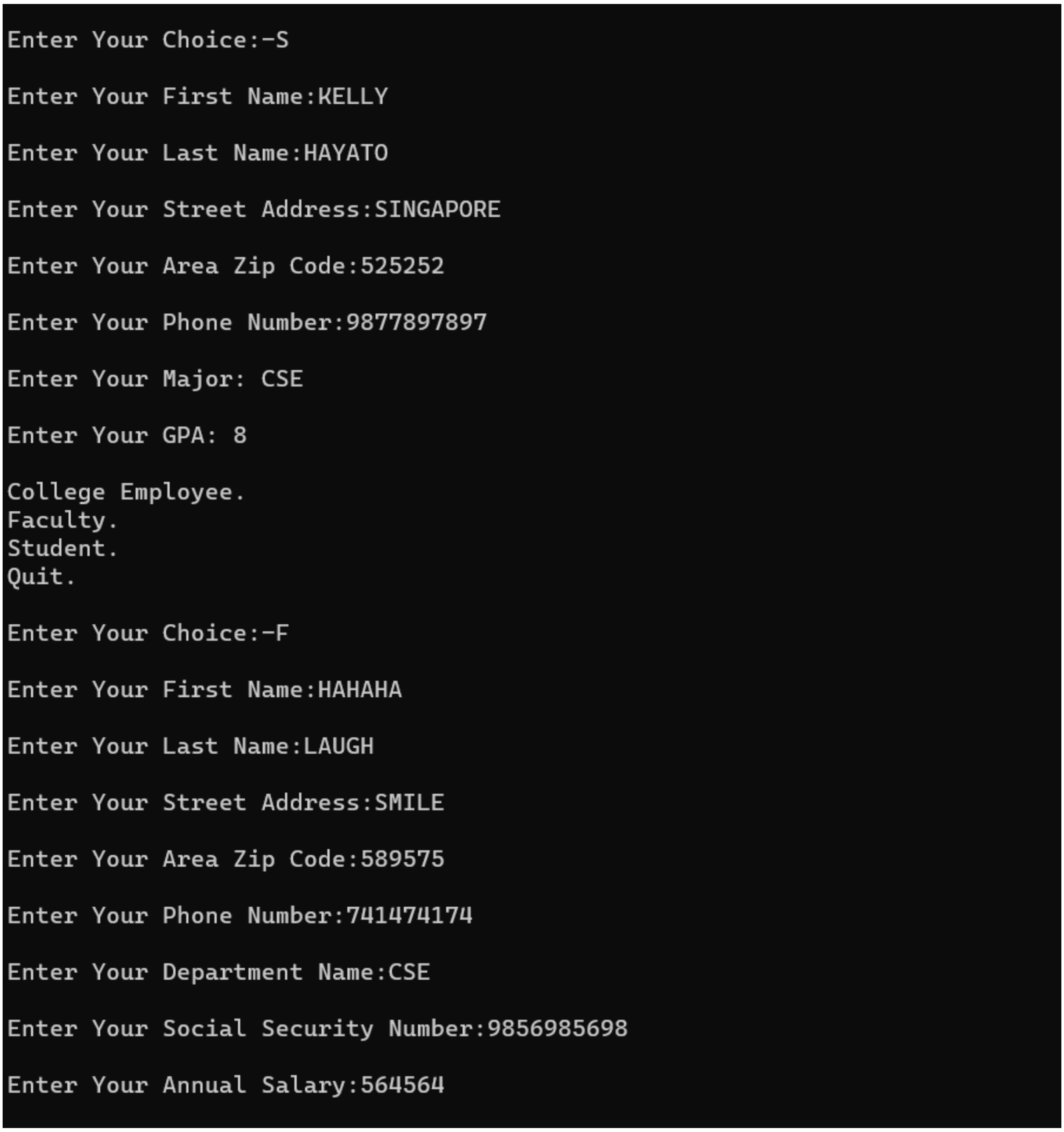
```
Enter Your Social Security Number:7842251005

Enter Your Annual Salary:0.00000

Is the Faculty member tenured: NO

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F

Enter Your First Name:JASWANTH

Enter Your Last Name:MAJJIGA

Enter Your Street Address:31-30/1-6,SAINAGAR COLONY

Enter Your Area Zip Code:517247

Enter Your Phone Number:9959860037

Enter Your Department Name:CSE

Enter Your Social Security Number:7842251005

Enter Your Annual Salary:0.00000

Is the Faculty member tenured: N

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-C

Enter Your First Name:CHRONO
```



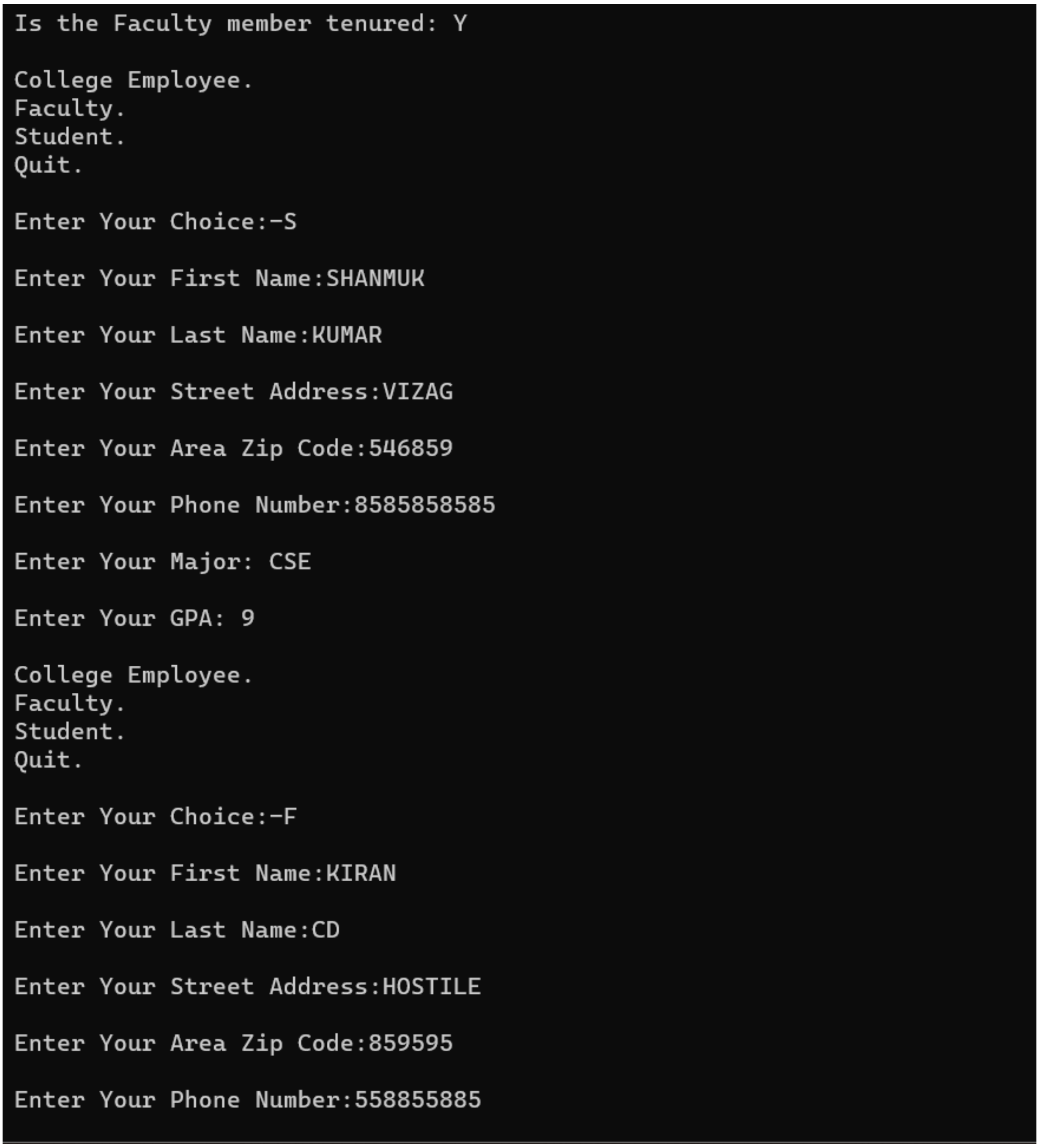
```
Enter Your Last Name:LEON

Enter Your Street Address:FREEFIRE

Enter Your Area Zip Code:2546859

Enter Your Phone Number:8528528528

Enter Your Department Name:FF

Enter Your Social Security Number:CR7
Exception in thread "main" java.util.InputMismatchException
        at java.base/java.util.Scanner.throwFor(Scanner.java:860)
        at java.base/java.util.Scanner.next(Scanner.java:1497)
        at java.base/java.util.Scanner.nextDouble(Scanner.java:2467)
        at CollegeEmployee.SetData(CollegeEmployee.java:14)
        at CollegeList.main(CollegeList.java:22)

C:\Users\MAJJIGA JASWANTH\Desktop\java>java CollegeList

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F

Enter Your First Name:JASWANTH

Enter Your Last Name:MAJJIGA

Enter Your Street Address:31-30/1-6,SAINAGAR COLONY

Enter Your Area Zip Code:517247

Enter Your Phone Number:9959860037

Enter Your Department Name:CSE

Enter Your Social Security Number:7842251005
```



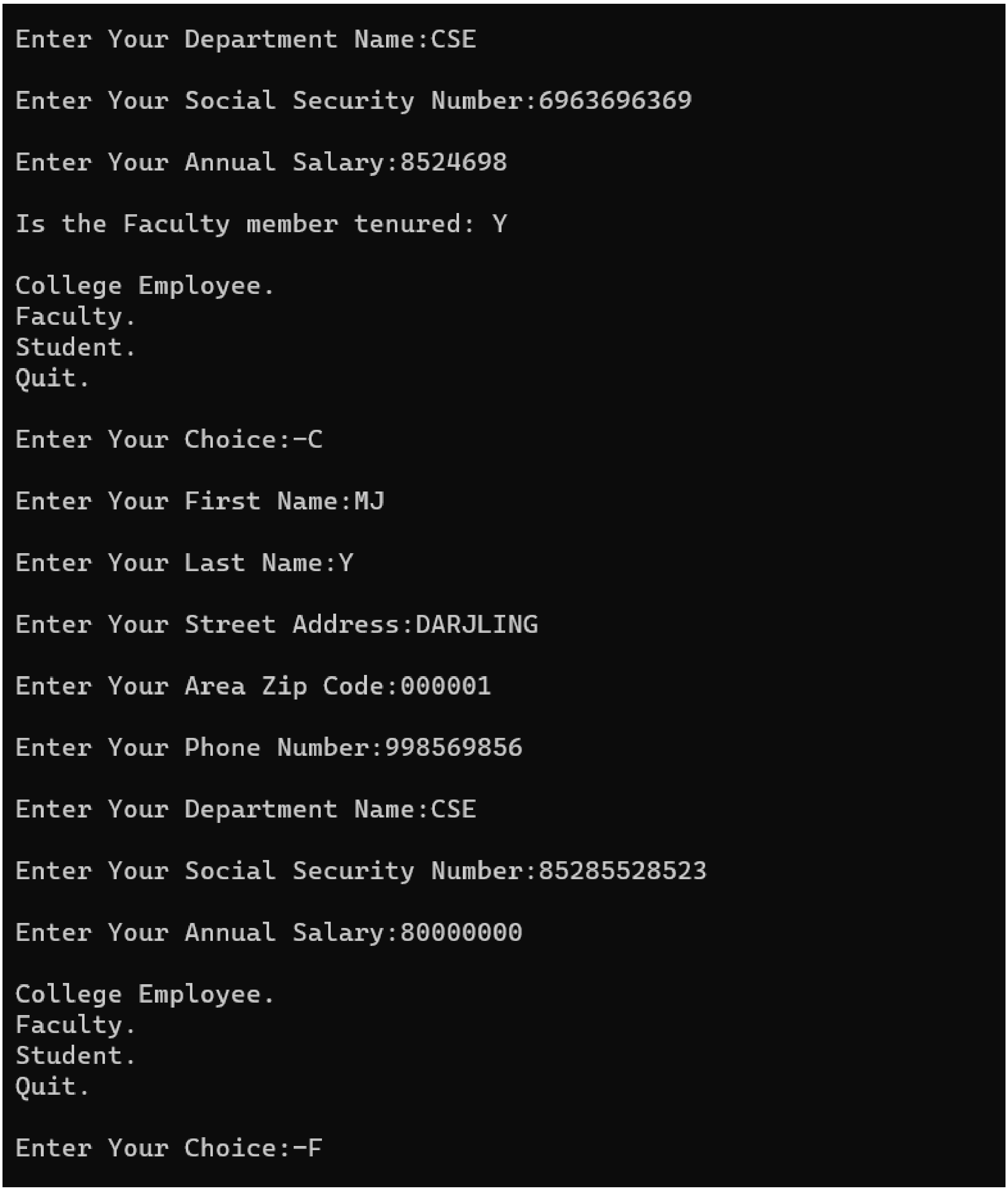
```
Enter Your Social Security Number:7842251005

Enter Your Annual Salary:0.00000

Is the Faculty member tenured: N

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-C

Enter Your First Name:CHRONO

Enter Your Last Name:LEON

Enter Your Street Address:FREEFIRE

Enter Your Area Zip Code:2546859

Enter Your Phone Number:8528528528

Enter Your Department Name:FF

Enter Your Social Security Number:8989898989

Enter Your Annual Salary:200000000

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-A

College Employee.
Faculty.
Student.
Quit.
```



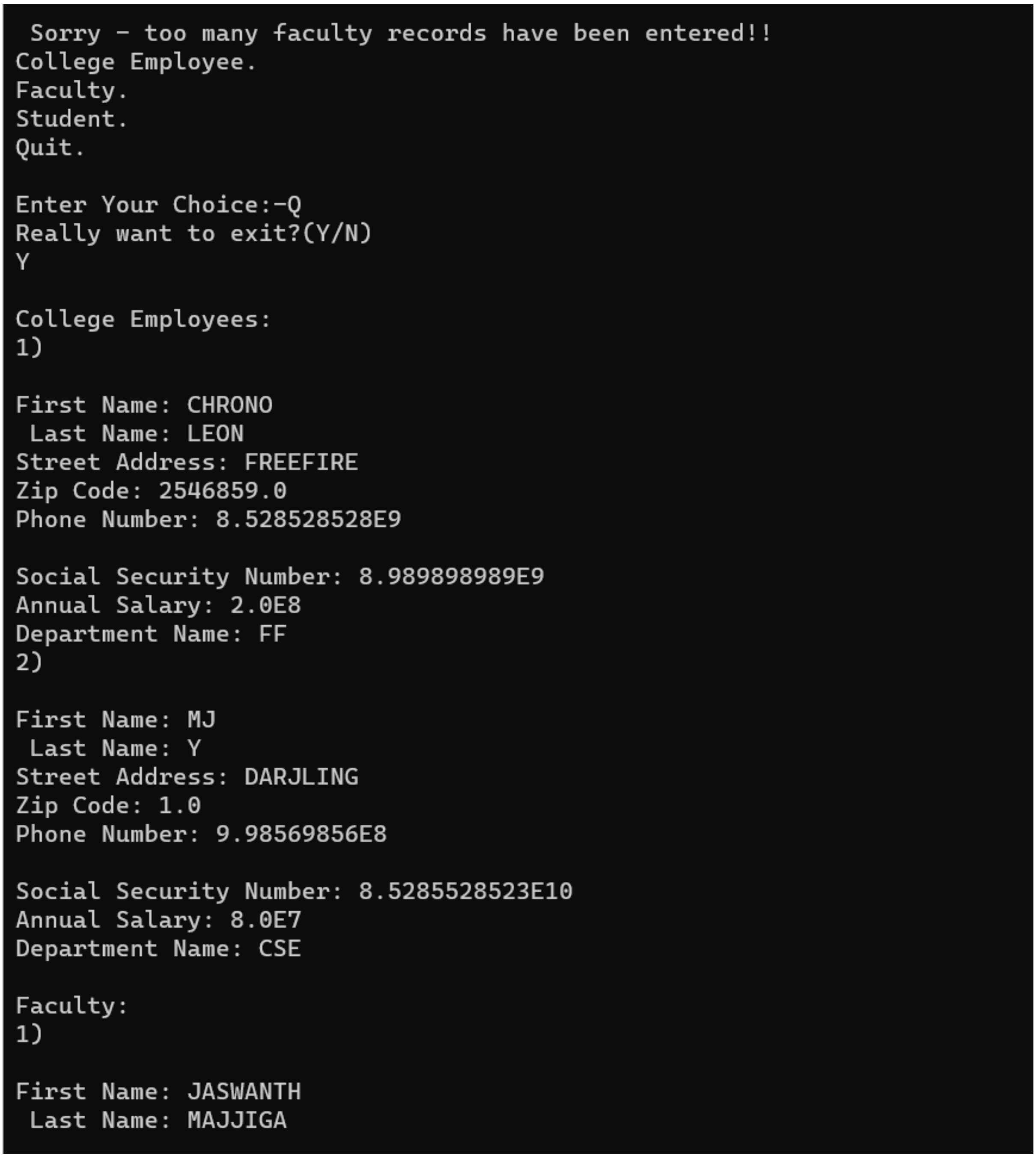
```
Enter Your Choice:-S

Enter Your First Name:KELLY

Enter Your Last Name:HAYATO

Enter Your Street Address:SINGAPORE

Enter Your Area Zip Code:525252

Enter Your Phone Number:9877897897

Enter Your Major: CSE

Enter Your GPA: 8

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F

Enter Your First Name:HAHAHA

Enter Your Last Name:LAUGH

Enter Your Street Address:SMILE

Enter Your Area Zip Code:589575

Enter Your Phone Number:741474174

Enter Your Department Name:CSE

Enter Your Social Security Number:9856985698

Enter Your Annual Salary:564564
```



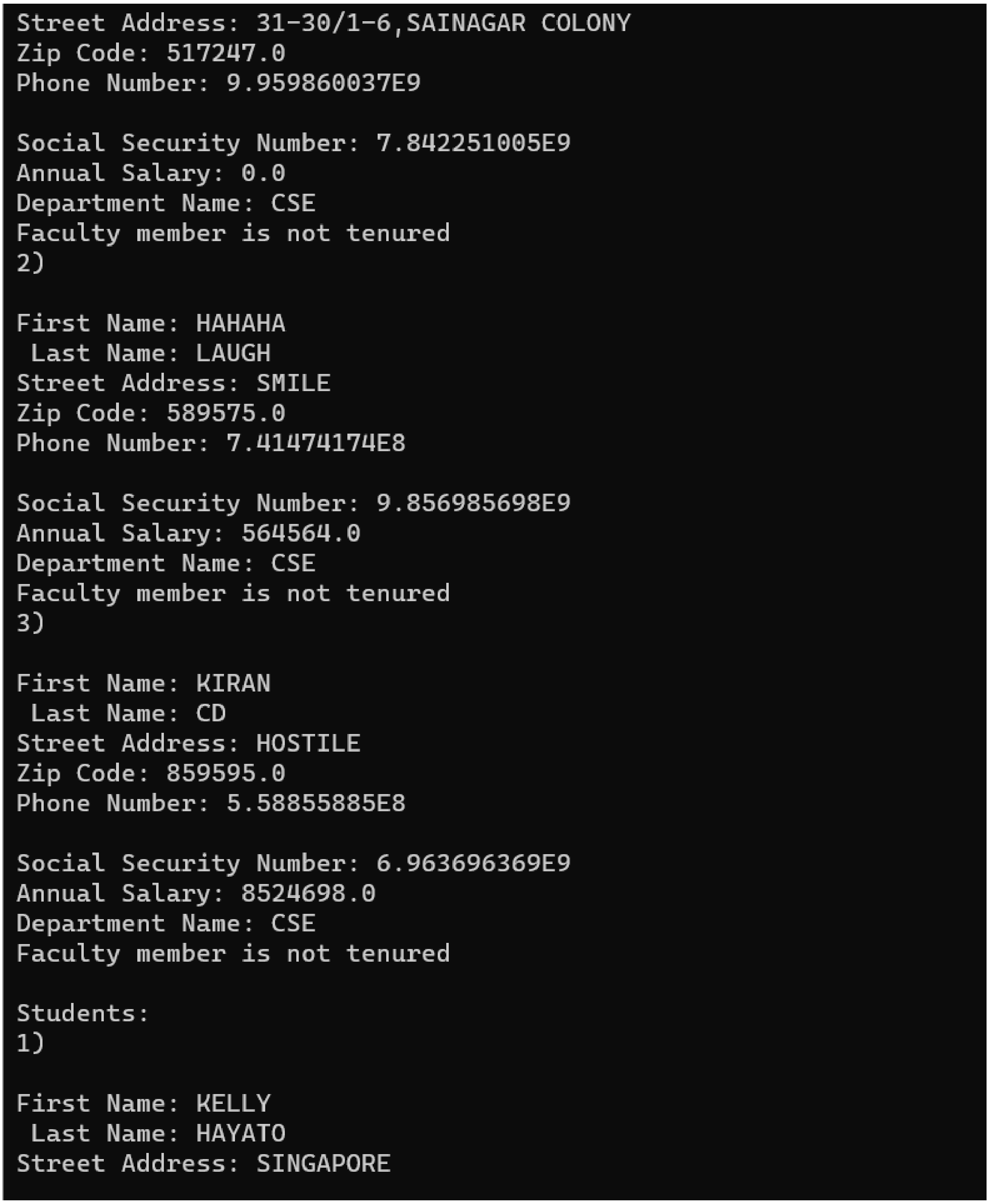
```
Is the Faculty member tenured: Y

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-S

Enter Your First Name:SHANMUK

Enter Your Last Name:KUMAR

Enter Your Street Address:VIZAG

Enter Your Area Zip Code:546859

Enter Your Phone Number:8585858585

Enter Your Major: CSE

Enter Your GPA: 9

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F

Enter Your First Name:KIRAN

Enter Your Last Name:CD

Enter Your Street Address:HOSTILE

Enter Your Area Zip Code:859595

Enter Your Phone Number:558855885
```



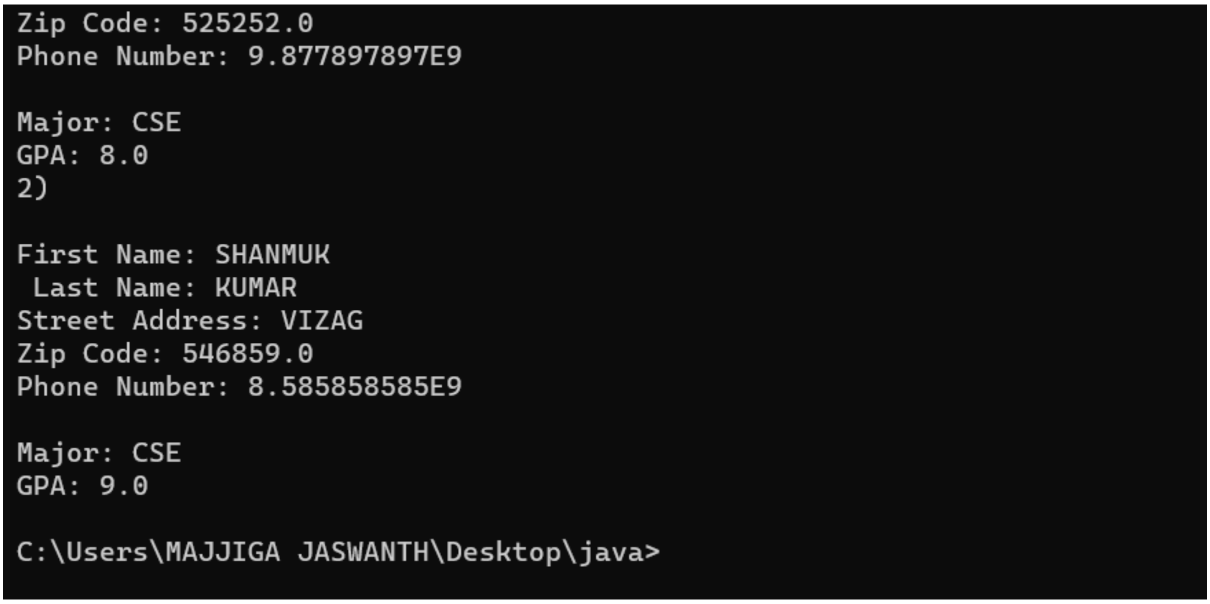
```
Enter Your Department Name:CSE

Enter Your Social Security Number:6963696369

Enter Your Annual Salary:8524698

Is the Faculty member tenured: Y

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-C

Enter Your First Name:MJ

Enter Your Last Name:Y

Enter Your Street Address:DARJLING

Enter Your Area Zip Code:000001

Enter Your Phone Number:998569856

Enter Your Department Name:CSE

Enter Your Social Security Number:85285528523

Enter Your Annual Salary:80000000

College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-F
```



```
 Sorry - too many faculty records have been entered!!
College Employee.
Faculty.
Student.
Quit.

Enter Your Choice:-Q
Really want to exit?(Y/N)
Y

College Employees:
1)

First Name: CHRONO
 Last Name: LEON
Street Address: FREEFIRE
Zip Code: 2546859.0
Phone Number: 8.528528528E9

Social Security Number: 8.989898989E9
Annual Salary: 2.0E8
Department Name: FF
2)

First Name: MJ
 Last Name: Y
Street Address: DARJLING
Zip Code: 1.0
Phone Number: 9.98569856E8

Social Security Number: 8.5285528523E10
Annual Salary: 8.0E7
Department Name: CSE

Faculty:
1)

First Name: JASWANTH
 Last Name: MAJJIGA
```



```
Street Address: 31-30/1-6,SAINAGAR COLONY
Zip Code: 517247.0
Phone Number: 9.959860037E9

Social Security Number: 7.842251005E9
Annual Salary: 0.0
Department Name: CSE
Faculty member is not tenured
2)

First Name: HAHAHA
 Last Name: LAUGH
Street Address: SMILE
Zip Code: 589575.0
Phone Number: 7.41474174E8

Social Security Number: 9.856985698E9
Annual Salary: 564564.0
Department Name: CSE
Faculty member is not tenured
3)

First Name: KIRAN
 Last Name: CD
Street Address: HOSTILE
Zip Code: 859595.0
Phone Number: 5.58855885E8

Social Security Number: 6.963696369E9
Annual Salary: 8524698.0
Department Name: CSE
Faculty member is not tenured

Students:
1)

First Name: KELLY
 Last Name: HAYATO
Street Address: SINGAPORE
```



```
Zip Code: 525252.0
Phone Number: 9.877897897E9

Major: CSE
GPA: 8.0
2)

First Name: SHANMUK
 Last Name: KUMAR
Street Address: VIZAG
Zip Code: 546859.0
Phone Number: 8.585858585E9

Major: CSE
GPA: 9.0

C:\Users\MAJJIGA JASWANTH\Desktop\java>
```