Name:- Bhavesh Kewalramani

Roll No.:- 25

Batch:- A1

Semester:-4th

Shift:- 1st

Section:- A

PRACTICAL-3

Solution:-

```
package third;

import java.util.Scanner;
import java.time.LocalDate;
import java.time.Period;

public class Person {
        String name;
        LocalDate dob;
        int age;

        public Person() {

        }

        public Person(String name,LocalDate dob) {
                this.name=name;
                this.dob=dob;
                Period a=Period.between(dob,LocalDate.now());
                this.age=a.getYears();
        }
```

```java
        public void display() {

                System.out.println("Name : " + this.name);

        System.out.println("Date Of Birth : " +this.dob);

        System.out.println("Age : " + this.age);

        }

}


public class Students extends Person{
                int rollno;
                int sem;
                double sgpa[]=new double[8];
                double cgpa;

                public Students(){
                        super();
                }

                public Students(Person p,int rollno,int sem,double sgpa[]) {
                        this.name=p.name;
                        this.age=p.age;
                        this.dob=p.dob;
                        this.rollno=rollno;
                        this.sem=sem;
                        this.sgpa=sgpa;
                        this.cgpa=cgpaCal();
                }

                public double cgpaCal() {
                        int i;
                        double sum=0;
                        for(i=0;i<this.sgpa.length;i++) {
                                sum+=this.sgpa[i];
                        }
                        this.cgpa=sum/sgpa.length;
                        return this.cgpa;
                }

                public void display() {
                        System.out.println("Name : " + this.name);
                 System.out.println("Date Of Birth : " + this.dob);
                 System.out.println("Age : " + this.age);
                 System.out.println("Roll No. : " + this.rollno);
                 System.out.println("Semester : " + this.sem);
                 System.out.println("cgpa : " + this.cgpa);
                 System.out.println();
                }
}


public class Teachers extends Person{
                String qual;
```

```java
            LocalDate doj;
            int yoe;
            double salary;

            public Teachers() {
                    super();
            }

            public Teachers(Person p,String qual,LocalDate doj) {
                    this.name=p.name;
                    this.age=p.age;
                    this.dob=p.dob;
                    this.qual=qual;
                    this.doj=doj;
                    Period a=Period.between(doj,LocalDate.now());
                    this.yoe=a.getYears();
                    this.salary=salaryCal();
            }

            public double salaryCal() {
                    if(this.qual.equals("MTech")){
                            this.salary=55000+(3500*this.yoe);
                    }
                    else if(this.qual.equals("PhD pursuing")) {
                            this.salary=70000+(4000*this.yoe);
                    }
                    else if(this.qual.equals("PhD")) {
                            this.salary=95000+(4500*yoe);
                    }
                    else {
                            return 0;
                    }

                    return this.salary;
            }

            public void display() {
                    System.out.println("Name : " + this.name);
              System.out.println("Date Of Birth : " + this.dob);
              System.out.println("Age : " + this.age);
              System.out.println("Qualification : " + this.qual);
              System.out.println("Years of Experience : " + this.yoe);
              System.out.println("Salary : " + this.salary);
              System.out.println();
            }
    }



public class Departments {


            static String dname;

            static Teachers[] staff;

            static Students[] stud;
```

```java
public Departments(String s,Teachers[] staff,Students[] stud) {

        this.dname=s;

        this.staff=staff;

        this.stud=stud;

}


public double dept_avg_cgpa() {

        double sum=0;

        int i;

        for(i=0;i<stud.length;i++) {

                sum+=stud[i].cgpa;

        }

        return (sum/stud.length);

}


public double semester_avg() {

        double sum=0;

        for(int i=0;i<stud.length;i++) {

                sum+=stud[i].sem;

        }

        return (sum/stud.length);

}


public double avg_staff_age() {

        double sum=0;

        for(int i=0;i<staff.length;i++) {

                sum+=staff[i].age;

        }

        return (sum/staff.length);

}
```

```java
public static void main(String[] args) {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the number of departments : ");
    int nd=sc.nextInt();
    Departments d[]=new Departments[nd];
    int c1=0,c2=0;
    for(int k=0;k<nd;k++) {
        System.out.println("Enter the name of the Department : ");
        String dn=sc.next();
        System.out.println("Enter the number of teachers your department has : ");
        int a=sc.nextInt();
        c1=a;
        Person p[] =new Person[a];
        Teachers t[]=new Teachers[a];
        for(int i=0;i<a;i++) {
            System.out.println("Enter the name of the teacher "+(i+1)+" : ");
            String n=sc.next();
            System.out.println("Enter the year of birth of teacher "+(i+1)+" : ");
            int y=sc.nextInt();
            System.out.println("Enter the month of birth of teacher "+(i+1)+" : ");
            int m=sc.nextInt();
            System.out.println("Enter the date of birth of teacher "+(i+1)+" : ");
            int d2=sc.nextInt();
            System.out.println("Choose the Qualification of teacher "+(i+1)+" : ");
            System.out.println("1. MTech ");
            System.out.println("2. PhD pursuing");
            System.out.println("3. PhD");
```

```java
System.out.println("Enter your choice : ");
int b=sc.nextInt();
String q=null;
switch(b) {
case 1:
        q="MTech";
        break;
case 2:
        q="PhD pursuing";
        break;
case 3:
        q="PhD";
        break;
default: System.out.println("Wrong choice");
}
System.out.println("Enter the year of joining of teacher "+(i+1)+" : ");
int y1=sc.nextInt();
System.out.println("Enter the month of joining of teacher "+(i+1)+" : ");
int m1=sc.nextInt();
System.out.println("Enter the date of joining of teacher "+(i+1)+" : ");
int d1=sc.nextInt();
p[i]=new Person(n,LocalDate.of(y,m,d2));
t[i]=new Teachers(p[i],q,LocalDate.of(y1, m1, d1));
}

System.out.println("Enter the number of students in the department : ");
int b=sc.nextInt();
c2=b;
```

```java
Person p1[]=new Person[b];
Students st[]=new Students[b];
for(int i=0;i<b;i++) {
        System.out.println("Enter the name of the student "+(i+1)+"
: ");
        String n1=sc.next();
        System.out.println("Enter the year of birth of student
"+(i+1)+" : ");
        int y=sc.nextInt();
        System.out.println("Enter the month of birth of student
"+(i+1)+" : ");
        int m=sc.nextInt();
        System.out.println("Enter the date of birth of student
"+(i+1)+" : ");
        int d1=sc.nextInt();
        System.out.println("Enter the roll number of the student
"+(i+1)+" : ");
        int r=sc.nextInt();
        System.out.println("Enter the semester of the student
"+(i+1)+" : ");
        int s1=sc.nextInt();
        double sg[]=new double[s1];
        if(s1>0 && s1<=8) {
                for(int j=0;j<s1;j++) {
                        System.out.println("Enter the sgpa of
semester "+(j+1)+" : ");
                        sg[j]=sc.nextDouble();
                }
        }
        else {
                System.out.println("Error ");
        }
        p1[i]=new Person(n1,LocalDate.of(y, m, d1));
```

```java
                        st[i]=new Students(p1[i],r,s1,sg);
                }
                d[k]=new Departments(dn,t,st);
                for(int i=0;i<c1;i++) {
                System.out.println();
                System.out.println("Teacher  "+(i+1)+"  information : ");
                t[i].display();
                System.out.println();
            }
            for(int i=0;i<c2;i++) {
                    System.out.println();
                    System.out.println("Student  "+(i+1)+"  information : ");
                    st[i].display();
                    System.out.println();
            }
            }

            for(int k=0;k<nd;k++) {
                    System.out.println();
                    System.out.println("Average Cgpa of department "+(k+1)+" is      :
"+d[k].dept_avg_cgpa());

                    System.out.println();
                    System.out.println("Semester Average of department "+(k+1)+" is    :
"+d[k].semester_avg());

                    System.out.println();
                    System.out.println("Average staff age of department "+(k+1)+" is   :
"+d[k].avg_staff_age());
                }
            }
}
```
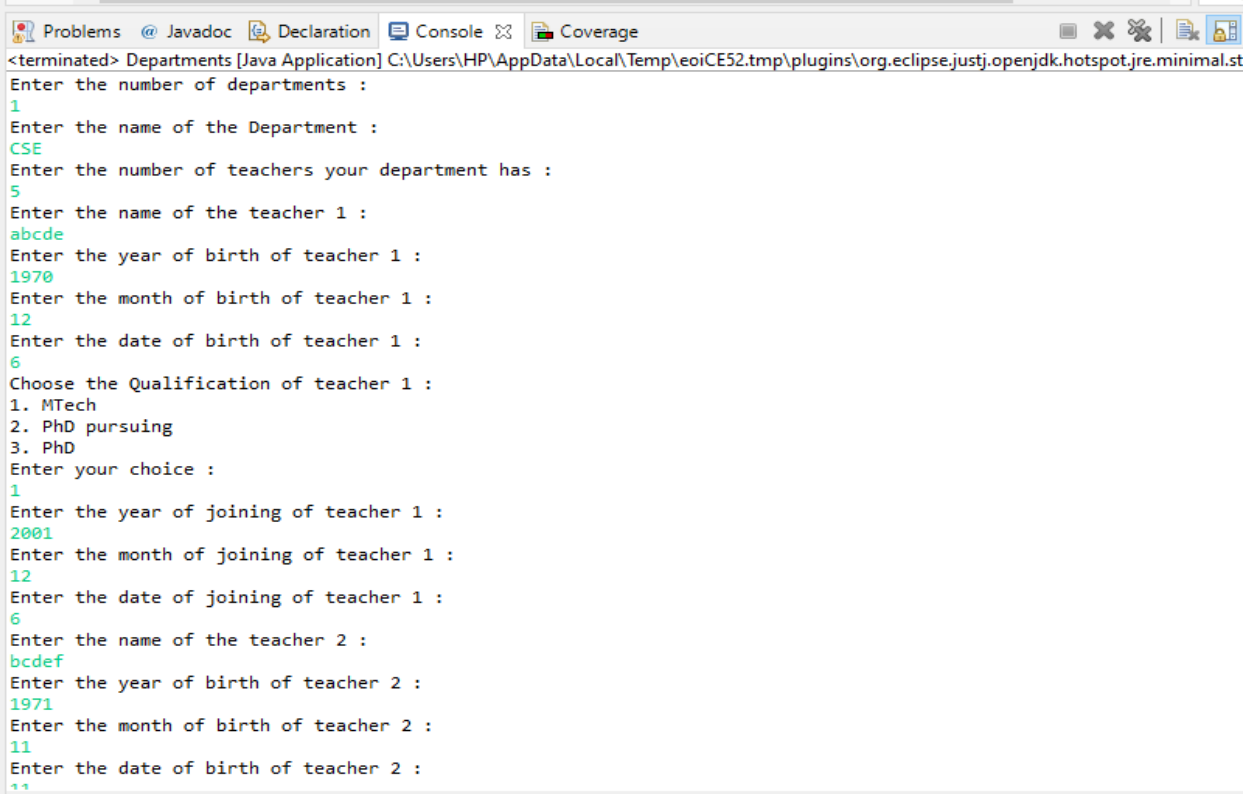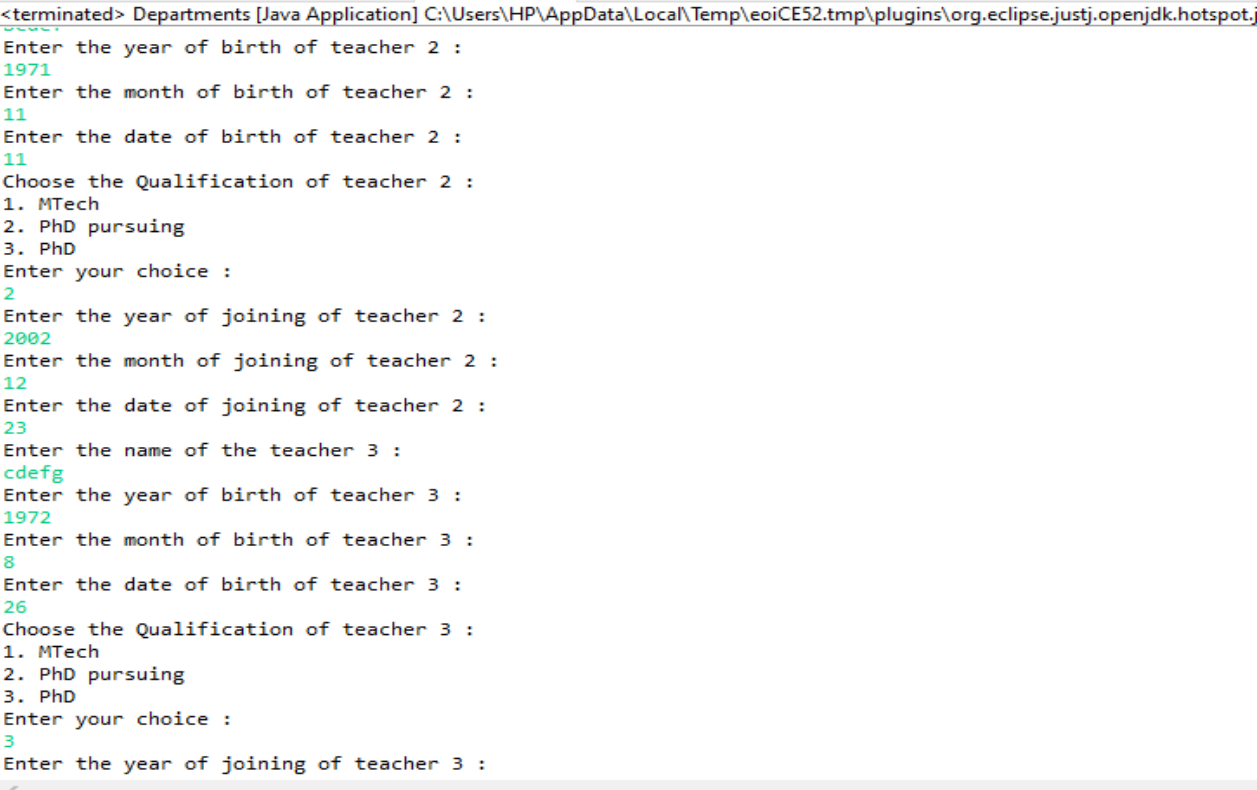
Output:-

<terminated> Departments [Java Application] C:\Users\HP\AppData\Local\Temp\eoiCE52.tmp\plugins\org.eclipse.justj.openjdk.hotspot.jre.minimal.st
```
Enter the number of departments :
1
Enter the name of the Department :
CSE
Enter the number of teachers your department has :
5
Enter the name of the teacher 1 :
abcde
Enter the year of birth of teacher 1 :
1970
Enter the month of birth of teacher 1 :
12
Enter the date of birth of teacher 1 :
6
Choose the Qualification of teacher 1 :
1. MTech
2. PhD pursuing
3. PhD
Enter your choice :
1
Enter the year of joining of teacher 1 :
2001
Enter the month of joining of teacher 1 :
12
Enter the date of joining of teacher 1 :
6
Enter the name of the teacher 2 :
bcdef
Enter the year of birth of teacher 2 :
1971
Enter the month of birth of teacher 2 :
11
Enter the date of birth of teacher 2 :
11
```

<terminated> Departments [Java Application] C:\Users\HP\AppData\Local\Temp\eoiCE52.tmp\plugins\org.eclipse.justj.openjdk.hotspot.j
```
Enter the year of birth of teacher 2 :
1971
Enter the month of birth of teacher 2 :
11
Enter the date of birth of teacher 2 :
11
Choose the Qualification of teacher 2 :
1. MTech
2. PhD pursuing
3. PhD
Enter your choice :
2
Enter the year of joining of teacher 2 :
2002
Enter the month of joining of teacher 2 :
12
Enter the date of joining of teacher 2 :
23
Enter the name of the teacher 3 :
cdefg
Enter the year of birth of teacher 3 :
1972
Enter the month of birth of teacher 3 :
8
Enter the date of birth of teacher 3 :
26
Choose the Qualification of teacher 3 :
1. MTech
2. PhD pursuing
3. PhD
Enter your choice :
3
Enter the year of joining of teacher 3 :
```

```
3
Enter the year of joining of teacher 3 :
2002
Enter the month of joining of teacher 3 :
8
Enter the date of joining of teacher 3 :
16
Enter the name of the teacher 4 :
defgh
Enter the year of birth of teacher 4 :
1973
Enter the month of birth of teacher 4 :
10
Enter the date of birth of teacher 4 :
5
Choose the Qualification of teacher 4 :
1. MTech
2. PhD pursuing
3. PhD
Enter your choice :
3
Enter the year of joining of teacher 4 :
2003
Enter the month of joining of teacher 4 :
7
Enter the date of joining of teacher 4 :
7
Enter the name of the teacher 5 :
efghi
Enter the year of birth of teacher 5 :
1974
Enter the month of birth of teacher 5 :
2
Enter the date of hirth of teacher 5 :
```

```
1974
Enter the month of birth of teacher 5 :
2
Enter the date of birth of teacher 5 :
28
Choose the Qualification of teacher 5 :
1. MTech
2. PhD pursuing
3. PhD
Enter your choice :
2
Enter the year of joining of teacher 5 :
2005
Enter the month of joining of teacher 5 :
3
Enter the date of joining of teacher 5 :
16
Enter the number of students in the department :
5
Enter the name of the student 1 :
aaaaa
Enter the year of birth of student 1 :
2001
Enter the month of birth of student 1 :
12
Enter the date of birth of student 1 :
12
Enter the roll number of the student 1 :
1
Enter the semester of the student 1 :
2
Enter the sgpa of semester 1 :
8.5
Enter the sgpa of semester 2 :
```

```
2
Enter the sgpa of semester 1 :
8.5
Enter the sgpa of semester 2 :
8.6
Enter the name of the student 2 :
bbbbb
Enter the year of birth of student 2 :
2001
Enter the month of birth of student 2 :
7
Enter the date of birth of student 2 :
7
Enter the roll number of the student 2 :
2
Enter the semester of the student 2 :
2
Enter the sgpa of semester 1 :
8.9
Enter the sgpa of semester 2 :
9.8
Enter the name of the student 3 :
ccccc
Enter the year of birth of student 3 :
2001
Enter the month of birth of student 3 :
3
Enter the date of birth of student 3 :
11
Enter the roll number of the student 3 :
3
Enter the semester of the student 3 :
2
```

```
Enter the semester of the student 3 :
2
Enter the sgpa of semester 1 :
9.5
Enter the sgpa of semester 2 :
9.6
Enter the name of the student 4 :
ddddd
Enter the year of birth of student 4 :
2001
Enter the month of birth of student 4 :
11
Enter the date of birth of student 4 :
5
Enter the roll number of the student 4 :
4
Enter the semester of the student 4 :
2
Enter the sgpa of semester 1 :
10
Enter the sgpa of semester 2 :
10
Enter the name of the student 5 :
eeeee
Enter the year of birth of student 5 :
2001
Enter the month of birth of student 5 :
5
Enter the date of birth of student 5 :
11
Enter the roll number of the student 5 :
5
Enter the semester of the student 5 :
```

```
Enter the roll number of the student 5 :
5
Enter the semester of the student 5 :
2
Enter the sgpa of semester 1 :
10
Enter the sgpa of semester 2 :
10
|
Teacher  1  information :
Name : abcde
Date Of Birth : 1970-12-06
Age : 50
Qualification : MTech
Years of Experience : 19
Salary : 121500.0


Teacher  2  information :
Name : bcdef
Date Of Birth : 1971-11-11
Age : 49
Qualification : PhD pursuing
Years of Experience : 18
Salary : 142000.0


Teacher  3  information :
Name : cdefg
Date Of Birth : 1972-08-26
Age : 48
```

```
Teacher  1  information :
Name : abcde
Date Of Birth : 1970-12-06
Age : 50
Qualification : MTech
Years of Experience : 19
Salary : 121500.0


Teacher  2  information :
Name : bcdef
Date Of Birth : 1971-11-11
Age : 49
Qualification : PhD pursuing
Years of Experience : 18
Salary : 142000.0


Teacher  3  information :
Name : cdefg
Date Of Birth : 1972-08-26
Age : 48
Qualification : PhD
Years of Experience : 18
Salary : 176000.0


Teacher  4  information :
Name : defgh
Date Of Birth : 1973-10-05
```

```
Teacher  4  information :
Name : defgh
Date Of Birth : 1973-10-05
Age : 47
Qualification : PhD
Years of Experience : 17
Salary : 171500.0


Teacher  5  information :
Name : efghi
Date Of Birth : 1974-02-28
Age : 46
Qualification : PhD pursuing
Years of Experience : 15
Salary : 130000.0


Student  1  information :
Name : aaaaa
Date Of Birth : 2001-12-12
Age : 19
Roll No. : 1
Semester : 2
cgpa : 8.55


Student  2  information :
Name : bbbbb
Date Of Birth : 2001-07-07
```

```
Student  2  information :
Name : bbbbb
Date Of Birth : 2001-07-07
Age : 19
Roll No. : 2
Semester : 2
cgpa : 9.350000000000001


Student  3  information :
Name : ccccc
Date Of Birth : 2001-03-11
Age : 19
Roll No. : 3
Semester : 2
cgpa : 9.55


Student  4  information :
Name : ddddd
Date Of Birth : 2001-11-05
Age : 19
Roll No. : 4
Semester : 2
cgpa : 10.0


Student  5  information :
Name : eeeee
Date Of Birth : 2001-05-11
```

```
Date Of Birth : 2001-05-11
Age : 19
Roll No. : 3
Semester : 2
cgpa : 9.55


Student  4  information :
Name : ddddd
Date Of Birth : 2001-11-05
Age : 19
Roll No. : 4
Semester : 2
cgpa : 10.0


Student  5  information :
Name : eeeee
Date Of Birth : 2001-05-11
Age : 19
Roll No. : 5
Semester : 2
cgpa : 10.0


Average Cgpa of department 1 is       : 9.49

Semester Average of department 1 is   : 2.0

Average staff age of department 1 is  : 48.0
```