**Student Name: Diptesh Ravindra Varule Roll No.:23277**

**Assignment No 3**

**Problem Statement : Design and develop inheritance for a given case study, identify objects and relationships and implement inheritance wherever applicable. Employee class has Emp\_name, Emp\_id, Address,** **Mail\_id, and Mobile\_no as members. Inherit the classes : Programmer, Team Lead, Assistant Project Manager and Project Manager from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary.**

**package** assignment3;

**import** java.util.Scanner;

//base class Employee having all the required data members and functions

**class** Employee {

String Emp\_Name,Emp\_Designation;

**static** **int** *id*=1000;

**int** Emp\_Id;

String Address;

String Mail\_Id;

String Mobile\_No;

**double** DA,HRA,PF,BP,Staff\_Club\_Fund,Gross\_Salary,Net\_Salary;

//Constructor to assign employee\_id to every new employee recruited

Employee(){

*id*=*id*+1;

Emp\_Id=*id*;

}

//method to read the details of the employee

**public** **void** read\_details(){

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("\nEnter details of Employee...");

System.***out***.print("Enter Employee Name :");

Emp\_Name=sc.nextLine();

System.***out***.print("Enter Address :");

Address=sc.nextLine();

System.***out***.print("Enter Mail Id :");

Mail\_Id=sc.nextLine();

System.***out***.print("Enter Mobile No :");

Mobile\_No=sc.nextLine();

}

//method to display the basic details of the Employee

**public** **void** display\_details() {

System.***out***.println("\n Employee Details");

System.***out***.println("----------------------------------------------------------");

System.***out***.println("Employee ID : "+Emp\_Id);

System.***out***.println("Employee Name : "+Emp\_Name);

System.***out***.println("Employee Designation : "+Emp\_Designation);

System.***out***.println("----------------------------------------------------------");

}

//method to calculate the net and gross salary based on the the basic pay of the employee

**protected** **void** calculate() {

DA=0.97\*BP;

HRA=0.1\*BP;

PF=0.12\*BP;

Staff\_Club\_Fund=0.001\*BP;

Gross\_Salary=BP+DA+HRA;

Net\_Salary=Gross\_Salary-Staff\_Club\_Fund;

}

//method to display the payslip of the employee

**public** **void** display\_payslip() {

System.***out***.println(" Salary Slip ");

System.***out***.println("----------------------------------------------------------");

System.***out***.println("Basic Pay : "+BP);

System.***out***.println("DA : "+DA);

System.***out***.println("HRA : "+HRA);

System.***out***.println("PF : "+PF);

System.***out***.println("Staff Club Fund : "+Staff\_Club\_Fund);

System.***out***.println("----------------------------------------------------------");

System.***out***.println("Gross Salary : "+Gross\_Salary);

System.***out***.println("Net Salary : "+Net\_Salary);

System.***out***.println("----------------------------------------------------------");

}

//method to display all the details of the Employee

**void** display() {

display\_details();

calculate();

display\_payslip();

System.***out***.println();

}

}

//child class

**class** Programmer **extends** Employee{

//Method to read details of the Programmer

**void** read() {

Scanner sp=**new** Scanner(System.***in***);

read\_details();

Emp\_Designation="Programmer";

System.***out***.println("Enter basic pay : ");

**double** x=sp.nextDouble();

**if**(x>=40000.0 && x<50000.0 ) {

BP=x;

}

**else** {

System.***out***.println("The basic pay must be between 40000 and 50000\nEnter the basic pay : ");

BP=sp.nextDouble();

}

}

//static method to search an Programmer in the company

**static** **int** searchP(Programmer p[],**int** noOfP,**int** id) {

**int** index=-1;

**for**(**int** i=0;i<noOfP;i++) {

**if**(p[i].Emp\_Id==id) {

index=i;

}

}

**return** index;

}

}

//child class

**class** TeamLead **extends** Employee{

//Method to read details of the Team Lead

**void** read() {

Scanner st=**new** Scanner(System.***in***);

read\_details();

Emp\_Designation="Team Lead";

System.***out***.println("Enter basic pay : ");

**double** x=st.nextDouble();

**if**(x>=50000.0 && x<60000.0 ) {

BP=x;

}

**else** {

System.***out***.println("The basic pay must be between 50000 and 60000\nEnter the basic pay : ");

BP=st.nextDouble();

}

}

//static method to search an Team lead in the company

**static** **int** searchTL(TeamLead t[],**int** noOfTLs,**int** id) {

**int** index=-1;

**for**(**int** i=0;i<noOfTLs;i++) {

**if**(t[i].Emp\_Id==id) {

index=i;

}

}

**return** index;

}

}

**class** Assistant\_Project\_Manager **extends** Employee{

//Method to read details of the Assistant Project Manager

**void** read() {

Scanner sa=**new** Scanner(System.***in***);

read\_details();

Emp\_Designation="Assistant Project manager";

System.***out***.println("Enter basic pay : ");

**double** x=sa.nextDouble();

**if**(x<70000.0 && x>=60000.0) {

BP=x;

}

**else** {

System.***out***.println("The basic pay must be between 60000 and 70000\nEnter the basic pay : ");

BP=sa.nextDouble();

}

}

//static method to search an Assistant Project Manager in the company

**static** **int** searchAPM(Assistant\_Project\_Manager apm[],**int** noOfapms,**int** id ) {

**int** index=-1;

**for**(**int** i=0;i<noOfapms;i++) {

**if**(apm[i].Emp\_Id==id) {

index=i;

}

}

**return** index;

}

}

**class** Project\_Manager **extends** Employee{

//Method to read details of the Project Manager

**void** read() {

Scanner spm=**new** Scanner(System.***in***);

read\_details();

Emp\_Designation="Project Manager";

System.***out***.println("Enter basic pay : ");

**double** x=spm.nextDouble();

**if**(x<90000.0 && x>=70000.0) {

BP=x;

}

**else** {

System.***out***.println("The basic pay must be between 70000 and 90000\nEnter the basic pay : ");

BP=spm.nextDouble();

}

}

//static method to search an Project Manager in the company

**static** **int** searchPM(Project\_Manager pm[],**int** noOfpms,**int** id ) {

**int** index=-1;

**for**(**int** i=0;i<noOfpms;i++) {

**if**(pm[i].Emp\_Id==id) {

index=i;

}

}

**return** index;

}

}

**public** **class** Demo {

**public** **static** **void** main(String[] args) {

//creating arrays of programmers,team leads,assitant project managers and managers

Programmer p[]=**new** Programmer[10];

TeamLead t[]=**new** TeamLead[10];

Assistant\_Project\_Manager apm[]=**new** Assistant\_Project\_Manager[10];

Project\_Manager pm[]=**new** Project\_Manager[10];

Scanner s=**new** Scanner(System.***in***);

**int** ch=1,option;

**int** i=0,j=0,k=0,l=0,m=0;

**while**(ch!=0) {

System.***out***.println("Select \n1.to recruit programmer\n2.to recruit teamlead\n3.to recruit assistant project manager\n4.to recruit project manager\n5.to display Salary Slip of a Programmer\n6.to display Salary Slip of a Team Lead\n7.to display Salary Slip of a Assistant Project Manager\n8.to display Salary Slip of a Project Manager\n9.to display no of employees in company\n10.to display basic details of all employees in the company\n");

option=s.nextInt();

**switch** (option) {

**case** 0:**break**;

**case** 1:

p[i]=**new** Programmer();

p[i].read();

i++;

m++;

**break**;

**case** 2:

t[j]=**new** TeamLead();

t[j].read();

m++;

j++;

**break**;

**case** 3:

apm[k]=**new** Assistant\_Project\_Manager();

apm[k].read();

m++;

k++;

**break**;

**case** 4:

pm[l]=**new** Project\_Manager();

pm[l].read();

m++;

l++;

**break**;

**case** 5:

System.***out***.println("Enter Id of programmer you want to search : ");

**int** pID=s.nextInt();

**int** index=Programmer.*searchP*(p,i,pID);

**if**(index==-1) {

System.***out***.println("Programmer not found with "+pID);

}

**else** {

System.***out***.println("Programmer found...");

p[index].display();

}

**break**;

**case** 6:

System.***out***.println("Enter Id of Team Lead you want to search : ");

**int** tID=s.nextInt();

**int** c=TeamLead.*searchTL*(t,j,tID);

**if**(c==-1) {

System.***out***.println("Team Lead not found with "+tID);

}

**else** {

System.***out***.println("Team Lead found...");

t[c].display();

}

**break**;

**case** 7:

System.***out***.println("Enter Id of Assistant Project Manager you want to search:");

**int** apmID=s.nextInt();

**int** d=Assistant\_Project\_Manager.*searchAPM*(apm,k,apmID);

**if**(d==-1) {

System.***out***.println("Assistant Project Manager not found with "+apmID);

}

**else** {

System.***out***.println("Assistant Project Manager found...");

apm[d].display();

}

**break**;

**case** 8:

System.***out***.println("Enter Id of Project Manager you want to search:");

**int** pmID=s.nextInt();

**int** e=Project\_Manager.*searchPM*(pm,l,pmID);

**if**(e==-1) {

System.***out***.println("Project Manager not found with "+pmID);

}

**else** {

System.***out***.println("Project Manager found...");

pm[e].display();

}

**break**;

**case** 9:

System.***out***.println("The total number of employees in the company :"+m+"\n");

**break**;

**case** 10:

**for**(**int** n=0;n<i;n++) {

p[n].display\_details();

}

**for**(**int** n=0;n<j;n++) {

t[n].display\_details();

}

**for**(**int** n=0;n<k;n++) {

apm[n].display\_details();

}

**for**(**int** n=0;n<l;n++) {

pm[n].display\_details();

}

**break**;

**default**:

System.***out***.println("Enter a valid option.........");

}

System.***out***.println("Enter 1 to continue : ");

ch=s.nextInt();

}

}

}

**Output:**

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

1

Enter details of Employee...

Enter Employee Name :Diptesh Ravindra Varule

Enter Address :abc

Enter Mail Id :dips@gmail.com

Enter Mobile No :7769021948

Enter basic pay :

58750

The basic pay must be between 40000 and 50000

Enter the basic pay :

48750

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

2

Enter details of Employee...

Enter Employee Name :Utkarsh Sanjay Magar

Enter Address :def

Enter Mail Id :uttu@gmail.com

Enter Mobile No :9875641247

Enter basic pay :

52896

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

3

Enter details of Employee...

Enter Employee Name :ABhi mahajan

Enter Address :ghi

Enter Mail Id :abhi@gmail.com

Enter Mobile No :7458963215

Enter basic pay :

85420

The basic pay must be between 60000 and 70000

Enter the basic pay :

65820

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

4

Enter details of Employee...

Enter Employee Name :Shubham Sandanshiv

Enter Address :pqr

Enter Mail Id :shubgam@gmail.com

Enter Mobile No :8574967564

Enter basic pay :

72560

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

3

Enter details of Employee...

Enter Employee Name :Harsh Thakkar

Enter Address :xyz

Enter Mail Id :harsh@gmail.com

Enter Mobile No :45896756214

Enter basic pay :

62750

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

9

The total number of employees in the company :5

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

10

Employee Details

----------------------------------------------------------

Employee ID : 1001

Employee Name : Diptesh Ravindra Varule

Employee Designation : Programmer

----------------------------------------------------------

Employee Details

----------------------------------------------------------

Employee ID : 1002

Employee Name : Utkarsh Sanjay Magar

Employee Designation : Team Lead

----------------------------------------------------------

Employee Details

----------------------------------------------------------

Employee ID : 1003

Employee Name : ABhi mahajan

Employee Designation : Assistant Project manager

----------------------------------------------------------

Employee Details

----------------------------------------------------------

Employee ID : 1005

Employee Name : Harsh Thakkar

Employee Designation : Assistant Project manager

----------------------------------------------------------

Employee Details

----------------------------------------------------------

Employee ID : 1004

Employee Name : Shubham Sandanshiv

Employee Designation : Project Manager

----------------------------------------------------------

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

7

Enter Id of Assistant Project Manager you want to search:

1004

Assistant Project Manager not found with 1004

Enter 1 to continue :

1

Select

1.to recruit programmer

2.to recruit teamlead

3.to recruit assistant project manager

4.to recruit project manager

5.to display Salary Slip of a Programmer

6.to display Salary Slip of a Team Lead

7.to display Salary Slip of a Assistant Project Manager

8.to display Salary Slip of a Project Manager

9.to display no of employees in company

10.to display basic details of all employees in the company

7

Enter Id of Assistant Project Manager you want to search:

1005

Assistant Project Manager found...

Employee Details

----------------------------------------------------------

Employee ID : 1005

Employee Name : Harsh Thakkar

Employee Designation : Assistant Project manager

----------------------------------------------------------

Salary Slip

----------------------------------------------------------

Basic Pay : 62750.0

DA : 60867.5

HRA : 6275.0

PF : 7530.0

Staff Club Fund : 62.75

----------------------------------------------------------

Gross Salary : 129892.5

Net Salary : 129829.75

----------------------------------------------------------

Enter 1 to continue : 0