

~~ET-6~~  
Name of Experiment: Write a JAVA program which includes a base employee class to compute the basic salary adding yearly increment with five private data members: first name, last name, employee id, basic salary and increment rate. A class will be derived from the base class which computes the house rent on basic salary adding a new private member house rent rate. In addition another new class will be derived which calculates the gross salary deducing the provident fund adding two new private data members: gross salary and rate of provident fund. Write a test application to demonstrate the explained program.

### Introduction:-

We have to create a class Employee with data members as per mentioned in problem statement. Then we have to define a derived class Houserent with a house rent rate data members and another derived class named Provident fund. Then we will define a main class that will have the main method inside.

## Objectives :-

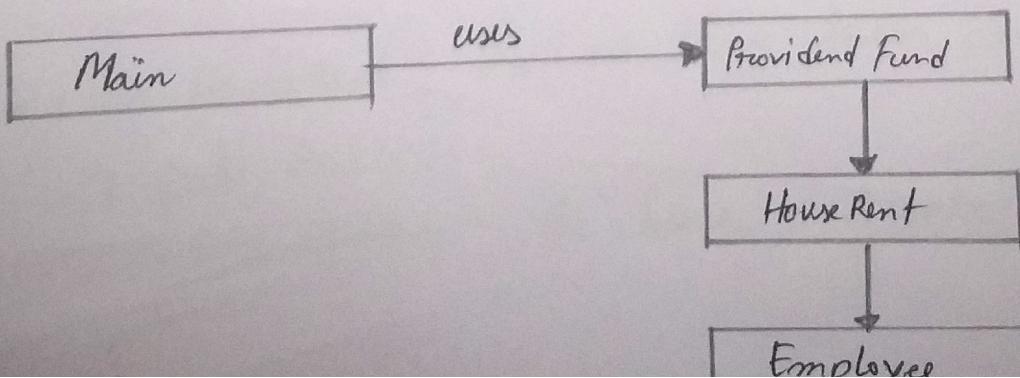
- \* To learn how inheritance works.
- \* How to use inheritance is used to solve problems.

## Analysis :-

After analysing our problem we have found following components of our problem.

- \* We have to define a class Employee having 6-5 data members as per mentioned in the problem statement.
- \* Then we have to define a derived class named Houserent with house rent rate as a data member and several methods to compute house rent.
- \* Then we have to define another derived class which will compute the provident fund and gross salary.

From above analysis a conceptual class diagram is given below in figure-1. Where Employee, Houserent, Provident Fund and Main are classes.



Design :-

From above analysis our class design descriptions are given below.

\* Class Employee : Base Class for employees.

Data Members :

- first name : first name of the employee
- last name : last name of the employee.
- ID : ID of the an employee.
- basicSalary : the base salary of an employee
- incRate : increment rate of salary per year.

Methods :-

- getFirstName : returns the first name of an employee.
- getLastName : returns the last name of an employee.
- getID : returns the ID of an employee.
- getBasicSalary : returns the basic salary of an employee
- getIncRate : returns the increment rate of Salary.

\* Class HouseRent : Derived class from Employee class.

Data Members :

- houseRentRate : the house rent rate.

### Methods :

- get HouseRentRate : returns the house rent rate.

\* Class Provident Fund : Derived class from HouseRent class.

### Data Members :

- grossSalary : the gross salary of an employee
- providentFundRate : the provident fund rate for an employee

### Methods :

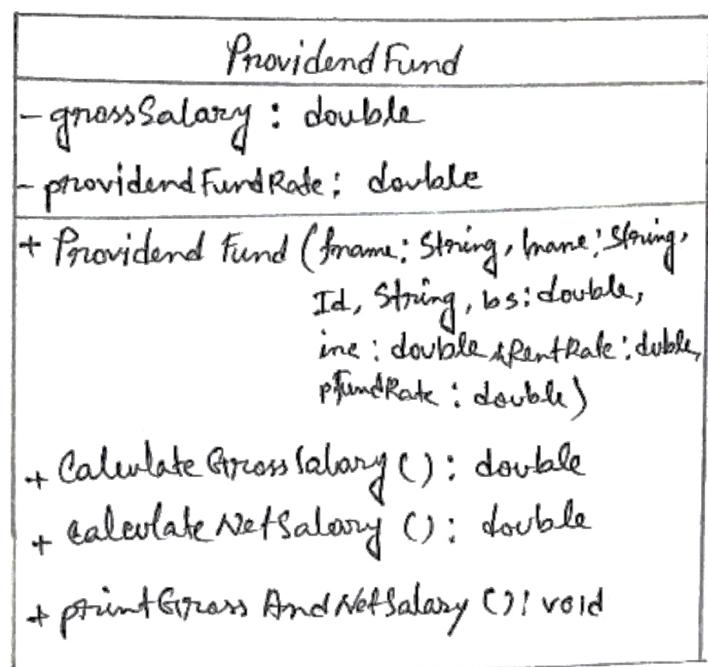
- calculateGrossSalary : calculates and returns the gross salary of a employee.
- calculateNetSalary : calculates and returns the net salary of an employee.
- printAll : prints all info about an employee and his net and gross salary

\* Class Main : The main class of the program.

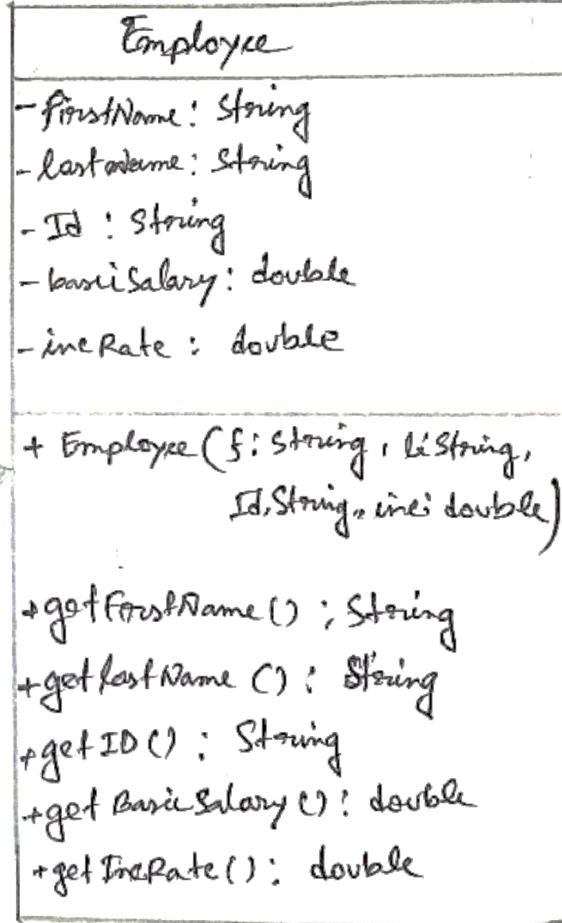
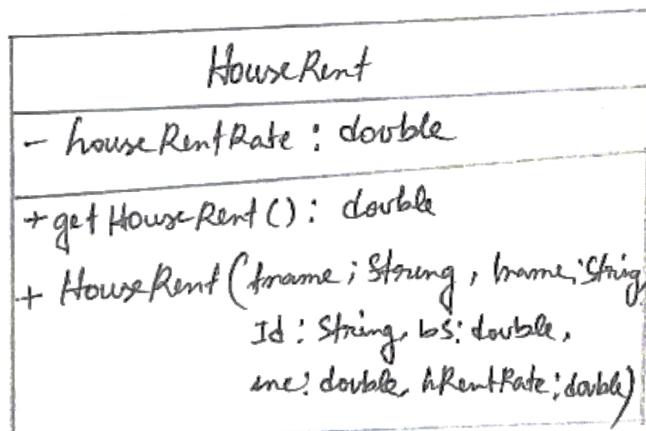
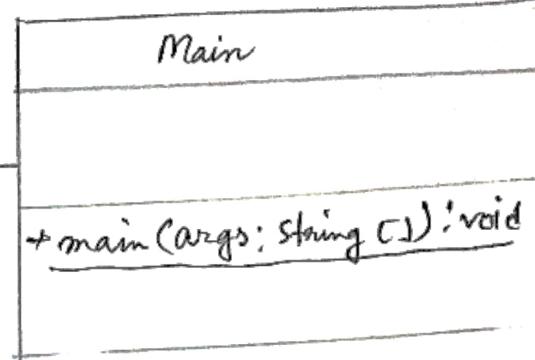
### Methods :

- main : the main method from where the program will start execute.

From above design description the architectural diagram is given in the figure - 2 :-



Use



From the above design description the pseudo codes of the methods are given below:

getFirstName () :

return the firstname

getLastName () :

return the LastName

get ID () :

return the Id

get Basic Salary () :

return the basic Salary

get IncRate () :

return the incrementRate

get HouseRentRate () :

return the house rent rate

calculate Gross Salary () :

calculate the gross salary in a year and return it.

calculate Net Salary () :

calculate the net salary in a year and return it.

print Gross And Net Salary () :

print all info about employee and the gross and net sal

Implementation:

Attached with Report

## Implementation

### Conclusion :-

We created Employee class, derived class, HouseRent and another derived class ProvidentFund. And we also created another class Main which is the main class of the program and contains the main method.

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### Implementation:

```

file: Main.java

class Employee {
    private String firstName;
    private String lastName;
    private String ID;
    private double basicSalary, incRate;

    protected Employee(String fname, String lname, String id, double bs, double inc) {
        firstName = fname;
        lastName = lname;
        ID = id;
        basicSalary = bs;
        incRate = inc;
    }

    String getFirstName() {
        return firstName;
    }
    String getLastName() {
        return lastName;
    }
    String getID() {
        return ID;
    }
    double getBasicSalary() {
        return basicSalary;
    }
    double getIncRate() {
        return incRate;
    }
}

class HouseRent extends Employee {
    private double houseRentRate;
    protected HouseRent(String fname, String lname, String id,
                        double bs, double inc, double hRentRate) {
        super(fname, lname, id, bs, inc);
        houseRentRate = hRentRate;
    }

    double getHouseRentRate() {
        return houseRentRate;
    }
}

class ProvidendFund extends HouseRent {
    double grossSalary;
    double providendFundRate;
    protected ProvidendFund(String fname, String lname, String id,
                           double bs, double inc, double hRentRate,
                           double pFundRate) {
        super(fname, lname, id, bs, inc, hRentRate);
        providendFundRate = pFundRate;
    }

    double calculateGrossSalary() {
        double bSalary = getBasicSalary();
        grossSalary = bSalary + bSalary * getIncRate();
        grossSalary += (bSalary * getHouseRentRate() / 100);
        grossSalary *= 12;
        return grossSalary;
    }
}

```

```
}
```

```
double calculateNetSalary() {
    calculateGrossSalary();
    double netSalary = grossSalary;
    netSalary -= 12 * (getBasicSalary() * providendFundRate / 100);
    return netSalary;
}

void printGrossAndNetSalary() {
    System.out.println("Employee Yearly Salary Info:");
    System.out.println("Name: " + getFirstName() + " " + getLastName());
    System.out.println("Employee ID: " + getID());
    System.out.println("Basic Salary(per month): " + getBasicSalary());
    System.out.println("Increment Rate(per year): " + getIncRate() + "%");
    System.out.println("House Rent(per month): " +
        (getBasicSalary() * getHouseRentRate() / 100));
    System.out.println("Providend Fund(per month): " +
        (getBasicSalary() * providendFundRate / 100));
    System.out.println("Gross Salary(in a year): " + calculateGrossSalary());
    System.out.println("Net Salary(in a year): " + calculateNetSalary());
}
```

```
class Main {
    public static void main(String[] args) {
        ProvidendFund p = new ProvidendFund("Garry", "Kasparov", "1989CHAMP",
            50000, 4.0, 10.0, 12.0);
        p.printGrossAndNetSalary();
    }
}
```