**Lab Assignment #7**

**FP1 A company pays its employees on a weekly basis. The employees are of four types:**

**1. Salaried employees are paid a fixed weekly salary regardless of the number of hours worked,**

**2. Hourly employees are paid by the hour and receive overtime pay for all hours worked in excess of 40 hours**

**3. Commission employees are paid a percentage of their sales**

**4. Salaried-Commission employees receive a base salary plus a percentage of their sales.**

**For the current pay period, the company has decided to reward salaried-commission employees by adding 10% to their base salaries. The company wants to implement a C# application that performs its payroll calculations polymorphically.**

**a. Identify and declare all the properties of an employee with suitable constraints, e.g. Age could not be less than 18 years and not exceeds than 60 years.**

**b. Salary of a salaried employee won’t be exceeded Rs. 20000 per week and not less than Rs.4000 pe r week. The joining of an employee would not be less than Rs.4000 per week. Every year salaried employees get an increment of 10%.**

**c. Hourly Employee cannot work less than 30 hrs. in a week and not more than 50 hrs. in a week. Minimum and maximum payment is Rs. 200 and 400 per hour respectively.**

**d. The commissioned Employees’ commission cannot exceed Rs. 20000 in a week. The commission on per article sale is 10%, which is fixed.**

**e. No one employee can earn more than Rs. 25000 per week**

using System;

namespace FP

{

 class MyException: Exception

    {

        public MyException(string message): base(message){}

    }

 interface SalaryCalculate{

     double calsal();

 }

 class Employee:SalaryCalculate

    {

        public string name;

        public double basic;

        public int id;

        public int age;

        public double Basic{

            get{ return basic;}

            set

            {

                try{

                     if(value>=4000)

                        basic=value;

                    else

                        throw new Exception("It can't be less than 4000");

               }

                catch (Exception e){

                    Console.WriteLine(e.Message);

                    Console.WriteLine("Enter Basic Pay:");

                    Basic=Convert.ToInt32(Console.ReadLine());

                }

            }

        }

        public int Age{

            get{return age;}

            set

            {

               try{

                    if((value>=18) && (value<=60))

                        age=value;

                    else

                        throw new MyException("Age could not be less than 18 years and not exceeds than 60 years");

               }

                catch (MyException e){

                    Console.WriteLine(e.Message);

                    Console.WriteLine("Enter Age:");

                    Age=Convert.ToInt32(Console.ReadLine());

                }

            }

        }

        public double calsal(){

            return basic\*2+basic\*0.30; //basic+DA(100%)+HRA(30%)

        }

    }

    class Hourly:Employee

    {

        int num\_hrs;

        double rate\_hrs;

        double ot\_charges;

         public double Rate\_Hrs{

            get

            {

                return rate\_hrs;

            }

            set

            {

                 try{

                   if(value>=200 && value<=400)

                        rate\_hrs=value;

                    else

                        throw new MyException("Minimum and maximum payment is Rs. 200 and 400 per hour respectively. ");

               }

                catch (MyException e){

                    Console.WriteLine(e.Message);

                    Console.WriteLine("Enter Rate per Hour:");

                    rate\_hrs=Convert.ToDouble(Console.ReadLine());

                }

            }

        }

        public int Num\_Hrs{

            get

            {

                return num\_hrs;

            }

            set

            {

                try

                {

                if((value>=30) && (value<=50)){

                    if(rate\_hrs>=200 && rate\_hrs<=400)

                        num\_hrs=value;

                }

                    else

                        throw new MyException("Employee cannot work less than 30 hrs. in a week and not more than 50 hrs. in a week.");

               }

                catch (MyException e){

                    Console.WriteLine(e.Message);

                    Console.WriteLine("Enter Number of Hours:");

                    num\_hrs=Convert.ToInt32(Console.ReadLine());

                }

            }

        }

        public void setDetails(){

            Console.WriteLine("Enter Name:");

            name=(Console.ReadLine());

            Console.WriteLine("Enter Id:");

            id=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Age:");

            Age=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Rate per Hour:");

            Rate\_Hrs=Convert.ToDouble(Console.ReadLine());

            Console.WriteLine("Enter Number of Hours per week:");

            Num\_Hrs=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter OT charges:");

            ot\_charges=Convert.ToDouble(Console.ReadLine());

        }

        public new double calsal()

        {

            double sal;

            if(num\_hrs>40)

            {

                sal=(40\*rate\_hrs)+(num\_hrs-40)\*(rate\_hrs\*ot\_charges);

            }

            else

                sal=num\_hrs\*rate\_hrs;

            if(sal<=25000)

                return sal;

            else throw new MyException("Salary can't exceed Rs. 25000 per week.Try Again");

        }

    }

    class Salaried:Employee{

        int year;

         public void setDetails(){

            Console.WriteLine("Enter Name:");

            name=(Console.ReadLine());

            Console.WriteLine("Enter Id:");

            id=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Age:");

            Age=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Basic Pay per week:");

            Basic=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter No. of Year Employee has worked (Press 0 if employee worked less than 12 months):");

            year=Convert.ToInt32(Console.ReadLine());

        }

        public new double calsal()

        {

            double sal=basic+basic\*1.0+basic\*0.30;

            double increment=year\*sal\*0.1;

            if(sal>=4000 && sal<=20000 && sal<=25000)

                return sal+increment;

            else if(sal<4000 || (sal>20000 && sal<=25000))

                throw new MyException("Salary of a salaried employee won’t be exceeded Rs. 20000 per week and not less than Rs.4000 per week.");

            else throw new MyException("Salary can't exceed Rs. 25000 per week.Try Again");

        }

    }

    class Commission:Employee

    {

        int articles;

        double comm\_rate=10; //commission on per article sale is 10% is fixed.

        double unit\_price;

        public void setDetails(){

            Console.WriteLine("Enter Name:");

            name=(Console.ReadLine());

            Console.WriteLine("Enter Id:");

            id=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Age:");

            Age=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Articles:");

            articles=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Unit Price:");

            unit\_price=Convert.ToDouble(Console.ReadLine());

        }

        public new double calsal(){

            double sal=(articles\*unit\_price)\*(comm\_rate/100);// commission calculate per week

            if(sal<=20000 && sal<=25000)

                return sal;

            else

                throw new MyException("Commission cannot exceed Rs. 20000 in a week");

        }

    }

    class Sal\_Commission:Salaried{

        int articles;

        double comm\_rate=10; //commission on per article sale is 10% is fixed.

        double unit\_price;

        public new void setDetails(){

            Console.WriteLine("Enter Name:");

            name=(Console.ReadLine());

            Console.WriteLine("Enter Id:");

            id=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Age:");

            Age=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Basic Pay:");

            Basic=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Articles:");

            articles=Convert.ToInt32(Console.ReadLine());

            Console.WriteLine("Enter Commision Rate %:");

            comm\_rate=Convert.ToDouble(Console.ReadLine());

            Console.WriteLine("Enter Unit Price:");

            unit\_price=Convert.ToDouble(Console.ReadLine());

        }

        public new double calsal(){

            double comm=(articles\*unit\_price)\*(comm\_rate/100);// commission per week

            double sal=basic+basic\*1.0+basic\*0.30;

            if(comm<=20000)

                sal=comm+(sal+(sal\*0.1));

            else

                throw new MyException("Commission cannot exceed Rs. 20000 in a week.");

            if(sal>25000)

                throw new MyException("Salary can't exceed Rs. 25000 per week.Try Again");

            else return sal;

        }

    }

    class Program

    {

        static void Main(string[] args)

        {

            int choice;

            Salaried salaried=new Salaried();

            Sal\_Commission sal\_Commission=new Sal\_Commission();

            Commission commission=new Commission();

            Hourly hourly=new Hourly();

            try{

                do{

                Console.WriteLine("Enter choice:");

                Console.WriteLine("1.Salaried Employee");

                Console.WriteLine("2.Hourly Employee");

                Console.WriteLine("3.Commission Employee");

                Console.WriteLine("4.Salaried Commission Employee");

                Console.WriteLine("5.Exit");

                choice=Convert.ToInt32(Console.ReadLine());

                switch(choice){

                    case 1:salaried.setDetails();

                            Console.WriteLine("Salary Per Week: "+salaried.calsal().ToString());

                            break;

                    case 2: hourly.setDetails();

                            Console.WriteLine("Salary: "+hourly.calsal().ToString());

                            break;

                    case 3: commission.setDetails();

                            Console.WriteLine("Salary Per Week: "+commission.calsal().ToString());

                            break;

                    case 4:sal\_Commission.setDetails();

                            Console.WriteLine("Salary Per Week: "+sal\_Commission.calsal().ToString());

                            break;

                }

            }while(choice!=5);

            }

            catch(MyException e){

                Console.WriteLine(e.Message);

            }

            catch(FormatException e){

                Console.WriteLine(e.Message);

            }

            catch(Exception e){

                Console.WriteLine(e.Message);

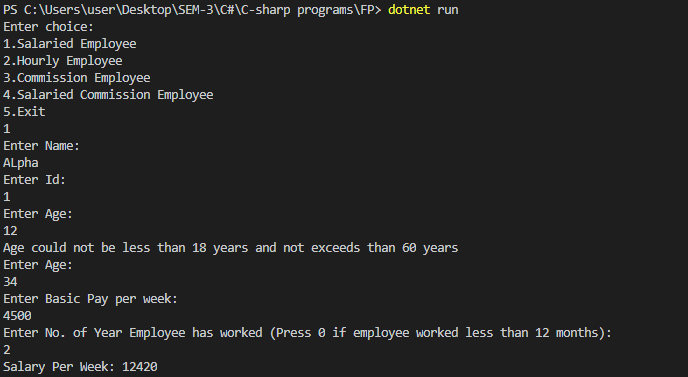
            }

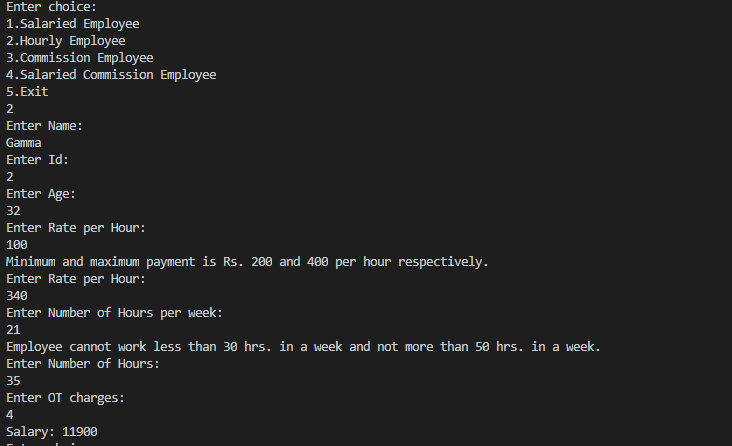
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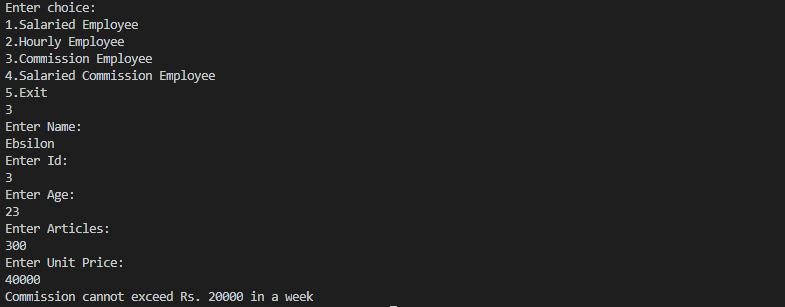
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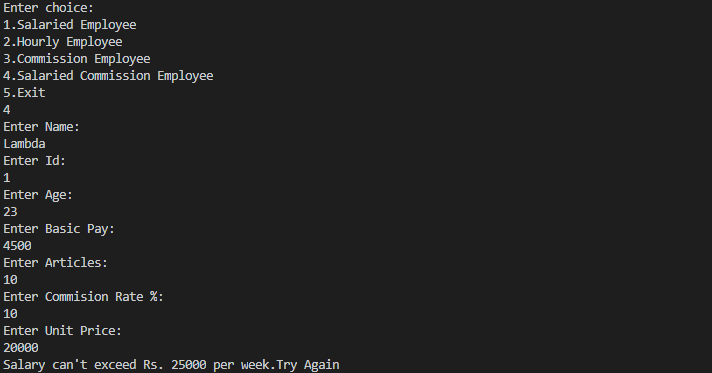
}

**OUTPUT**

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