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

```csharp
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
```

```csharp
        {
          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;
```

```csharp
        }
        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 wo
rked 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. 200
00 per week and not less than Rs.4000 per week.");
```

```csharp
            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:");
```

```csharp
            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);
        }
    }
  }
}
```

OUTPUT

```
PS C:\Users\user\Desktop\SEM-3\C#\C-sharp programs\FP> dotnet run
Enter choice:
1.Salaried Employee
2.Hourly Employee
3.Commission Employee
4.Salaried Commission Employee
5.Exit
1
Enter Name:
ALpha
Enter Id:
1
Enter Age:
12
Age could not be less than 18 years and not exceeds than 60 years
Enter Age:
34
Enter Basic Pay per week:
4500
Enter No. of Year Employee has worked (Press 0 if employee worked less than 12 months):
2
Salary Per Week: 12420
```

```
Enter choice:
1.Salaried Employee
2.Hourly Employee
3.Commission Employee
4.Salaried Commission Employee
5.Exit
2
Enter Name:
Gamma
Enter Id:
2
Enter Age:
32
Enter Rate per Hour:
100
Minimum and maximum payment is Rs. 200 and 400 per hour respectively.
Enter Rate per Hour:
340
Enter Number of Hours per week:
21
Employee cannot work less than 30 hrs. in a week and not more than 50 hrs. in a week.
Enter Number of Hours:
35
Enter OT charges:
4
Salary: 11900
```

```
Enter choice:
1.Salaried Employee
2.Hourly Employee
3.Commission Employee
4.Salaried Commission Employee
5.Exit
3
Enter Name:
Ebsilon
Enter Id:
3
Enter Age:
23
Enter Articles:
300
Enter Unit Price:
40000
Commission cannot exceed Rs. 20000 in a week
```

```
Enter choice:
1.Salaried Employee
2.Hourly Employee
3.Commission Employee
4.Salaried Commission Employee
5.Exit
4
Enter Name:
Lambda
Enter Id:
1
Enter Age:
23
Enter Basic Pay:
4500
Enter Articles:
10
Enter Commision Rate %:
10
Enter Unit Price:
20000
Salary can't exceed Rs. 25000 per week.Try Again
```