We have already discussed a about encapsulation while discussing OOPs concepts.

The whole idea behind encapsulation is to hide the implementation details from users. If a data member is private it means it can only be accessed within the same class. No outside class can access private data member (variable) of other class. However if we setup public getter and setter methods to update (for e.g. void setSSN(int ssn))and read (for e.g. int getSSN()) the private data fields then the outside class can access those private data fields via public methods. This way data can only be accessed by public methods, thus making the private fields and their implementation hidden for outside classes. That’s why encapsulation is known as data hiding.

public class EncapsulationDemo{

private String empName;

//Getter and Setter methods

public String getEmpName(){

return empName;

}

public void setEmpName(String newValue){

empName = newValue;

}

}

public class EncapsTest{

public static void main(String args[]){

EncapsulationDemo obj = new EncapsulationDemo();

obj.setEmpName("Mario");

System.out.println("Employee Name: " + obj.getEmpName());

}

}

Exercise 3-1: Develop a code for the following scenario.

“An encapsulated class contains three variables to store Name, Age and Salary of the employee. Evelop getters and setters to set and get values . Develop a test class to test your code.”

Answer:

package com.mycompany.test;

public class Encapsulation

{

private String Name;

private int Age;

private float Salary;

public void setName(String n)

{

Name=n;

}

public String getName()

{

return Name;

}

public void setAge(int a)

{

Age=a;

}

public int getAge()

{

return Age;

}

Public void setSalary(float s)

{

Salary=s;

public float getSalary()

{

return Salary;

}

}

package com.mycompany.test;

public class Test {

public static void main(String[] args)

{

Encapsulation e1=new Encapsulation();

e1.setName("Thilina");

e1.setAge(22);

e1.setSalary(10000.00f);

System.out.println("Name:"+e1.getName());

System.out.println("Age:"+e1.getAge());

System.out.println(“Salary:”+e1.getSalary());

}

}

Now modify the same code by trying to replace the setters using a constructor.

Answer:

package com.mycompany.test;

public class Encapsulation

{

private String Name;

private int Age;

private float Salary;

public void setData(String Name,int Age,float Salary)

{

this.Name=Name;

this.Age=Age;

this.Salary=Salary;

}

public String getName()

{

return Name;

}

public int getAge()

{

return Age;

}

public float getSalary()

{

return salary;

}

}

Exercise 3-2: Code for the last example that we have discussed during the class. We need the following Output. (Use Netbeans code generation option where necessary)

Employee Name: xxxxx (Use setter to set and getter to retrieve)

Basic Salary: xxxx (Use setter to set and getter to retrieve)

Bonus: xxxx (You may use the constructor to pass this value)

Bonus Amount: xxxxx (Develop a separate method to calculate Bonus amount. Bonus amount is the total of Bonus and Basic Salary)

E.g.

Employee Name: Bogdan

Basic Salary: 50000

Bonus: 10000

Bonus Amount: 60000

Answer:

package com.mycompany.calculatesalary;

public class SalaryProfile

{

private String empName;

float basicSalary;

float bonus;

public SalaryProfile(String empName,float basicSalary,float bonus)

{

this.empName=empName;

this.basicSalary=basicSalary;

this.bonus=bonus;

}

public String getName()

{

return empName;

}

public float getBSalary()

{

return basicSalary;

}

public float getBonus()

{

return bonus;

}

public float CalculateNetSalary()

{

return basicSalary+bonus;

}

}

package com.mycompany.calculatesalary;

public class CalculateSalary

{

public static void main(String[] args)

{

SalaryProfile p1=new SalaryProfile("Bogdan",50000.00f,10000.00f);

System.out.println("Employee Name:"+p1.getName());

System.out.println("Basic Salary:"+p1.getBSalary());

System.out.println("Bonus:"+p1.getBonus());

System.out.println("Bonus Amount:"+p1.CalculateNetSalary());

}

}