

**UNITED INTERNATIONAL UNIVERSITY (UIU)**

Dept. of Computer Science & Engineering

Trimester: Summer 2024

Course No: CSE 1115 Title: Object Oriented Programming

Section: Class Test-2

**Time: 20 minutes Marks: 20**

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| **Name** |  | **ID** |  |

1. Consider the following interface ***Payable*** and the abstract class ***Employee*** which implements *Payable*-

public interface Payable  
{  
 double getPaymentAmount(); *// calculate payment; no implementation*} *// end interface Payable*

public abstract class Employee implements Payable{  
 String name;  
 String id;  
 public Employee(String name, String id) {  
 this.name = name;  
 this.id = id;  
 }  
 *// abstract method overridden by concrete subclasses* public abstract double earnings();  
} *// end abstract class Employee*

Write codes the following classes - **[2+2]**

1. Now create a concrete class ***HourlyEmployee*** that is a subclass of the Employee class. This class has two default members (wage:double) and (hours:int) representing the employee’s wage and the weekly number of hours he/she works respectively. Create a constructor with appropriate parameters to set all the attributes.
2. The earnings of an HourlyEmployee can be formulated as following – **[3]**

Earnings = wage \* hours ; [In case of no overtime]

Earnings = wage \* hours for the first 40 hours and 1.5x wage for the overtime hours [In case of overtime (more than 40 hours per week)]

1. The payable amount for an HourlyEmployee is what he/she earns according to the aforementioned policy. Complete the class along with constructor and all other concrete methods. **[3]**
2. Create another concrete class ***CommissionedEmployee*** which also inherits the Employee class. This class has default members (baseSalary:double), (grossSales:int) and (comissionRate:double). Create a constructor with appropriate parameters to set all the attributes. **[2+2]**
3. The earnings of a ComissionedEmployee is the amount of gross sales made per week times commission rate per item sold. **[3]**
4. The total payable amount to a ComissionedEmployee is his/her base salary plus earnings. Complete the class along with constructor and all other concrete methods. **[3]**

public class HourlyEmployee extends Employee {  
 double wage;  
 int hours;  
  
 public HourlyEmployee(String name, String id, double wage, int hours) {  
 super(name, id);  
 this.wage = wage;  
 this.hours = hours;  
 }  
  
 @Override  
 public double earnings() {  
 if (hours <= 40) return wage \* hours;  
 else return 1.5 \* wage \* (hours - 40) + wage \* 40;  
 }  
  
 @Override  
 public double getPaymentAmount() {  
 return earnings();  
 }  
}

public class CommissionedEmployee extends Employee {  
 double baseSalary;  
 int grossSales;  
 double commissionRate;  
  
 public CommissionedEmployee(String name, String id, double baseSalary, int grossSales, double commissionRate) {  
 super(name, id);  
 this.baseSalary = baseSalary;  
 this.grossSales = grossSales;  
 this.commissionRate = commissionRate;  
 }  
  
 @Override  
 public double earnings() {  
 return grossSales \* commissionRate;  
 }  
  
 @Override  
 public double getPaymentAmount() {  
 return baseSalary + earnings();  
 }  
}