Exercise 1:

Create a class called **Employee** that includes three pieces of information as instance variables

1. First name (type String)

2. Last name (type String)


Your class should have the following methods:

- **Constructor** that initializes the three instance variables.

- Provide a **set** and a **get** method for each instance variable. If the monthly salary is not positive, set it to 0.0.

Write a test application named **EmployeeTest** that demonstrates class Employee’s capabilities. Create two Employee objects and display each object’s yearly salary. Then give each Employee a 10% raise and display each Employee’s yearly salary again.

```java
class Employee {
    private String firstname, lastname;
    private double monthlysalary;

    public Employee()
    {
        firstname = "";
        lastname="";
    }
    // Constructor
```

```java
```
monthlysalary=0.0;

public Employee (String first, String last, double salary)
{
    setfirstname (first);
    setlastname (last);
    setmonthlysalary (salary);
}

public void setfirstname (String name)
{
    firstname = name;
}

public void setlastname (String name)
{
    lastname = name;
}

public void setmonthlysalary (double salary)
{
    if (salary <=0.0)
    {
        salary = 0.0;
        monthlysalary = salary;
    }
public class TestEmployee {

    public static void main(String[] args) {
        Employee a = new Employee("Turky", "Alotebi", 20000);
        Employee b = new Employee("Faisal", "Mohammed", 15000);
    }
}
double yearlysalaryA = a.getmonthlysalary() * 12;

double yearlysalaryB = b.getmonthlysalary() * 12;

System.out.println(a.getfirstname()+ " " + a.getlastname()+ " has yearly Salary : " + yearlysalaryA);

System.out.println(b.getfirstname()+ " " + b.getlastname()+ " has yearly Salary : " + yearlysalaryB);

System.out.println();

System.out.println(" ((( Now we will Add 10% for every employee ))) ")

System.out.println();
a.setmonthlysalary( a.getmonthlysalary()*1.1);
b.setmonthlysalary( b.getmonthlysalary()*1.1);

yearlysalaryA = a.getmonthlysalary() * 12;

yearlysalaryB = b.getmonthlysalary() * 12;

System.out.println (a.getfirstname()+ " " + a.getlastname()+ " has yearly Salary: " +yearlysalaryA);

System.out.println (b.getfirstname()+ " " + b.getlastname()+ " has yearly Salary: " +yearlysalaryB);

}
}

Exercise 2:

Create a class called Date that includes three pieces of information as instance variables—

1. Month (type int)
2. *Day* (type int)

3. *Year* (type int).

Your class should have the following methods:

- Constructor that initializes the three instance variables and assumes that the values provided are correct.

- Provide a *set* and a *get* method for each instance variable.

- Provide a method *display* Date that displays the month, day and year separated by forward slashes (/).

Write a test application named *DateTest* that demonstrates class Date’s capabilities.

```java
public class Date {
    private int month, day, year;

    public Date (int d, int m, int y)
    {
        setday (d);
        setmonth (m);
        setyear (y);
    }

    public void setday (int d)
    {
        day = d;
    }

    public void setmonth (int m)
    {
        
```
month = m;

public void setyear (int y)
{
    year = y;
}

public int getday()
{
    return day;
}

public int getmonth()
{
    return month;
}

public int getyear()
{
    return year;
}

public void display()
{
    System.out.println (day + " / " + month + " / " + year);
}
import java.util.Scanner;

public class DateTest {

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        int d1, m1, y1;
        System.out.println("Enter the day: ");
        d1 = in.nextInt();
        System.out.println("Enter the month: ");
        m1 = in.nextInt();
        System.out.println("Enter the year: ");
        y1 = in.nextInt();
        Date d = new Date(d1, m1, y1);
        d.display();
    }
}

Exercise 3:

Create a class called **Invoice** that a hardware store might use to represent an invoice for an item sold at the store. An Invoice should include four pieces of information as instance variables:

1. Part number (type String)
2. Part description (type String)

3. Quantity of the item being purchased (type int)

4. Price per item (double).

Your class should have the following methods:

- **Constructor** that initializes four instance variables.

- Provide a **set** and a **get** method for each instance variable.

- Provide a method named **getInvoiceAmount** that calculates the invoice amount (i.e., multiplies the quantity by the price per item), then returns the amount as a double value. If the quantity is not positive, it should be set to 0. If the price per item is not positive, it should be set to 0.0.

Write a test application named **InvoiceTest** that demonstrates class Invoice’s capabilities.

```java
public class Invoice {
    private String partNum;
    private String partDesc;
    private int quantity;
    private double pricePerItem;

    public Invoice (String num, String desc, int quan, double pricePI) {
        partNum = num;
        partDesc = desc;
        quantity = quan;
        pricePerItem = pricePI;
    }
}
```
public void setPartNum (String num)
{
    partNum = num;
}

public String getPartNum ()
{
    return partNum;
}

public void setPartDesc (String desc)
{
    partDesc = desc;
}

public String getPartDesc ()
{
    return partDesc;
}

public void setQuantity (int quan)
{
    quantity = quan;
    if (quantity < 0)
    {
        quantity = 0;
    }
}

public int getQuantity ()
{  
    return quantity;  
}

public void setpricePerItem (double pricePI)  
{
    pricePerItem = pricePI;
    if (pricePerItem < 0)  
    {  
        pricePerItem = 0;
    }
}

public double getpricePerItem()  
{
    return pricePerItem;
}

public double getInvoiceAmount ()
{
    return (pricePerItem * quantity);
}

}

-------------------------------------------------------------
import java.util.Scanner;

public class InvoiceTest {

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter your Product Number: ");
        String num = in.next();
        System.out.println("Enter your Product Description: ");
        String desc = in.next();
        System.out.println("Enter your Quantity: ");
        int quan = in.nextInt();
        System.out.println("Enter the price of Product: ");
        double price = in.nextDouble();
        Invoice Invo = new Invoice(num, desc, quan, price);

        System.out.println("your item number is " + Invo.getpartNum() + " and its description is : " + Invo.getpartDesc() + " your order " + Invo.getQuantity() + " Items" + "n" + "Item price is : " + Invo.getpricePerItem());
        System.out.println("your items total price is: " + Invo.getInvoiceAmount());
    }
}
Exercise 4:

A Café sells coffee for SR 5.50 a cup, Tea for SR 3.50 and Donuts for SR 2.25. Write a Java program to compute a customer’s bill. Declare a class Cafe and use appropriate data types for declaring the following attributes coffee, tea, donut, discount, subTotal and total. Discount is a number between 0-100 and it represents a percentage, coffee, tea and donut represent amount of items ordered.

Class Cafe should have the following operations:

1) Constructor to initialize the quantities and discount to 0.

2) setters() Methods for the four attributes.

3) calculateSubTotal() to calculate the subtotal of the bill.

4) double calculateTotal() to calculate the total cost of the bill, including the discount and return this total cost.

5) display() to display an itemized bill as follows: (assume discount is 10)

---

Item | Quantity | Price
--- | --- | ---
Coffee | 3 | SR 16.50
Tea | 2 | SR 7.00
Donuts | 2 | SR 4.50
---

Sub total | SR 28.00
Discount (%10) | SR 2.80
Do the following:

(1) Declare the class Cafe in a separate file called Cafe.java.

(2) Write the main program to test class Cafe using Class TestCafe.java. You should read, calculate and display bills for several customers using a menu driven program (Hint: use while loop for the menu). Your program should display a menu with 2 options:

1) Read, calculate and display bill for customer

2) Quit

(3) When the user enters 2 for Quit print the total sales for all the operations.

```java
class Cafe {
    private double subtotal, total;
    private int coffee, tea, donut, discount;
    public Cafe() {
        coffee = 0;
        tea = 0;
        discount = 0;
        subtotal = 0;
        total = 0;
    }
    public void setcoffee(int amount) {
    }
}
```
coffee = amount;
}

public void settea (int amount)
{
    tea = amount;
}

public void setdonut (int amount)
{
    donut = amount;
}

public void setdiscount (int present)
{
    discount = present;
}

public void calculatesubtotal()
{
    subtotal = coffee * 5.5 + tea * 3.5 + donut * 2.25;
}

public double calculatetotal ()
{
    calculatesubtotal();
    total = subtotal - subtotal * discount / 100;
    return total;
public void display ()
{
    calculatetotal ();
    System.out.println ("@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@");
    System.out.println ("coffee SR " + coffee*5.5);
    System.out.println("Tea SR "+ tea*3.5);
    System.out.println("Donut SR "+ donut*2.25);
    System.out.println("subtotal SR "+ subtotal);
    System.out.println( "discount SR " + subtotal*discount/100 );
    System.out.println( "Total SR " +total);
}

import java.util.Scanner;
public class TestCafe {

    public static void main(String[] args) {

        Scanner in = new Scanner (System.in);
        import java.util.Scanner;
    public class TestCafe {
        public static void main(String[] args) {
            Scanner in = new Scanner (System.in);
        }
    }
}
double totalbills = 0;

System.out.print("Enter 1 to read bill and any other number to Quit:");

boolean read ;

if (in.nextInt()==1)
{
    read = true;
}

else {
    read = false;
}

while (read ==true){
    cafe bill = new cafe();
    System.out.print("coffe amount ");
    bill.setcoffee(in.nextInt());
    System.out.print("tea amount ");
    bill.settea( in.nextInt());
    System.out.print("donut amount ");
    bill.setdonut( in.nextInt());
    System.out.print("discount ");
    bill.setdiscount(in.nextInt());
    System.out.print("your bill ");
    bill.display();
    totalbills+=bill.calculatetotal();
    System.out.print ("Enter 1 to read bill and any other number to Quit.");
if (in.nextInt()==1 ) {
    read = true;
}
else {
    read = false;
}

System.out.println("the total bill : SR "+totalbills);