Chapter 3 – Page 123 - #10

# Problem Statement

A retail company must file a monthly sales tax report listing the total sales for the month as well as the state and county sales tax collected. State sales tax rate is 4% and the county sales tax rate is 2%. Design a modular program to:

# Algorithm

1. Ask the user to enter the total sales for the month
2. Display:
   1. Total sales for the month
   2. Amount of county sales tax
   3. Amount of state sales tax
   4. Total sales tax (county plus state)

# IPO Diagrams

Main module

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| totalSales | Calculate countyTax = Call taxCalculator(totalSales, COUNTY\_TAX\_RATE)  Calculate stateTax = Call taxCalculator(totalSales, STATE\_TAX\_RATE)  Call ReportBuilder(totalSales, countyTax, stateTax) |  |

TaxCalculator module

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| totalSales  TAX\_RATE | Calculate tax = totalSales – totalSales/(1 +TAX\_RATE) | Return tax |

ReportBuilder module

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| totalSales  countyTax  stateTax | Calculate totalTax = countyTax + stateTax | Display totalSales  Display countyTax  Display stateTax  Display totalTax |

# Hierarchy Chart

# Flowchart

# Pseudocode

// Program: Chapter 3 - P123 - #10 MDoctor

// Author: Mark Doctor

// Course: iTech

void main ()

{

DISPLAY "Please enter the total sales for the month: ";

INPUT totalSales;

taxCalculator (totalSales, COUNTY\_TAX\_RATE);

taxCalculator (totalSales, STATE\_TAX\_RATE);

reportBuilder (totalSales, countyTax, stateTax);

}

Real taxCalculator (totalSales, TAX\_RATE)

{

SET tax = totalSales - totalSales/ (1 + TAX\_RATE);

return tax;

}

void reportBuilder (totalSales, countyTax, stateTax)

{

SET totalTax = countyTax + stateTax;

DISPLAY " --MONTHLY SALES TAX REPORT--";

DISPLAY "Total sales: $", totalSales;

DISPLAY "County sales tax: $", countyTax;

DISPLAY "State sales tax: $", stateTax;

DISPLAY "Total sales tax: $", totalTax;

}

# Java Source Code

1 //Mark Doctor, 9/30/16, iTechPM Section 3: Assignment 3   
 2 //Purpose: Learn modular programming  
 3 //Filename: monthlySalesTaxReport.java  
 4 //Documentation: Chapter 3 - P123 - #10 MDoctor.docx  
 5 //Assumption: total sales is considered as the total amount of money received (purchase price and taxes combined)  
 6   
 7 import java.util.\*;  
 8 import java.text.\*;  
 9   
10 public class MonthlySalesTaxReport  
11 {  
12 public static final double COUNTY\_TAX\_RATE = 0.02;  
13 public static final double STATE\_TAX\_RATE = 0.04;  
14   
15 public static void main(String[] args)  
16 {  
17 //Variable declaration  
18 Scanner kb = new Scanner(System.in);  
19 double totalSales, countyTax, stateTax;  
20   
21 //Request monthly sales amount  
22 System.out.println("Please enter the total sales for the month: ");  
23 totalSales = kb.nextDouble();  
24   
25 //Calculate taxes via taxCalculator method  
26 countyTax = taxCalculator(totalSales, COUNTY\_TAX\_RATE);  
27 stateTax = taxCalculator(totalSales, STATE\_TAX\_RATE);  
28 reportBuilder(totalSales, countyTax, stateTax);  
29 } //end of main  
30   
31 //Calculates the tax amount from the total sales (total sales is purchase price plus tax)  
32 public static double taxCalculator(double totalSales,double taxRate)  
33 {  
34 double tax = totalSales - totalSales/ (1 + taxRate);  
35 return tax;  
36 } // end of taxCalculator  
37   
38 //Creates a report/receipt of all information needed for the monthly sales tax report  
39 public static void reportBuilder(double totalSales, double countyTax, double stateTax)  
40 {  
41 DecimalFormat df = new DecimalFormat("#.00");  
42 double totalTax = countyTax + stateTax;  
43 System.out.println("--MONTHLY SALES TAX REPORT--");  
44 System.out.println("Total sales: $" + df.format(totalSales));  
45 System.out.println("County sales tax: $" + df.format(countyTax));  
46 System.out.println("State sales tax: $" + df.format(stateTax));  
47 System.out.println("Total sales tax: $" + df.format(totalTax));  
48 } //end of reportBuilder  
49 } //end of class: MonthlySalesTaxReport  
50   
51   
52 /\*  
53 ----jGRASP exec: java MonthlySalesTaxReport  
54 Please enter the total sales for the month:   
55 1000  
56 --MONTHLY SALES TAX REPORT--  
57 Total sales: $1000.00  
58 County sales tax: $19.61  
59 State sales tax: $38.46  
60 Total sales tax: $58.07  
61   
62 ----jGRASP: operation complete.  
63 \*/