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Class and Section CSC201 M6
Total Points (50 points)

Project 5: Computing Income Tax Again

CSC 201 – Computer Science I
New River Community College

Problem Description:

The United States federal personal income tax is calculated based on filing status and taxable income. There are three filing statuses: single filers, married joint filers, and head of household filers. The tax rates vary every year. Table below shows the expected rates for the year 2013. If you are, say, single with a taxable income of \$10,000, the first \$8,925 is taxed at 10% and the other \$1,075 is taxed at 15%. Your tax will be \$1,053.75.

Rate	Single	Married Jointly	Head of Household
10%	\$0 to \$8,925	\$0 to \$17,850	\$0 to \$12,750
15%	\$8,925 to \$36,250	\$17,850 to \$72,500	\$12,750 to \$48,600
25%	\$36,250 to \$87,850	\$72,500 to \$146,400	\$48,600 to \$125,450
28%	\$87,850 to \$183,250	\$146,400 to \$223,050	\$125,450 to \$203,150
33%	\$183,250 to \$398,350	\$223,050 to \$398,350	\$203,150 to \$398,350
35%	\$398,350 to \$400,000	\$398,350 to \$450,000	\$398,350 to \$425,000
39.6%	\$400,000 and up	\$450,000 and up	\$425,000 and up

Assignment

Write a Java program that creates a Tax Table for 2013 that looks like this:

Tax Table for the Year 2013			
Taxable Income	Single	Married Jointly	Head of Household
\$20000	\$2553.75	\$2107.50	\$2362.50
\$21000	\$2703.75	\$2257.50	\$2512.50
\$22000	\$2853.75	\$2407.50	\$2662.50
\$23000	\$3003.75	\$2557.50	\$2812.50
\$24000	\$3153.75	\$2707.50	\$2962.50
\$25000	\$3303.75	\$2857.50	\$3112.50
\$26000	\$3453.75	\$3007.50	\$3262.50
\$27000	\$3603.75	\$3157.50	\$3412.50
\$28000	\$3753.75	\$3307.50	\$3562.50
\$29000	\$3903.75	\$3457.50	\$3712.50
\$30000	\$4053.75	\$3607.50	\$3862.50
\$31000	\$4203.75	\$3757.50	\$4012.50

\$32000	\$4353.75	\$3907.50	\$4162.50
\$33000	\$4503.75	\$4057.50	\$4312.50
\$34000	\$4653.75	\$4207.50	\$4462.50
\$35000	\$4803.75	\$4357.50	\$4612.50
\$36000	\$4953.75	\$4507.50	\$4762.50
\$37000	\$5178.75	\$4657.50	\$4912.50
\$38000	\$5428.75	\$4807.50	\$5062.50
\$39000	\$5678.75	\$4957.50	\$5212.50
\$40000	\$5928.75	\$5107.50	\$5362.50

Specifications

Write three methods to calculate the taxes for the three statuses.

- public static double singleFilerTax (double income) to calculate the income tax for various incomes for single filer status.
- public static double marriedJointFilerTax(double income) to calculate the income tax for various incomes for married joint filer status,
- public static double headOfHouseholdFilerTax(double income) to calculate the income tax for various incomes for head of household filer status.

Important Note: Don't use numerical literals in the formulae that calculate the tax. Use Constant names and variable names. Make sure your constants and variables follow the naming convention of Java.

Invoke these methods in a for loop to create the above table. Your program must ask the user for the following values, calculate the taxes and print out the table for them.

1. Starting Taxable Value
2. Ending Taxable Value
3. Incremental Value

Extra Credit

5 points extra will be given if you make sure that the last row of the table is for the ending taxable value the user entered.

For example: The user enters the following input values 20000, 39900, 1000. The last row in the table would be for 39000.

If you make sure the last row is for 39900, you will receive 5 point extra credit for this assignment.

Analysis:

(Describe the purpose, processing, input and output in your own words.)

Purpose of the program is to create a tax table for various filing status.

Design:

(Describe the major steps for solving the problem.)

Major algorithm for the tax calculation was already developed in Project 2. In project 5, I have used the same classes developed to create a table.

Define a class "incomeTax" for income tax with following fields and methods:

- fields: six constants for rates and six variables for tax brackets
- public double singleFilerTax (double income)
- public double marriedJointFilerTax(double income)
- public double headOfHouseholdFilerTax(double income)

Define helper methods to be used inside the three methods above:

- setUpUpperLimits(int status) :- used to initialize tax brackets
- taxCalculator(double yourIncome) : used to calculate tax

Define Class "IncomeTaxMain" to use incomeTax class to generate tax table

- Create variables to store start, end and increments for the tax table
- create an incomeTax object, call methods in a loop.
- Apply error validation such that no string input is allowed and end value > start value.
- Apply string formatting to print tax table to the console.

Testing: (Describe how you test this program)

Debugging was a continuous process in the program development.

Example output

```
IncomeTaxMain.main({ });
```

Please enter STARTING value for the tax table

10000

Please enter ENDING value for the tax table

30000

Please enter INCREMENT desired for the tax table

1000

Tax Table for the Year 2013			
Taxable Income	Single	Married Jointly	Head of Household
\$10000	\$1053.75	\$1000.00	\$1000.00
\$11000	\$1203.75	\$1100.00	\$1100.00
\$12000	\$1353.75	\$1200.00	\$1200.00
\$13000	\$1503.75	\$1300.00	\$1312.50
\$14000	\$1653.75	\$1400.00	\$1462.50
\$15000	\$1803.75	\$1500.00	\$1612.50
\$16000	\$1953.75	\$1600.00	\$1762.50

\$17000	\$2103.75	\$1700.00	\$1912.50
\$18000	\$2253.75	\$1807.50	\$2062.50
\$19000	\$2403.75	\$1957.50	\$2212.50
\$20000	\$2553.75	\$2107.50	\$2362.50
\$21000	\$2703.75	\$2257.50	\$2512.50
\$22000	\$2853.75	\$2407.50	\$2662.50
\$23000	\$3003.75	\$2557.50	\$2812.50
\$24000	\$3153.75	\$2707.50	\$2962.50
\$25000	\$3303.75	\$2857.50	\$3112.50
\$26000	\$3453.75	\$3007.50	\$3262.50
\$27000	\$3603.75	\$3157.50	\$3412.50
\$28000	\$3753.75	\$3307.50	\$3562.50
\$29000	\$3903.75	\$3457.50	\$3712.50
\$30000	\$4053.75	\$3607.50	\$3862.50

How to submit your assignment

1. Login Blackboard
2. Click on Assignments on the left
3. Click on Week 8 Work folder
4. Read the instruction there and submit the following items:
 - Your jar file with source code. The jar file without the source code will not be graded. Please use the steps given on Project 1 Instructions to create your jar file. Rename your jar file as YourName_Project5. Suppose your name is Susan Boyd, you should rename your jar file as SusanBoyd_Project5. **Files with wrong name will not be graded.**
 - This document with answers for analysis, design and testing. Rename this document as Project5_Yourname. Suppose your name is Susan Boyd, you should rename this document as Project5_SusanBoyd. **Files with wrong name will not be graded.** This document is worth 10 points and the comments in your program is worth 10 points. Working code is worth 30 points.