10.8: the Tax class

public class Exercise\_10\_08 {

public static void main(String[] args) {

Tax tax2001 = new Tax();

Tax tax2009 = new Tax();

double[] rates2001 = {15, 27.5, 30.5, 35.5, 39.1};

tax2001.setRates(rates2001);

int[][] brackets2001 = {

{27050, 65550, 136750, 297350},

{45200, 109250, 166500, 297350},

{22600, 54625, 83250, 148675},

{36250, 93650, 151650, 297350}

};

tax2001.setBrackets(brackets2001);

final double FROM = 50000;

final double TO = 60000;

final double INTERVAL = 1000;

System.out.println(

"\n2001 tax tables for taxable income from $50,000 to $60,000");

print(tax2001, FROM, TO, INTERVAL);

System.out.println(

"\n2009 tax tables for taxable income from $50,000 to $60,000");

print(tax2009, FROM, TO, INTERVAL);

}

public static void print(Tax tax, double from, double to, double interval) {

System.out.println(

"---------------------------------------------------------------------\n" +

"Taxable Single Married Joint Married Head of\n" +

"Income or Qualifying Separate a House\n" +

" Widow(er)\n" +

"---------------------------------------------------------------------");

for (double taxableIncome = from;

taxableIncome <= to; taxableIncome += interval) {

tax.setTaxableIncome(taxableIncome);

System.out.printf("%-13.0f", taxableIncome);

tax.setFilingStatus(tax.SINGLE\_FILER);

System.out.printf("%8.2f", tax.getTax());

tax.setFilingStatus(tax.MARRIED\_JOINTLY\_OR\_QUALIFYING\_WIDOWER);

System.out.printf("%15.2f", tax.getTax());

tax.setFilingStatus(tax.MARRIED\_SEPARATELY);

System.out.printf("%18.2f", tax.getTax());

tax.setFilingStatus(tax.HEAD\_OF\_HOUSEHOLD);

System.out.printf("%15.2f\n", tax.getTax());

}

}

}

public class Tax {

private int filingStatus;

public static final int SINGLE\_FILER = 0;

public static final int MARRIED\_JOINTLY\_OR\_QUALIFYING\_WIDOWER = 1;

public static final int MARRIED\_SEPARATELY = 2;

public static final int HEAD\_OF\_HOUSEHOLD = 3;

private int[][] brackets;

private double[] rates;

private double taxableIncome;

Tax() {

filingStatus = SINGLE\_FILER;

double[] currentYearRates = {10, 15, 25, 28, 33, 35};;

setRates(currentYearRates);

int[][] currentYearBrackets = {

{8350, 33950, 82250, 171550, 372950},

{16700, 67900, 137050, 20885, 372950},

{8350, 33950, 68525, 104425, 186475},

{11950, 45500, 117450, 190200, 372950}

};

setBrackets(currentYearBrackets);

taxableIncome = 0;

}

Tax(int filingStatus, int[][] brackets, double[] rates, double taxableIncome) {

setFilingStatus(filingStatus);

setBrackets(brackets);

setRates(rates);

setTaxableIncome(taxableIncome);

}

/\*\* Set a new filingStatus \*/

public void setFilingStatus(int filingStatus) {

this.filingStatus = filingStatus;

}

/\*\* Return filingStatus \*/

public int getFilingStatus() {

return filingStatus;

}

/\*\* set new brackets \*/

public void setBrackets(int[][] brackets) {

this.brackets = new int[brackets.length][brackets[0].length];

for (int i = 0; i < brackets.length; i++) {

for (int j = 0; j < brackets[i].length; j++)

this.brackets[i][j] = brackets[i][j];

}

}

/\*\* Return brackets \*/

public int[][] getBrackets() {

return brackets;

}

/\*\* Set new rates \*/

public void setRates(double[] rates) {

this.rates = new double[rates.length];

for (int i = 0; i < rates.length; i++)

this.rates[i] = rates[i] / 100;

}

/\*\* Return rates \*/

public double[] getRates() {

return rates;

}

/\*\* Set new taxableIncome \*/

public void setTaxableIncome(double taxableIncome) {

this.taxableIncome = taxableIncome;

}

/\*\* Return Tax \*/

public double getTax() {

double tax = 0, incomeTaxed = 0;

double income = taxableIncome;

if (rates.length >= 2) {

for (int i = rates.length - 2; i >= 0; i--) {

if (income > brackets[filingStatus][i]) {

tax += (incomeTaxed = income - brackets[filingStatus][i])

\* rates[i + 1];

income -= incomeTaxed;

}

}

}

return tax += brackets[filingStatus][0] \* rates[0];

}

}