```
 1 // Lab05
 8 import java.lang.Math;
11
12 public class FederalTaxRate {
13 public static void main(String args[]) {
14 // Construct a Scanner for user input
15 Scanner scan = new Scanner(System.in);
16 System.out.println("Which marital status best describes you: Married/Qualifying Widower
   or Single?");
17 String inputtedMaritalStatus = scan.nextLine();
18 String letterStatus = inputtedMaritalStatus.substring(0,
19 1).toLowerCase();
20 System.out.println("What is your income?");
21 double income = scan.nextDouble();
22 scan.close();
23 double tax = calculateTax(letterStatus, income);
24 System.out.println("You must pay " + tax + " in federal income taxes.");
25 }
26
27     /**
28      * Calculate the federal tax based on a given marital status and yearly income
29      * (USD)
30      *
31      * @param maritalStatus "s" for single, "m" for married, "q" or "w" for
32      *                      qualifying widow
33      * @param income       the yearly income in USD
34      * @return the amount of federal tax in USD or -1 if an error occurred
35      */
36    public static double calculateTax(String maritalStatus, double income) {
37        double tax = 0.0;
38 // Check for negative income
39        if (income < 0)
40            return -1; // Decide on a sentinel value; I'll use -1
41        if (maritalStatus.equals("s")) {
42            if (income <= 9950.0)
43                tax = 0.10 * (income);
44            else if (income <= 40525.0)
45                tax = 995.00 + 0.12 * (income - 9950);
46            else if (income <= 86375.0)
47                tax = 4664.00 + 0.22 * (income - 40525);
48            else if (income <= 164925.0)
49                tax = 14751.00 + 0.24 * (income - 86375);
50            else if (income <= 209425.0)
51                tax = 33603.00 + 0.32 * (income - 164925);
52            else if (income <= 523600.0)
53                tax = 47843.00 + 0.35 * (income - 209425);
54            else
55                tax = 157804.00 + 0.37 * (income - 523600);
56        } else if (maritalStatus.equals("w") || maritalStatus.equals("q") ||
   maritalStatus.equals("m")) {
57            if (income <= 19900.0)
58                tax = 0.10 * (income);
59            else if (income <= 81050.0)
60                tax = 1990.00 + 0.12 * (income - 19900);
61            else if (income <= 172750.0)
62                tax = 9328.00 + 0.22 * (income - 81050);
63            else if (income <= 329850.0)
64                tax = 29502.00 + 0.24 * (income - 172750);
65            else if (income <= 418850.0)
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66                     tax = 67206.00 + 0.32 * (income - 329850);
67                 else if (income <= 628300.0)
68                     tax = 95686.00 + 0.35 * (income - 418850);
69                 else
70                     tax = 168994.00 + 0.37 * (income - 628300);
71         } else {
72             System.out.println("ERROR: No tax table found.");
73             return -1; // Decide on a sentinel value; I'll use -1
74         }
75         return (Math.round(tax * 100) / 100.00);
76     }
77 }
```