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1  /* Gross Pay, Savings, and Investment Calculator read from a file
2     and output to a file.
3     This program purpose is to calculate gross pay, savings, and investment based
4     off of data stored in a txt file and then write the data to a new file.
5     Zachary Stall
6     Program #4, CS 1050, Section 2
7     jGRASP, Custom PC, Windows 10
8     Assiduoud - Constant in application or attention; dilligen.
9     "Great things are done by a series of small things brought together."
10    -Vincent Van Gogh (1853 - 1890)
11 */
12
13
14 import java.util.Scanner;           // Access the Scanner class
15 import java.io.*;                  // Access PrintWriter and related classes
16
17
18 public class ZacharyStall_2_04 {
19
20     static Toolkit tools = new Toolkit();
21
22     public static void main(String[] args) throws IOException {
23
24
25         // Files to get inputs and write outputs
26         // All variable declared and described below
27
28         final String INPUT_FILE = "ZacharyStall_2_04_Input.txt";
29         final String OUTPUT_FILE = "ZacharyStall_2_04_Output.txt";
30
31         int numInputLines = 0;       // Number of lines in the input file
32         int numValidLines = 0;       // Number of valid lines in the input file
33         double grossPay = 0.0;       // Input file's gross pay
34         double savingsRate = 0.0;    // Input file's savings rate
35         double iraRate = 0.0;        // Input file's IRA investment rate
36         double savingsAmount = 0.0;  // Calculated percentage saved
37         double iraAmount = 0.0;      // Calculated percentage in ira
38         double sumGrossPay = 0.0;    // Sum of all valid gross pay amounts
39         double sumSavings = 0.0;     // Sum of all valid savings amounts
40         double sumIra = 0.0;         // Sum of all valid IRA investment amounts
41         double grossAverage = 0.0;   // Average of all valid gross salary
42         double savingsAverage = 0.0; // Average of all valid savings
43         double iraAverage = 0.0;     // Average of all valid ira amounts
44
45         String lineHeaders;          // Stores string for headers
46         String tableData;            // Stores string to create table
47         String lineOutput;           // Stores string to output data
48         String sumGrossPayStr;        // String var for formating and output
49         String sumSavingStr;          // String var for formating and output
50         String sumIraStr;             // String var for formating and output
51         String grossAverageStr;       // String var for formating and output
52         String savingsAverageStr;     // String var for formating and output
53         String iraAverageStr;         // String var for formating and output
54
55         // Access the input/output files
56
57         File inputDataFile = new File(INPUT_FILE);
58         Scanner inputFile = new Scanner(inputDataFile);
59
60         FileWriter outputDataFile = new FileWriter(OUTPUT_FILE);
61         PrintWriter outputFile = new PrintWriter(outputDataFile);
62
63         // Begin program execution
64
65         System.out.println("Reading file " + INPUT_FILE + "\r\n" +
66                             "Creating file " + OUTPUT_FILE + "\r\n");
67
68

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69 // Headers for the table of values for console and output file
70 lineHeaders = tools.padString("Grosspay", 12, " ", "") +
71     tools.padString("Savings Rate", 15, " ", "") +
72     tools.padString("Savings", 15, " ", "") +
73     tools.padString("IRA Rate", 12, " ", "") +
74     tools.padString("IRA", 15, " ", "") +
75     "\r\n";
76
77 outputFile.print(lineHeaders);
78 System.out.print(lineHeaders);
79
80 // Read the input file and sum the numbers.
81 while (inputFile.hasNext()) {
82     numInputLines++; // Adds the number of lines in input file
83
84     grossPay = inputFile.nextDouble(); // Gets grossPay from input file
85
86     savingsRate = inputFile.nextDouble(); // Gets savingRate from input file
87
88     iraRate = inputFile.nextDouble(); // Gets iraRate from input file
89
90     // Calculates the amount of money in savings and IRA
91     savingsAmount = (savingsRate / 100.0) * grossPay;
92     iraAmount = (iraRate / 100.0) * grossPay;
93
94     /*
95     If statement checks that the line input is a valid line,
96     meaning that all values in the line are positive.If the
97     line is valid, it adds it to valid lines, and each
98     variable respectively.
99     */
100     if(grossPay > 0 && savingsRate > 0 && iraRate > 0) {
101         numValidLines ++;
102         sumGrossPay += grossPay;
103         sumSavings += savingsAmount;
104         sumIra += iraAmount;
105     }
106
107     // Formats numbers and stores them in tableData
108     tableData =
109         tools.leftPad(grossPay, 12, "##,##0.00") +
110         tools.leftPad(savingsRate, 15, "#0.0") +
111         tools.leftPad(savingsAmount, 15, "##,##0.00") +
112         tools.leftPad(iraRate, 12, "#0.0") +
113         tools.leftPad(iraAmount, 15, "##,##0.00") +
114         "\r\n";
115     // Prints tableData to file and console
116     outputFile.print(tableData);
117     System.out.print(tableData);
118 } // End while
119
120 /*
121 If there is data then the averages will be calculated and stored
122 into their respective variables. If there is not data then to avoid
123 dividing by zero, the else statement will assign zero to the averages
124 and warn the user that the input file is empty.
125 */
126 if(numValidLines > 0) {
127     grossAverage = sumGrossPay / numValidLines;
128     savingsAverage = sumSavings / numValidLines;
129     iraAverage = sumIra / numValidLines;
130 }
131 else {
132     System.out.println("ERROR: FILE CONTAINS NO DATA!");
133     outputFile.println("ERROR: FILE CONTAINS NO DATA!");

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133     grossAverage = 0.0;
134     savingsAverage = 0.0;
135     iraAverage = 0.0;
136 }
137
138 /*
139 formats all the data collected, and outputs all the data to the file
140 and the console
141 */
142 sumGrossPayStr = tools.leftPad(sumGrossPay, 17, "$###,##0.00");
143 sumSavingStr = tools.leftPad(sumSavings, 19, "$##,##0.00");
144 sumIraStr = tools.leftPad(sumIra, 11, "$##,##0.00");
145 grossAverageStr = tools.leftPad(grossAverage, 16, "$##,##0.00");
146 savingsAverageStr = tools.leftPad(savingsAverage, 11, "$##,##0.00");
147 iraAverageStr = tools.leftPad(iraAverage, 15, "$##,##0.00");
148
149 // stores out put string to lineOutput
150 lineOutput =
151     "\r\n" + "The number of input lines read: " + numInputLines
152 + "\r\n" + "The number of valid input lines read: " + numValidLines + "\r\n" + "\r\n"
153 + "The sum of gross pay: " + sumGrossPayStr + "\r\n"
154 + "The sum of savings: " + sumSavingStr + "\r\n"
155 + "The sum of IRA investments: " + sumIraStr + "\r\n" + "\r\n"
156 + "The average gross pay: " + grossAverageStr + "\r\n"
157 + "The average savings amount: " + savingsAverageStr + "\r\n"
158 + "The average ira amount: " + iraAverageStr + "\r\n";
159
160 // prints lineOutput to the file and console
161 outputFile.println(lineOutput);
162 System.out.println(lineOutput);
163
164 inputFile.close();
165 outputFile.close();
166
167 System.exit(0);
168
169 } // End main
170 } // End class

```