**CSE 174 – Spring 2019**

**PROGRAM #5: 30 points – Due Sunday, March 03, by 11:59 p.m.**

**Outcomes:**

* Use a contemporary programming language and programming environment
* Write, compile, edit, and debug simple Java programs
* Write Java programs that use conditional expressions
* Write Java programs that manipulate strings
* Write Java programs that use Math.random() method
* Format and comment source code that adheres to a given set of formatting guidelines
* Use a zip compression tool to combine multiple files

**Scoring:**

At a bare minimum, the program you submit must have the assigned source code, and your source code must compile and run without crashing.

* If you do not submit your source code (.java files), your score will be zero.
* If you submit source code that does not compile, your score will be zero.
* If you submit source code that roughly resembles the requirements and it compiles, but it crashes under normal operating conditions (nice input from the user), your score will be reduced by 75%.

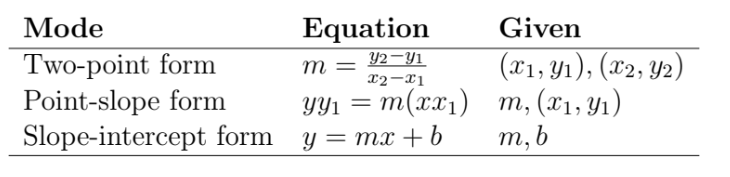
|  |  |  |
| --- | --- | --- |
|  | **Full credit** | **No credit or Partial credit** |
| **Write solutions to the two given problems (24 points)** | The programs you submitted solved the specified problems. | The programs you submitted do not solve or only partially solve the specified problems. |
| **In the comments of your source code, list the test cases and results you used for the LineForm program (3 points)** | You adequately tested your program with an appropriate mix of words. | You did not consider a good range of test cases. |
| **Format and comment source code (3 points)** | You followed all formatting guidelines (indentation, comments, escape sequences, upper/lowercase, etc.). | You did not follow some or all the formatting guidelines. |
| **Follow technical specifications**  **(0 points - Deductions only)** | Your class names, filenames, and zip folder meet all specifications | You did not meet one or more of the required specifications |

**Getting started:**

* Review how the indexOf() method words for strings and Math.random() method for random number generation.
* Review how to write a method that returns a random string

**Requirements: You will write two separate Java programs**

1. Create a folder on your computer named program5. All your source code files should be created in this folder.
2. The table below summarizes three commonly used mathematical models of non nonvertical straight lines.



In a class named **LineForm**, write a program that permits the user to convert either two-point form or point-slope form into slope-intercept form. Your program should interact with the user as follows:

**Example1:**  
Select the form that you would like to convert to slope-intercept form:  
1) Two-point form (you know two points on the line)  
2) Point-slope form (you know the line's slope and one point)  
=> 2  
  
Enter the slope=> 4.2  
Enter the x-y coordinates of the point separated by a space  
=> 1 1  
Point-slope form  
y - 1.00 = 4.20(x - 1. 00)

Slope-intercept form  
y = 4.20x - 3.20

**Example2:**  
Select the form that you would like to convert to slope-  
intercept form:  
1) Two-point form (you know two points on the line)  
2) Point-slope form (you know the line's slope and one point)  
=> 1

Enter the x-y coordinates of the first point separated by a  
space=> 4 3  
  
Enter the x-y coordinates of the second point separated by a  
space=> -2 1

Two-point form  
         (1.00 - 3.00)  
m= --------------------  
         (-2.00 - 4.00)

Slope-intercept form  
y=0.33x+1.66

In the comments at the top of this class, include a list of test cases you used, along with the results of those test cases (even if those results were incorrect).

1. In a class named **RockPaperScissors** you are to write a human vs. computer Rock Paper Scissors game. In the game of "Rock Paper Scissors", two players each choose one of three weapons: rock, paper, or scissors. The human types her weapon choice on the keyboard (the word rock, paper, or scissors – shown in red). The computer randomly selects a weapon. Then, your program should display whether the human or computer wins, or if the game ended in a tie.

The winner is determined based on the following:

* Rock beats scissors
* Scissors beats paper
* Paper beats rock
* If both players choose the same weapon, it is a tie

**Some requirements:**

1. Use String variables for the human weapon and for the computer weapon.
2. For the human move, allow the user to type her choice as String variable in any mix of uppercase or lowercase. The user must type the entire word (not just R, P, or S).
3. For the computer move, use Math.random() to help you generate a random int value of either 0, 1, or 2. Then choose the computer's weapon based on that choice.
4. Use some combination of if statements, else statements, &&, ||, or whatever else is needed to determine who wins the game.

Here are three sample runs of the program:

Match this format as closely as possible (including quotation marks, spacing, periods at the ends of sentences, and so on).

|  |
| --- |
| Welcome to "Rock, Paper, Scissors".  What is your move? **Rock**  Human plays rock. The computer plays paper.  Computer wins. |

|  |
| --- |
| Welcome to "Rock, Paper, Scissors".  What is your move? **sCiSSoRs**  Human plays scissors. The computer plays scissors.  Tie game. |

|  |
| --- |
| Welcome to "Rock, Paper, Scissors".  What is your move? **paper**  Human plays paper. The computer plays rock.  Human wins. |

1. Zip the folder containing your two source code files (only .java files are there). Name your zip file program5.zip. Upload the file to Canvas. It is OK if Canvas modifies your filename.

**Below is a short method that returns a random month. Use this to help you think about how to randomly return rock, paper, or scissors.**

