ICS4U Assignment 1 Java Basics

Setup

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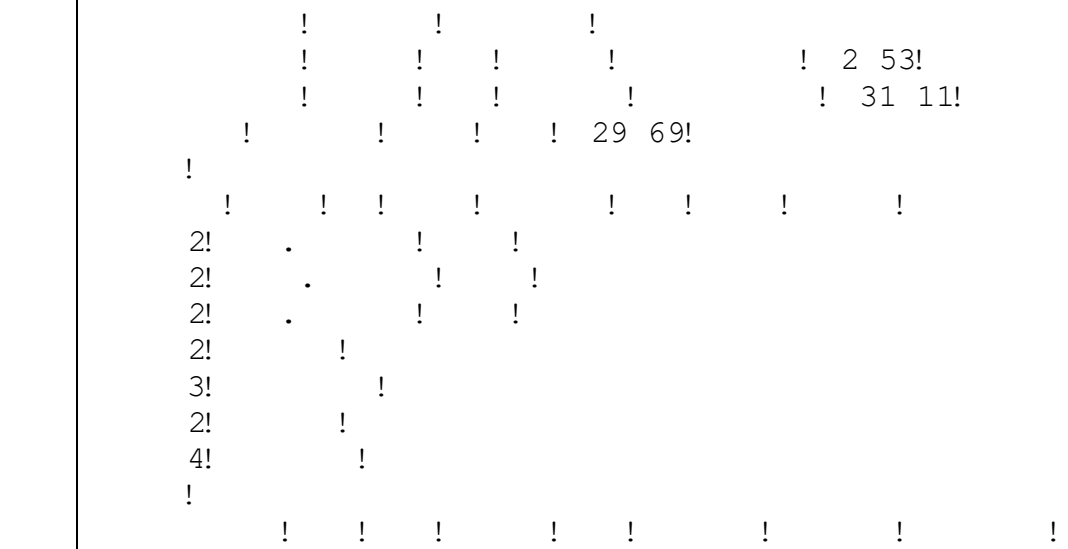
- For each of the programs described below, create a new Java Class (with a main method), and name it as indicated (watch the capitalisation!)
- Use standard console input / output. Refer to code provided in the last few weeks.

Class Name	Program Description
Rectangle	Write a program that asks the user for the length and the width of a rectangle, and then calculates and displays the area and perimeter of the rectangle. **Hint:** You may want to reuse code for console input / output that we created during previous lessons.
Cylinder	Write a program that asks the user for the height and radius of a cylinder, and the calculates and displays the surface area and volume. Round your answers to the one decimal place. Use the constant. The formula for the surface area and volume of a cylinder are: 3 3 3 and 3 **Hint:** You may want to copy the code from your Rectangle.java program and modify it as needed. To output double values with specific rounding, use the class as we have in previous lessons.
Levels	Suppose that Levels are assigned from numerical grades as follows: Level 4 - mark in the 80's or 90's, including 100. Level 3 - mark in the 70's Level 2 - mark in the 60's Level 1 - mark in the 50's Level 0 - mark less than 50 Write a Java program that asks the user for a numeric grade and finds and displays the corresponding Level. You may assume that the user is going to type in an integer number in the range 0 to 100. **Bonus**: C 0 to 100. If the user enters a number outside the range, give an error message.

Pizza	Suppose that every slice of pizza contains 355 calories. Also suppose that when you go cycling you burn 550 calories per hour. Write a program to ask the user how many pizza slices they ate, and then calculate and output to the user how long they would have to cycle to burn the equivalent calories. Give your answer in hours and minutes (rounded to the nearest minute). **Hint:** To determine hours and minutes, first find the total number of minutes needed (rounded to the nearest minute), and then use the / and % operations with integers. To round decimal values to integers, use the methods as needed.
ChangeMaker	A store clerk wants a program that calculates the exact change to give a customer with the minimum number of bills and coins. You should input the amount of the purchase and the amount of money tendered (given to the clerk) and then output the change required and the number of each bill and coin to make up the change. Remember you want the minimum number of coins and bills in each case. **<u>** Plan out this program first, before writing any code **</u>** A sample run of the program is shown below.  **Hint:** For the minimum number of bills and coins for change, continually give the largest denomination possible until no change is left.

SquareCube	Ask the user for a positive integer less than 100. Write a Java program that uses a loop to display the whole numbers from 1 to the user entered number, along with their squares and cubes. You should display the numbers in a nicely formatted table with column headings. Example partial output: ! ! ! ! ! ! ! ! ! ! ! ! 211 ! 26! ! ! ! ! ! 2! 2! 2! 3! 5! 9! 4! ,! 38! ! ! ! 25! 2,7! 3855! 26! 336! 4486! **Hint**: To right-align integers you will need to pad your output with a number of spaces depending on how many digits you are outputting. You may want to write a helper method to do this for you, using parameters to indicate how long each integer should be after padding.
DrawingBoxes	Write a Java program which draws two rectangles of asterisks on the screen (one filled in, and one with only the border). Your program should allow the user to input the height and the width of the rectangle. The required code to solve this problem is quite simple if you plan out your code carefully. The following examples are for a rectangle with a height of 4 and a width of 6. ! ! ! ! ++++++! ! ! ! ! ! ! ! ! ! ! ! ++++++! ! ! ! ! ! ! ! ! ! ! ! ++++++! ! ! ! ! ! ! ! ! ! ! ! ++++++! ! ! ! ! ! ++++++! ! ! ! ! ! ! ! ! ! ! ! +! ! ! ! +! ! ! ! ! ! ! ! ! ! ! ! +! ! ! ! +! ! ! ! ! ! ! ! ! ! ! ! ++++++!