
ECE20016 Java: Chapter04 Programming Exercises / LiveLab

Due – Wednesday 11:55 pm, March 26, 2014

This is not a group assignment, but an individual.

Chapter 04

4.13 (Find the largest n such that $n^3 < 12,000$) Use a while loop to find the largest integer n such that n^3 is less than 12,000.

4.25 (Compute π) You can approximate π by using the following series:

$$\pi = 4 \left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \cdots + \frac{(-1)^{i+1}}{2i-1} \right)$$

Write a program that displays the π value for $i = 10000, 20000, \dots$ And 100000.

4.37 (Decimal to binary) Write a program that prompts the user to enter a decimal integer and displays its corresponding binary value. Don't use Java's `Integer.toString(int)` in this program.

4.41 (Occurrence of max numbers) Write a program that reads integers, finds the largest of them, and counts its occurrences. Assume that the input ends with number 0 and let users know this sentinel value. Suppose that you entered 2 5 2 5 5 0. The program finds that the largest is 5 and the occurrence count for 5 is 4.

(Hint: Maintain two variables, max and count. Max stores the current max number, and count stores its occurrences. Initially, assign the first number to max and 1 to count. Compare each subsequent number with max. If the number is greater than max, assign it to max and reset count to 1. If the number is equal to max, increment count by 1.)

[A sample run of this program]

Enter integer numbers (0 to finish): 3 5 2 5 5 0

The largest number is 5

The occurrence count of the largest number 5 is 4

Checklist

1. These programs should be submitted to LiveLab, after you make them work in Eclipse. Remove warnings in Eclipse to follow the java code style if applicable.
2. In each program, describe the description of the program, user's input, output, author, date and so.
3. Sign up an honor code at the top of your program, unless you violate the code.
4. 0.5 points per program as usual.