CS161: Introduction to Computer Science
Homework Assignment 6
Due: 3/7 by 11:59pm

Conditionals and Private Methods

In this week's homework assignment you'll be working with conditionals and private methods. Be sure to pull out any repeated code into private methods.

Written Exercises

Double click on the sheet of notebook paper icon in BlueJ. This will open a README file where you can type your answers to the following exercises:

Given the following variable declarations, what is the value of each of the following boolean expressions?

```
int value1 = 13, value2 = 20;
boolean done = false;
```

1. value1 > value2
2. (value1 + 7) <= value2
3. value1 < (value2 − 7)
4. value1 != value2
5. !(value1 != value2)
6. !(value1 == value2) || !done
7. !(value1 == value2) && !done
8. done
9. done || !done
10. done && !done
11. !(!done || done)
12. ((value1 <= value2) || !done) && (done || (value2 < value1))

Fever Flow Chart

One of the earliest forms of artificial intelligence (AI) were expert systems. An expert system is a system designed to make decisions or arrive at diagnoses based on information it is given. The decisions it makes are based on a sequence of conditionals.

For this assignment, you will create an expert system to diagnose the cause of a fever. The flowchart shown on the next page is a simplification of the American Medical Associations's (AMA) diagram for diagnosing a fever [1]. Using the flowchart, your program should ask the necessary questions to determine the cause of the fever as indicated by the chart.

Getting Started

Create a new BlueJ project entitled `hw6`. Inside the project, create a Java class called `FeverDiagnosis` that uses a `Scanner` to ask the user questions and diagnose the cause of the fever. Your `FeverDiagnosis` class should have only two public methods: the constructor and a method called `diagnose()`. These methods should take no input arguments and they should return no values.

The `diagnose()` method should be similar to the `determineFilingStatus()` method discussed in class – i.e., calling this method should result in the user being asked a series of questions that ultimately leads to a diagnosis for the cause of the fever. Just like we practiced in class, pull out all repeated code into private methods to make your `diagnose()` method as short as possible.

You should also create a second Java class called `FeverController` that has a `main()`. Inside the `main()` method, you should create an object of type `FeverDiagnosis` and then call the `diagnose()` method.

Style Guide

Before you submit your assignment, go through the checklist below and make sure your code conforms to the style guide.

Checklist

- ☐ All unused variables are deleted
- ☐ All instance variables are used in more than one method (if not, make them local)
- ☐ All instance variables are declared private
- ☐ All instance variables are initialized in the constructor
- ☐ Javadoc comment for all classes
- ☐ All methods have Javadoc comments (except for the `main` method)
- ☐ Proper capitalization of variables (final and non-final variables), methods, and classes
- ☐ All numbers have been replaced with constants (i.e. no magic numbers)
- ☐ Use white space to separate different sections of your code
- ☐ Code is correctly indented to improve readability

Read the "Style Guide" (under "Resources" on the course website) for more information.

Submitting your homework assignment

You should submit your `hw6` folder with your `FeverDiagnosis` class and your `FeverController` class.

[1] The flowchart is taken from *Java: Programming Design* by James Cohoon and Jack Davidson who themselves took it from *The American Medical Family Medical Guide: Third Edition*, C. B. Clayman (medical editor), 1994.

Figure 5.11 Procedure to diagnose the cause of a fever.