

EE333 P6–7 Fall 2015

Purpose

The purpose of this project is to produce a **Object-Oriented Design** and demonstration **Java program** of a simulation of a coffee brewing system inspired by the Flavia C400 system that was in US Air Airport Lounges.



Flavia C400 in US Airways Club in Tampa

Overview

The goal of this project is to demonstrate your ability to do **object oriented design** and then to implement a demonstration of the quality of **that design**. The discussion Points section below is intended to supply *some* of the information necessary to create the object model but more discovery is likely necessary.

Discussion Points

1. The Flavia C400 is described on this [product site](#) which includes a [video of its use](#).
2. The system
 - takes user input on a keyboard
 - displays output on a screen
 - opens a hatch to insert ingredient packets
 - is plumbed for water
 - has a bin that contains the used ingredient packets
 - contains recipes to make coffee and related products
3. Your demonstration program should use a text-user interface to simulate the user input, packet input, and all outputs.
4. You should model sequencing of actions but you do not need to model time of operations.
5. You should limit real IO to dedicated classes to do the IO in order that the model could be used in other situations like a GUI or real hardware system.

Note: you are expected to have an object oriented design and a matching implementation with a demonstration of quality. You may have to reduce scope in implementation but do not eliminate the object-oriented nature of the design nor the demonstration of quality.

Note: remember don't put specific I/O in (domain) model classes

Obey Java Documentation Style

Continue to use the specified [documentation standard for Java source code](#). Ensure that the javadoc comments contain

1. class responsibilities
2. class and instance behaviors

P6 Delivery

You shall deliver an electronic copy of the files detailing your designed classes and the draft P7 report to Canvas. As a minimum, the submission should include:

1. Draft P7 Report including at least
 - i. Relationships between classes

- ii. Key interactions
 - iii. UML Diagrams expressing the above (at least one class diagram, one state diagram, and two interaction diagrams are minimum requirement)
 - iv. Statement of design problem
 - Goals
 - Constraints
 - Standards
 - v. Design process
 - vi. Design alternatives thus far
2. Data 'maintained' by the class (will end up in code documentation)
 3. Public methods to implement functionality (will end up as code)
 4. One or more lines of text describing the data and methods. (will end up as JavaDoc comments)

Sections in the report that do not apply to the design phase (such as debugging) should be labeled TBD.

P6 is **strictly** due at the start of class. After P6 is discussed in class no further submissions will be accepted.

Word and LaTeX templates for the report are available.

P7 Report

1. Project definition based on specifications, constraints, goals, and applicable standards
2. Is this a good problem for object oriented solution? Why or why not?
3. Alternatives considered in designing the project
4. Alternatives selected and why
5. Final object approach
 - i. Relationships between classes
 - ii. Key interactions
 - iii. UML Diagrams expressing the above (at least one class diagram, one state diagram, and two interaction diagrams are minimum requirement)
6. Process - the approach you chose to follow in developing your solution (beginning with receipt of assignment). You are trying to show you know how to do software design and development.
7. Discovery and use of online information - discuss at least one instance where you had to search, understand, and use information from an online source that was not furnished in the course infrastructure. Be sure to relate how you performed the search, obtained an understanding, as well has how the information was used.

8. Debug - discuss one of the problems you had in implementation and the steps you took to debug the program
9. Results - how you tested your model and how well it worked. Relate to item 1.
10. Include actual data (listings of runs) to show your project's execution.
11. How would you do things different next design project?

P7 is expected to be of the quality that you would use the document as an example to a potential employer of the type of work that you can do.

Word and LaTeX templates for the report are available.

The makers of [LucidChart](#), a web-based tool for drawing things including UML diagrams, in an effort to support education and students have made the premium version of their product available to my classes. You are not required to use this tool but a invitation to use it is being e-mailed to you (by me but from their e-mail address.)

Bonus (for P7, 20 points)

Deliver JUnit tests for all modeling classes in addition to fulfilling other requirements.

Bonus (for P7, up to 30 points)

Add additional richness to the simulation such as waiting for the water to heat, ensuring the door gets closed, etc. Be sure to note these additions in your report.

P7 Delivery

You shall produce source code that complies with the documentation standards. Your program **MUST** show your name and BlazerID near the top of source code files and display out your name and BlazerID at the start of the test run. Produce a `blazerid-p7.zip` file containing a directory `blazerid-p7` which contains all files (at least the report file, javadoc files, .java and .class files) and submit it using the assignment tool of *Canvas*.

Recall that there are COURSE PERFORMANCE REQUIREMENTS RELATED TO THIS ASSIGNMENT.