Results

Did the application of the design patterns help or hinder your design and implementation? Please explain how.

The application of the design patterns definitely helped my design and implementation. Especially the Composite pattern provided a neat way to model Permissions and Roles. Implementing the Singleton Pattern was straightforward. I believe the most challenging and interesting part of this assignment was implementing the Visitor pattern, especially for the AuthenticationVisitor. But it provided an interesting way to traverse objects.

How could the design have been better, clearer, or made the implementation easier?

I believe the design would have been clearer if the requirements document included more details about the resource roles. I spent a lot of time trying to understand what a resource role represents. Also, some explanation regarding the default root user account could be included in the requirements document. I was not aware of this user account until I saw the script for this assignment.

Any implementation changes that you made to your design and how they continue to support the requirements

I chose to hash both passwords and biometric prints (voice prints and face prints) because I think biometric prints are also considered sensitive information. Hashing voice prints and face prints still support the requirements because when the Authentication Service receives a biometric print it hashes the print before comparing it to the user's biometric prints.

Is the design process getting easier?

The design process is getting easier however it is not always easy to visualize the structure without coding. For example, it was difficult to design the Visitor Pattern in this assignment. That's why I first coded the Visitor pattern using a small example in order to understand the structure. Then it became more clear and easier to create the design for the assignment.

Did the design review help improve your design?

The design review had minimal impact on my design. Fatma did not have any comments on my design. Haley provided me the following 3 comments.

1. She told me how to turn off the sequence diagram numbers in Astah. This was helpful.
2. She also suggested that the Credential and AuthToken classes may also need to extend the Visitable interface. However, the reason I did not include those classes in the Visitor Pattern for printing out the inventory is because the User already has Credentials and AuthTokens. Hence, when I print details about a user, its Credentials and AuthTokens are also printed. Therefore, I did not see a need to include the Credential and AuthToken classes in the Visitor Pattern.
3. Finally, she suggested that I should consider providing an interface for the AuthenticationService. I believe using an interface for the AuthenticationService would have resulted in a better and more flexible design. However, this would be a "nice to have" option and since my design already meets the requirements, I did not want to change my design.

Your comments for your review partners

My comments can be found in the following files which are located in the zip file:

- Haley_Assignment_4_Design_Burak_Feedback.pdf
- Fatma_ClassDiagram_Burak_Feedback.pdf

Note: I only received a class diagram from Fatma.

Comments from peer design review and optionally the functional review

From Haley Huang

Comments on my Class Diagram

Credential and AuthToken may need to also extend Visitable since they are also considered entities in the Authentication System that need to be printed out by the InventoryVisitor.

Consider providing an Interface for the AuthenticationService that provides a list of all the public methods and make some of these methods (like generateAuthToken) private.

Comments on my Sequence Diagram

There is a way to turn off the numbers (1.2.1.4.1.2.1) in Asta. It may help make the diagram more aesthetically pleasing since the nesting is pretty deep. https://astahblog.com/2015/10/28/hide-sequence-message-number/

From Fatma Ekim

Burak, nothing to add to yours. Well done:)

How to run the scripts

You may run the scripts following these steps:
1. Unzip the file into a directory.
2. cd into that directory (that directory should include the "com" folder)
3. compile the program with the following command:
javac com/cscie97/store/*.java com/cscie97/ledger/*.java com/cscie97/controller/*.java com/cscie97/*.java com/cscie97/test/*.java com/cscie97/authentication/*.java
4. Run the scripts with the following commands
java -cp . com.cscie97.test.TestDriver test_1.script
java -cp . com.cscie97.test.TestDriver test_2.script