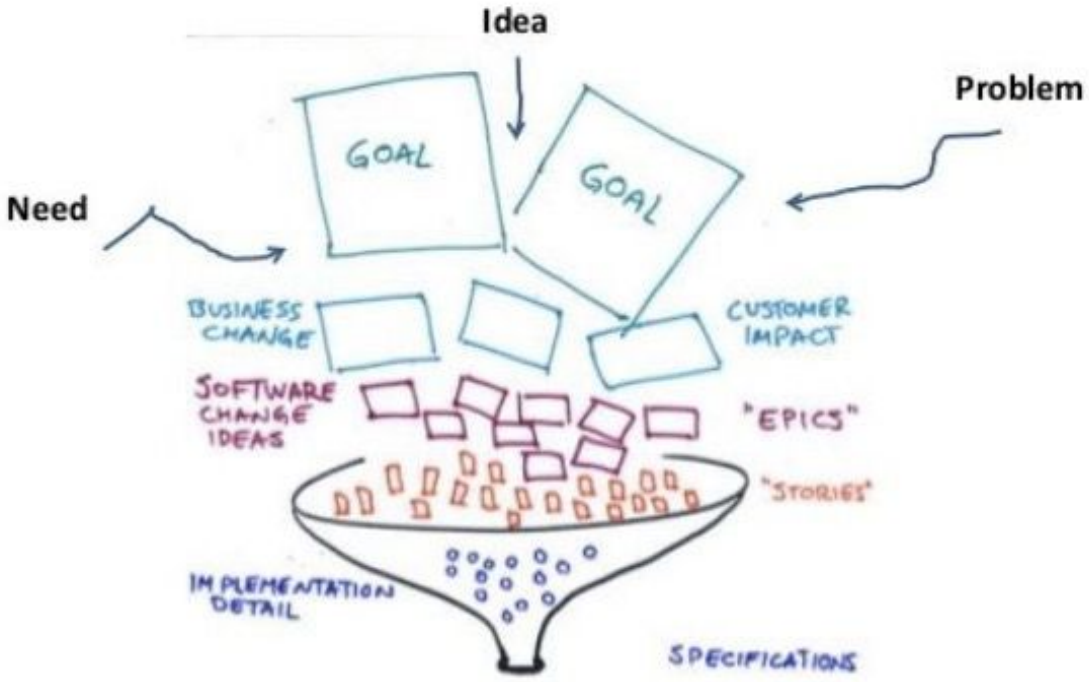
ECE651 Software Engineering

User Story & System Architecture



Change History

Date	Modification
February 23rd	Created Task Card
February 23rd	Created MVC Graph
February 23rd	Modified the Use Case Diagram
February 23rd	Deleted the API Part

User Story

Amy's New Semester

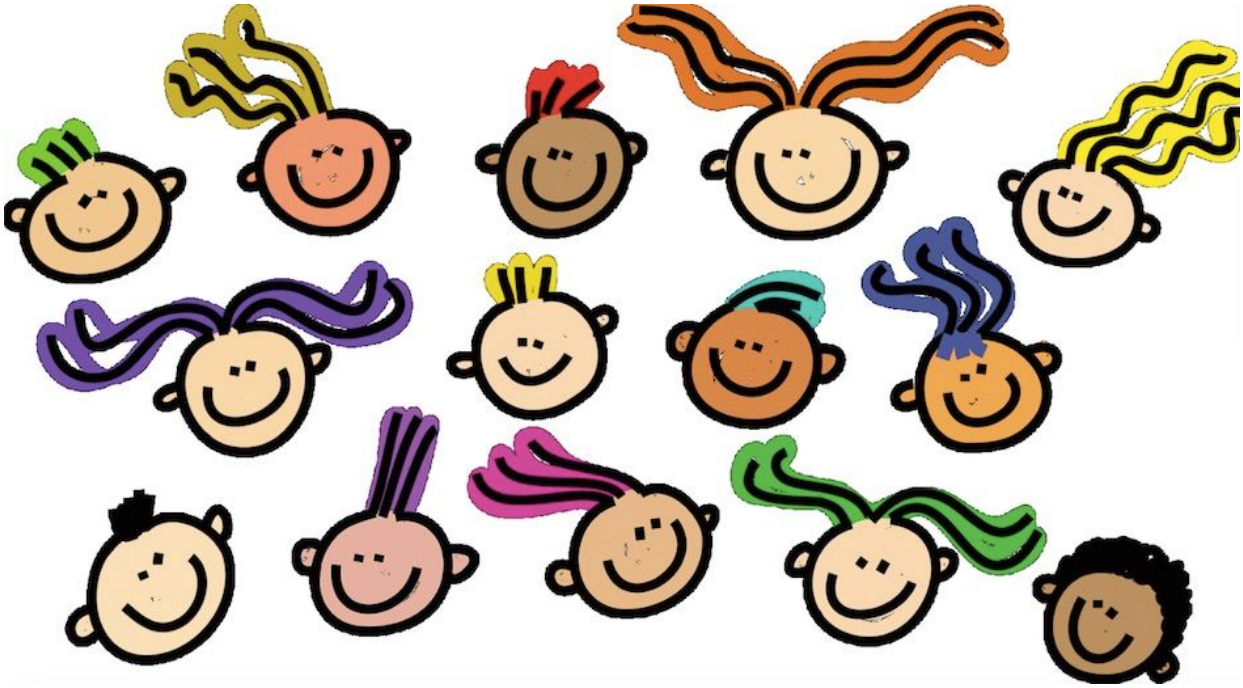
The new semester is coming! A lot of new students join Duke community this year. And Amy is one of them. She will arrive in Durham this month, so she starts looking furniture today. IKEA is a really good place to find furniture, she thought. But then she found the shipment fee is very expensive, and she can not drive to buy furniture because she does not have a driving license. Then she thought "I'm a prime member, so I can buy those stuff on Amazon without shipment fee". So, she quickly checks on Amazon, however; she found several items including bed cannot be shipped in this month. "Also, it's inconvenient for me to move all furniture into my room the first day I arrive Durham. I might need someone's help" Amy thought. She's now confused and she emailed to the advisor to ask how incoming students buy furniture and where can find some cheap furniture. Soon, her advisor sent her a link to a website – Dukiture and told her this is an application shared within Duke community, so that feel free to buy furniture on it.

Time to Graduate

Several days ago, a lot of students just graduated this year and would relocate to work in other cities, therefore; they planned to sell their furniture and books to save some money and provide convenience to incoming students. Alice, Mike and their other friends used a famous website on campus -- Dukiture to upload some pictures of their furniture, provided information after the pictures, choose a price and delivery method and also leave their contact information. They believe that their furniture will be sold quickly at this time because of Dukiture.

Dukiture Helps a Lot

Back to Amy, she created a new account using her NetId. There are a lot of fancy furniture sorted in different kind of lists on Dukiture. Amy is excited and she clicked on some of her favorite furniture to get the full information about the furniture and deliver method. Then she chose some furniture which can be delivered by the seller so that she does not need to move the furniture in her room by herself. Using the sellers' contact information provided by the website, Amy contacts the sellers to choose the date to make transactions. Finally, when she arrived her house, she got really nice and cheap furniture.



Task card

Front end:

1. UI design

When the user enter our website, they will first see the login page. We show them a clear and beautiful UI on this page. They can use the provided form to register or login. When they login to our website they will see a lot of furniture pictures posted by sellers. And there is a navigation bar to help the user to navigate our website. User can also use the search list on our web to search their prefered furniture.

2. Register Login Logout Component

When users want to register an account or log in, they need to enter their username and password. We have a form for users to enter username and password. The navbar also has button for users to access the register and login form.

3. Furniture Selling Component

When a user wants to sell his/her furniture on our website, he/she can use this component to post the furniture information to all the users who login to the website. The seller should be able to post picture, post their email, contact information. The seller should be also able to delete a furniture information when he/she has sold the furniture.

4. Furniture Buying Component

When a user wants to buy and view the detailed information of the furniture. They should use this component. This component should be presented to users on the main page of our website, so that it is easy for users to find furniture they want to buy. The users should be able to use this component to view all possible furniture, search for some furniture and view the public information of the furniture.

5. Searching Component

This should be easy to be found by buyers on the main page of our website. This component enables buyers to search the furniture using partial name of the furniture they may interest in. When buyers enter should keywords, the corresponding furniture whose name contain the keywords should appear on the main page.

Back end:

6. Develop RESTful Routes

Build routes to parse HTTP request and send Json information to the front-end web to respond user request.

7. Database Schema Design

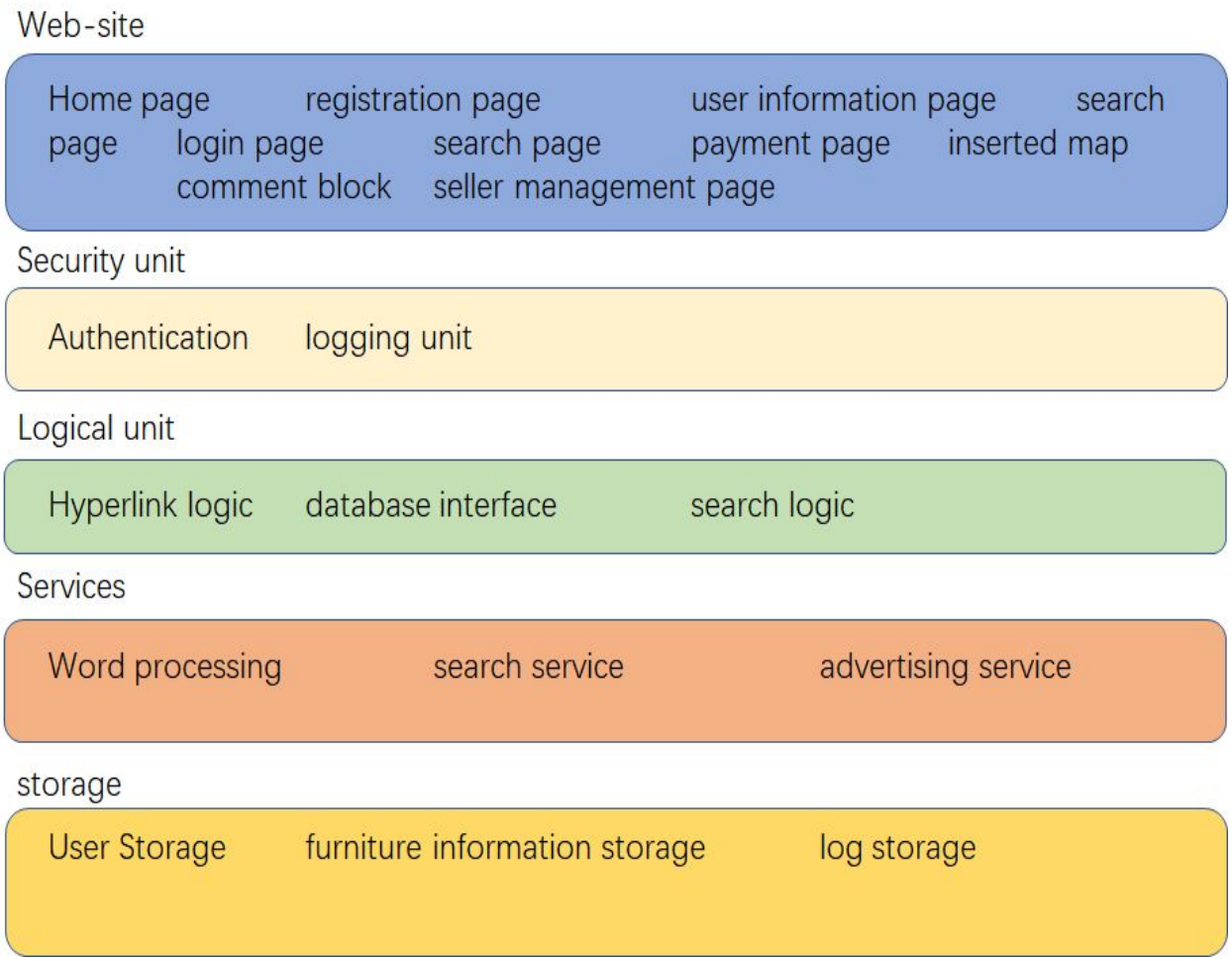
We need to use database to store user information and furniture information permanently. Specifically, there should be user models that contain username, password, contact information and furniture model. The furniture model has furniture information and its associated user.

8. Connection Between Server and App

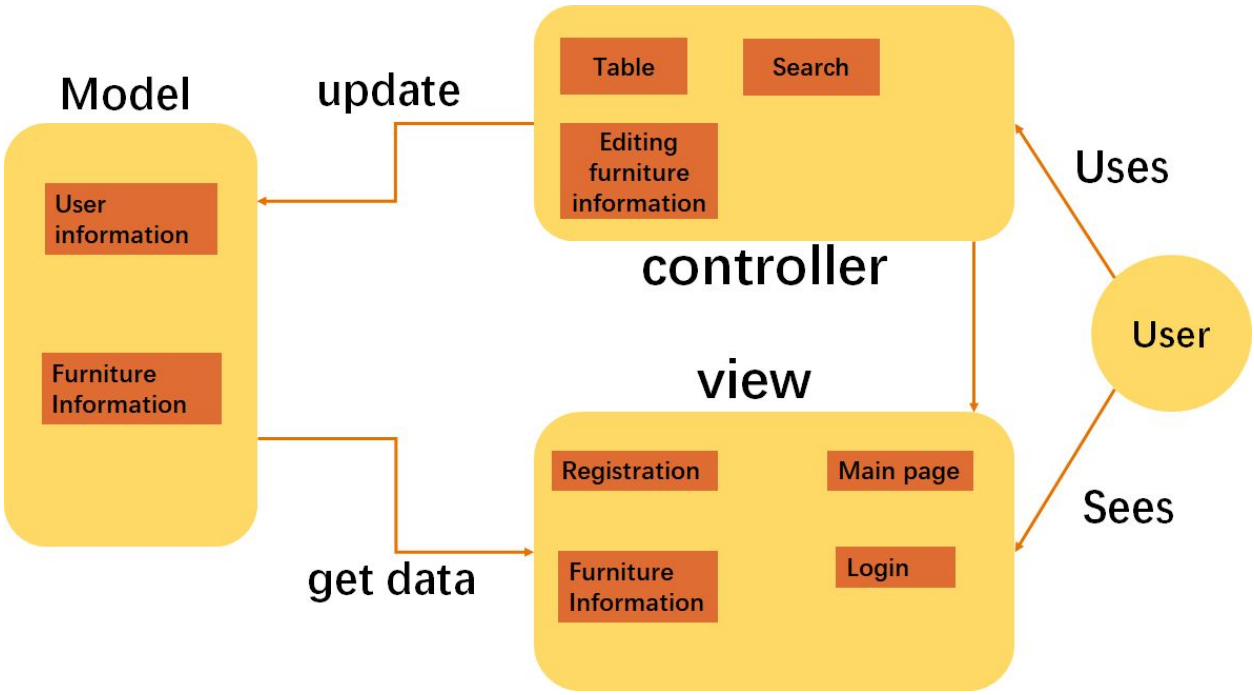
After building the server and database, we need to connect the backend and the front-end website. When the front-end website send request to the back-end server and database. The server is supposed to parse the request. Based on the request to create objects, update objects or delete objects in the database, and respond the front-end request.

System Architecture

Our web application dukiture will mainly contain two parts: front end and back end. We will follow the classic Model - View - Control model to build our application. On the View layer, we plan to use Twitter Bootstrap as CSS stylesheet. On model and control layer, we plan to use Spring Boot as our web framework.



Architecture of Dukiture

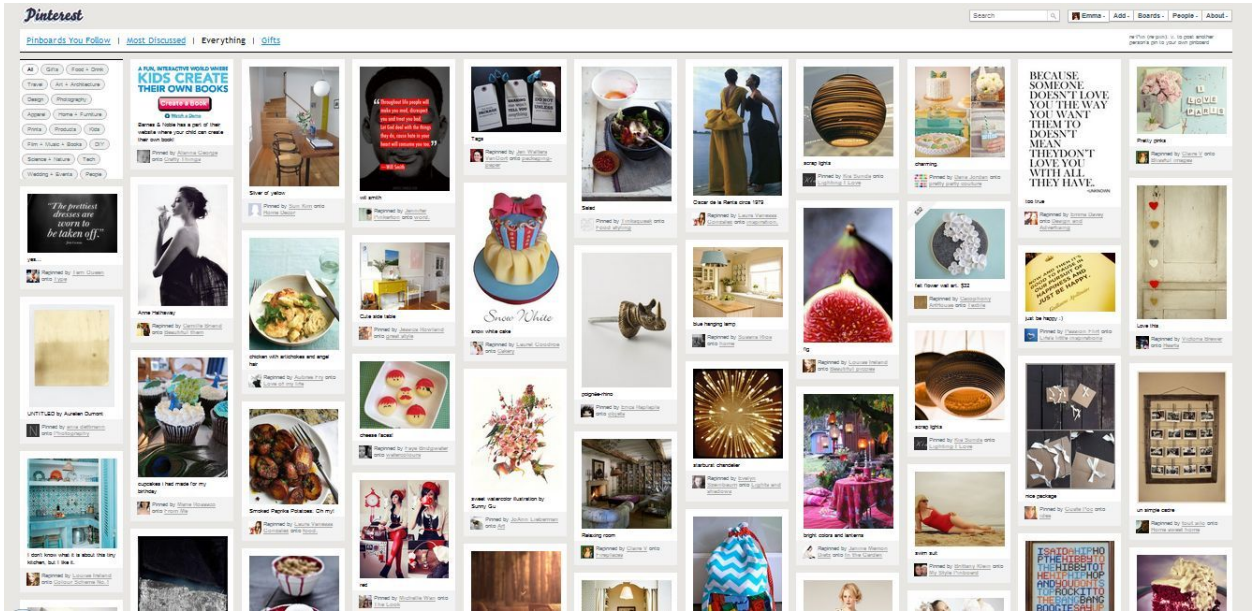


MVC Diagram

View

Buyer View

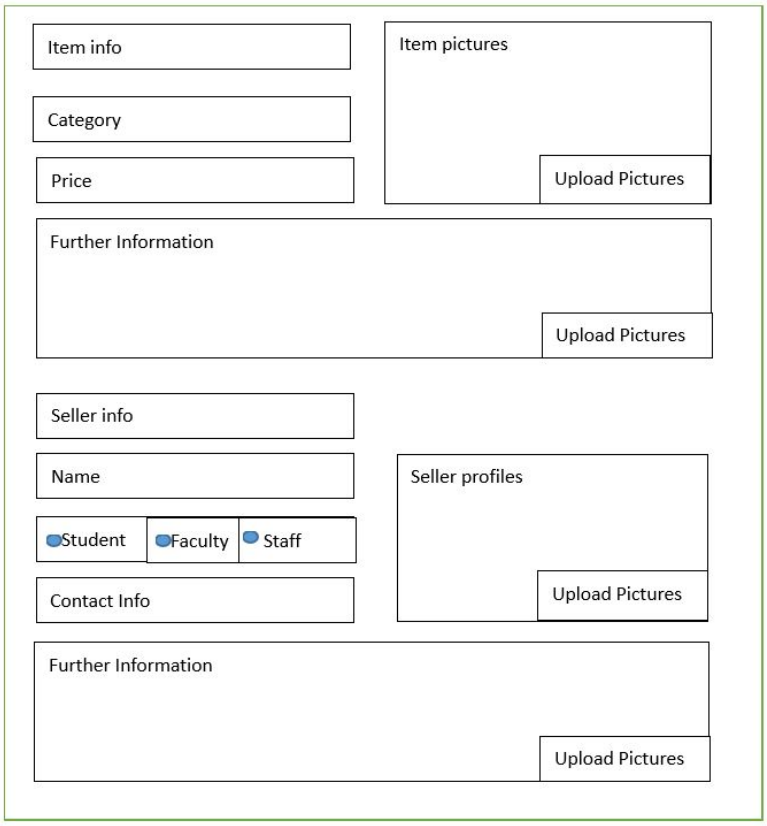
On the buyer view, we want to present a list of furnitures that are for sale. The information could be presented in a similar fashion as Pinterest.



Also, we wish to provide users capability to search.

Seller View

On the seller view, we want to present a view that can let seller post their information like item name, item price and seller information so that buyer can contact seller. We can provide a form for sellers to fill in.



Seller application form

Model

Mainly we need to model two classes. Items to sell and users. Item should include item name, item price, and a picture to item.

Controller

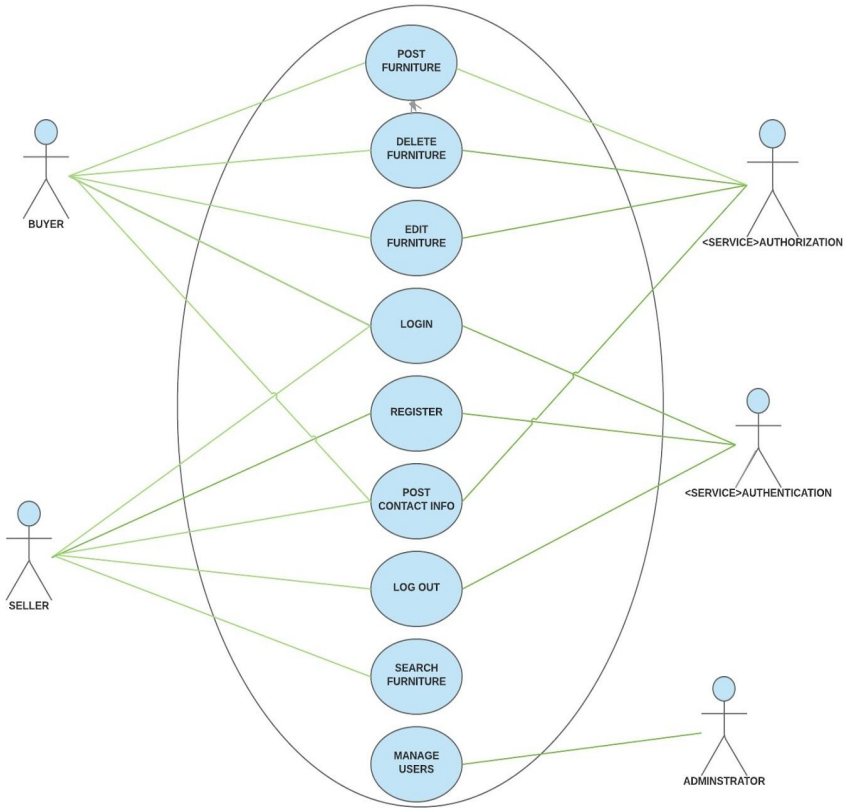
Controller is the part of business logic. Our business logic here is to give the user opportunity to post a thread about what they sell and when they have sold the furnitures. They can delete the thread they post.

Technology Stack

For front end, we plan to use Twitter Bootstrap as CSS template and JQuery as JavaScript library. For web framework, we are working on Spring Boot. For database, we are using MySQL.

Use Case Diagram

This following diagram represents the relationship between buyers, sellers and system in different situation.



Use Case Diagram