

Problem

The BreazeHome web application gives users the ability to rent, buy and sell property in a convenient and timely manner. However, the current implementation does not allow for clients to be able to communicate with real estate agents in real time and in a one-to-one fashion in order to discuss with them about a property they would like to buy, sell or rent.

Solution

- Have a centralized location such as the agent's profile page to allow the client to communicate with the real estate agent in real time.
- Have each conversation between client and agent be restricted to users that have a matching id.
- Display a typing message of who is currently typing to improve user experience.

Current System

- There was no one-to-one personal chat conversations. All messages were sent to everyone in the system.
- There wasn't a centralized location where a client would be able to contact an agent and start a private conversation.
- There was no way to know who was typing in any given moment.

Screenshots

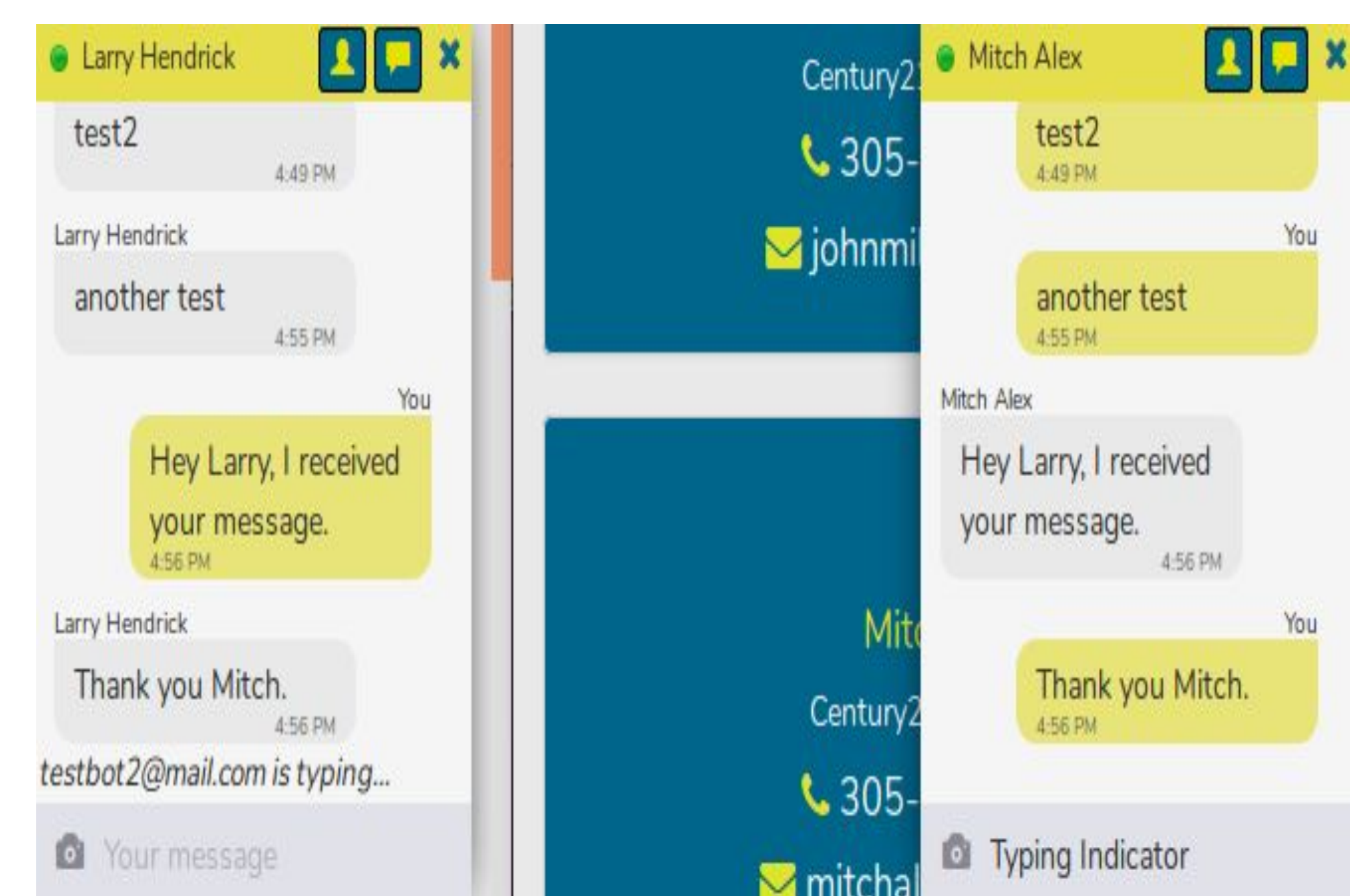
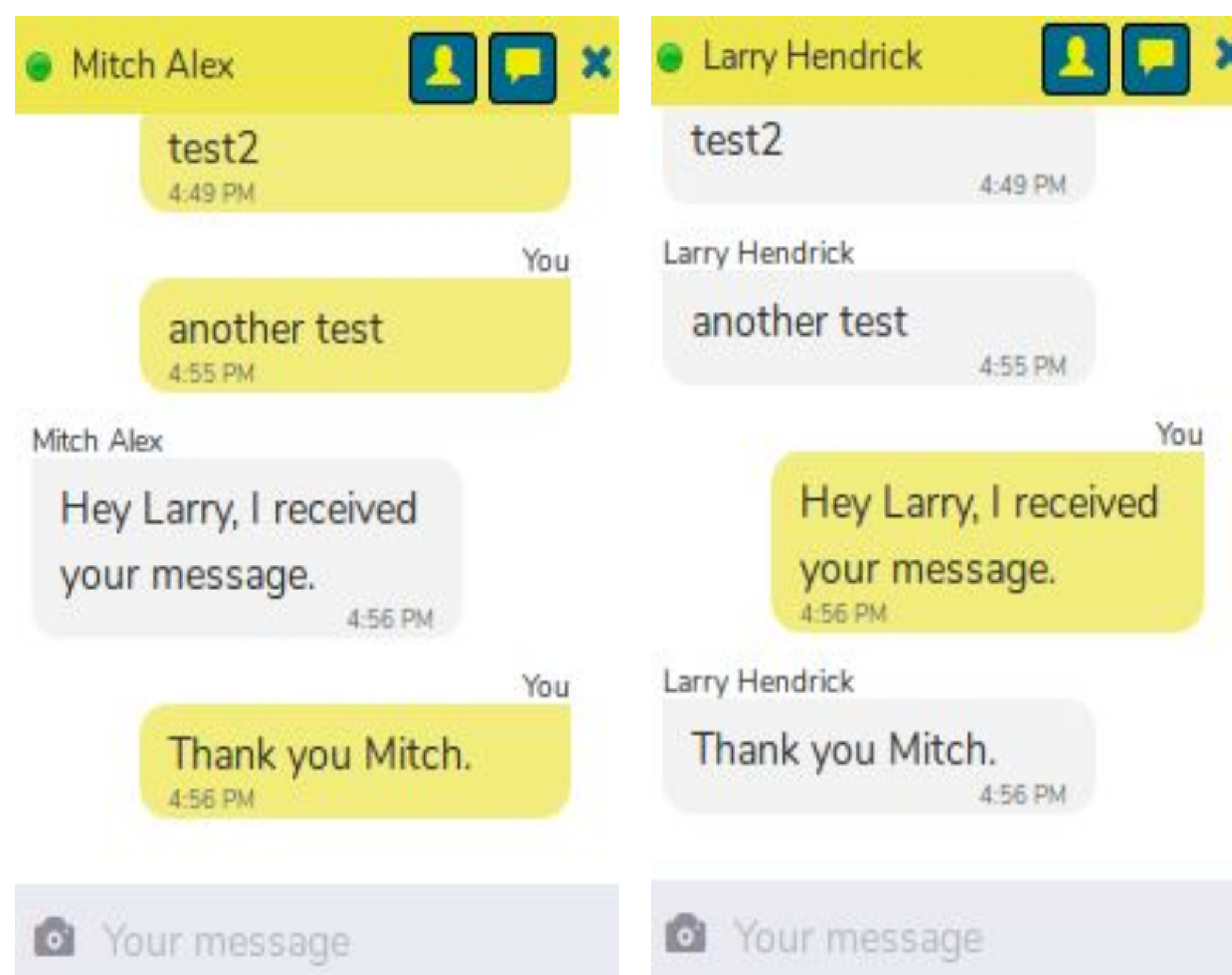
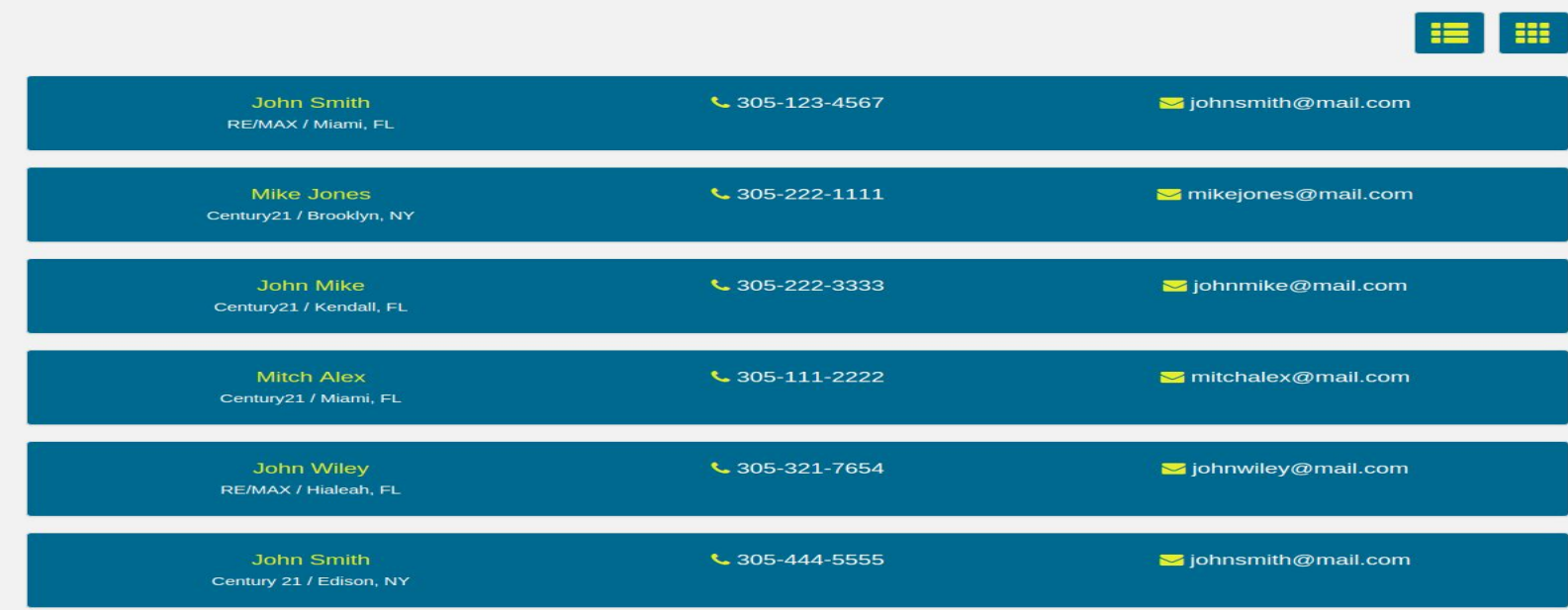


Figure 1 (Top): Agent List & Grid View

Figure 2 (Top): Private Chat

Figure 3 (Top): Typing Indicator

System Design & Implementation

Presentation Tier	Delivery Tier	Data Aggregation Tier	Fundamental Data Tier
BreazeHome Desktop Website	Chat API	BreazeHome CRUD interface Services	BreazeHome Database

- **Front-End:** AngularJS, NodeJS, HTML, Bootstrap, SASS
- **Back-End:** Django REST, Python, Phoenix, Elixir
- **Database:** PostgreSQL
- **Operating System:** Ubuntu Linux
- **Version Control:** Git

Verification

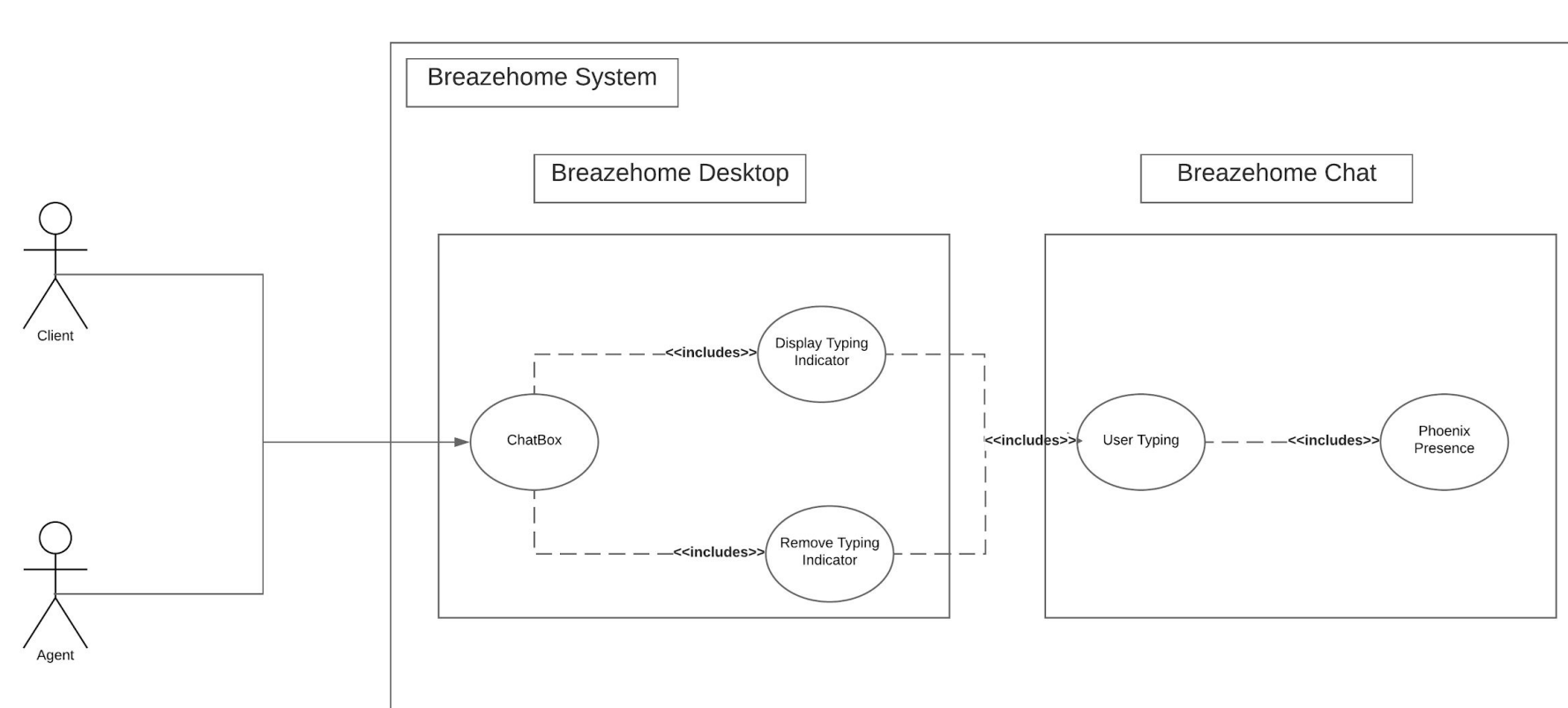
- Selenium was used to verify all requirements across multiple browsers.
- ExUnit was used to unit test methods in the phoenix server to verify their functionality.
- Sample Unit Test:
 - Test case ID: Load All Messages In Private Chat
 - Description/Summary of Test: Load all messages that belongs to the private chat and no other messages.
 - Pre-condition: On agent profile page and has click on the chat with me now button.
 - Expected Results: After client has clicked on the chat with me now button, he should only see messages that belong to that private chat.
 - Actual Result: The client only see messages that belong to that private chat.
 - Status (Fail/Pass): Pass

Requirements

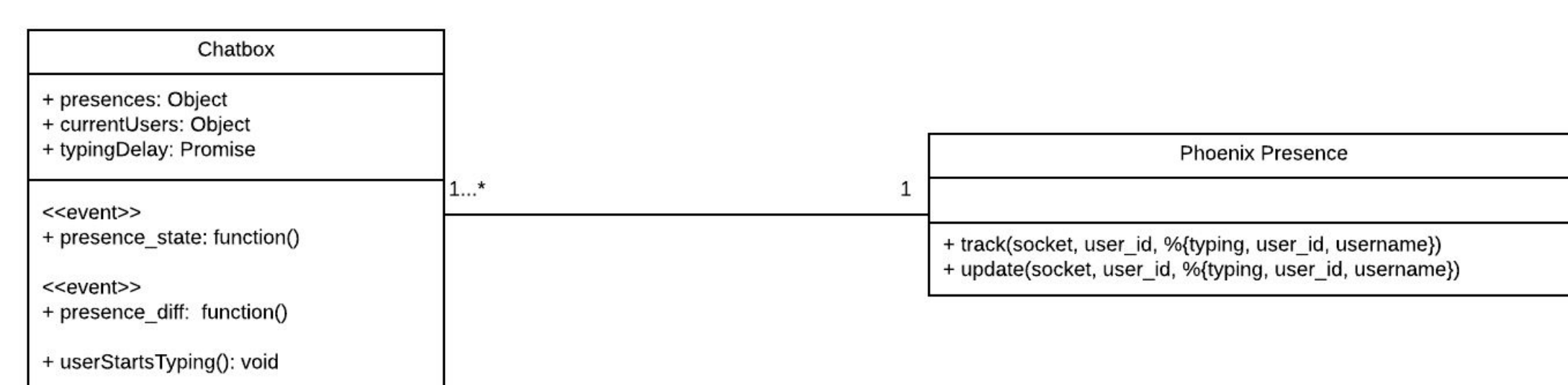
- Clients and agents must be able to initiate a chat with only themselves present and no else.
- Chat should only load messages that belong to the room the client and agent are in.
- Chat should only sent messages that belong to the room the client and agent are in.
- Only clients and agents whose id is a substring of the room name are allowed to join the chat. I.E a client with id 3 can join chat private:3:23.
- Clients should be able to leave and chat with another agent if the client wishes to.

Object Design

Typing Indicator Use Case Diagram



Typing Indicator Class Diagram



Summary

- Clients are now able to toggle between a list view and grid view when searching for agents to help them organize the information present to them.
- Clients are able to have a private conversation with an agent.
- Clients/Agents are able to see whether or not a user is preparing a reply for them.

Acknowledgement

The material presented in this poster is based upon the work supported by Dr. Masoud Sadjadi. I am thankful to the help that I received from my group members, Tariq Juman and Mark Cameron.