SW Engineering CSC648/848 Section 02 Fall 2017

Essos

Real Estate Web Application

Milestone 1

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Team 06

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Revisions

October 3, 2017	Initial Draft
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Executive Summary

Mission
At Essos, we believe finding Real Estate for rent or sale should be seamless and easy. And we strive to provide our users the most convenient and easy-to-navigate interface, making their experience of finding or selling real estate as easy as pie.

Background
Real Estate has been a growing market ever since anyone can remember. But since the beginning of globalization, the flow of people and capital around the world has led to massive surge in prices all over the world. San Francisco is a prime example of one such global hub that has seen ridiculous increase in the cost of housing. It is astonishing the prices are shooting for record highs even though people haven't completely recovered from a recent global recession due to the real estate market. At the same time, there hasn't been a significant increase in the number of services that people can find online. Among the ones that already exist, there haven't been enough that are easy to use for the average Joe. Our team of developers (refer to Team section) understands how hard it can be to find housing, partly because of living as students in an expensive housing market like San Francisco. This is where Essos comes in.

What is Essos?
Essos is a Web-based real estate listing platform that allows users to post and browse through listings in any town, city, state or zip code within the United States. Unlike other platforms on the market, Essos is designed to make the browsing experience significantly easier for users so that anybody – a young working professional, a retired construction worker or a foreign student new to the country; can make good use of our platform and find housing. Essos is also a great platform for real estate agents. Users seeking professional help, to maximize their chances of a good deal, can get in touch with registered Agents and fix an arrangement. Postings will include photos and map-integration, making it convenient for interested parties to find further information about the locality.

With more and more people moving to new places and shortage of platforms to cope with the demand, we believe Essos will not only gain a huge traction of users but also triumph against the competition due to its wide array of features and superior user-interface that anybody can use. If you believe that you can be a part of Essos's success story, feel free to contact our management team or drop a message through the "Contact us" section on the website.

Use Cases

Unregistered Guest
John, a prospective homebuyer, is looking for houses that are on the market in the city. Upon searching for real estate sites for information, he stumbles upon *Essos*. From the home page, John can view featured real estate **listings** that have been posted by real estate **Agents** on the site. He can enter a city name or zipcode in a **search** box, or select **browse** to **filter listings** by their listing properties. Upon selecting an interesting listing, John can see **pictures** of the property and its general location on a Google Map. He enters some numbers into the provided **financial tools** on the page to get a rough estimate of his expenses. To receive more information about the property, he selects "Contact **Agent**" under a set of pre-filled form fields and is prompted to log in or register to continue his inquiry.

Registered User
Lee, a new US immigrant, is seeking to buy a property through *Essos* **listings**. After browsing and searching through results, he's interested in several of the **listings** that popped up and decides to contact an **Agent** through Essos's **messaging feature** that is only available for **registered users**. After logging in, he simply clicks on "Contact **Agent**" from the **listing** page. There are a few properties that he is very interested in so he decides to add all of those properties to his **bookmarks** for convenience to review his interests at a later time.

Agent
Jessica, a real estate **Agent** that is registered with an **Agent** account on *Esso*, currently has many properties listed on the Essos's website. She is able to **post** details of new properties available, or **edit** the current **listing** with extra information or update it with any changes regarding the property. She receives a number of messages daily from **registered users** asking for extra details about the property through the **messaging** feature. She manages all her listings and messages through the **Agent dashboard** provided with her **Agent** account.

Admin
Jason, one of the **admins** that manage the *Essos* website, is tasked with watching over all the **listings** that are posted by **Agent** accounts. He has to make sure that all of the **listings** are adhering to the *Esso* Terms of Use, and remove any inappropriate content posted by the **Agents**. Furthermore, accounts with recurring violations will be considered for deletion to prevent future misconduct. Jason also have full access to *Essos*'s database by logging into the website's MySQL workbench, and shall delete **listings** or accounts as necessary.

Data Definitions

Unregistered Guest: Does not require registration or login. These users can browse listings using search and listing filters. They may access all listing information and financial tools, but are unable to save listings to bookmarks or contact an agent.

Registered User: Requires registration and login. These users have access to all search and financial tool features. They may save listings into their bookmarks, and can contact the Agent in-site from a listing. Registration requires the following information:

- Email
- Name (First and Last -optional)
- Password

Agent: Requires registration and login. These users have access to all search and financial tool features. They are granted access to an Agent dashboard in which they may post any number of real estate listings. Registration requires the following information:

- Name (First and Last)
- Email
- Contact number
- Password

Admin: Requires authentication. Admins have access to full site databases via MySQL Workbench. They shall delete accounts and/or listings as per Essos's Terms of Use.

Listing: Real estate listing posted by an Agent account. These listings generate pages for properties that are up for sale through Esso. Listings contain the following information:

- Title
- Address (City, State, Zipcode)
- sqft
- Number of bedrooms and bathrooms
- Pictures (minimum of 2. 1 inside, 1 outside)max 10
- Price ($)
- Type (house, apartment, etc.)
- Description

Financial Tools: Financial widgets that offer different cost estimations for prospective buyers.

Bookmarks: Registered Users may save viewed listings for later viewing.

High-Level Functional Requirements

Unregistered Guests

1. Application shall display new, featured, and pending sale listings.
2. Application shall display listing locations on Google Maps.
3. Application shall allow for listing search by city name or zip code.
4. Application shall allow search result filtering by city, zip code, number of bedrooms, number of bathrooms, and price.
5. Application shall offer a set of financial tools that guests may interact with to receive cost estimates, etc.
6. Application shall allow guests to register for a User or Agent account.

Registered Users

7. Users shall register with their full name, email, and desired password.
8. Users shall contact Agents from the listing page with a pre-filled description.
9. Agent responses shall be viewable by User accounts.
10. Users shall have the option to save viewed listings into a collection of bookmarks.

Agents

11. Real estate listings shall be posted by Agent accounts.
12. Listings shall contain required information: address, square footage, number of bedrooms, number of bathrooms, asking price, property type, a minimum of 2 images, and a general description.
13. Listing inquiries shall be viewable by Agent accounts.
14. Agents shall have the option to edit their listings once posted.

Admins

15. Admins shall view all database entities via Workbench.
16. Admins shall delete listings and/or accounts, if necessary.

High-Level Non Functional Requirements

1. Application shall be developed and deployed using class provided deployment stack
2. Application shall be developed using pre-approved set of SW development and collaborative tools provided in the class. Any other tools or frameworks must be explicitly approved by Anthony Souza on a case by case basis.
3. Application shall be hosted and deployed on Amazon Web Services as specified in the class
4. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of all major browsers: Mozilla, Safari, Chrome.
5. Application shall have responsive UI code so it can be adequately rendered on mobile devices but no mobile native app is to be developed
6. Data shall be stored in the MySQL database on the class server in the team's account
7. Application shall provide real-estate images and optionally video
8. Maps showing real-estate location shall be required
9. Application shall be deployed from the team's account on AWS
10. No more than 50 concurrent users shall be accessing the application at any time
11. Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.
12. The language used shall be English.
13. Application shall be very easy to use and intuitive. No prior training shall be required to use the website.
14. Google analytics shall be added
15. Messaging between users shall be done only by class approved methods and not via e-mail clients in order to avoid issues of security with e-mail services.
16. Pay functionality (how to pay for goods and services) shall not be implemented.
17. Site security: basic best practices shall be applied (as covered in the class)
18. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
19. The website shall prominently display the following text on all pages "SFSU Software Engineering Project, Fall 2017. For Demonstration Only". (Important so as to not confuse this with a real application).

Competitive Analysis

Features	Zillow	Trulia	Century 21	Our Product
Text search	+	+	+	+
Boolean Search	-	+	-	+
Browse	++	+	+	++
Search Filtering	+	+	+	+
Finance tools	++	+	+	++
Saved Homes	+	+	+	+

+ feature exists
++ superior feature
- feature does not exist

Our product seeks to provide a markedly better user experience compared to competitors currently on the market. Competitors provide a variety of features to varying degrees. Our team will offer the user all of these features while also matching or exceeding the competition's depth of said features. Providing more depth to potential clients will increase usability and thus increase in agent contacts through ease of use.

System Architecture

Development Stack

- Google Cloud Platform Linux/Ubuntu 16.04.3 Instance
- NGINX Webserver (*v. 1.13.5*)
- MySQL (*v. 5.7.19*)
- Node.js (*v. 8.6.0*)

Frameworks & APIs

- Express - Minimal and flexible Node.js framework for serving web content
- Jade - Templating engine for generating dynamic HTML pages
- Bootstrap - Front-end web development framework for responsive interfaces
- Google Maps - Google API that brings powerful and up to date location and map data with Google Maps
- Google Analytics - Google API that offers accurate website tracking and statistics

Browser Support

The latest versions of the most popular web browsers are supported by this development stack. These include the following:

- Google Chrome *(vers. 61* or higher*)*
- Mozilla Firefox (*vers. 56* or higher)
- Safari (*vers. 10* or higher)
- Internet Explorer (*vers. 11* or higher)
- Microsoft Edge (*vers. 15* or higher)
- Opera (*vers. 47* or higher)

Version Control: Git *(vers. 2.7.4)* via GitHub

Development Team

Alberto Mancini, *Team Lead*
Julian Morrisette, *Back-End Lead*
Mayank Sachdeva, *Front-End Lead*
Jirat Parkeenvincha, *Front-End Dev*
Felix Chin, *Back-End Dev*
Shenliang Wang, *Back-End Dev*

Our Story

Essos was started by a team of six undergraduate developers from San Francisco State University and is led by Dragutin Petkovic, former Chair of Computer Science at San Francisco State University, as Chief Executive Officer (CEO) and Anthony Souza, graduate and now a lecturer at the same time, as Chief Technical Officer (CTO). The team includes students from very diverse backgrounds and unique specialties in their respective fields. Sharing the common experiences of struggling in the expensive San Francisco housing market, our team understands how difficult it can be to find good housing in today's fast paced world. Thus, with experience and extensive research, our developers have created Essos which shall be your newest friend to finding and selling real estate.

The team is led by Alberto Mancini, who has several years of experience managing small and mid-sized teams. The back-end team includes Julian Morrisette, Shenliang Wang, and Felix Chin, who are skilled with handling databases and are motivated to create user-friendly APIs. The front-end development is managed by Mayank Sachdeva and Jirat Parkeennvincha, both having extensive experience in front-end design and development with numerous former projects under their name.

Checklist

- Team decided on basic means of communications - **DONE**
- Team found a time slot to meet outside of class - **DONE**
- Front and back end team leads chosen - **DONE**
- Github master chosen - **DONE**
- Team ready and able to use the chosen back and front end frameworks - **ON TRACK**
- Skills of each team member defined and known to all - **DONE**
- Team lead ensured that all team members read and understand the final M1 - **DONE**