SW Engineering CSC648/848 Summer 2020

House-a-Gator

Team 02

Milestone 1

06/24/2020

Team members:

Team Lead	Raviteja Guttula (rguttula@mail.sfsu.edu)
Front End Lead	Swetha Govindu
Front End Developer	Henry Meier
Front End Developer	Kevin Zhou
Front End Developer	Troy Turner
Back End Lead	Ashwini Uthirakumar
Back End Developer & Github Master	Fiona Senchyna

History:

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1. Executive Summary:

In the recent decades, San Francisco has become the home of some of the largest technology companies in the world. Unfortunately along with that, it has also become one of the most expensive places to live in the world. The high cost of living can be discouraging for many San Francisco State University students. Many students are leaving their family homes for the first time, taking on student debt, and trying to focus diligently on their academic careers. It is also difficult for SFSU faculty, who might want to buy a house near their workplace but simply don't think that they can afford it.

Our team wants to create an apartment and housing listing website called House-a-Gator that will be specifically focussed on San Francisco State University students and faculty. Guest users can only browse the listings and registered users can post listings but only those registered with @mail.sfsu.edu or @sfsu.edu email can buy/rent. Our website shall be personalized to registered users; allowing them to create a short profile, save their favorite listings, and provide them with real estate recommendations. It will allow the user to see the location of a property relative to the university campus. The website will also include the ability to see nearby restaurants, laundromats, transit stations, grocery stores, and other essential locations.

Our design shall be focussed around the SFSU community. Our layout shall be very user friendly and naturally invoke campus life. User profiles will allow for students and faculty to be able to share about themselves and what they are looking for with a roommate, thus building a sense of community within the website.

We are a group of SFSU students, both undergraduate and graduate, that come from very diverse backgrounds and understand the difficulty in finding places to live near campus. We all want to make a web application that will benefit and be of interest to our peers. We care very much about making SFSU a more affordable place to study and work for anyone who wants to come here.

2. Personae and main Use Cases:

2.1 Personae:

Persona case 1:

Abraham - Student

About Abraham:

- Newly joined SFSU student
- Comes from a poor family background
- Part time employee at Jamba Juice
- Looking for apartments near SFSU
- Looking to share a room with SFSU students

Goals and Scenario:

- Will be continuing to attend San Francisco State University for the next upcoming school year with the hopes of finding a nearby place to stay that is a short commute time to school and work
- Plans to keep the housing budget relatively low by searching for roommates who are willing to share living space. Is also very open to available listings near SFSU campus location
- A newcomer in the school that is hoping to increase the familiarity of areas within SFSU campus radius through internet related searching

Persona case 2:

Vanessa - SFSU Faculty

About Vanessa:

- Professor at SFSU from past 12 years
- CEO of multiple start-ups at SFSU
- Commutes from Santa Clara to SFSU daily
- Decides to buy a home near SFSU

Goals and Scenario :

- Willing to continue with her long-term goals of buying a house near San Francisco State University in order to reduce her commute time to campus
- Hopes to maintain her position as CEO in order to further help assist her with long term goals of buying a high cost home near San Francisco State University

Persona case 3:

John - Retired Army Officer

About John:

- Retired army officer living with his wife
- Owns apartments near SFSU campus
- Very limited knowledge of technology
- Wants to market his apartments with SFSU students and faculty

Goals and Scenario :

- He wants to know if the tenant has any concerns before he decides to give a tour.
- Decides to continue to market his apartments with SFSU students and faculty because his apartments are close to SFSU campus
- He wants a website that is easy to navigate without much confusion

Persona case 4:

Emma - Admin

About Emma:

- Administrator at Gator
- Find application
- Provides great service
- Has previous experience as an administrator
- Taking courses at community colleges related to cyber security and databases
- Skilled in Cyber security

Goals and Scenario :

- As an administrator, she has the ability to remove unsafe content on websites and make websites free of scams and illegal posts
- She should be able to view, approve or reject items, if the registered user posts

2.2 Use Cases:

2.2.1 Guest User - User without an account who can browse the listings:

Abraham is a new **SFSU student.** He temporarily works **part time at Jamba juice**. He wants to find a place that is close to both school and work. Since Abraham wants to spend a small amount of his budget on housing, he wants to share a room with another SFSU student. Other online platforms are not naturally SFSU specific and therefore it can be hard to know whether they are directed towards SFSU students. So, Abraham **wants to use a rental website that is focussed around the SFSU community** as he is looking to share an apartment with a SFSU roommate and he **does not want to immediately register** in the application unless he finds a valid reason to do so. As a guest user, House-a-Gator allows **him to search, browse different apartments/housing for sale or rent that are shared and sort them based on distance from SFSU campus.** These are posted by registered users and verified by the administrator. Once Abraham is **ready to contact the poster**, House-a-Gator housing requests the **user for registration or login**. Once he logs into the application as an SFSU student, he is ready to contact the poster if required and send a request.

2.2.2 Registered User - Buyer:

Vanessa is a **professor** and a CEO of multiple start-ups at SFSU. She commutes from Santa Clara to SFSU daily. She decides to buy a home near SFSU in order to reduce commute time to her university. Vanessa is a **registered user** of the House-a-Gator application. She is able to **browse or search** the listings that are posted for sale and are also verified by the admin of the website. As a registered user, she can also view the contact details and **message** the landlord if she has any concerns.

2.2.3 Registered User - Landlord:

John is a retired army officer who **owns many apartments** near SFSU. He uses an online application for rental postings. As it is very close to SFSU campus, he wants to market his rentals with SFSU students. He also wants to find a new tenant before the existing tenant lease ends. He decided to register in the House-a-Gator application. He is able to **browse the different listings on the websites without log in** to find out the average rent demanded by the tenants in the area. John is able to fill in the details for his apartment, but when he tries to submit the form he will be redirected to a page to **login or signup.** Once he logs in as a **registered user** and posts the listing, it is forwarded to admin for approval. Once the admin approves the posting, it is available to all the users for viewing.

2.2.4 Admin:

Emma is a registered user and administrator of House-a-Gator application. As an administrator, she examines the posts that are submitted by registered users and she can **approve** or **reject** the pending **rental posts** before they are visible on the website. She can mark the posts as **rejected** if it is illegal or does not meet the requirements.

3. <u>List of main data items and entities:</u>

3.1 <u>Entities:</u>

- **User:** Someone who interacts with the website.
  - **Guest**: Any user with/without an account can browse the listings on the website.
  - **Registered**: User with an account who can post a listing (landlord) or reply to a listing (SFSU student/faculty).
  - **Admin**: User who is registered and has special privileges for approving a listing to be shown on the website.
- **Listing:** Complete details about the apartment/housing posted.

3.2 <u>Data items:</u>

Registration record:
- Email: Email id used to create an account.
- Name: Full name of the registered user.
- Password: Password associated with the email id and is encrypted
- Phone number: Contact detail of the user or landlord
- Terms of service flag (Y/N)

Listing:
- Listing title: Unique title of the apartment/housing/room
- Listing Description: A short description of the apartment/housing/room
- Listing address: Location of the house
- Listing media: Images/Pictures
- Listing date available: Availability of the apartment/housing/room
- Listing home type: Apartment/condo/single family house/townhouse, other
- Listing status ?
  - Pending verification
  - Rejected
  - Verified

- - ■ Occupied
  - Listing views (number of people who visited this listing)
  - Listing category
    - Rental or Buy
  - Listing policies
    - Pet policy: Number and type of pets allowed
    - Smoking policy
  - Listing attributes
    - Square foot
    - Lot size
    - Number of beds and baths
    - Price
    - Parking spots
    - Amenities
    - Number of occupants

4. Initial list of functional requirements:

Dividing the functional requirements into different categories:
- Guest users' point of view
- Registered users' point of view
- Admin point of view

The website shall allow registered users to **buy/sell/rent** apartments/housing and find roommates. For landlords, the website shall allow them to post their listings. The website shall provide a user-friendly interface to the users and landlords to register and post their listings.

4.1. Guest User:

1. Guest users shall be able to **search** based on address, city, zip code, current location

2. Guest users shall be able to **filter** listings based on price, beds & baths, home type, amenities

3. Guest users shall be able to **sort** based on price, newest listing/ date posted, square feet, lot size

4. **Media** of the house posted by the homeowner shall be visible to guest users

5. The location of house on **map** for every listing shall be visible to guest users

6. Floorplan of the house for every listing shall be visible to guest users

7. Guest users shall be able to see the **distance** from the house to the university for every listing

8. Guest users shall be able to see the **nearby** Restaurants, Laundromat, Bart station, Grocery and other essentials for every listing on the website

9. Guest users shall be able to register

4.2. Registered User:

10. Registered users shall experience all the functionalities experienced by the guest users.

11. Registered users shall be able to create a short **profile** about themselves including their contact information.

12. Registered users shall be verified using their @mail.sfsu.edu or @sfsu.edu **email id.**

13. Registered users shall be able to **post new listings**

14. Registered users shall be able to **save** the filter, sort and search options to avoid repetitions.

15. Registered users shall be able to see a **personalized** home page with recommendations.

16. Registered users shall be able to save their **favorite listings** to view later.

17. Contact details of students and faculty looking for a roommate shall only be visible to registered users.

18. Landlords **contact** details shall be visible only to registered users and the admin.

19. Only registered users shall be able to request the landlord for a tour via **in-site messaging.**

20. "Number of views" for every listing shall be visible only to registered users.

21. Registered users shall be able to **update** their password.

22. Registered users shall be able to **reset** forgotten password.

4.3. <u>Admin:</u>

23. Admin shall be required to **approve** the registered landlords listing within 24 hours, before it goes live. Approval shall be marked by a "verified" icon.

24. Admin shall be able to view the list of listings waiting for approval.

25. Admin shall be able to **delete** flagged listings.

26. Admin shall be able to delete flagged users.

27. Admin shall be able to enforce **terms and conditions** for the website.

5. <u>List of non-functional requirements:</u>

1. The Application will be developed, tested, and deployed using the tools and servers that were approved by the Class CTO and as agreed on in M0 (some may be provided in the class, some may be chosen by the student team, but all tools and servers have to be approved by class CTO).

2. The Application will be optimized for standard desktop and laptop browsers e.g. It must also render correctly on the two latest versions of two major browsers.

3. The selected application functions must render well on mobile devices.

4. Data shall be stored in the team's chosen database technology on the team's deployment server.

5. No more than 50 concurrent users should be accessing the application at any given time.

6. The privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.

7. The language used shall be English (no localization needed).

8. The application shall be very easy to use and intuitive.

9. Google analytics shall be used.

10. No email clients shall be allowed. Interested users can only message the seller's via in-site messaging. One round of messaging (from user to seller) is enough for this application.

11. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in the user interface.

12. Site security: basic best practices shall be applied (as covered in the class) for main data items.

13. Media formats shall be standard as used in the market today.

14. Modern software engineering processes and practices shall be used as specified in the class, including collaborative and continuous software development.

15. The website shall prominently display the following exact text on all pages *"SFSU Software Engineering Project CSC 648-848, Summer 2020. For Demonstration Only"* at the top of theWWW page. (Important so as to not confuse this with a real application).

6. Competitive analysis:

Feature	House-a-Gator	Zillow	Apartments	Craigslist

SFSU focused ● Rent/Sell to SFSU students of faculty ● Filter for distance to SFSU campus	++	-	-	-
Verification of listings	+	+	+	+
Map	+	++	++	+
UI Interface	++	++	+	-

+: Feature available   -: Feature not available   ++: Excellent

All the competitors in the market today have the basic search, filter and sort functionality available on their website. House-a-Gator will include all these basic functionalities and will be designed to benefit the interests of students and faculty of SFSU. The listings posted on our website are closer to San Francisco State University and are only available to students and faculty of SFSU. This unique feature would attract users who want to buy/rent nearby the university. Unlike craigslist, our website will have a user-friendly interface and also multiple images and a map associated with every listing.

7. High-level system architecture and technologies used:

- **Server Host:** AWS EC2 t2.micro (1 vCPU, 1GiB RAM)
- **Operating system:** Amazon Linux (4.14.181-140.257.amzn2.x86_64)
- **Database:** Mysql (8.0.20-1debian10)
- **Web server:** Nginx (1.19.0)
- **Server-Side language:** Python (3.8.3)
- **Web framework:** Flask (1.1.2)
- **Object Relational Mapper:** SQLAlchemy(1.3.17)
- **Frontend framework:** ReactJS (16.13.1)
- **Web Analytics:** Google analytics
- **IDE:** Pycharm, Visual Studio Code

8. Team and Roles:

Team Lead	Raviteja Guttula
Front End Lead	Swetha Govindu
Front End Developer	Henry Meier
Front End Developer	Kevin Zhou
Front End Developer	Troy Turner
Back End Lead	Ashwini Uthirakumar
Back End Developer & Github Master	Fiona Senchyna

9. Checklist:

Checklist	Answer
So far, all team members are very engaged and attending ZOOM sessions when required.	ON TRACK
Team has found a regular time slot to meet outside of the class.	ON TRACK
GitHub master was chosen.	DONE
Team decided and agreed together on using the listed SW tools and deployment server.	DONE

Team ready and able to use the chosen back and front-end frameworks and those who need to learn are working on learning and practicing.	DONE
Team lead ensured that all team members read the final M1 and agree/understand it before submission. Final M1 edited and proofread.	DONE
GitHub organized as was discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	DONE

10. References:

- Documentation of high-level vision of our application shared by CEO/CTO.
- Relevant existing applications like zillow.
- Class notes on software architecture and design patterns .
- Class notes on use cases, requirements and specs.
- Milestone 1: Use cases, High Level Requirements and Architecture.
- Milestone 0: Documentation of software stack.