

SW Engineering CSC648/848 - Milestone 1

SecondChance: The Eco-Friendly Rental Platform!

CSC 648 - Section 01 - Team 05

10/01/2024

Team Members & Roles

Student Name	Student's Role
Parth Desai	Team Lead / PM
Pedro Grande	Front-end Developer
Charvi Sharma	Scrum Master
Josue Hernandez	Git Master
Andre Velarde	Back-end Lead
Preet Vithani	Front-end Lead
Hsin-Ying Tsai	Back-end Developer

History Table (Revisions)

Date	Version	Changes Made
09/23/2024	1.0	Initial Draft
09/30/2024	2.0	Modified Project Direction from a Social Media app to an Eco-Friendly Renting Platform

Executive Summary

Motivation & Importance

In a world increasingly aware of environmental sustainability, consumers are searching for ways to live more ecologically responsible lives. SecondChance is an online platform that meets this growing demand by offering an eco-friendly alternative to traditional purchasing: renting second-hand items. By promoting a circular economy and reducing waste, SecondChance enables users to access everyday items they need without the environmental impact of manufacturing and disposing of new products. This not only saves money but also promotes conscious consumer behavior, making sustainability easy and convenient for everyone.

The SecondChance Solution

Platform Overview: User-friendly website for listing, discovering, and renting second-hand items.

- **Range of Items:** Rent tools, electronics, furniture, and more to extend product lifecycles.
- **Key Features:**
 - Real-time chat for easy communication between renters and owners.
 - Advanced search and filters for finding items quickly.
 - Secure transactions to build trust and ensure safety.
 - Personalized user dashboards for managing rentals and listings.
 - Sustainability tips page to promote eco-friendly practices.
- **Uniqueness:** Blends convenience and ecological values to offer a marketplace focused on sharing and sustainability.

Value Proposition

User Benefits: Save money and access items temporarily without committing to purchases.

- **Eco-Focus:** Encourages sustainable living by reducing waste and supporting the circular economy.
- **Seamless Experience:** Secure payment processing and user-friendly design for easy renting and listing.
- **Market Differentiation:** Targets the growing market for eco-conscious consumers, focusing on second-hand goods.
- **Community Impact:** Aims to build a community around sustainable choices and environmental responsibility.

About the Team

Our team is a group of passionate computer science students with a shared goal of building technologies that contribute to a better world. With backgrounds in full-stack web development, data science, and user experience design, we are equipped to develop a platform that is not only functional and secure but also aligned with modern environmental values. We are committed to bringing SecondChance to life as a meaningful solution for conscious consumers and aim to grow the platform to make a tangible impact on sustainability and everyday living.

Personas and User stories

User Categories

1. Specialized Equipment Renters

- **Overview:** Users needing occasional access to specialized items like sports equipment, musical instruments, or camera gear.
- **Behavior:** They rent items based on short-term needs (e.g., projects, events, hobbies).
- **Primary Pain Point:** High cost and infrequent use make ownership impractical.
- **Key Personas:**
 - **Max Tran (Athlete)**
 - **Autumn DeGrazia (Photographer/Journalism Major)**

2. Household Item Renters

- **Overview:** Users who need everyday household items like baby gear, furniture, or kitchenware for short periods.
- **Behavior:** They rent due to temporary needs, convenience, and cost-saving motives.
- **Primary Pain Point:** Ownership isn't necessary for short-term use; storage and transport issues arise.
- **Key Personas:**
 - **Maria Sanchez (Faculty Member/Parent)**
 - **Jawahar Ramakoti (International Student)**

3. Sustainability-Focused Renters

- **Overview:** Users who prioritize eco-friendly living and prefer renting to reduce waste and consumption.
- **Behavior:** They actively seek sustainable choices, preferring to rent rather than buy.
- **Primary Pain Point:** Desire to minimize their carbon footprint and support the circular economy.
- **Key Personas:**
 - **Alisha Sengupta (Environmental Studies Major)**
 - **Ryan Gough (Adventure Enthusiast)**

User Stories

1. Max Tran - Basketball Athlete [HIGH Priority]

- a. **User Story:** [ID 1]
 - i. As an athlete, Max wants to rent workout and recovery equipment for short periods to access what he needs without full ownership.
 - ii. He searches for items like foam rollers or massage guns nearby, rents them for a few days, and arranges a convenient pickup.
- b. **Behaviors/Interests:** Active lifestyle, requires different workout/recovery equipment occasionally, prefers short-term rentals.
- c. **Skills:** Familiar with fitness equipment and comfortable using mobile apps.
- d. **Pain Points:** Equipment is costly and not frequently needed.

e. **Interview Highlights:**

- i. "I train a lot, and sometimes need specialized equipment I don't always own."
- ii. "Buying something I only use occasionally isn't worth it."

2. Autumn DeGrazia - Photographer/Journalism Major [HIGH Priority]

a. **User Story:** [ID 2]

- i. As a photography student, Autumn wants to rent different types of camera gear to test them on projects without making a large purchase.
- ii. She browses the photography section to find cameras, lenses, and tripods, reads reviews, checks availability, and rents the gear for a shoot.

b. **Behaviors/Interests:** Engaged in photography, requires access to expensive gear for short-term projects.

c. **Skills:** Knowledge of photography equipment, comfortable renting for assignments.

d. **Pain Points:** High cost of gear ownership for temporary use.

e. **Interview Highlights:**

- i. "Different projects require different types of equipment that are expensive to own."
- ii. "Renting would allow me to try different options while staying sustainable."

3. Maria Sanchez - Faculty Member/Parent [MEDIUM Priority]

a. **User Story:** [ID 3]

- i. As a parent, Maria wants to rent baby equipment like strollers or car seats for short periods to avoid carrying and storing items everywhere.
- ii. She searches for baby gear nearby, filters for clean and safe items, and rents for a family trip or event.

b. **Behaviors/Interests:** Balances work and parenting, occasionally needs baby gear.

c. **Skills:** Organized, prioritizes safety and convenience.

d. **Pain Points:** Baby gear is only occasionally needed and cumbersome to transport.

e. **Interview Highlights:**

- i. "Sometimes I need baby gear for events, but I don't want to own it."
- ii. "Renting would be ideal for on-demand needs, especially close by."

4. Jawahar Ramakoti - International Student [MEDIUM Priority]

a. **User Story:** [ID 7]

- i. As an international student, Jawahar wants to rent household items like furniture or kitchenware since his stay is temporary.
- ii. He looks for flexible rental periods and seeks items like desks or kitchenware within a close distance, given he lacks transportation.

b. **Behaviors/Interests:** Temporarily living on campus, needs items for a short-term stay.

c. **Skills:** Balances academic life and practical needs efficiently.

- d. **Pain Points:** Costly to purchase items for a limited period, transportation challenges.
- e. **Interview Highlights:**
 - i. "Renting things like furniture for a semester makes life easier as an international student."
 - ii. "Transporting things back home after studies is not feasible."

Data Definitions

User types

- **Renter (General User):**
 - **Privileges:** Can browse, search, filter, rent items, chat with owners, and manage rentals via a personalized dashboard.
 - **Data Elements:** User ID, name, email, username, password, phone number, rental history, favorite items, chat history, and saved filters.
- **Owner (Landlord/User with Listings):**
 - **Privileges:** In addition to the Renter privileges, can create and manage item listings, handle rental inquiries, update item details, and track rental status.
 - **Data Elements:** User ID, name, email, username, password, phone number, listed items, communication history, and item reviews.
- **Admin:**
 - **Privileges:** Can manage users, listings, monitor transactions, approve listings, and review disputes.
 - **Data Elements:** Admin ID, name, email, permissions, logs of actions

Main Data Elements

- **Item/Listing:** This represents an item that a user has listed for rent.
 - Attributes
 - Item ID
 - Owner ID: Linked to the user listing the item.
 - Item Name
 - Description
 - Category: E.g., furniture, electronics, etc.
 - Condition: New, good, fair, etc.
 - Rental Price
 - Availability: Dates the item is available for rent.
 - Location: Includes city, zip code, etc.
 - Images: URLs or paths to item images.
 - Listing Date
 - Reviews/Ratings
 - Status: Available, rented, etc.
- **Rental Transaction:** Represents a transaction for renting an item.
 - Attributes
 - Rental ID

- Renter ID
 - Owner ID
 - Item ID
 - Start Date: Rental start date.
 - End Date: Rental end date.
 - Transaction Status: Completed, pending, canceled, etc.
 - Chat History: Related to the rental transaction.
- **Reviews:** User-generated feedback for rented items.
 - Attributes
 - Review ID
 - Renter ID
 - Item ID
 - Rating: Out of 5.
 - Review Content

Functional Requirements

- **User**
 - **FR-01:** The application allows users to create accounts using email, phone number, and password.
 - **FR-02:** The user can log in to the application using the login and password.
 - **FR-03:** The user can update their profile, contact details, and personal information through the application.
- **Items listed**
 - **FR-04:** The application allows lenders to post items for rent with the item's images, description, price, and rent period.
 - **FR-05:** The application should be multi-item so the lender and renter can rent out multiple items simultaneously.
 - **FR-06:** The lender should specify the condition of the item, security deposit, and terms and conditions.
- **Search items**
 - **FR-07:** The application allows renters to search items based on price, keyword, condition, and categories.
 - **FR-08:** The system should display searched items on the application with brief descriptions, availability, and images.
- **Booking Management**
 - **FR-09:** The system allows renters to browse through all the items with their brief descriptions, availability, and images.
 - **FR-10:** The application allows renters to rent an item by submitting a booking request and selecting rental dates.
 - **FR-11:** The application provides the renter an option to extend their item rent period if needed.

- **Notification**

- **FR-15:** The application will send an item return notification to the renters about upcoming return dates and payment notifications.
- **FR-16:** The application sends notifications to lenders when their item is booked and returned.

- **Review**

- **FR-17:** The application allows renters to leave reviews for the items and the lenders can review the renters when their product is returned.
- **FR-18:** The application displays average reviews of all the items listed for prospective renters.

Non - Functional Requirements

Category	Non-Functional Requirement	Description
Responsive design	We will make our app work on various devices such as laptops and tablets	Since our app targets users who mostly use laptops, we will work our designs primarily on laptops and then on smaller devices.
Server Optimization / Management	Convert high-resolution images to 1080p	Reduce the amount of storage used by images on the server
	Implement systems to manage server load when the server faces high usage	Prevent the server from crashing due to high amount of requests
	Ensure no operations are executed with outdated data	Prevent the client from using bad data to perform a server-sided operation
	Check all data is valid before performing operations	Ensure the data being used to perform an operation is complete
Client-Sided Optimizations	Use 720p images for thumbnails/preview images	Decrease the resource usage by rendering smaller images in places where large ones are not necessary
	Test compatibility across popular browsers (Google Chrome, Firefox, Microsoft Edge, Safari)	Ensure that the interfaces across different browsers remain functional
Security	Hash passwords	Use a hashing algorithm to encrypt passwords stored in

		the database
	User Data	The users should have to be validated to access and upload content.
Codebase Maintenance	Maintain documentation up-to-date	Keep information on new and existing systems updated
	Consistent and easy-to-understand software architecture	Create systems that will allow the project to be expanded

Competitive Analysis

Feature	Rent the Runway	Loanables	BabyQuip	Spinlister	SecondChance
Primary Focus	High-End Designer Clothing	Household Items, Tools, Party Supplies	Baby and Toddler Gear	Bikes, Snowboards, Surfboards, Sports Gear	Wide Range: Household Goods, Fashion, Electronics, Sports Gear
Range of Goods	x	✓	x	x	✓
Rental Protections	✓	✓	✓	✓	✓
One-Stop Marketplace Experience	x	✓	x	x	✓
User-Friendly Design	✓	✓	x	✓	✓

High-Level System Requirements

Component	Description
Frontend	Next.js, Tailwind CSS
Web App Framework	Django, Django Rest Framework
Backend	Python

Component	Description
Database	PostgreSQL
Authentication	Django Allauth
Search and Filters	Elasticsearch
Web Server	nginx
Deployment	Docker, AWS EC2
Version Control	GitHub
Compiler/IDE	VS Code
Real-Time Communication	WebSockets

Team and Milestone Planning

High-level tasks for the upcoming milestone:

- Create Figma Mockups
- Create a Database Schema
- Setup the Database
- Setup the Django app and the necessary APIs
- Implement Login and Homepage

Student Name	Student's Role	Assigned Tasks
Parth Desai	Team Lead / PM	Oversee the creation of Figma mockups for key pages. Ensure database schema aligns with overall project requirements.
Pedro Grande	Front-end Developer	Work with the Front-end Lead to design Figma mockups for the login and homepage. Implement the front-end aspects of the login page.
Charvi Sharma	Scrum Master	Coordinate team meetings to finalize the database schema. Ensure all team members have clear tasks and timelines.
Josue Hernandez	Git Master	Set up the Git repository for the Django app and ensure all team members have access. Manage branches for setting up the database and Django APIs.

Student Name	Student's Role	Assigned Tasks
Andre Velarde	Back-end Lead	Create the initial database schema based on project requirements. Set up the database and ensure seamless integration with the Django app.
Preet Vithani	Front-end Lead	Lead the design of Figma mockups for the entire user flow. Develop the front-end layout for the homepage and coordinate with Pedro.
Hsin-Ying Tsai	Back-end Developer	Work on setting up the necessary APIs in Django for user login. Assist Andre in database setup and connection to the Django app.

Checklist

Task	Status
Team found a time slot to meet outside of the class	Done
Scrum Master shares meeting minutes with everyone after each meeting	Done
GitHub master chosen	Done
Everyone sets up their local development environment from the team's git repo	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/front-end frameworks	Done
Team lead ensured that all team members read the final M1 and agree/understand it before submission	Done