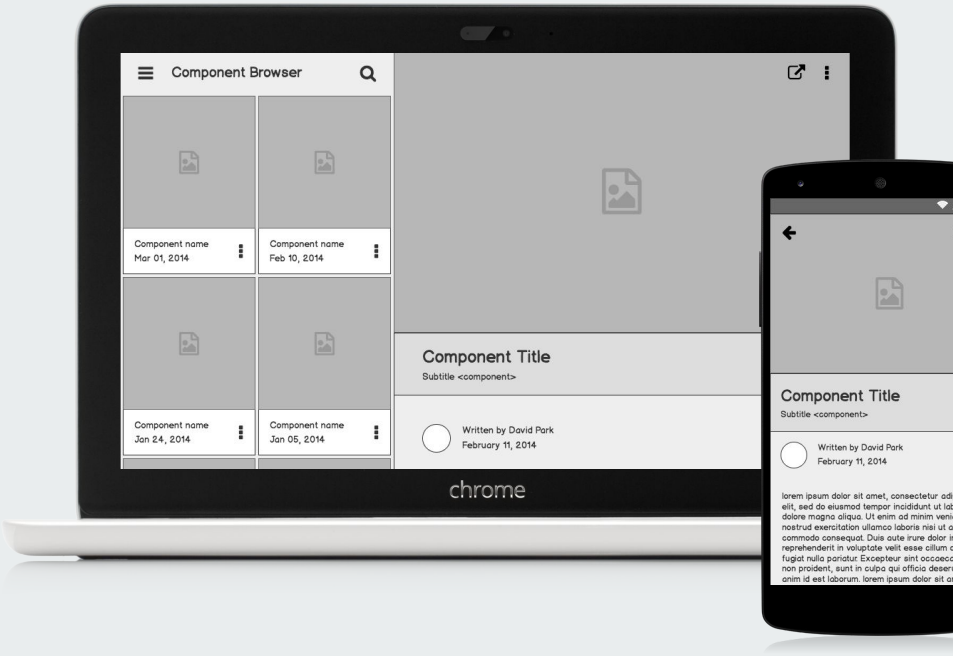
# UCSD Marketplace

Problem statement and solution proposal



# Statement of Purpose

**What we are building:**
A second-hand marketplace app specifically for UCSD students, enabling them to easily buy and sell used items like textbooks, furniture, electronics, and school supplies within the university community.

**Problem we are solving:**
Students currently rely on fragmented and external platforms (e.g., Facebook Marketplace, Craigslist) that are not tailored for campus-specific needs, leading to logistical challenges, irrelevant listings, and poor search/reach.

**Why it is valuable:**

- **Centralized and Relevant:** Only UCSD-specific items and users — no irrelevant posts or adverts.
- **Increased Trust:** All transactions take place on campus, reducing scams and fostering a safer environment.
- **Convenience:** Faster and easier transactions with students who are nearby on campus or in student housing.
- **Community Building:** Promotes sustainable reuse within the student community, reducing waste.

# Use cases / user stories

**1. Emma – First-Year Student**

- **Major:** Biology
- **Needs:** Affordable textbooks, lab equipment, and dorm essentials.
- **Pain Points:** High cost of buying new items, unreliable sellers off-campus.
- **Goals:** Quickly find cheap, trustworthy listings from fellow students.

# Use cases / user stories

**2. Alex – Graduating Senior**

- **Major:** Computer Science
- **Needs:** Sell used furniture, electronics, and textbooks before moving out.
- **Pain Points:** Low visibility on platforms like Facebook Marketplace, time-consuming coordination.
- **Goals:** Easily post listings and sell items to local students without hassle.

# Use cases / user stories

**3. Priya – International Student**

- **Major:** Economics
- **Needs:** Find second-hand household items after arriving at UCSD.
- **Pain Points:** Unfamiliar with local platforms, worried about scams.
- **Goals:** Use a campus-specific platform to buy necessary items safely and quickly.

# Problem Overview

**Fragmented Platforms:**
Students must rely on third-party marketplaces like Facebook, Craigslist, or OfferUp, which mix campus-related and unrelated listings.

**Irrelevant Listings and Poor Searchability:**
Listings are often flooded with unrelated items. Search and categorization is very generalized and not specific for student needs.

**Logistical Challenges:**
Coordinating pickups with non-local sellers adds unnecessary complexity for students who primarily live on or near campus.

**Missed Opportunities:**
Many students leave campus or graduate without an easy way to offload valuable items to peers who could use them.

# Core Features / Values

**Campus-Specific Marketplace:**
A dedicated second-hand marketplace limited to UCSD students, ensuring all listings are relevant and nearby.

**Verified UCSD Users Only:**
Access restricted to users with a UCSD email, promoting trust and safety within the community.

**Simple Listing and Search System:**
Streamlined posting process and powerful campus-focused search filters to help students quickly find or sell items.

**On-Campus Pickup Focus:**
Listings encourage transactions to happen conveniently on campus or in nearby student housing areas.

**Sustainability and Community Growth:**
Promotes the reuse of goods among students, reducing waste and strengthening campus community ties.

# Core Design Principles

**Light:**

Minimalist, clutter-free UI focused on essential actions.
Fast loading times even on slower campus Wi-Fi or mobile data.

**Fast:**

Quick posting and browsing experiences with minimal required inputs.
Instant search and filter results to help users find what they need fast.

**Secure:**

UCSD-only access through email.
Protection against spam, scams, and fraudulent listings.
No messaging, promote direct email contact

# Tech Stack (SPA)

**Frontend:**

Static HTML, CSS, and vanilla JavaScript

Served directly by the Flask backend

Light dynamic interactions handled through JavaScript fetch API calls (for posting listings, searching, etc.)

**Backend:**

Flask (Python lightweight web framework)

Handles both serving static files and REST API endpoints

Responsible for routing, authentication, and data validation

**PostgreSQL**

Structured relational database to store users, listings, and potential transactions

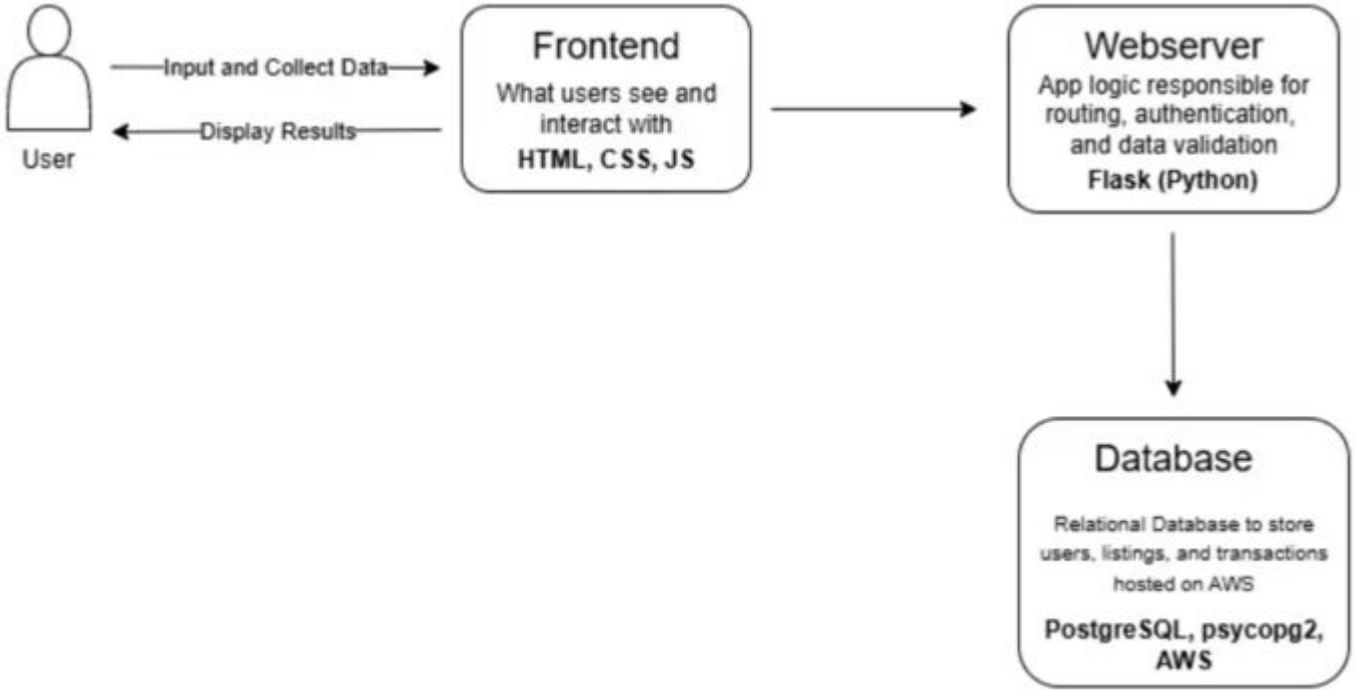
Well-supported with Flask via libraries like psycopg2

**Authentication:**

UCSD email verification via manual registration (initial MVP)

Future: OAuth or Shibboleth integration for official UCSD SSO if desired

# Tech Stack Diagram



# Wireframe

01

Main Search Landing Page

# Wireframe

01

Main Search Landing Page

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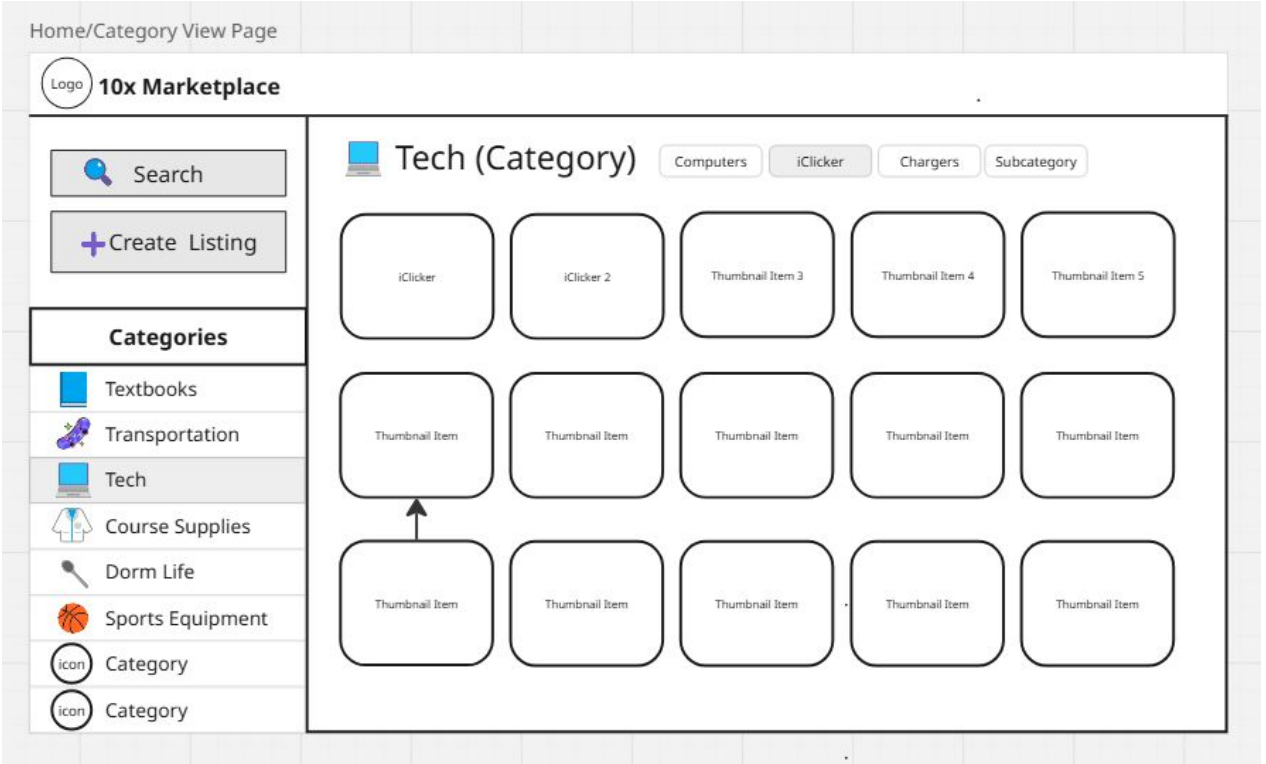
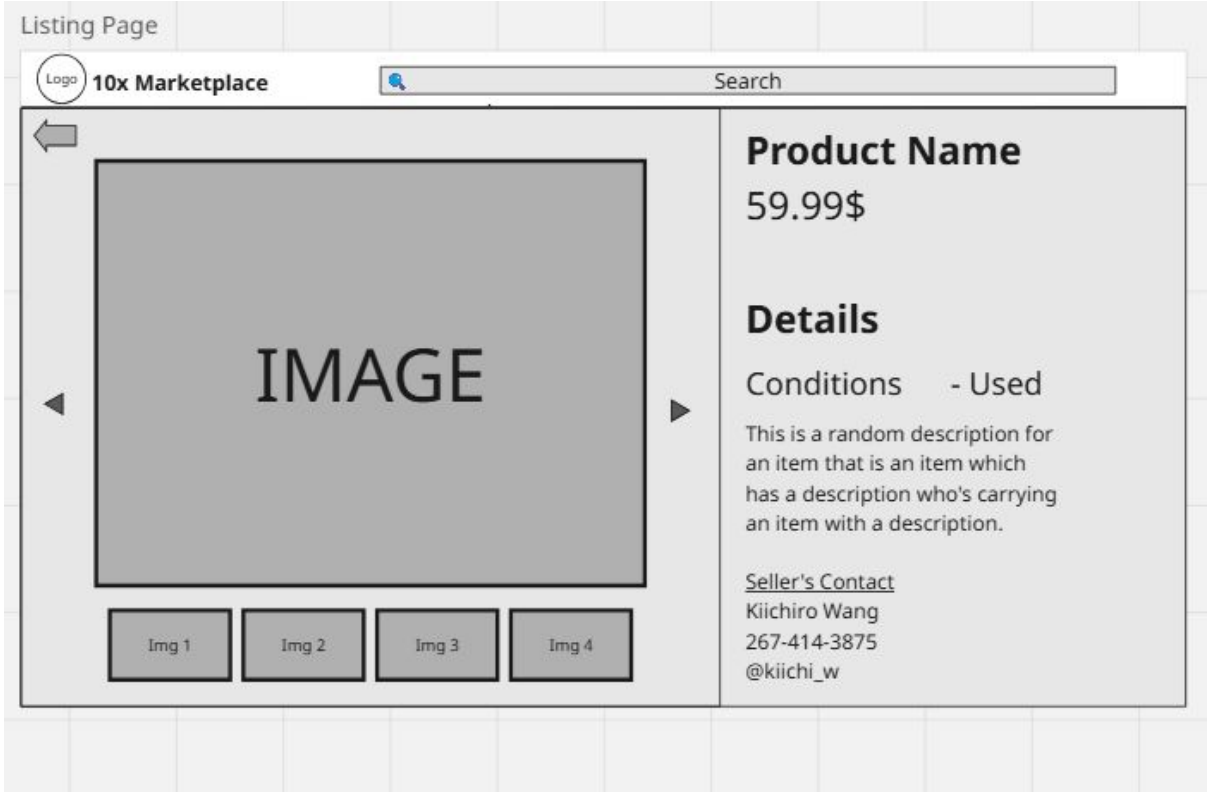


# Wireframe

02

Listing Specifics Page



# Thoughts behind decisions

Website could potentially function as a lightweight single-page website.

Our home page drops directly onto the main search page (wireframe 1), and item details (wireframe 2) could be shown as a popup or overlay over the main page.

This can minimize page reloads and create a faster, smoother user experience without fully committing to a complex single-page application architecture. Most product listings could be shown and updated through simple JavaScript fetch requests after any filter or search event happens.

Authentication will initially be handled outside of this flow. To accelerate early development, we will manually register users and approve postings during the prototype phase. Full authentication, including UCSD email verification and login functionality, will be introduced in later iterations once the core marketplace functionality is stable.

# Risks

The biggest risk to our application is security.

Building a secure authentication system is a major challenge. Verifying UCSD emails, managing accounts safely, and preventing unauthorized access introduces significant backend complexity. We anticipate that building a fully secure authentication and login flow will take considerable time and care.

Early Prototype without Authentication:

To mitigate this risk, we plan to first create an early prototype without formal authentication. Instead, initial user listings will be manually posted or manually approved through a basic sign-up form. This will allow us to test core marketplace functionality (posting, browsing, buying) without being blocked by authentication development.

# Rabbit Hole

Potential Rabbit Holes:

Complex user profile systems, password resets, multi-device login syncing, and secure image handling are all potential rabbit holes that could greatly slow down development if tackled too early. For the early stage of the project, we will deliberately defer building these features until basic posting and browsing functionality are stable.

Database Security and Scaling:

Direct exposure of sensitive data or badly designed database queries could pose security risks. We must avoid rushing database design or overcomplicating schema migrations early in development.