Justin Derenthal

Professor Alrajab

CSC-371 Mobile Application Development

October 1st, 2025

Proposal Documentation: *ShareBin*

Problem Description:
Many individuals are eager to donate clothing, shoes, and household goods, yet often face difficulty finding donation bins nearby. Existing online resources are often region-specific, incomplete, or outdated, leaving donors confused, frustrated, and discouraged.

Solution:
Donation bins are difficult to track because they are often moved, operated by a wide range of organizations, and not maintained in a central database. As a result, no single online resource provides complete or reliable coverage of bin locations. *ShareBin* addresses this gap by creating a community-driven platform where users can log new bins with photos and GPS data, verify existing locations, and maintain an up-to-date, shared map of donation opportunities. Through this collaborative model, *ShareBin* can build and sustain a reliable, large-scale dataset of donation bin locations across the United States, and eventually worldwide.

Social Impact:

Encourages Charitable Giving and Recycling
By making donation bins easier to find, *ShareBin* creates a more accessible environment for individuals to donate clothing, shoes, and household goods.

Reduces Landfill Waste
Redirects usable items away from the trash and into the hands of organizations and people who need them.

Promotes Community Sustainability
Provides a simple, accessible way for communities to contribute collectively to sustainability and responsible consumption.

Ensures Reliable Information
Creates a feedback loop where bins are regularly verified, maintaining accuracy and reducing donor frustration, while building the most up-to-date donation bin database in the United States.

Core Features:

- *Interactive Map* – Displays nearby donation bins with pins.
- *Log a New Bin* – Users can take a photo, automatically capture GPS location, and submit a new bin.
- *Bin Verification* – Users receive notifications when near a bin to confirm if it still exists.
- *Crowdsourced Database* – Community-driven entries keep the database up to date.

Enhanced Features:

- *Image Metadata Integration* – Use photo EXIF data to verify or autofill location.
- *Computer Vision Validation* – Detect whether an uploaded image contains a donation bin.
- *Filters* – Search bins by accepted items. (clothing, shoes, electronics, etc...)
- *Organization Insights* – Show which charities or companies operate the bins.
- *Database Statistics* – Showcase crucial donation bin statistics. (Bin Density, Bin Availability, etc...)

Target Users:

- Families, students, eco-conscious individuals, community organizers.

Devices:

- Android smartphones with GPS, camera, and notification support.

Potential Stack:

Language & IDE: Kotlin x Android Studio

UI & Layout: Jetpack Compose (or XML layouts)

Maps & Location: Google Maps SDK (Android), Fused Location Provider (Google Play Service), Geofencing API ("Nearby Bin" notification system)

Database/Storage: Firebase – Firestore (Potentially)

Notification handler: Firebase Cloud Messaging (Automate push notification "is bin still here", Android Notification Manager (handles when user is near a bin)

4-Week Project Plan:

Week 1 – Planning & Setup

I. Define app features and flow.
II. Set up project skeleton on Android Studio.
III. Research & Implement Google Maps API and GPS location basics.
IV. Research Database.

Week 2 – Core Features

I. Build interactive map with custom pins.
II. Add "Catalog Bin" feature. (Photo + GPS location + Timestamp)
III. Implement Database & Store Bins.

Week 3 – Community Features

I. Connect Firebase (or alternative) for Shared bin data across users.
II. Implement notification system to verify nearby bins. (within acceptable range, as well as features to turn this off)
III. Add bin status updates (Bin will become unverified after a set number of days. ("We don't know if this bin still exists. Help us out"))
IV. Favorited Bins. (Stores users favorite bins to ensure they still exist (Potential Notification)

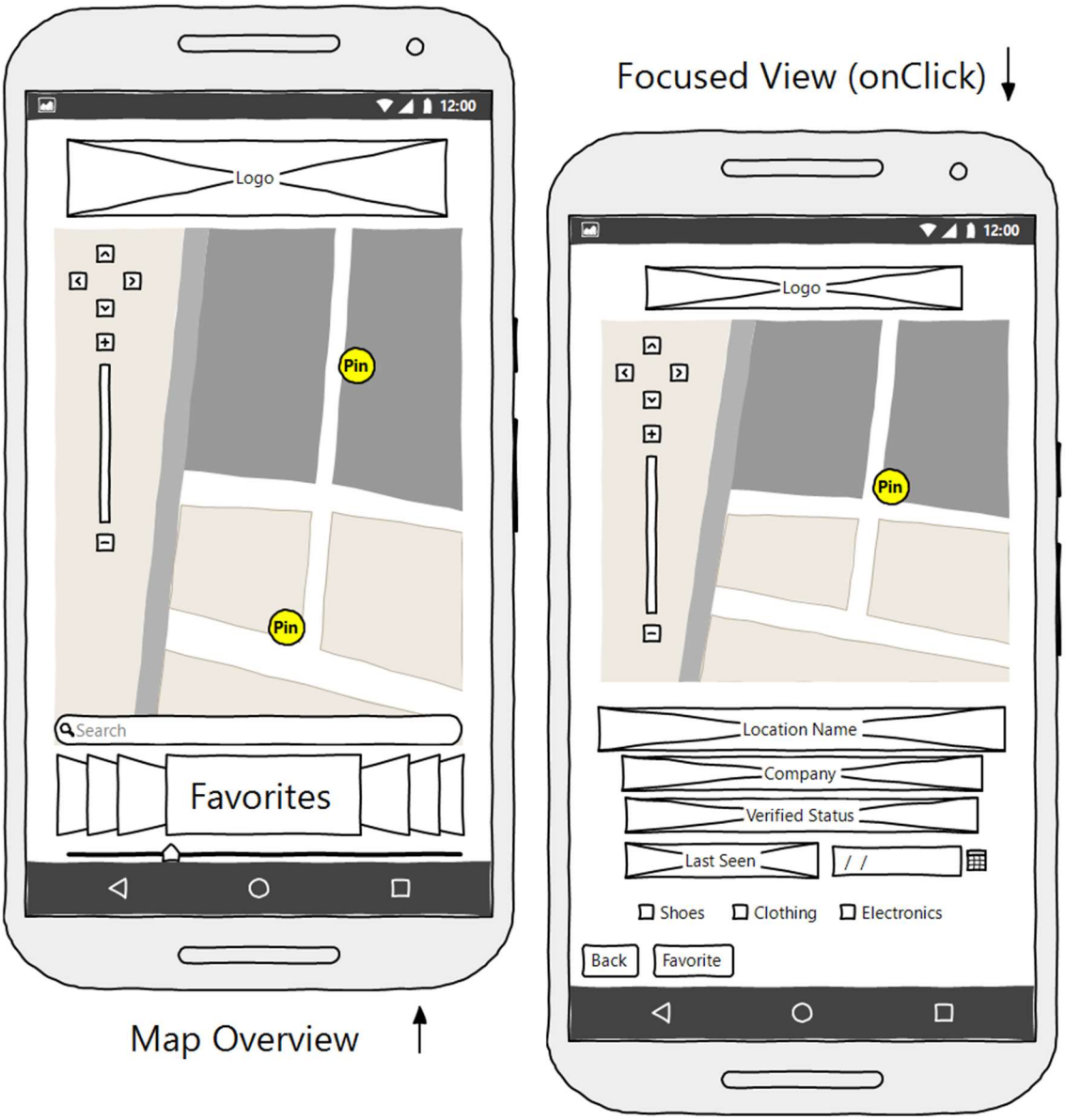
Week 4 – UI & Basic Testing

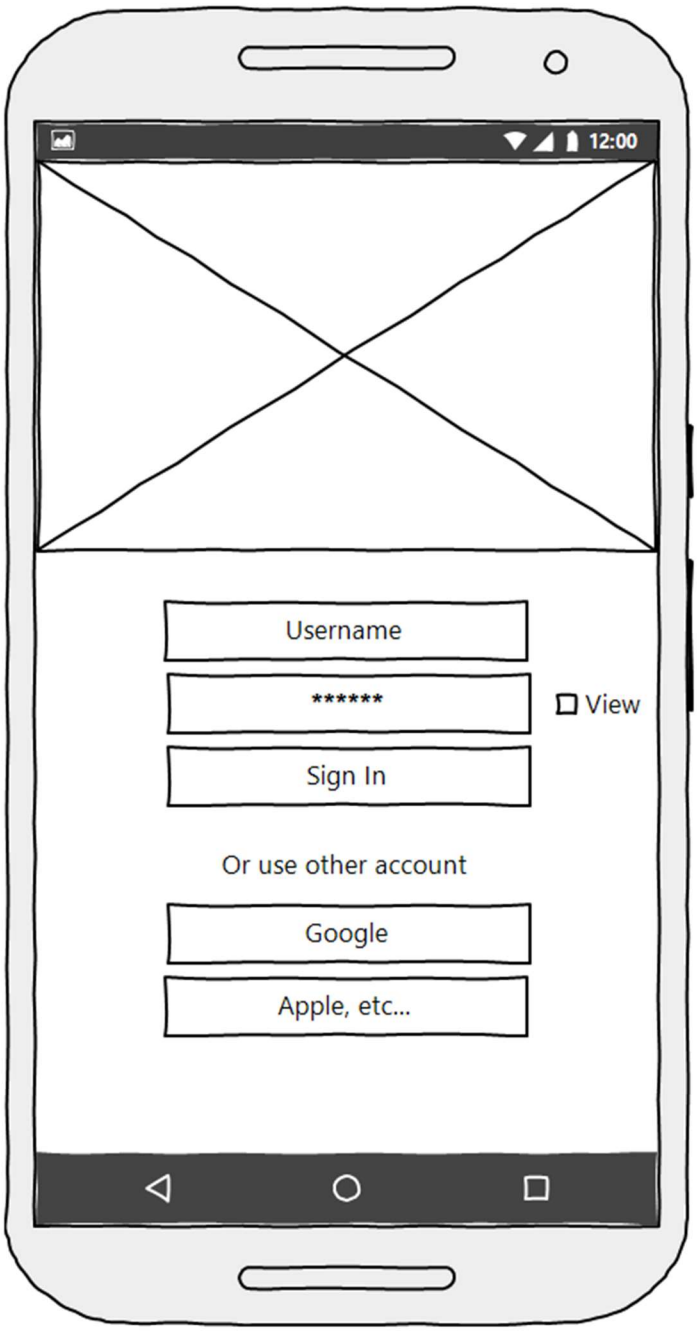
I. Refine UI with icons, colors, and filters.
II. Test photo uploads, GPS accuracy, and notifications.
III. Add "Last Verified" Timestamp.
IV. Documentation.

Links:

ShareBin Repository: https://github.com/JderenthalCS/ShareBin

Wireframe Sketches:





Landing Page


Logo
You’re near a donation bin — is it still here?
Bin Verification
Bin Verification - Reminder
Logo
This bin hasn’t been verified in 30 days. Can you confirm if it’s still available?
Logo
A new donation bin was added near your location. Tap to see details.
New Bin Near You