PROJECT DESCRIPTION - UPDATED FOR ITEMS ONLY

Community Item Sharing Platform

Problem Statement

In today's cost-of-living crisis, many people struggle to afford items they need only occasionally. At the same time, countless useful items sit unused in homes, garages, and storage spaces - bought once and rarely touched again. This creates a cycle of:

- **Financial waste** - people buying items they'll use once or twice
- **Environmental harm** - unnecessary production and consumption
- **Social isolation** - neighbors don't know each other or what resources exist nearby
- **Cluttered homes** - items taking up space that could benefit others

Traditional solutions are inadequate:

- **Buying new** is expensive and wasteful
- **Commercial rental** services are costly and require deposits
- **Selling online** takes time and effort for items of little monetary value
- **Throwing away** contributes to landfill when items still have use

Many items have more potential life but end up discarded because there's no easy way to share them within local communities.

Our Solution

A web-based platform that enables local community members to share items through three types of exchanges:

1. Lending/Borrowing (Temporary)

Lend items for short-term use - perfect for tools, equipment, books, camping gear

- Owner retains ownership
- Item returned after agreed period
- Build trust through successful exchanges

2. Swapping (Permanent Trade)

Trade items you no longer need for things you do - ideal for children's items, books, household goods

- Both parties exchange items

- Permanent transfer of ownership
- Mutually beneficial exchange

3. Giving Away (Free Gift)

Pass on items you no longer need to someone who does - great for outgrown clothes, old textbooks, unwanted gifts

- No expectation of return
- Declutter while helping others
- Build community goodwill

How It Works

For Item Owners:

1. **List Your Item** - Add photos, description, condition, and exchange type (lend/swap/giveaway)
2. **Receive Requests** - Get notifications when people request your item
3. **Choose Requester** - Review profiles and ratings, accept the right person
4. **Arrange Exchange** - Use in-app messaging to coordinate pickup/return
5. **Rate Experience** - Build trust by rating borrowers/traders

For Item Seekers:

1. **Browse or Search** - Find items by category, distance, or keyword
2. **View on Map** - See what's available nearby visually
3. **Request Item** - Send request explaining your need and proposed duration
4. **Coordinate** - Message owner to arrange details
5. **Exchange** - Meet safely, take item, return if borrowing
6. **Leave Rating** - Rate owner to help build community trust

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Target Users

Primary Users

Students

- Need: Textbooks, course materials, sports equipment, kitchen items, furniture
- Benefit: Save money, access expensive items temporarily
- Example: "I need a graphing calculator for one exam, not buying one for £100"

Young Families

- Need: Baby items, children's toys, kids' sports equipment, party supplies
- Benefit: Children outgrow items quickly - swap instead of buying new
- Example: "My toddler outgrew all his 12-month clothes, need 18-month size"

Local Residents

- Need: DIY tools, garden equipment, camping gear, occasional-use items
- Benefit: Access tools without expensive purchase, meet neighbors
- Example: "Need a power drill for one weekend project"

Retirees

- Have: Accumulated useful items, time to share
- Benefit: Declutter, help community, stay connected
- Example: "Have tools I no longer use, happy to lend to younger neighbors"

Secondary Users

Environmental Advocates

- Benefit: Reduce consumption and waste through sharing economy

Community Organizations

- Benefit: Strengthen local connections and mutual aid networks

Universities

- Benefit: Support students financially, promote sustainability

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Key Benefits

Economic

- **Save Money** - Borrow instead of buying expensive one-time-use items
- **Declutter** - Pass on items taking up space without hassle of selling
- **Circular Economy** - Maximize value from existing items

Social

- **Build Community** - Meet neighbors through shared needs

- **Reduce Isolation** - Create connections through helping each other
- **Trust Network** - Develop reliable local support system

Environmental

- **Reduce Consumption** - Fewer new items manufactured and purchased
- **Extend Lifecycles** - Items used to full potential before disposal
- **Minimize Waste** - Keep usable items out of landfills
- **Carbon Footprint** - Reduce production and shipping emissions

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Sprint 3 Features (Core Functionality)

User Management

- User registration with email verification
- User profiles (name, bio, location, profile picture)
- View all users in community
- View individual user profiles with their listings

Item Listings

- Create listing with:
  - Title and description
  - Photos (upload)
  - Category (tools, books, baby items, sports, household, electronics, other)
  - Condition (Like New, Good, Fair, Well-Used)
  - Exchange type (lending, swap, giveaway)
  - Availability status
- Edit and delete own listings
- Browse all available items
- Search by keyword
- Filter by category and exchange type
- View detailed listing page with owner info

Request System

- Send request to borrow/swap/receive item
- Include message with request

- View all requests you've made (with status)
- View all requests on your items
- Accept or decline requests
- Mark item as returned/completed

Pages Required (Per Brief)

1. **Users List Page** - Show all community members
2. **User Profile Page** - Display user details and their items
3. **Listings Page** - Browse all available items
4. **Listing Detail Page** - Full information about specific item
5. **Categories/Tags Page** - Browse by category

Additional Essential Pages

- Homepage (welcome and how it works)
- Create/Edit Listing forms
- Dashboard (my items, my requests)
- Request management

Sprint 4 Features (Advanced)

1. Google Maps Integration ⭐

Purpose: Visualize where items are available

Features:

- Map view showing item locations
- Pins color-coded by category
- Click pin to see item preview
- Filter map by distance (1km, 5km, 10km)
- "Near me" functionality
- Distance shown on all listings

Technical:

- Google Maps JavaScript API
- Store lat/lng for each user
- Geocoding for address → coordinates

- Distance calculation (Haversine formula)

User Benefit: "See that someone 0.5km away has exactly the camping tent I need!"

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2. In-App Messaging 💬

Purpose: Coordinate exchanges safely within platform

Features:

- Direct messaging between users
- Conversations linked to specific items/requests
- Message history preserved
- Unread message indicators
- Simple, clean interface

Technical:

- Messages table in database
- Real-time polling or basic refresh
- (Optional Sprint 4+: WebSockets for live updates)

User Benefit: "Arrange pickup time and location without sharing phone number"

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3. Points & Ratings System ⭐

Purpose: Build trust and encourage participation

Points System:

- Earn 10 points when someone accepts your item request
- Earn 5 points when you lend/give an item
- Earn 20 points for successful swap (both parties)
- New users start with 50 welcome points
- Display points on profile

Ratings System:

- Rate users after exchange (1-5 stars)
- Leave optional comment
- Average rating displayed on profile
- Recent ratings visible (last 10)

User Benefit: "See that David has 250 points and 4.8 stars - I can trust him with my expensive camera"

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4. Matching Algorithm 🎯

Purpose: Recommend relevant items users might need

Algorithm Logic:

Based on User History:

- What categories they've requested before
- What they're currently browsing
- Similar to collaborative filtering

Based on Location:

- Prioritize items within 5km
- "Nearby items you might like"

Based on Popularity:

- Show trending items in user's area
- Items frequently requested

Example Recommendations:

- "Students like you often need: textbooks, calculators, sports equipment"
- "Based on your baby clothes request, you might also need: stroller, high chair, toys"
- "Popular tools near you: power drill, ladder, lawn mower"

Implementation:

```javascript
Recommendations =
  (40% User History Match) +
  (30% Distance Score) +
  (20% Item Popularity) +
  (10% Recency)
```

User Benefit: "Platform suggests exactly what I need before I even search for it"

DevOps & CI/CD (Sprint 4)

Docker

- Application runs in containers
- MySQL database containerized
- Easy team setup with docker-compose

GitHub Actions

Minimum one action implemented:

- **Option 1:** Automated testing on push
- **Option 2:** Linting check on pull requests
- **Option 3:** Docker image build verification

Success Criteria

Sprint 3 Success:

- ✅ Users can register and create profiles
- ✅ Items can be listed with photos and details
- ✅ Users can browse and search items
- ✅ Request system works (send, accept, decline)
- ✅ All required pages functional
- ✅ Data pulls from MySQL database
- ✅ Basic styling applied

Sprint 4 Success:

- ✅ Map shows items within 10km with accurate pins
- ✅ Users can message each other about items
- ✅ Points awarded automatically on exchanges
- ✅ Ratings visible and impact trust
- ✅ Recommendations suggest relevant items
- ✅ One GitHub Action successfully running

Overall Success:

- ✅ Platform is usable and intuitive

- ✅ Exchanges happen successfully
- ✅ Trust is built through ratings
- ✅ Users return to platform regularly
- ✅ Community grows organically

Alignment with Module Theme: "Sharing, Exchange, and Building Community"

Sharing ♻️

- Physical items shared within community
- Resources maximized instead of wasted
- Generosity rewarded through points system

Exchange 🤝

- Three exchange types serve different needs
- No money required - based on trust and reciprocity
- Mutual benefit emphasized over commercial transaction

Building Community 👥

- Neighbors meet through shared needs
- Local connections strengthened
- Trust network developed through ratings
- Isolation reduced through interaction
- Sustainable lifestyle promoted collectively

Project Scope Boundaries

What We're Building:

✅ Item sharing platform (lending, swapping, giving away)
✅ Three user-friendly exchange types
✅ Location-based discovery with maps
✅ Messaging for coordination
✅ Trust through ratings and points
✅ Smart recommendations

What We're NOT Building:

❌ Skills sharing (removed per instructor feedback)

❌ Payment processing (money-free platform)
❌ Delivery/shipping (local pickup only)
❌ Insurance system (users responsible)
❌ Advanced calendar/booking system
❌ Mobile app (responsive web only)

Technical Architecture Summary

Frontend:

- HTML, CSS, JavaScript
- PUG templating engine
- Responsive design (mobile-friendly)
- Google Maps JavaScript API

Backend:

- Node.js with Express.js
- RESTful API structure
- Session management for auth
- Image upload handling (multer)

Database:

- MySQL 8.0
- Relational database design
- Efficient querying with indexes
- Geospatial queries for distance

DevOps:

- Docker containers
- GitHub for version control
- GitHub Actions for CI/CD
- Team collaboration via GitHub Projects

Example User Journeys

Journey 1: Sarah Borrows a Textbook

Day 1 - Discovery: Sarah searches "statistics textbook" on platform. Finds Marcus has one 0.8km away, available for lending. Reviews his profile: 120 points, 4.7 stars.

Day 1 - Request: Sends request: "Hi! Need for stats exam prep next month. Can collect anytime this week!"

Day 2 - Coordination: Marcus accepts. They message to arrange library pickup Tuesday 3pm.

Day 3 - Exchange: Meet at library, Sarah gets textbook. She photographs it (good condition, highlighted notes).

Week 5 - Return: Sarah returns book after exam. Both rate 5 stars. Sarah earns 10 points.

Result: Sarah saved £45, Marcus helped community, both built trust.

Journey 2: Maya Swaps Baby Clothes

Week 1 - List Items: Maya lists: "Baby clothes bundle 6-12 months, Like New condition, 20 pieces". Exchange type: Swap. Looking for: 18-24 month clothes.

Week 1 - Receive Requests: Gets 3 requests. Reviews profiles. Chooses Emma (lives 1.2km away, has exactly what Maya needs, 200 points).

Week 2 - Coordinate: They message, agree to swap at local park playground. Both bring kids.

Week 2 - Exchange: Both happy with swap. Kids play while parents chat. Exchange contact info for future swaps.

Week 3 - Rate: Both leave 5-star ratings. Each earns 20 points for successful swap.

Result: Both saved £50+, reduced waste, made a friend, kids got playdate.

Journey 3: David Gives Away Tools

Month 1 - Declutter: David lists 5 tools for giveaway: hand drill, level, tape measures, toolbox. Wants to help students, declutter garage.

Month 1 - Requests: Gets multiple requests. Chooses 3 students with genuine need (new accommodation, DIY projects mentioned).

Month 2 - Giveaways: Arranges pickups, gives tools away. Students grateful, promise to "pay it forward."

Month 3 - Community Recognition: David now has 150 points, 5.0 stars, 8 grateful reviews. Feels valued, stays active on platform.

Result: David feels useful, students saved money, community strengthened.

This focused approach on **items only** makes the project more achievable while still delivering significant community value and meeting all learning objectives.