

AI-Powered Campus Secondhand Marketplace

Software Design Document

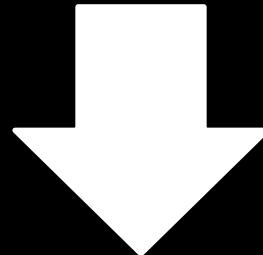
Team 2
(Kitae Kim, Jaeheon Park, Sanghoon Lee)

Brief Summary

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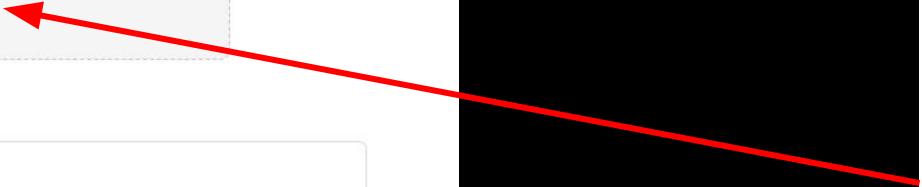
⚡번개장터



Trust & Relevance

1. Auto Categorization & Tags using AI

Select to insert images (up to 10)



Title
Enter item title

Description
Enter description

Price
Enter price (e.g., 40000)

Category (auto, editable)
auto category

Tags (auto, comma separated)
tag1, tag2

Click to post



Category (auto, editable)

electronics

Tags (auto, comma separated)

electronicdevice, laptop, personalcomputer, computer, officeequipment

2. AI Recommendation System

Select to insert images (up to 10)

Title
Enter item title

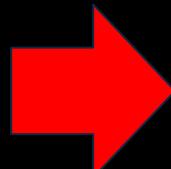
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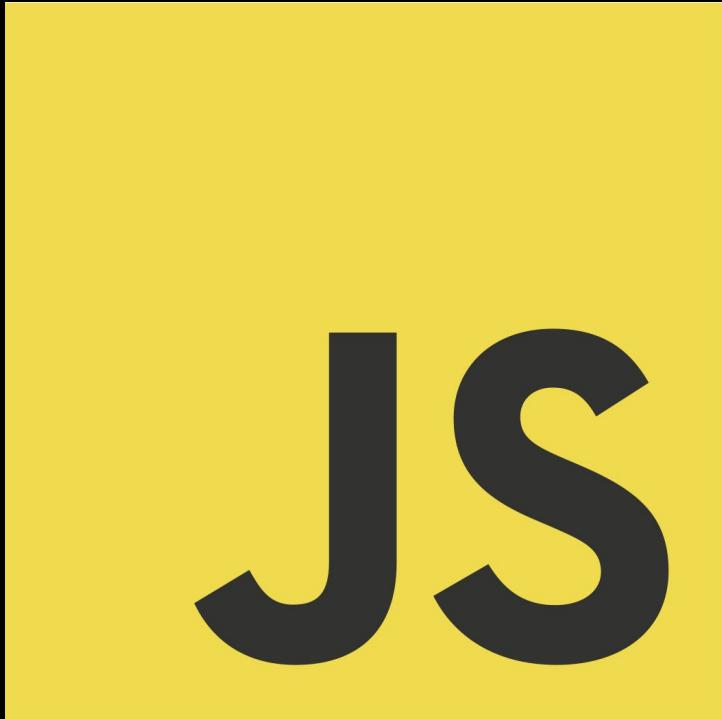


Title + Description + Tag
-> Vectorize (Open AI)

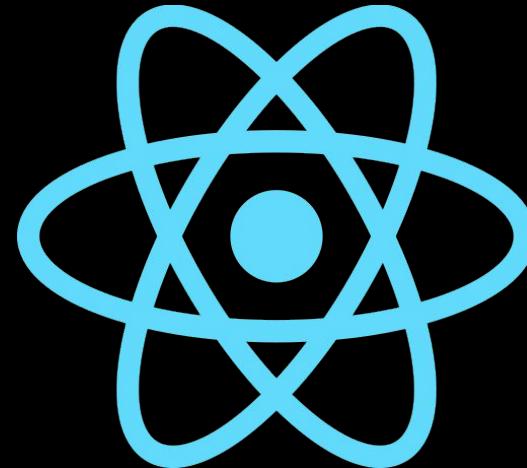
1. Embedding Vector
2. Cosine Similarity
3. Find similar products

Architectural Design

FrontEnd



ES6+



19.2.0



5.3.8

react-router-dom
(7.9.4)

Bootstrap Icons
(1.13.1)



Backend-as-a-Service
supabase

Edge Functions

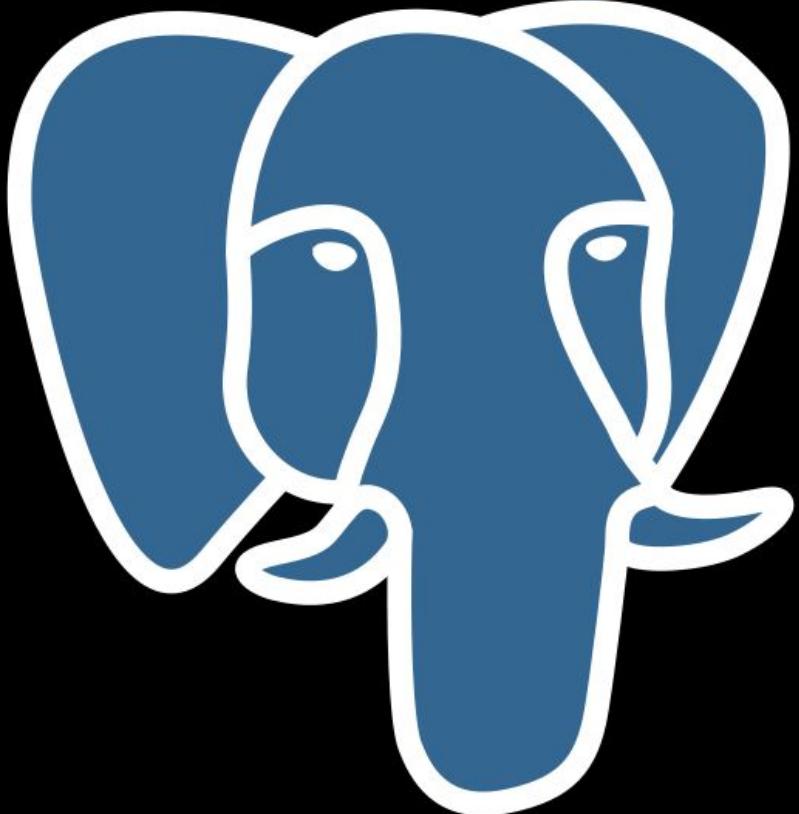
Supabase Auth

Supabase Storage

Supabase Functions

Supabase Realtime

Database Layer



PostgreSQL 15

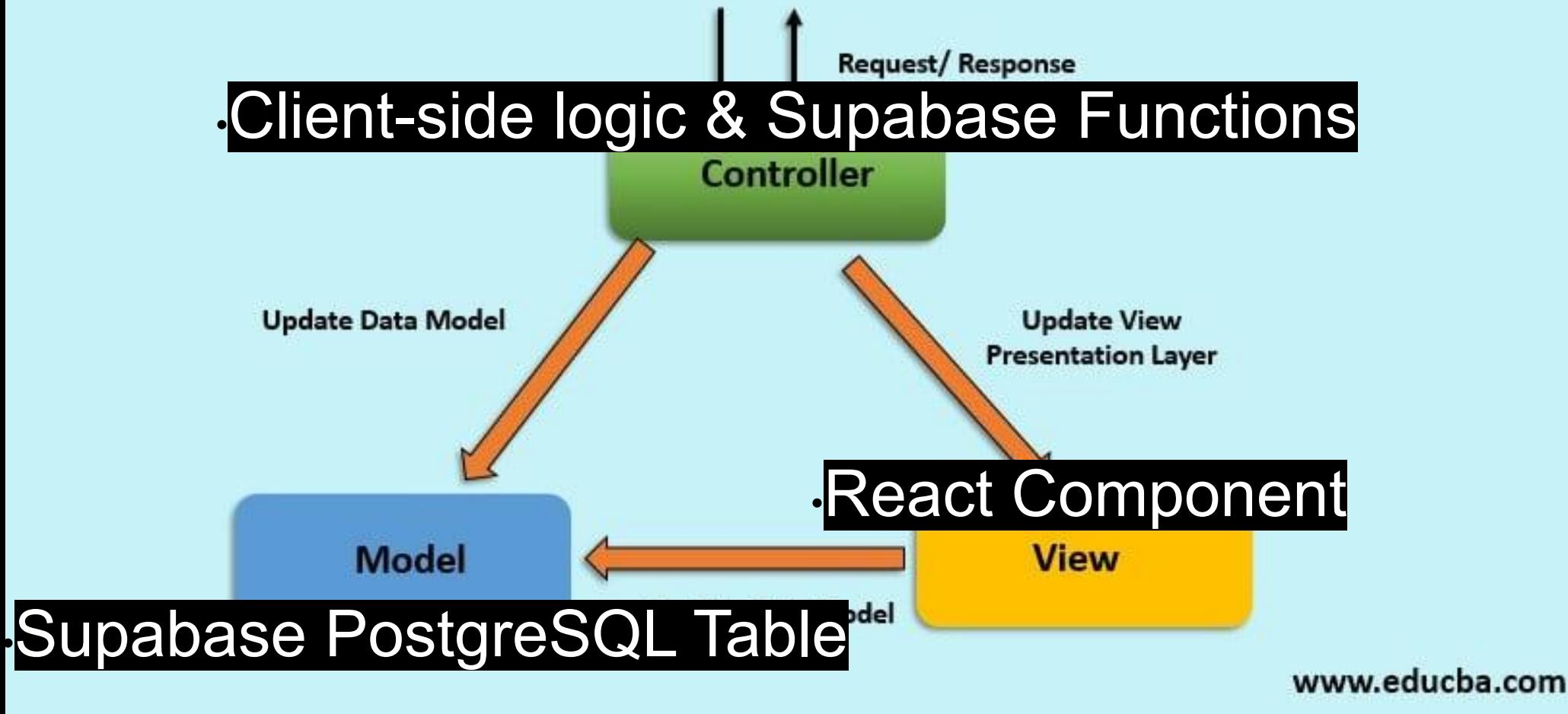
ORM-like Interface

ACID Compliance

Compatibility with JSON field

Model-View-Controller (MVC)

What is MVC Design Pattern



Data & API Design

Sequence Diagram

Schedule

FrontEnd

Milestone	Task
First	Implement Community Page UI with navigation and post structure
Second	Develop Marketplace UI (item list, detail view, filter/sort)
Third	Complete Profile UI and Chat UI , integrate Supabase Auth state
Last	UI refinement, mobile responsiveness, final testing

BackEnd

Milestone	Task
First	Implement core Supabase API connections for posts, users, and items
Second	Extend API endpoints and integrate AI model connections for automated tagging
Third	Add Google OAuth and multi-auth (email, Google) with Supabase
Last	Finalize API, enable monitoring/logging, connect production Supabase

| AI

Milestone	Task
First	Prototype automated category & tag generation I (rule-based + keyword extraction)
Second	Implement similar-item recommendation system using embedding similarity
Third	Improve recommendation accuracy and refine tagging pipeline
Last	Integrate final AI tagging + recommendation into live app

Thank you for listening

Q/A