University of Information Technology

Advanced Database Management System

POTATO

(Myanmar Local Price Tracker)

2025-2026 Academic Year

Group-1

- **May Thiri Htet(TNT-1606)**
- **Khine Mon(TNT-1828)**
- **Su Wai Wai Tun(TNT-1830)**
- **K Paing Phyoe Thaw(TNT-1841)**
- **Nay Win Thaung(TNT-1845)**

Presented by Sem VII Gp-1,BIS

POTATO

Myanmar Local Price Tracker

Our Team Members

May Thiri Htet	(TNT-1606)
Khine Mon	(TNT-1828)
Su Wai Wai Tun	(TNT-1830)
K Paing Phyoe Thaw	(TNT-1841)
Nay Win Thaung	(TNT-1845)

Meet Our Team Members

Khine Mon

- Admin routing and layout
- Manage users and contributors
- Content Management
- Analytics & operations: dashboard, price explorer
- Test features end-to-end and report bugs

Meet Our Team Members

Nay Win Thaung

- Build contributor pages and navigation
- Implement submission,history workflows and validation
- System notification
- Test features end-to-end and report bugs
- Draw project flowcharts and process diagrams

Meet Our Team Members

May Thiri Htet

- Home, browse, catalogue, discovery
- Price exploration and comparisons
- Engagement: favorites/watchlist and notifications
- Shop rating and price suggestion
- Create UI designs and component specs

Meet Our Team Members

K Paing Phyoe Thaw

- User profiles and activity
- Retailer dashboard and flows
- Shop profile and related views
- Authentication and account setup
- Create UI designs and component specs

Meet Our Team Members

Su Wai Wai Tun (Leader)

- Set up database and backend services
- Implement,maintain APIs, auth, and data models
- Develop and support maps,charts and reports moderation
- Collect team code, integrate branches, and fix errors
- Configure sentiment pipeline

Introduction to POTATO

- **POTATO** is a comprehensive price tracking and comparison platform designed specifically for Myanmar's local market ecosystem.
- The platform addresses the critical need for price transparency in essential commodities across different regions and cities in Myanmar.

Problem Statement

Current Market Challenges in Myanmar

Lack of Price Transparency

- Consumers have limited access to real-time price information.
- No centralized platform for comparing prices across different locations.
- Difficulty in identifying the best deals for essential commodities.

Market Information Gap

- Limited visibility into shop-specific pricing.
- No systematic way to track price fluctuations over time.
- Consumers often overpay due to lack of market knowledge.

Problem Statement

Current Market Challenges in Myanmar

Data Fragmentation

- Price information scattered across different sources
- No standardized way to collect and verify price data
- Limited historical data for trend analysis

Objectives(Primary Objectives)

Price Transparency

- Create a centralized platform for real-time price information
- Enable consumers to compare prices across different locations
- Provide historical price trends and analysis.

🔍 Market Intelligence

- Collect and verify price data from multiple sources
- Implement a multi-role system for data contribution
- Establish rating systems

Objectives(Primary Objectives)

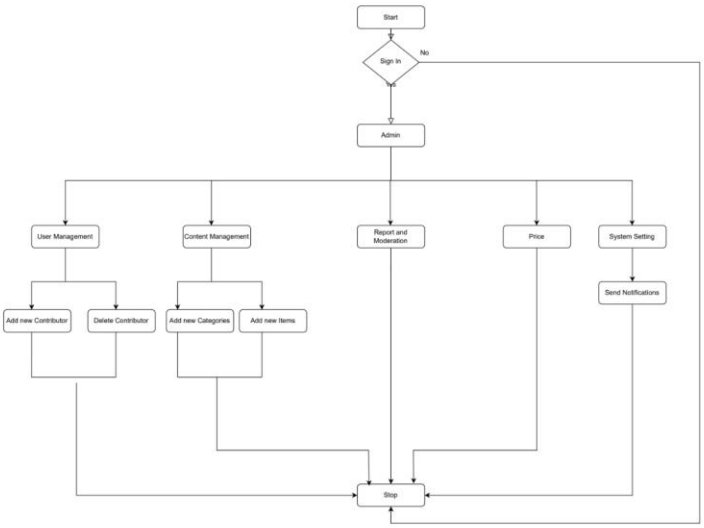
📱 User Experience

- Develop an intuitive,responsive interface
- Implement personalized features (watchlists, notifications)
- Provide multiple visualization options (charts, maps, tables)

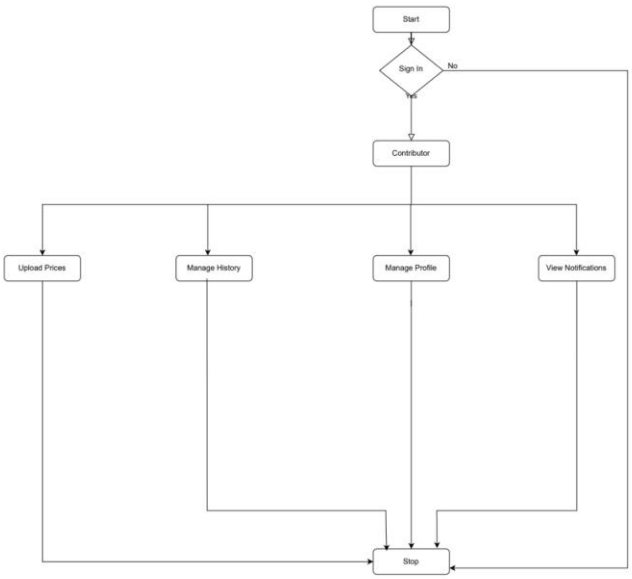
🏪 Business Enablement

- Help retailers understand market positioning
- Enable data-driven pricing strategies
- Create opportunities for business presence

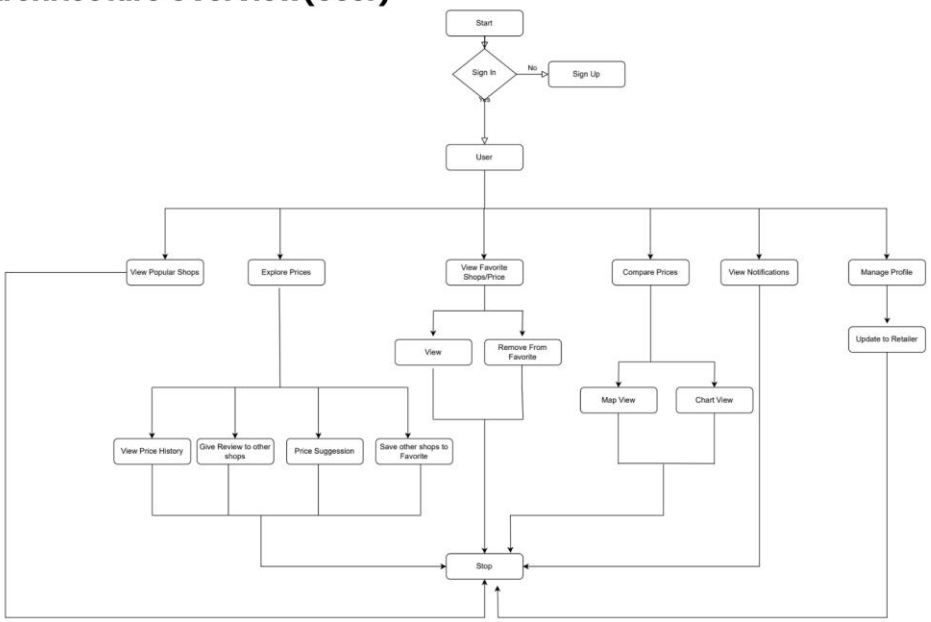
System Architecture Overview(Admin)



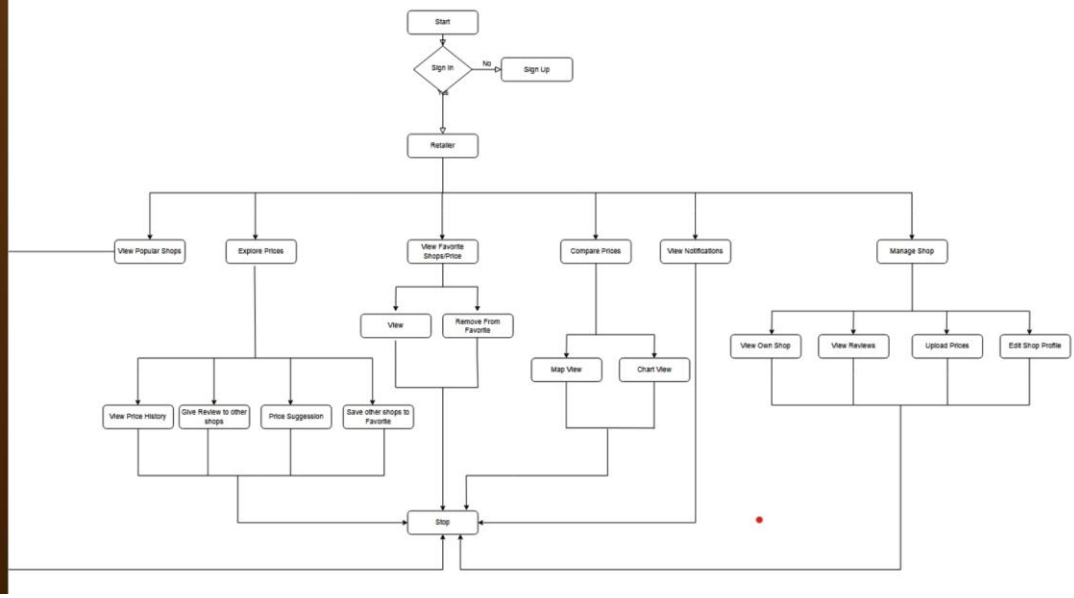
System Architecture Overview(Contributor)



System Architecture Overview(User)



System Architecture Overview(Retailer)



Database Use in the System

PostgreSQL (Primary Database)

- **ACID Compliance: Ensures data integrity for critical user and business data**
- **PostGIS Extension: Provides advanced geographic data processing for location-based services**
- **Scalability: Handles growing user base and data volume efficiently**
- **Reliability: Proven enterprise-grade database with excellent performance**
- **Complex Queries: Supports complex joins and relationships between users, shops, and locations**

Database Use in the System

MongoDB (Secondary Database)

- **Flexibility: Stores dynamic content like price entries and reports without rigid schema**
- **Performance: Optimized for read-heavy operations on price data**
- **Scalability: Horizontal scaling for large volumes of price entries**
- **JSON-like Documents: Natural fit for varied price entry structures**

Comparison with Alternative Databases

PostgreSQL vs MySQL

- PostGIS Support: Better geographic data handling than MySQL's spatial extensions
- JSON Support: Native JSON data types for flexible data storage
- Performance: Superior performance for complex queries and large datasets

MongoDB vs PostgreSQL for Price Data

- Schema Flexibility: MongoDB allows varying price entry structures
- Query Performance: Faster reads for simple price lookups
- Scalability: Better horizontal scaling for massive price datasets

Technology Stack

Frontend Layer

- React 18 with TypeScript for type safety
- Tailwind CSS + shadcn/ui for modern, responsive design
- React Router for multi-app navigation
- React Query for state management and API integration
- Recharts for data visualization
- Leaflet for map integration

Backend Layer

- FastAPI for high-performance REST API
- SQLAlchemy for database ORM
- Pydantic for data validation and serialization
- JWT for secure authentication
- Celery + Redis for background task processing

Database Layer

- PostgreSQL with PostGIS for structured data and spatial queries
- MongoDB for flexible document storage (price entries, reports)

Infrastructure

- Docker for containerization
- PostGIS for geographic data processing
- Multi-database architecture for optimal data storage

System Components

Authentication & Authorization

- JWT-based user authentication
- Role-based access control (User, Contributor, Retailer, Admin)
- Secure password hashing with bcrypt

Data Management

- PostgreSQL for user profiles, shops, categories, and locations
- MongoDB for dynamic content like price entries and reports

API Services

- RESTful API endpoints for all major functions
- Real-time price data management
- Geographic location services
- Notification and reporting systems

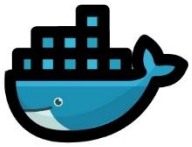
User Interfaces

- User App: Price browsing, comparison, watchlists
- Contributor App: Price submission and management
- Admin App: Platform oversight and content moderation
- Retailer App: Shop and price management

Advanced Features

- Geographic price comparison with maps
- Interactive charts and analytics
- Smart notification system
- Report and moderation tools

Experimental Setup



Local Development

- Docker containers for PostgreSQL, MongoDB

Testing Environment

- Automated testing for API endpoints and data validation

Security Testing

- Authentication and authorization validation

Limitations

Technical Constraints

- Single Region Focus: Currently limited to major Myanmar cities
- Language Support: English-only interface (no Myanmar language support)
- Mobile Optimization: Basic responsive design without native mobile apps
- Offline Capability: No offline data access or synchronization

Feature Limitations

- Price Prediction: No AI-powered price forecasting
- Social Features: Limited community interaction and reviews
- Payment Integration: No direct payment or ordering capabilities
- Advanced Analytics: Basic reporting without business intelligence features

Future Enhancements

Short-term (3-6 months)

- Myanmar Language Support: Localization for broader user adoption
- Mobile Applications: Native iOS and Android apps
- Enhanced Notifications: Push notifications and SMS alerts
- Advanced Search: Filtering by price range, location, and shop ratings

Medium-term (6-12 months)

- AI Price Prediction: Machine learning models for price forecasting
- Social Features: User reviews, ratings, and community discussions
- Business Intelligence: Advanced analytics dashboard for retailers

Future Enhancements

Long-term (1+ years):

- **E-commerce Integration: Direct ordering and payment processing**
- **Supply Chain Tracking: End-to-end product traceability**
- **International Expansion: Support for other Southeast Asian markets**