Final Project Proposal

Microservices and Cloud Computing - CSC 5201 001

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30 November 2024

Project Overview

Create a microservices-based application that fetches product prices from Costco and Metro Market in real-time, compares them, and shows users the cheapest store for a given product.

Hoping to answer the question, “What store should I buy ___ item at?”

1. Microservices Architecture

- Each microservice handles a specific function:
    - **Scraper Service:** For Costco and Metro Market.
    - **Comparison Service:** Normalize and compare prices.

2. Containerization and Orchestration

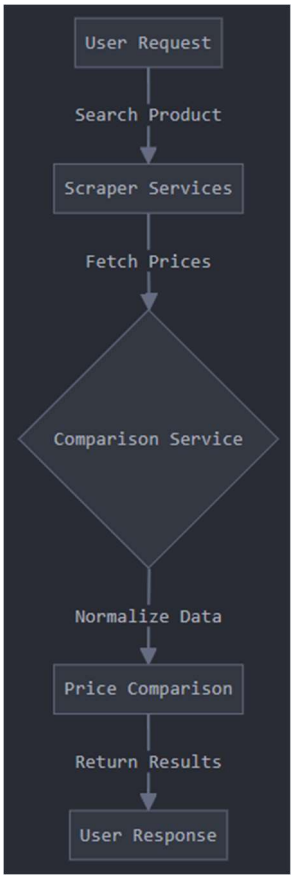
- **Dockerize** each service and deploy

3. APIs

- Create REST APIs for product search AND price comparison.

  Expose endpoints like:

    - /fetch-prices/costco
    - /fetch-prices/metro-market
    - /compare?product_id=<id>



Backend Services:

- Python using Flask.
- Database: SQLite for storing mock price data and usage statistics.

Frontend:

- A lightweight React or Vanilla JavaScript interface to view comparisons.

Requirements

- **Microservices:** Two backend services (price fetching and comparison) and one frontend app.
- **REST APIs:** All endpoints are RESTful.
- **Cloud Deployment:** Deployed on a cloud platform using Docker containers.
- **Access Controls:** Use API keys for access control.
- **Statistics:** Log API usage and display it on an admin endpoint.

Extra Credit:

- Machine Learning**:** Use a pretrained ML model (e.g., from TensorFlow) to predict price trends or discounts based on historical data.

^ I may not reach this step, but will try to integrate if I have time.