Group # Moyu

Final Report
CS296P - Fall 2018

MoDeal

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Executive Summary

MoDeal

Overview

MoDeal is a website that collects product information from various e-commerce platforms, providing a smoother experience for online shopping.

Features:

- Multiple-platform searching: Search products from mainstream platforms including eBay, BestBuy, Walmart, and Etsy.
- Sorting function: Provide three sorting options for results: price lowest first, price lowest first + best match, and rating highest first. Customers can choose one from them.
- Filter function: Provide three filters for results: filtering by setting the minimum price, filtering by setting the maximum price, and filtering by entering keywords of products or source platform names. Customers can choose one from them.
- User system: Customers can sign up and log in with their email addresses as well as social media accounts. Signed up customers can also save items in favorite lists.

Requirements Document

Introduction

This document is a requirements document for MoDeal from team Moyu. In this document, there is a brief description of the product, detailed functional and non-functional requirements of MoDeal, and analysis on possible risks we may face in the future. Finally, the document will mention the current development progress at the time of editing this document.

Overview

MoDeal is a website that gathers product information from many well-known online shopping platforms. One major problem encountered by online shoppers when they search for cheap deals is that there are many available platforms and they are likely to have different UI layouts. Other than that, it can be annoying to have multiple windows/tabs open and switch back and forth. It challenges our limits of short-time memory capacity.
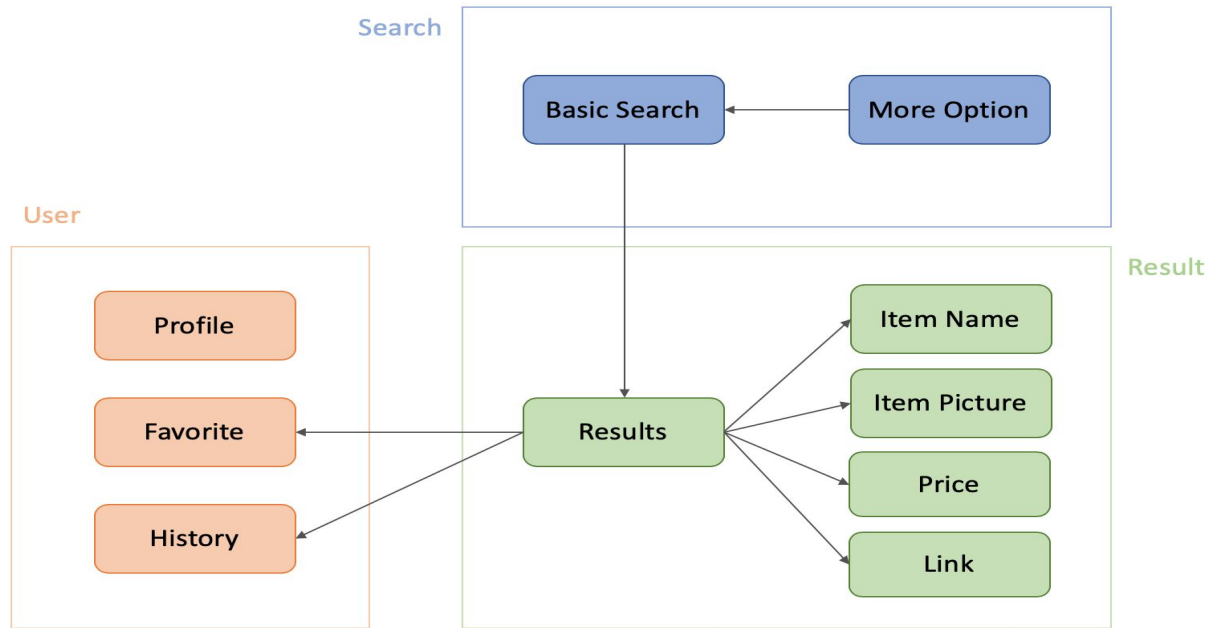
Our project eliminates the discrepancy in visual styles and info compositions among all these platforms, and brings a uniform layout for offerings from all other websites. All results are displayed in the same window, no more "Alt + Tab" or "Ctrl + Tab" in Google Chrome. Users can browse through all results based on the sorted prices or ratings. The website also allows signing up with other popular social media accounts for convenience, so they can save searching results online if they need to think about the purchase more carefully.

Application Context / Environmental Constraints

MoDeal can be accessed through modern web browsers from desktops, laptops and mobile phones. Since it collects results from other e-commerce platforms, relevant APIs are used to gather product information. Besides, since e-mail accounts or social media accounts can be used to sign up for MoDeal, relevant software might be accessed for permissions.

Functional Requirements

- This section covers the functional requirements of MoDeal. A user-case diagram listed below shows the hierarchy of our webpage.

Search

Basic Search ← More Option

User

Profile

Favorite

History

Result

Results

Item Name

Item Picture

Price

Link

- Descriptions of each feature.
  - Search
    Search is the main function of MoDeal. Besides basic search, MoDeal provides options for users to choose the source sites.
    - Basic Search
      Enter product names in the searching bar to get searching results from eBay, BestBuy, Walmart, and Etsy simultaneously.
    - More Option
      (1) Filter: Three filters for setting the minimum price, maximum price and entering keywords of products or source platforms respectively.
      (2) Sorting options: Originally without sorting. Three different sorting options are provided by MoDeal: Sorting by prices in ascending order; sorting by prices in ascending order with the best match; Sorting by ratings in descending order.
  - Result
    MoDeal provides details of each product: pictures, names, links to source platforms, prices, and name of source platforms. Signed up users can save items in their favorite lists.
    - Item Name
      Display Item name and precise description on top of every item.

- - - ■ Item Picture

      Show the item picture to the left of each item.
    - ■ Price

      List the price information of the item.
    - ■ Link

      A link to purchasing webpage, integrated with item names;
    - ■ Add to favorites

      Add items to favorite lists.
  - ○ User

    MoDeal has its own user management system, where users can log in with their e-mail addresses or social media accounts. In User section, one can manage personal profile, review browsing history, and edit favorite items list.
    - ■ Profile

      Change User Name, Profile Photo, Email Address, and Password.
    - ■ History

      View their browsing history here.
    - ■ Favorite

      Save and delete items in Favorite as their wishlist for future convenience. They are also able to share items with their friends.

Software Qualities and Non-functional Requirements

- Security: Information of users should be protected from leaking and stealing.
- Usability: All the functions of MoDeal should be practical and easily-learned by users.
- Speed: MoDeal should return searching results in a few milliseconds.
- Reliability: MoDeal should always return results correctly based on specific standards.
- Stability: Repetitive searching based on the same standard in a short period of time should always return the same results.

Other Requirements

- Database Requirement

  MoDeal uses SQLite which is included in Python.
- Internationalization Requirements

  For now, only the English version is provided, Chinese support is considered to be added in future.

- Legal Requirement

  Since web scraping is not considered legitimate officially, all of the data will be retrieved from open API to avoid the violation of the privacy policy of the e-commerce platform.

Assumptions / Risks

Assumptions
- E-commerce platforms will have open API to part of search results.

Risks
- Business risks

  Competition from other similar products.

  For now, the only profit method in consideration is the advertisement. The profitability prospect is not very clear.
- Legal and ethical risks

  All data will be retrieved from open API to avoid the violation of the privacy policy of the e-commerce platform.
- Project management risks

  Developers are from a team formed by students, the project development process might be influenced by an exam or interview schedule. A little advance in process is necessary.

Priorities / Implementation Phases

- Must Have:
  - Basic Search of Search function
  - List information of Result function including Item Name, Item Picture, Price and Link
  - Three different sorting options: Sorting by prices in ascending order; sorting by prices in ascending order with the best match; Sorting by ratings in descending order.
- Should Have:
  - User function including profile, history, and favorites
  - "Add to favorites" of Result function
- Nice to Have:
  - "More Option" of the Search function

Future Directions and Expected Changes

Our future directions:

- Place our website on the cloud server such as AWS, Azure, or GCP.
- Use advanced front-end framework.
- Apply machine learning algorithms (currently we applied a basic KNN algorithm on price to filter some items) to get a common method and a better performance of crawling.
- Add more filter options such as excluded keywords (e.g. "iPhone" without "case"), price range.
- User accounts could get connected with other social accounts like Google, Facebook.
- The user can make his/her comments on the items on MoDeal.
- Use the database to store search results of some common keywords to decrease searching cost.
- Find a common way to get information of shopping platforms that we can easily add a new platform into MoDeal's consideration.
- Find a way to get the approval of Amazon's official API to add into MoDeal.

Design Document

1. System Architecture

   Our primary idea is to provide different choices and various information for users to pick and conveniently access to the URLs of suitable items. The architecture of our system is illustrated in Fig. 1. First of all, we obtain the input searching content typed by users and preprocess these contents. Secondly, through official API of shopping platforms or directly crawling information by web source code, the system would find the ideal products items and their information as well to be displayed on our search page. Thirdly, the system also provides user accounts features including social media authentication from Google, Facebook, Twitter, etc.
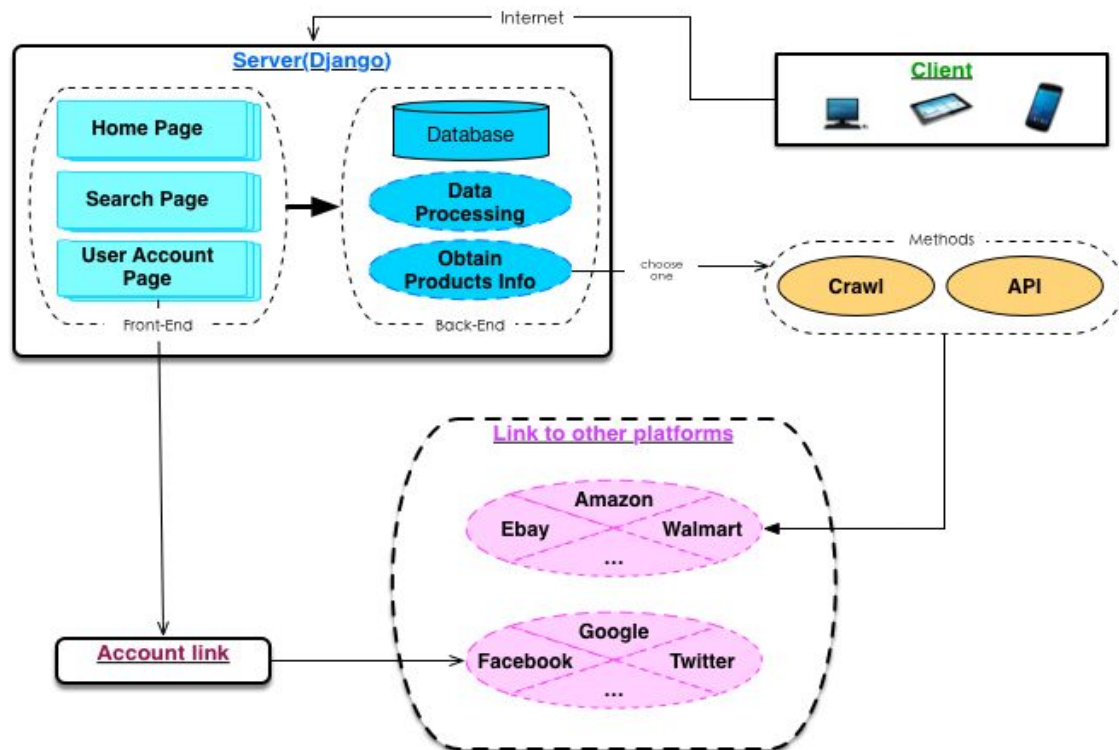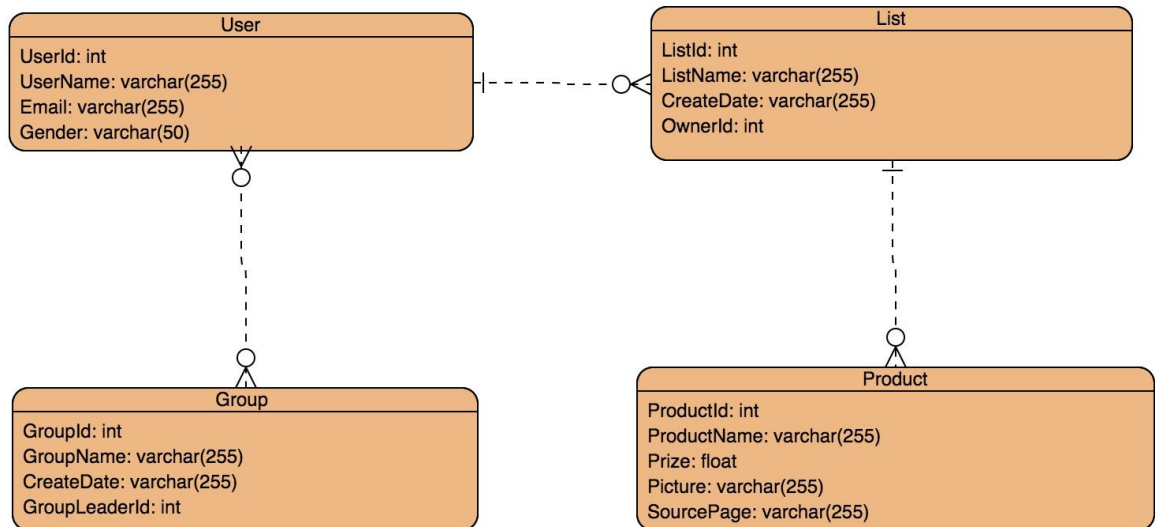

Fig. 1: System Architecture

2. Data Flow
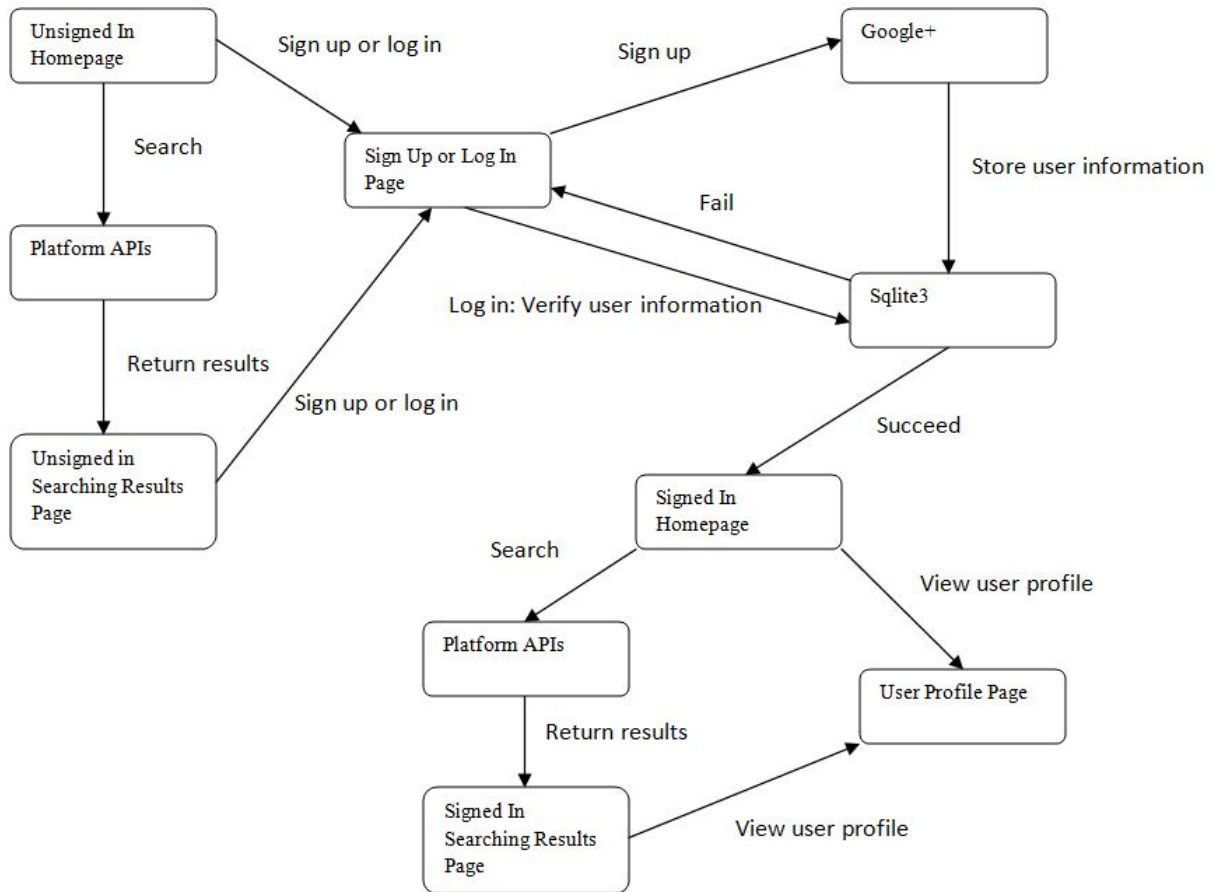
3. DB Design, Relational Diagram

1) Entity and relationships

User
UserId: int
UserName: varchar(255)
Email: varchar(255)
Gender: varchar(50)

List
ListId: int
ListName: varchar(255)
CreateDate: varchar(255)
OwnerId: int

Group
GroupId: int
GroupName: varchar(255)
CreateDate: varchar(255)
GroupLeaderId: int

Product
ProductId: int
ProductName: varchar(255)
Prize: float
Picture: varchar(255)
SourcePage: varchar(255)

4. Interfaces:

1) User:
   a) Login
   b) Logout
   c) ChangePassword
   d) AddToFavourite
2) Product
   a) getName
   b) getPrice
   c) getSource   // get original platform of posting
   d) getShippingFee
   e) getUrl
   f) getRating ***
3) Admin:
   a) CreateUser
   b) DeleteUser
4) SearchTool:
   a) Search(info)
   b) Filter(key, condition)
   c) Sort(key, order)

5. UI Design:

5) Home Page
   a) Search Box: Enter product information.
   b) Search Button: Click to search and redirect to result page.
   c) Sign In Button: Click to sign in and redirect to sign in page.

Log in

MoDeal

Enter product information   Search

6) Sign-in & Sign-up Page
   a) Sign-up: Create a username using an email address.
   b) Sign-in
      i)   Username Account: Use the created username to sign in.
      ii)   Social Media Account: Use a social media accounts to sign in.

MoDeal

Welcome

Email address

Enter email

We'll never share your email with anyone else.

Password

Password

Sign in

---

demo

👥 12 friends   🐷 5 lists   ✉ InMail

Profile

Friend

Favorite

Email   demo@demo.com

UserName   demo   Change

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7) Result Page
   a) Search:
      i) Search Box: Enter product Information
      ii) More Option: Filter results based on Price, Source, etc.
   b) Profile: Click to redirect to user profile page
   c) Item: List item information
      i) Price
      ii) Source: source website.
      iii) URL: Link to buy this item.
   d) Navigation: Navigate to different result pages.

Sign up or log in

MoDeal   iphone   Search

Filter

Enter MIN price..

Enter MAX price..

Enter keywords

Refurbished Apple iPhone 6 Plus 128GB, Gold - Unlocked GSM   Add to Favorites

$262.67

Walmart

Refurbished Apple iPhone 6 Plus 128GB, Space Gray - Unlocked GSM   Add to Favorites

$262.67

Walmart

Refurbished Apple iPhone 6s 128GB, Silver - Unlocked GSM   Add to Favorites

$269.33

Walmart

Apple iPhone 7 32GB GSM Unlocked Smartphone   Add to Favorites