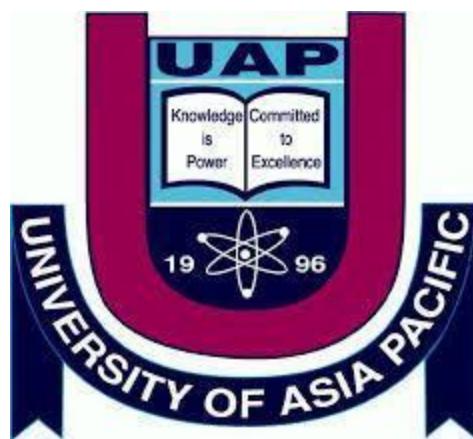


UNIVERSITY OF ASIA PACIFIC

Department of Computer Science of Engineering



Project Report:

Course code: CSE(410)

Course Title: Software Development

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Project Report

Project Title :

E-commerce site with recommendation system.

Motivation :

We want to build an E-commerce site with a recommendation system which recommends the product depending on previous search data.

Problem Definition: E-commerce provides an easy way to sell products to a large customer base. However, there is a lot of competition among multiple e-commerce sites. When users land on an e-commerce site, they expect to find what they are looking for quickly and easily. Also, users are not sure about the brands or the actual products they want to purchase. They have a very broad idea about what they want to buy. Many customers nowadays search for their products on Google rather than visiting specific e-commerce sites. They believe that Google will take them to the e-commerce sites that have their product.

Objective & Project Output :

Today, it is an indispensable technology for any e-commerce, as it makes product recommendations for the consumer, acting as a virtual seller. This facilitates navigation within the store and raises the user experience, because it makes the shopping journey much more enjoyable.

Benefits of the project (Effect on Society):

When our recommendation system tracks user data, this causes issues of user privacy. By recommending the product sometimes it's very user privacy confidential. If we recommend fake products that are viral that can stop bad consequences for our society.

Critical Challenges :

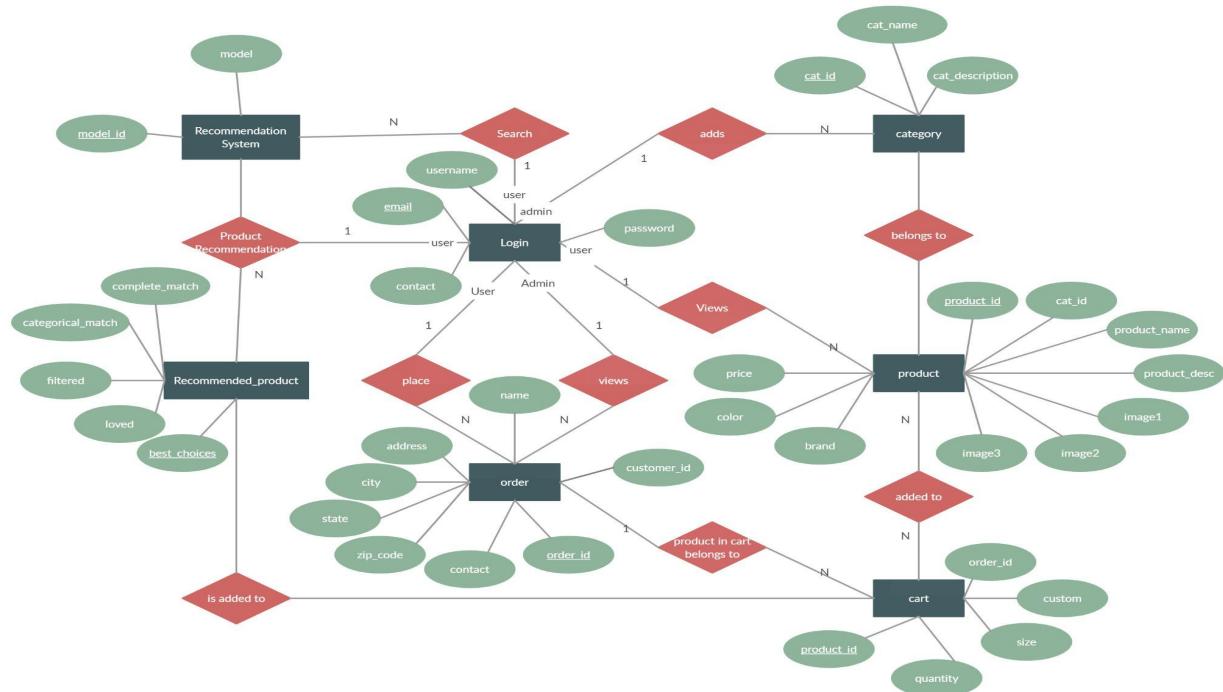
We observe that many products are added more frequently to the database of recommendation systems; only already existing products are recommended to users as newly added products are not rated yet. So an issue of Latency arises. The collaborative filtering method and category-based approach in combination with user-item interaction can be used to deal with this issue.

Conflicting requirement :

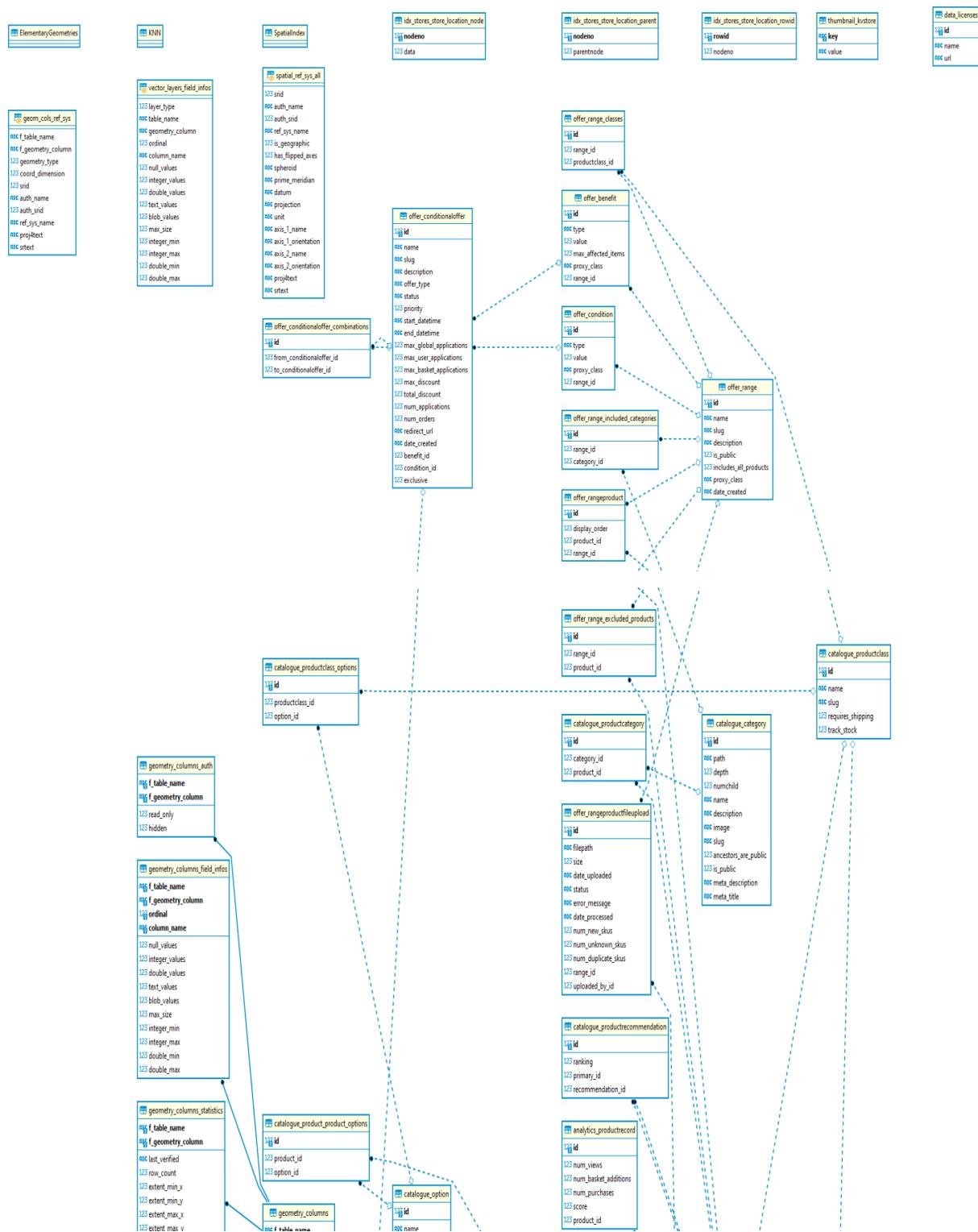
When a customer first registers on our site the recommendation system has not enough data for recommendation.

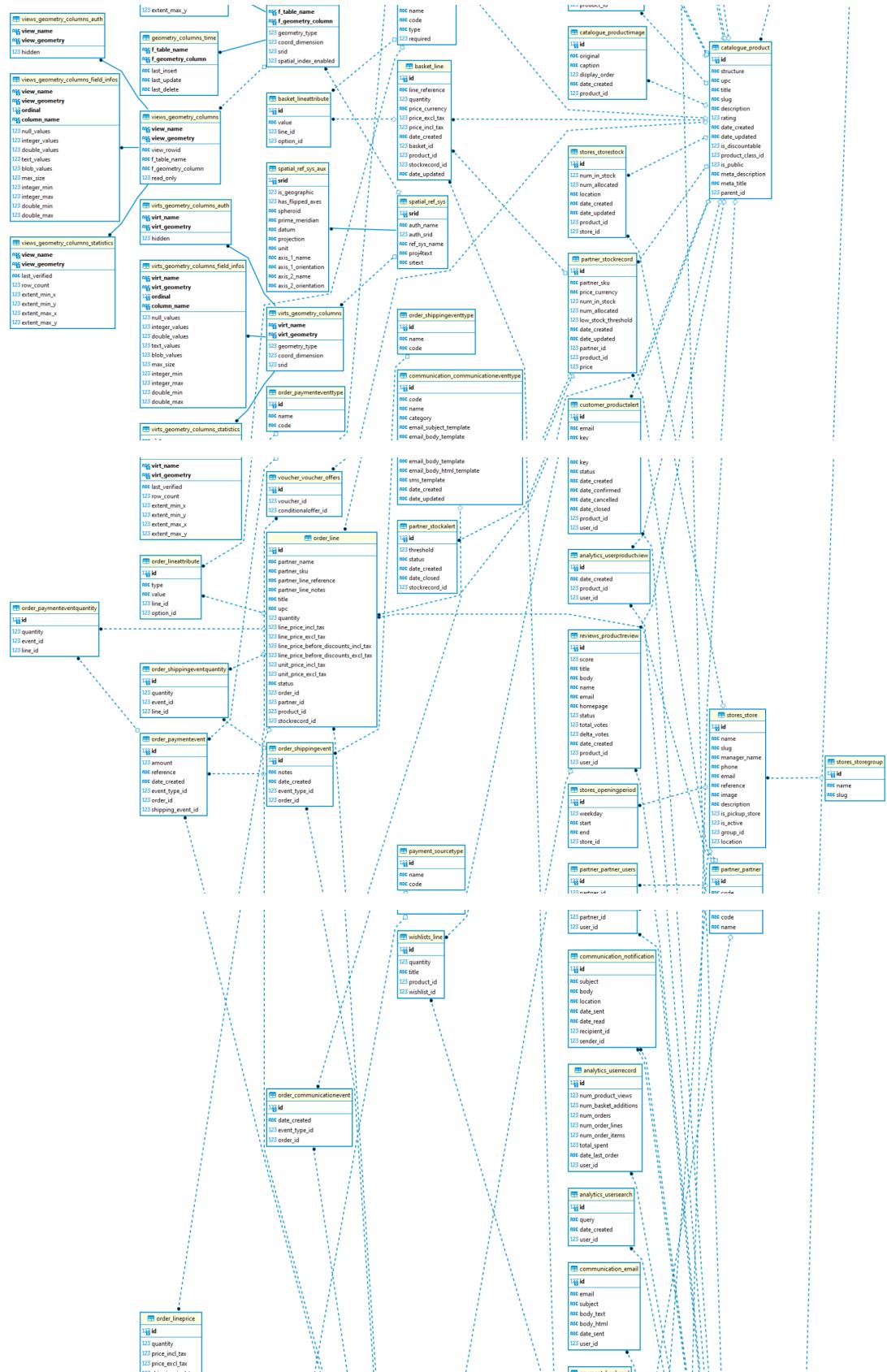
Solution methodology:

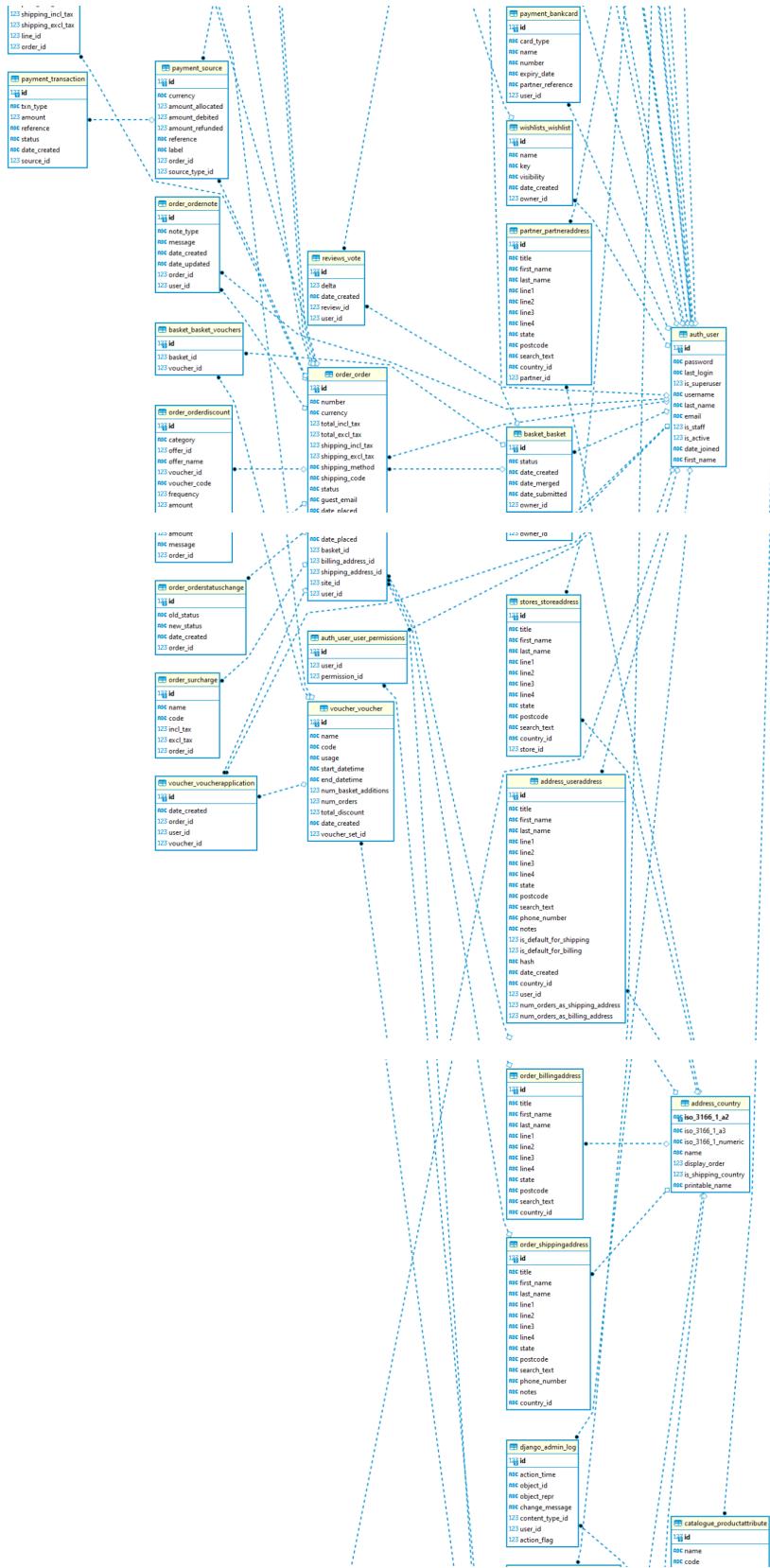
ER Diagram:

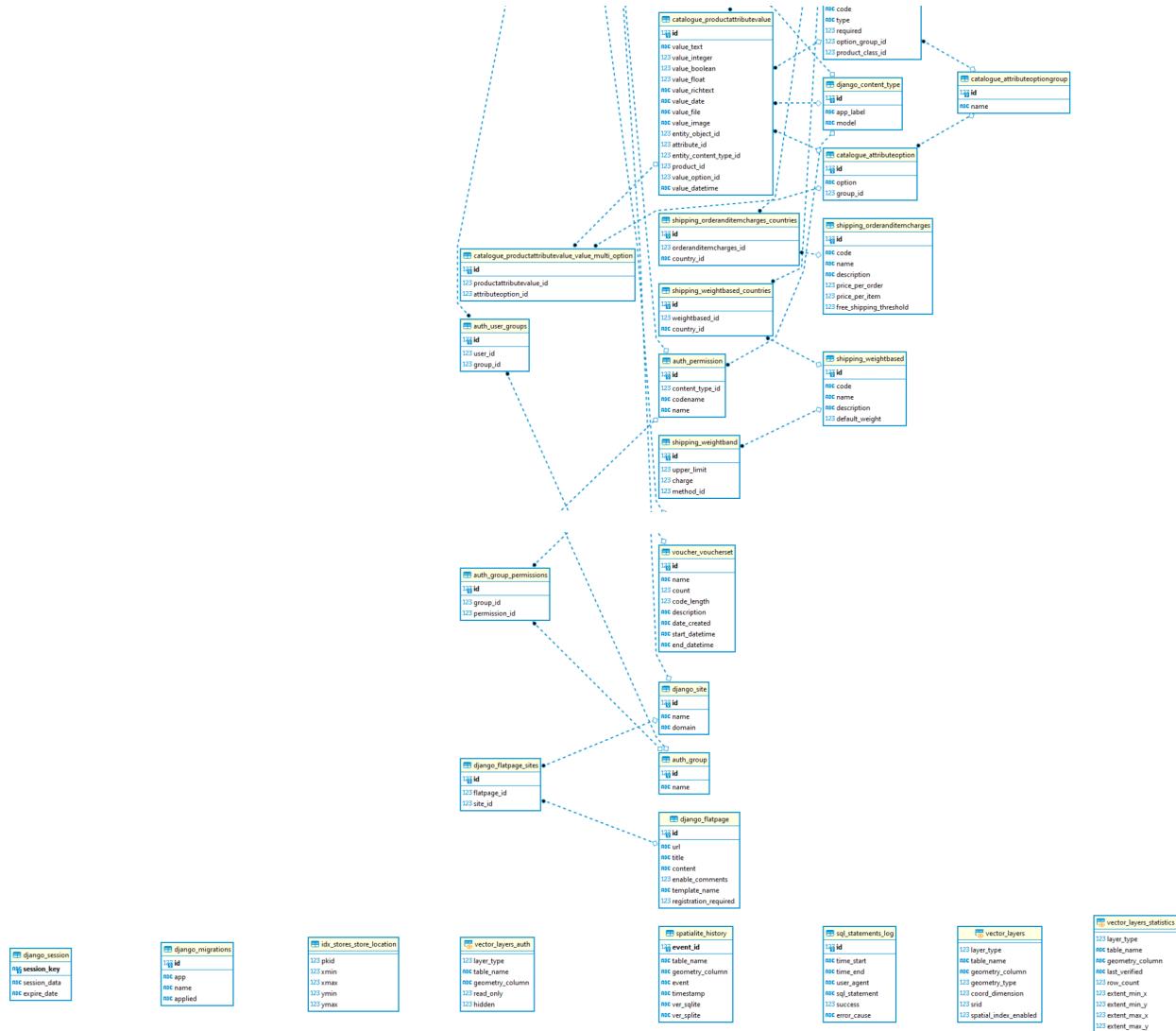


Schema Diagram:

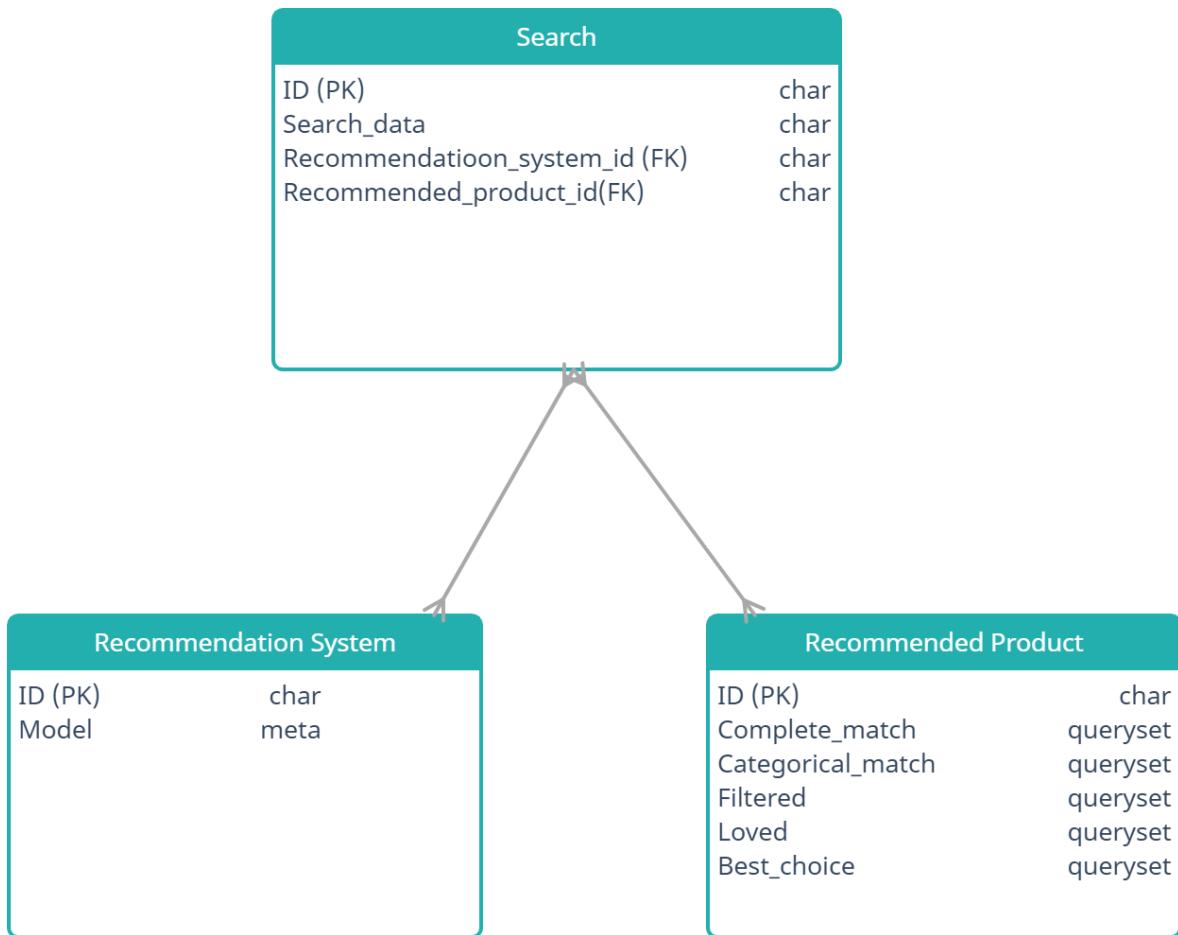




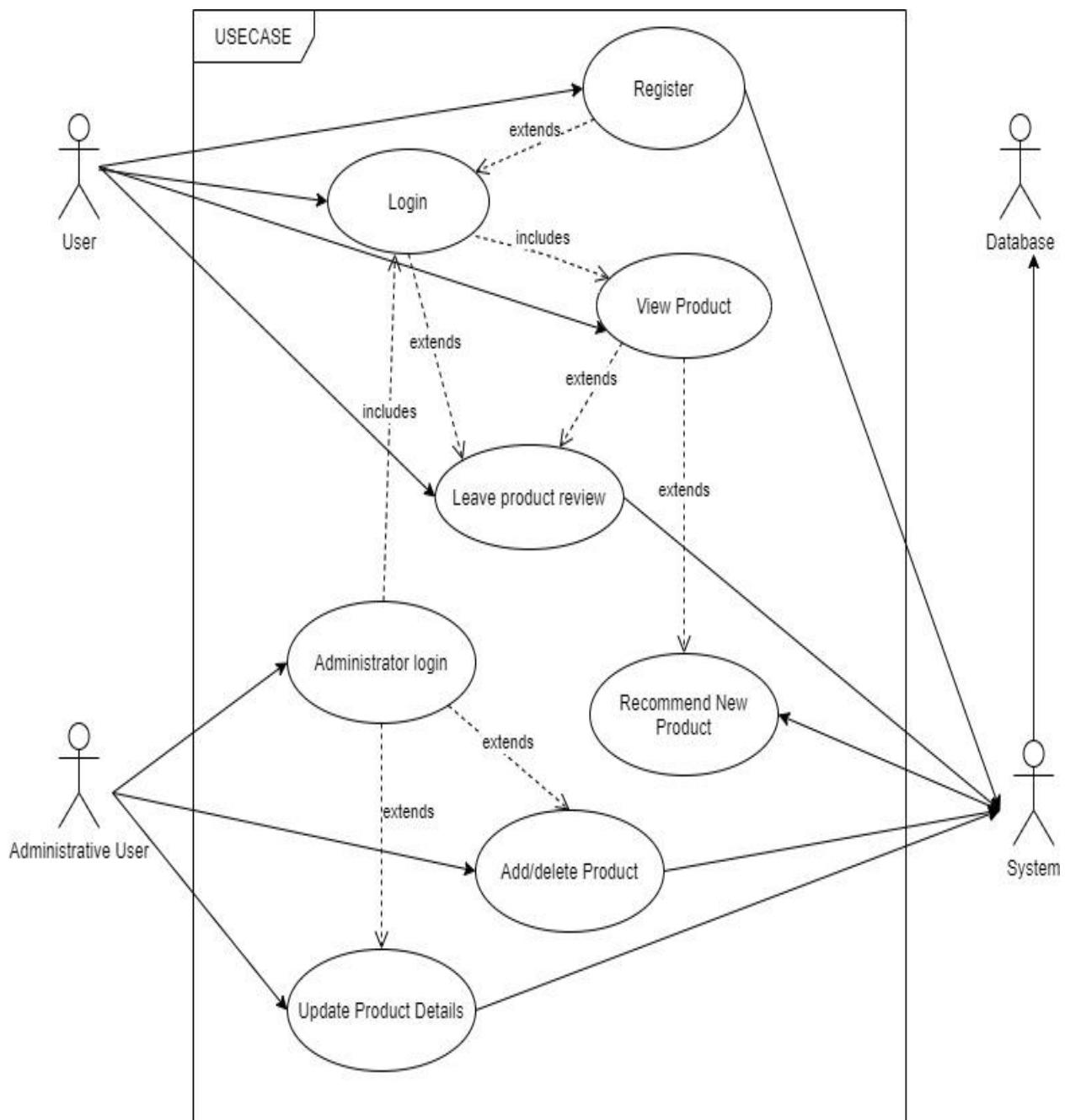




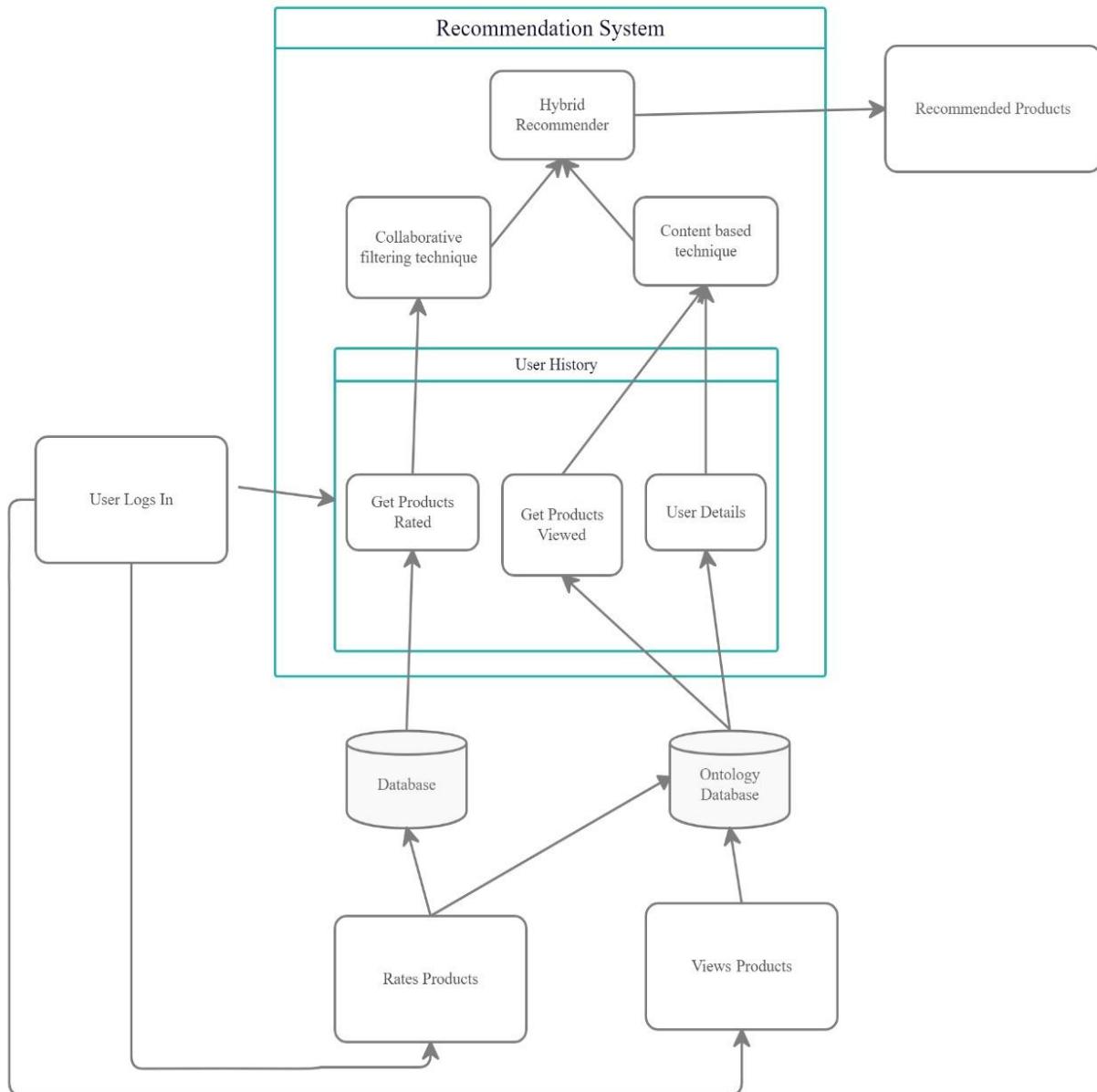
SchemaDiagram:



Use Case Diagram:



Block Diagram:



Project developing resource:

Sample recommendation system for ecommerce:

<https://www.kaggle.com/shawamar/product-recommendation-system-for-e-commerce/data>

Dataset: Dataset came from our project's product model (Jason format)

Model: k-means clustering algorithm (machine learning)

API: <https://www.sslcommerz.com/>

Framework: Django

Investigation (Related works):

Amazon is a pioneer and one of the most notable and old cases of success when it comes to the recommendation system.

They have used this technology since 1999, always cherishing the customization of the shopping experience. Over the years, they have been improving the system more and more and today it is the most valuable company in the world: it is worth almost half a billion dollars.

Its system is geared towards product recommendation, which facilitates the purchase journey of its con

Studies for recommendation system:

We are formulating a recommendation system for studying collaborative filtering. We have to gain more knowledge about machine

learning and their various models for building recommendation systems.

We are following the K-means cluster model for product recommendation . There is an example of a product recommendation system in <https://www.kaggle.com/>

Link:

<https://www.kaggle.com/shawamar/product-recommendation-system-for-e-commerce/data>

Survey:

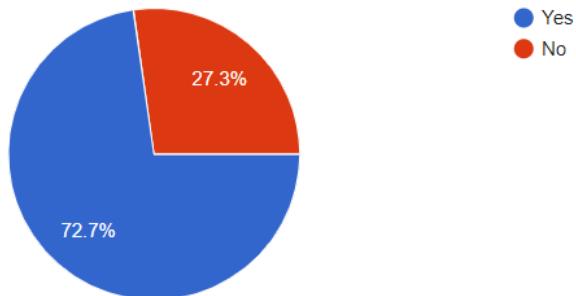
https://docs.google.com/forms/d/1aFSxIsf2buyz5BDwBvt_otDBBOgQZqgZIJHVNcH0fFQ/edit

<https://docs.google.com/forms/d/1UoOy8rTPOdgEs5rFEUsiw6MAIyyeCb1nWtU781sdG9w/edit>

Survey result:

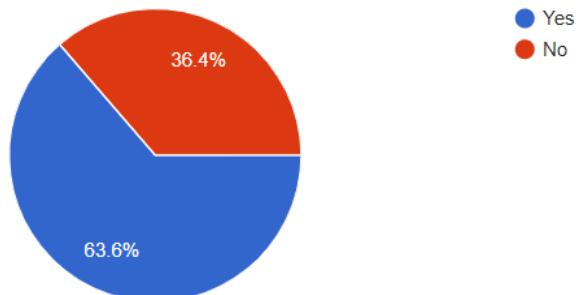
For the sake of your experience improvement can we use your purchased data for product suggestion?

22 responses



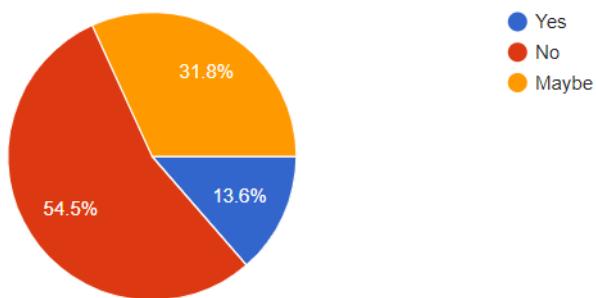
Can you share your location for local product suggestion?

22 responses



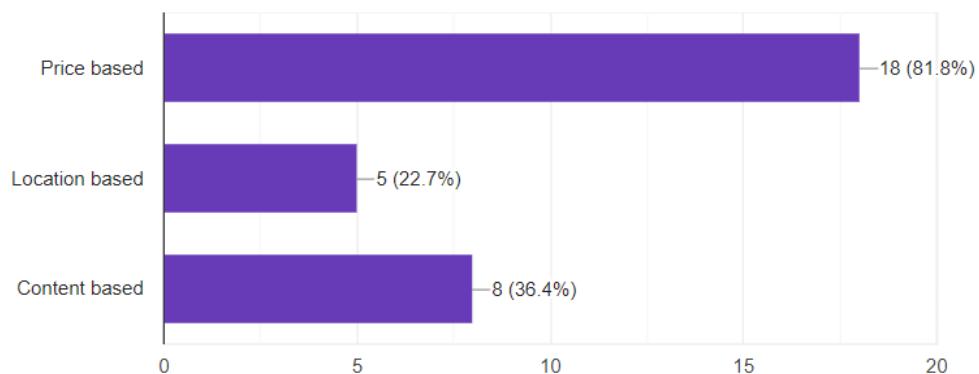
Can you agree to share your searched data with third party such as Facebook,Youtube and Google

22 responses

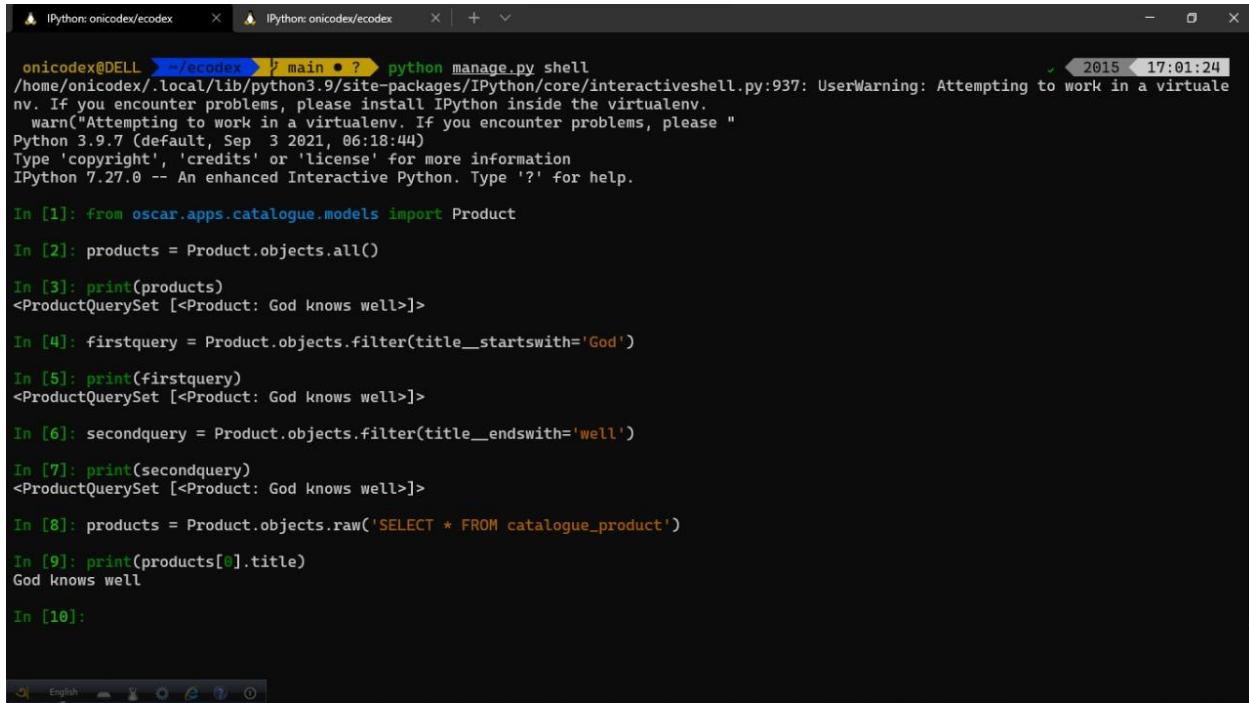


Which technique you prefer for suggests a product

22 responses



Query Part:



The screenshot shows a Jupyter Notebook interface with two tabs: 'IPython: onicodec/ecodex' and 'IPython: onicodec/ecodex'. The notebook contains the following Python code:

```
onicodex@DELL ~/ecodex > main • ? python manage.py shell
/home/onicodex/.local/lib/python3.9/site-packages/IPython/core/interactiveshell.py:937: UserWarning: Attempting to work in a virtualenv.
  warn("Attempting to work in a virtualenv. If you encounter problems, please install IPython inside the virtualenv.
Python 3.9.7 (default, Sep  3 2021, 06:18:44)
Type 'copyright', 'credits' or 'license' for more information
IPython 7.27.0 -- An enhanced Interactive Python. Type '?' for help.

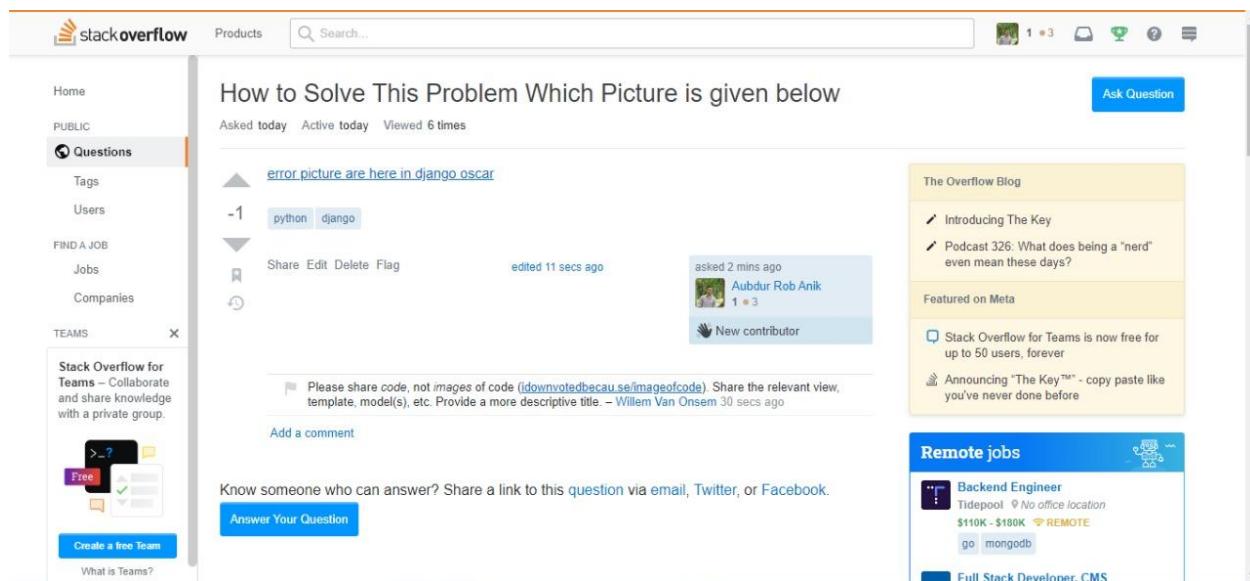
In [1]: from oscar.apps.catalogue.models import Product
In [2]: products = Product.objects.all()
In [3]: print(products)
<ProductQuerySet [<Product: God knows well>]>
In [4]: firstquery = Product.objects.filter(title__startswith='God')
In [5]: print(firstquery)
<ProductQuerySet [<Product: God knows well>]>
In [6]: secondquery = Product.objects.filter(title__endswith='well')
In [7]: print(secondquery)
<ProductQuerySet [<Product: God knows well>]>
In [8]: products = Product.objects.raw('SELECT * FROM catalogue_product')
In [9]: print(products[0].title)
God knows well
In [10]:
```

Solutions :

- 1)** We maximized the data storage depending on the session. Which provides user privacy.
- 2)** If we use Geo-location then we have to use Geo-location Anti Fraud Software.
- 3)** Reduce database load time using Optimize Caching Algorithm.

Risk Analysis:

By using ML model, analyse the Product title and Product description, detect item-item collaborative products for recommendation.In this case we try to recommend a product based on their title and descriptions to users.In this case we face various problems.we collect dataset from kaggle and we try to patch up with our project requirement, and also follow youtube for solve this problem.And we also browse different types of site like **Stack overflow,kaggle,quora**.



Learnings from this work:

In this project we develop a recommendation system using collaborative filtering techniques and also add a payment gateway system. How to integrate the machine learning model with the django project.

Deployment:

```
$ cd ecodex
```

```
### Install dependencies
```

```
$ pip install -r requirements.txt # or $ pipenv install
```

```
### Setup the application for running locally
```

```
$ python manage.py migrate
```

```
$ python manage.py makemigrations django_sslcommerz # if this is  
not listed in migration
```

```
$ python manage.py migrate django_sslcommerz
```

```
$ python manage.py oscar_populate_countries
```

```
$ python manage.py createsuperuser
```

```
# enter valid information
```

```
### Run the application locally
```

```
$ python manage.py runserver
```

Open your browser and verify <http://localhost:8000/>

Final Project(sample image):

Home Page

The screenshot shows the homepage of an e-commerce platform named ECODEX. At the top, there is a language selection dropdown (Bengali) and a 'Go' button. To the right are links for 'Account' and 'Logout'. The header features the text 'ECODEX Improve Lives' and a 'Basket total: BDT0.00' with a 'View basket' button. Below the header is a search bar with a 'Search' button. A breadcrumb navigation shows 'Home / All products'. On the left, a sidebar titled 'Show results for' lists 'Jersey' and 'Books'. The main content area is titled 'All products' and displays 7 results. It includes four book covers: 'Data Structures', 'Algorithm', 'Machine learning', and another book whose cover is partially visible. Below each book is its title, price (BDT350.00, BDT400.00, BDT500.00, BDT1,100.00), a 'In stock' status indicator with a green checkmark, and a blue 'Add to basket' button. At the bottom of this section are three smaller jersey images.

Select product to buy

The screenshot shows a product detail page for a PSG jersey. At the top, it features the ECODEX logo and a 'Basket total: BDT0.00' link. Below the header is a search bar and a breadcrumb navigation showing 'Home / Jersey / PSG'. The main product image is a white PSG away kit. To the right of the image, the product name 'PSG' is displayed in bold black text, followed by the price 'BDT1,100.00' in green. Below the price is a green 'In stock (48 available)' message with a checkmark icon. There is also a 'Write a review' button. At the bottom of this section are two blue 'Add to basket' and 'Add to wish list' buttons. Below the product image, there is a 'Product Description' section containing the text 'PSG away kit' and a 'Product Information' section.

Product description

Product Description

PSG away kit

Product Information

Product Type	Club Jersey
Price (excl. tax)	BDT1,100.00
Price (incl. tax)	BDT1,100.00
Tax	BDT0.00
Availability	In stock (48 available)
ClubName	PSG
Price	1100
Size	L
Number of reviews	0

Customer Reviews

This product does not have any reviews yet - [be the first to write one.](#)

Recommended items



Recommendation product

Customer Reviews

This product does not have any reviews yet - [be the first to write one.](#)

Recommended items



Germany

BDT900.00

In stock

Add to basket



Argentina

BDT900.00

In stock

Add to basket



Barcelona

BDT1,400.00

In stock

Add to basket

Products you recently viewed



Argentina

BDT900.00



Data Structure

BDT350.00



Machine learning

BDT500.00



Algorithm

BDT400.00

Checkout page

ECODEX Improve Lives

Basket total: BDT2,200.00 [View basket](#) ▾

Browse store ▾ [Search](#)

[Home](#) / [Jersey](#) / [PSG](#)

PSG has been added to your basket. ×

Your basket total is now **BDT2,200.00** [View basket](#) [Checkout now](#)



PSG
BDT1,100.00

✓ In stock (48 available)

[Write a review](#)

[Add to basket](#) [Add to wish list](#)

Product Description

Shipping address page

ECODEX Improve Lives

1. Shipping address 2. Shipping method 3. Payment 4. Preview 5. Confirmation

Shipping address

Where should we ship to?

An address from your address book?

Mr Anik das
Jamtola
Jamtola
Narayanganj
Bangladesh
1312
Bangladesh

[Ship to this address](#) [Edit address](#) ▾

Or a new address?

Title	<input style="width: 150px;" type="text"/>
First name *	<input style="width: 150px;" type="text"/>
Last name *	<input style="width: 150px;" type="text"/>
First line of address *	<input style="width: 150px;" type="text"/>
Second line of address	<input style="width: 150px;" type="text"/>

User details for order

Or a new address?

Title	Mr
First name *	Anik
Last name *	das
First line of address *	Jamtola
Second line of address	
Third line of address	Jamtola
City *	Narayanganj
State/County	Bangladesh
Post/Zip-code *	1312
Country *	Bangladesh
Phone number	01626838003
Instructions	<p>In case we need to call you about your order</p> <p>Tell us anything we should know when delivering your order.</p>

[Continue](#) or [return to basket](#)

Shipping Chosen page

ECODEX Improve Lives

> 1. Shipping address 2. Shipping method 3. Payment 4. Preview 5. Confirmation

Shipping method

Method

Standard Shipping

Cost

BDT6.00

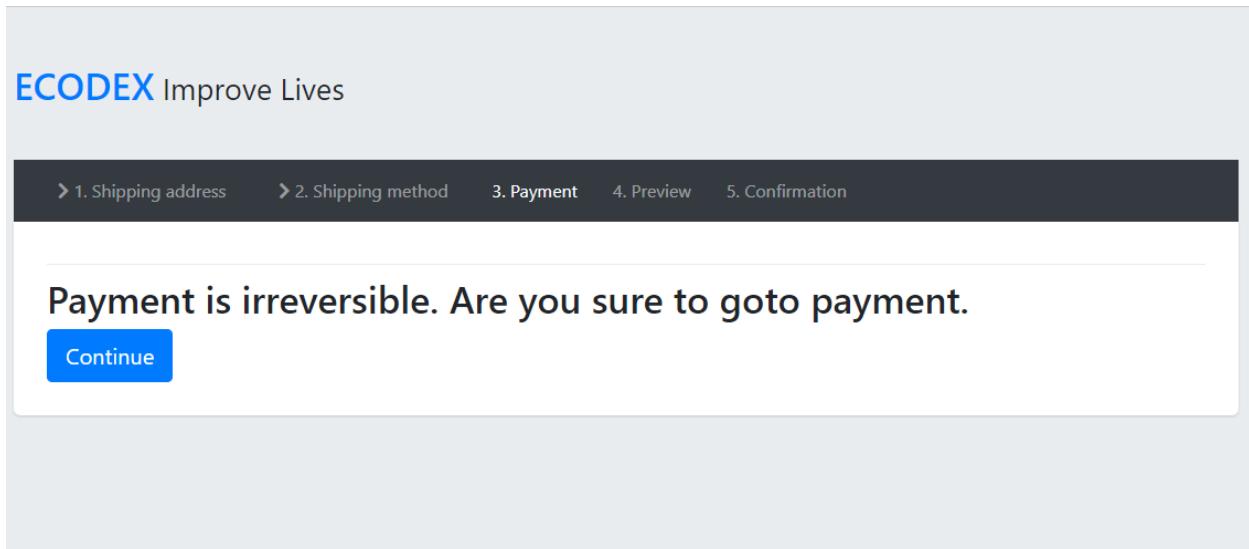
[Select option](#)

Express Shipping

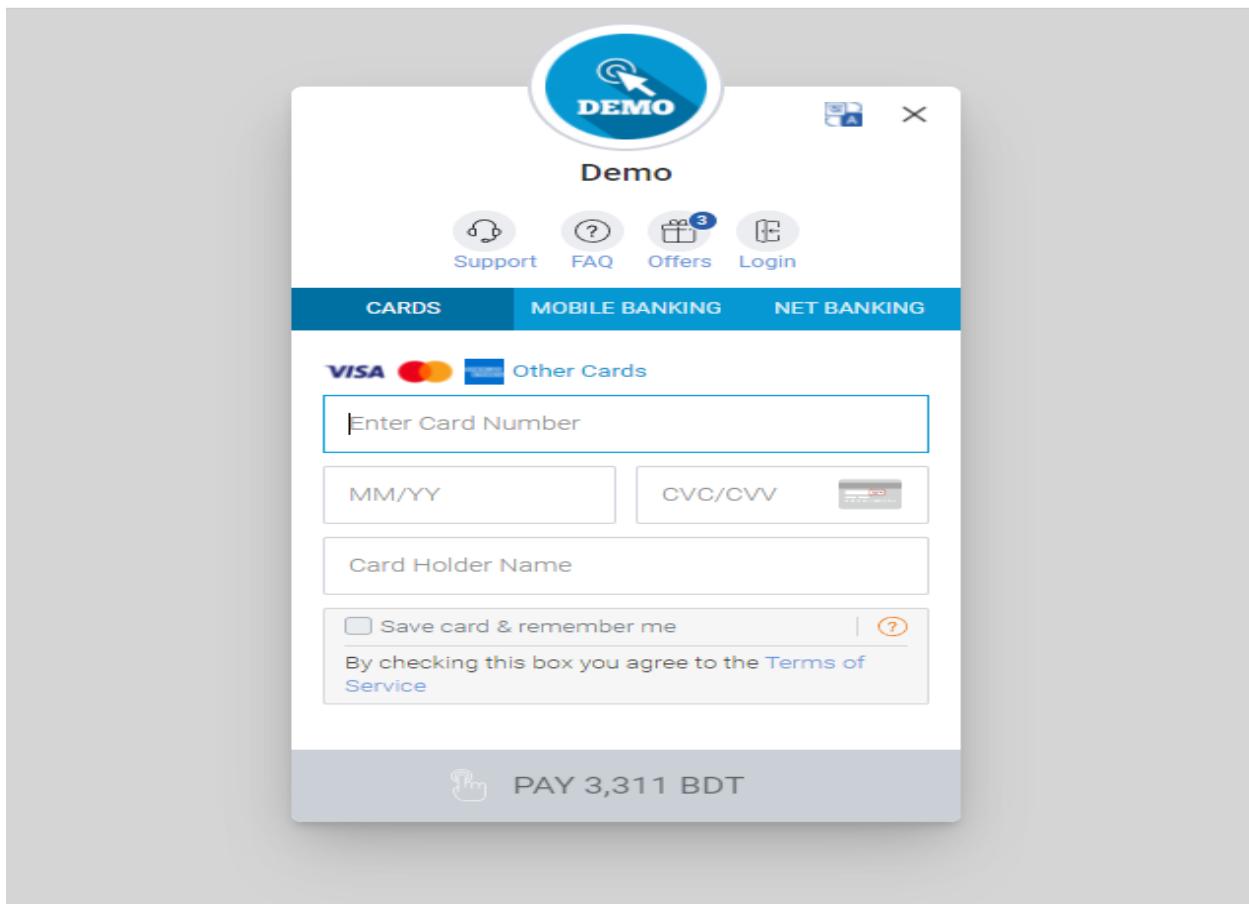
BDT11.00

[Select option](#)

For Payment page



Payment gateway



Payment gateway

OTP Page

Do not press browser back or forward button while you are in payment page

Payment Summary	
Please review the following detail for this transaction:	
Amount:	3311.00
Currency:	BDT
Invoice number:	21110216343200IFs5i7fFuZ5Sg
Description:	Products

Enter Card Information

OTP: <input type="text"/>	Your entered card information could not be corrupted or become known to the third party, as all transmitted data is encrypted by the SSL protocol.
Success Success with risk	Failed
Note	
<ol style="list-style-type: none">1. For VISA and MC, look at the back side of your Card to find 3-digit CVV2/ CVC2. For AMEX, look at the upper right corner of the front side of your Card to find 4-digit CSC.2. The cardholder's name should be entered just as it's written on the card.	

SSLCOMMERZ TESTBOX GATEWAY (NO CARD INFORMATION WILL BE SAVED AND DUMMY CARD WILL BE DISPLAYED IN RESPONSE)

ECODEX Improve Lives

► 1. Shipping address ► 2. Shipping method ► 3. Payment ► 4. Preview ► 5. Confirmation

Preview order

Shipping <p>Address Mr Anik das Jamtola Jamtola Narayanganj Bangladesh 1312 Bangladesh</p> <p>Contact Phone: +8801626838003</p>	Payment <p>Payment with sslcommerz Payment details to go here Total : xxx Paid : xxx bjSMelCAtoYtqUTwBozGY0dM06wNtc</p>
Shipping method Change Express Shipping	
Order contents Edit order contents	
Item  PSG Product ID: 140 - 001-001	Quantity Total 3 BDT3,300.00

Confirmation page

ECODEX Improve Lives

1. Shipping address 2. Shipping method 3. Payment 4. Preview 5. Confirmation

Order 100003: confirmation

Your order has been placed and a confirmation email has been sent - your order number is 100003. Please make a note of this reference or print this page and quote it in any communication with us regarding your order.

Shipping

Address

Mr Anik das
Jamtola
Jamtola
Narayanganj
Bangladesh
1312
Bangladesh

Contact

Phone: +8801626838003

Payment

Payment

No payment was required for this order.

Shipping method

Express Shipping

Order contents

Item purchased	Quantity	Total
----------------	----------	-------

Confirmation mail

The screenshot shows a Gmail inbox with 15 unread messages. The subject of the top message is "Confirmation of order 100003". The message content is as follows:

Hello.

We are pleased to confirm your order 100003 has been received and will be processed shortly.

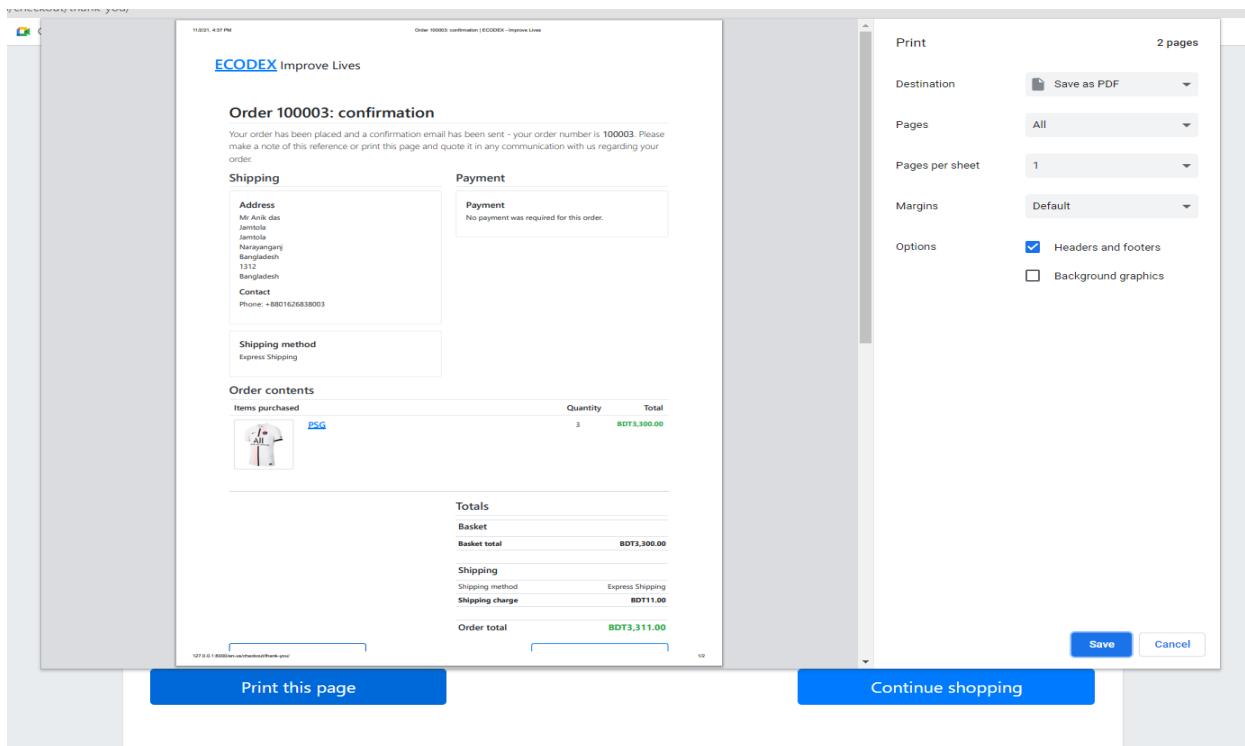
Your order contains:

PSG x 3	BDT3,300.00
	Basket total: BDT3,300.00
	Shipping: BDT11.00
	Order Total: BDT3,311.00

Shipping address:

Mr Anik das
Jamtola
Jamtola
Narayanganj
Bangladesh
1312
Bangladesh

Print way



Product review page

Leave a product review

Title *

Score *

★★★★★

Body *

Save review or cancel

Recommended items

Login and register page

The screenshot shows a web page for 'ECODEX Improve Lives'. At the top, there is a language dropdown set to 'বাংলা' and a 'Go' button. On the right, there is a 'Login or register' link. Below the header, the website's name 'ECODEX Improve Lives' is displayed, along with a 'Basket total: BDT0.00' message and a 'View basket' button. A navigation bar includes 'Browse store' and a search bar with a 'Search' button. The main content area has two forms: 'Log In' on the left and 'Register' on the right. The 'Log In' form requires an email address (with 'anikd6356@gmail.com' entered) and a password (with '*****' entered). It also includes a 'Forgot password?' link and a blue 'Log In' button. The 'Register' form requires an email address, password, and confirm password, each with a corresponding input field. It also includes a blue 'Register' button.

Project Management(Time-Table):

Task	Schedule
Project Proposal	1st week
Requirement analysis	2nd week
Database design	3rd week
UI design	4th week
ML model create	5th week
Basic Recommendation	6th week