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DEPARTMENT OF INFORMATION TECHNOLOGY

# Book Recommendation System

Team Details :

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# Problem Statement , Proposed System And Scope

## Problem Statement :

In today's digital age, readers often struggle to find books that align with their interests and reading preferences due to the overwhelming number of available titles. Traditional search methods are often inefficient, leading to user frustration and missed opportunities for discovering new and relevant books. Additionally, existing recommendation systems may lack personalization, resulting in generic suggestions that do not resonate with individual users. This project aims to develop a book recommendation system that provides tailored suggestions based on user preferences.

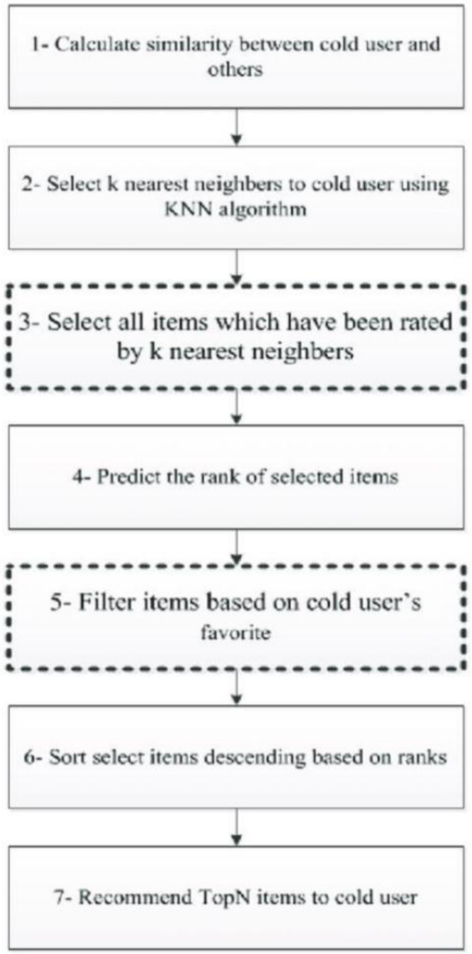
## Proposed System:

The proposed book recommendation system aims to enhance the book discovery experience through a user-friendly interface and robust architecture. It will feature a database (PostgreSQL or MongoDB) to store user profiles, book information, and reviews, along with a recommendation engine using collaborative filtering and content-based filtering techniques to provide personalized suggestions.

## Scope:

A book recommendation system includes creating personalized book suggestions based on user preferences and reading history. Key features would involve user profiles, recommendation algorithms, search functionality, and a review system. The project would utilize book databases, a technology stack including frontend and backend frameworks, and machine learning for improving recommendations.

# Flow Diagram



1- Calculate similarity between cold user and others

2- Select k nearest neighbers to cold user using KNN algorithm

3- Select all items which have been rated by k nearest neighbers

4- Predict the rank of selected items

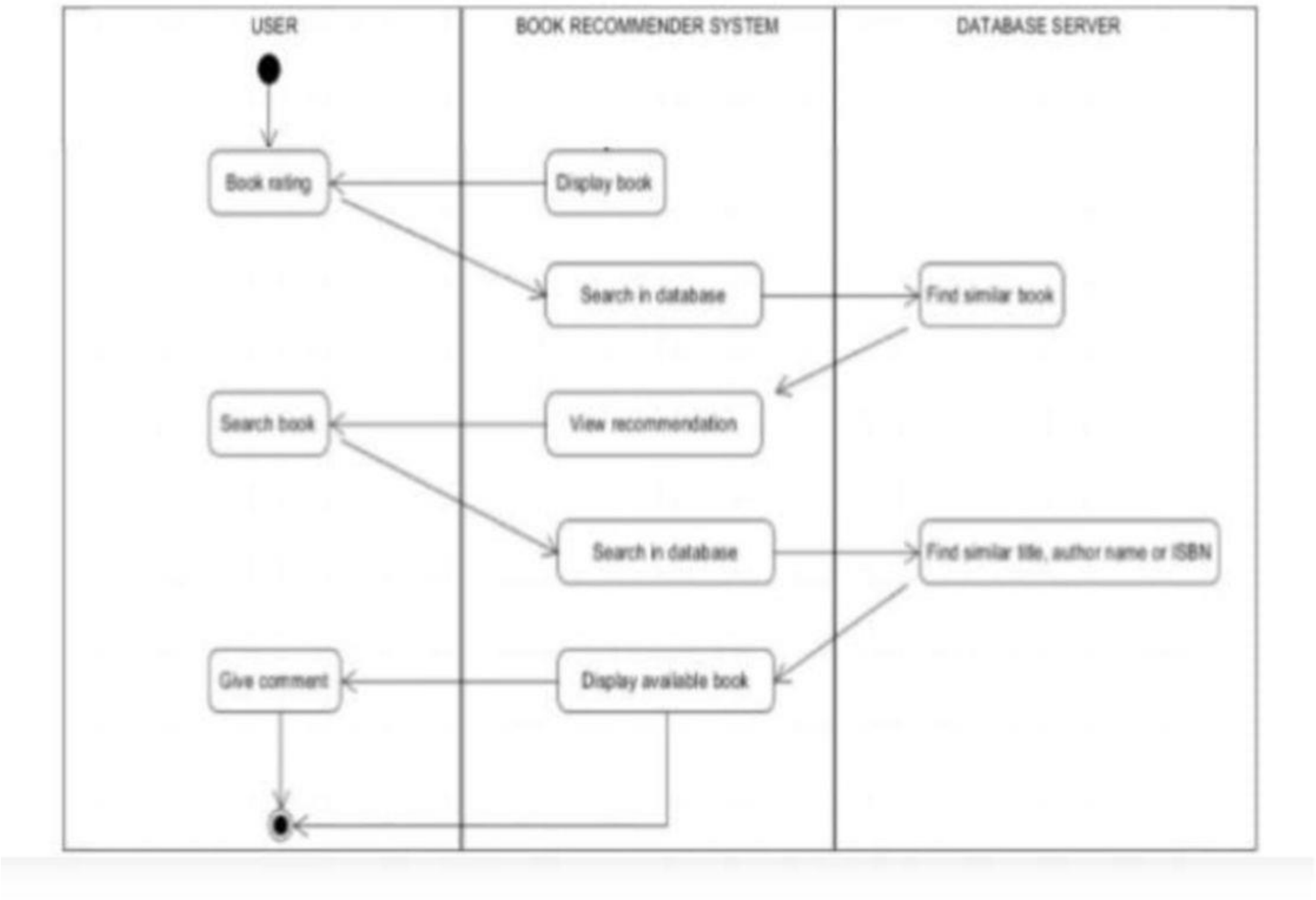
5- Filter items based on cold user's favorite

6- Sort select items descending based on ranks

7- Recommend TopN items to cold user

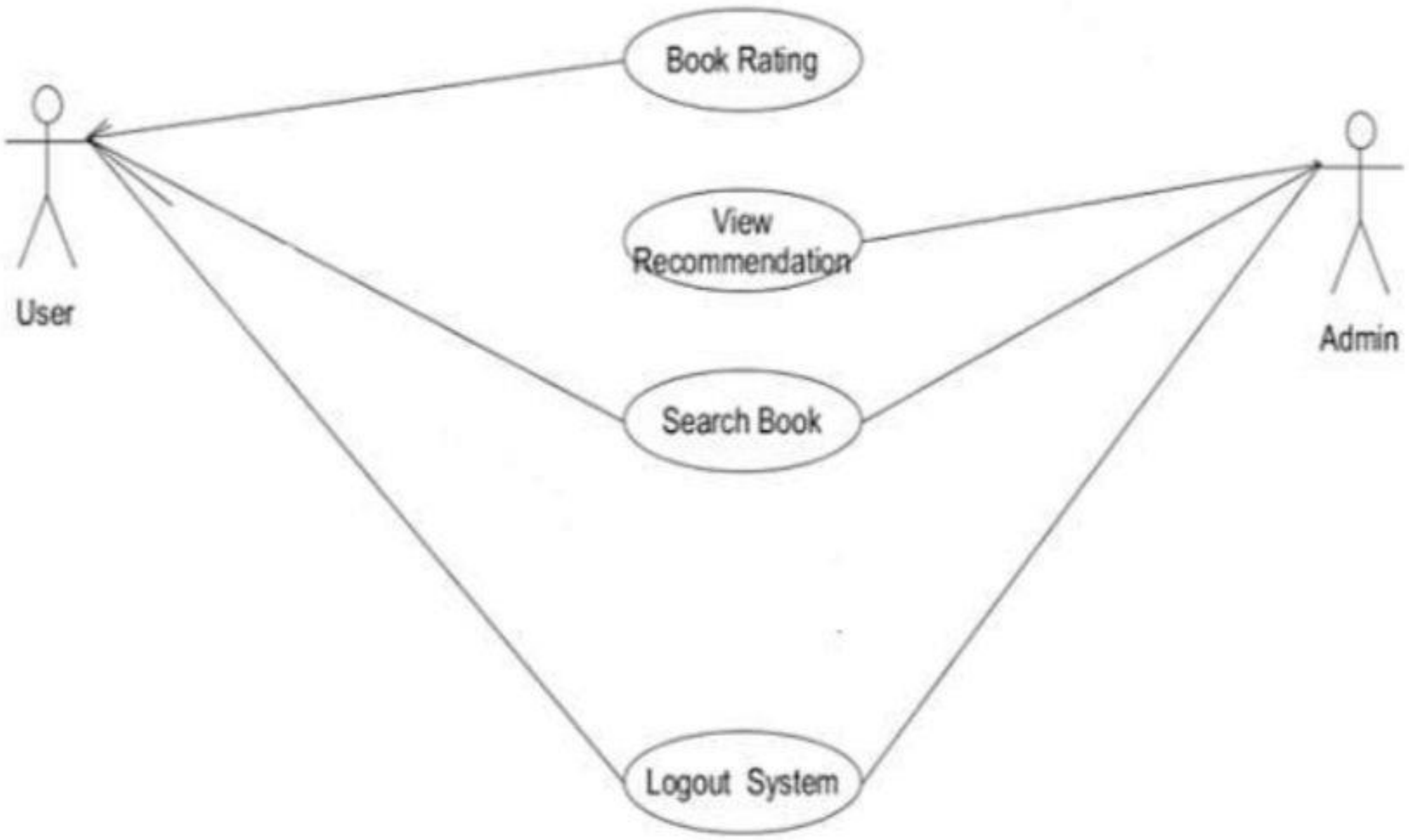
# UML Diagrams

## Sequence Diagram

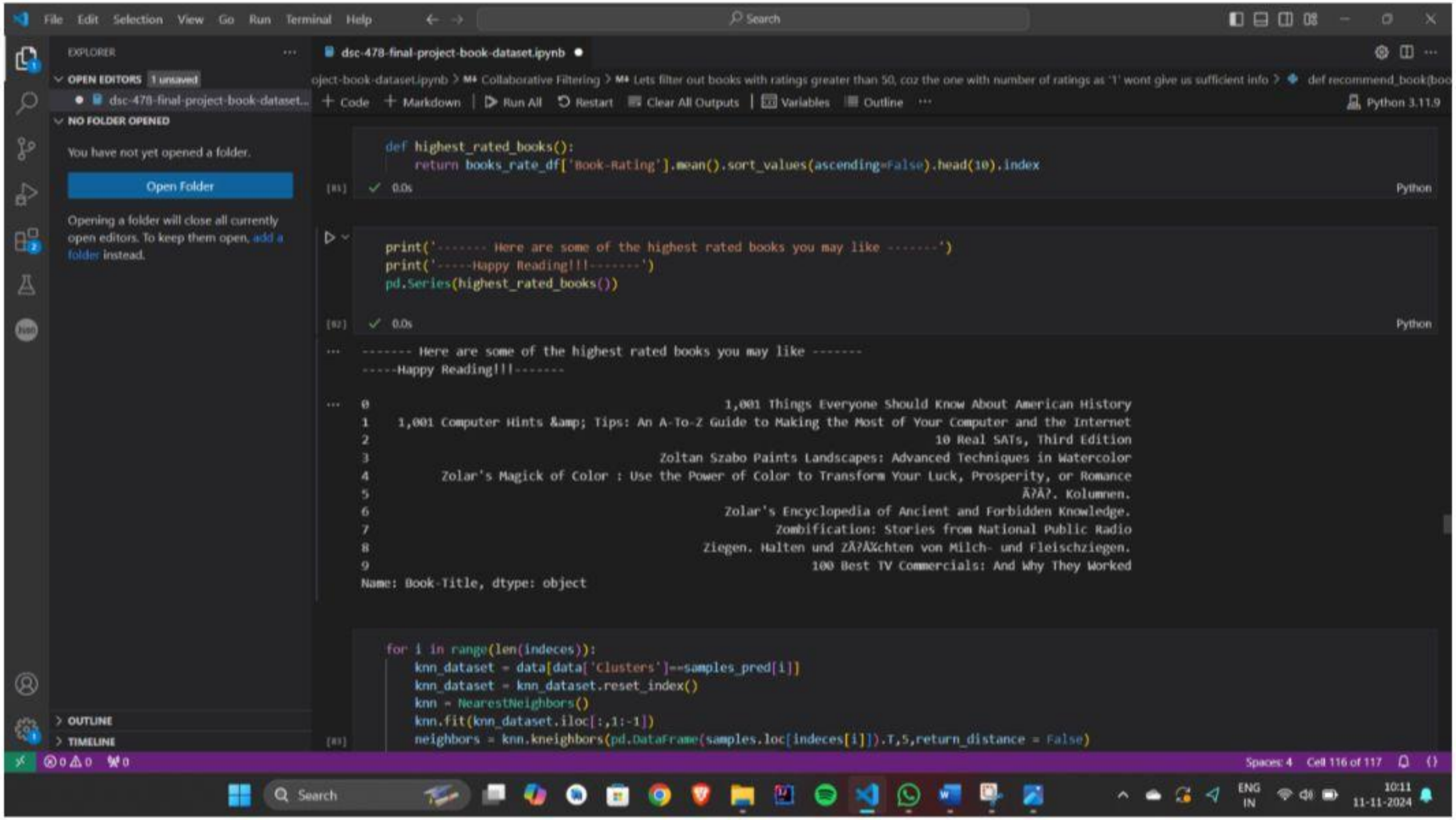


# UML Diagrams

2.Use Case Diagram



# Results



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Opening a folder will close all currently open editors. To keep them open, add a folder instead.

```python
def highest_rated_books():
    return books_rate_df['Book-Rating'].mean().sort_values(ascending=False).head(10).index
```

[81] ✓ 0.0s

```python
print('------- Here are some of the highest rated books you may like -------')
print('-----Happy Reading!!!-------')
pd.Series(highest_rated_books())
```

[82] ✓ 0.0s

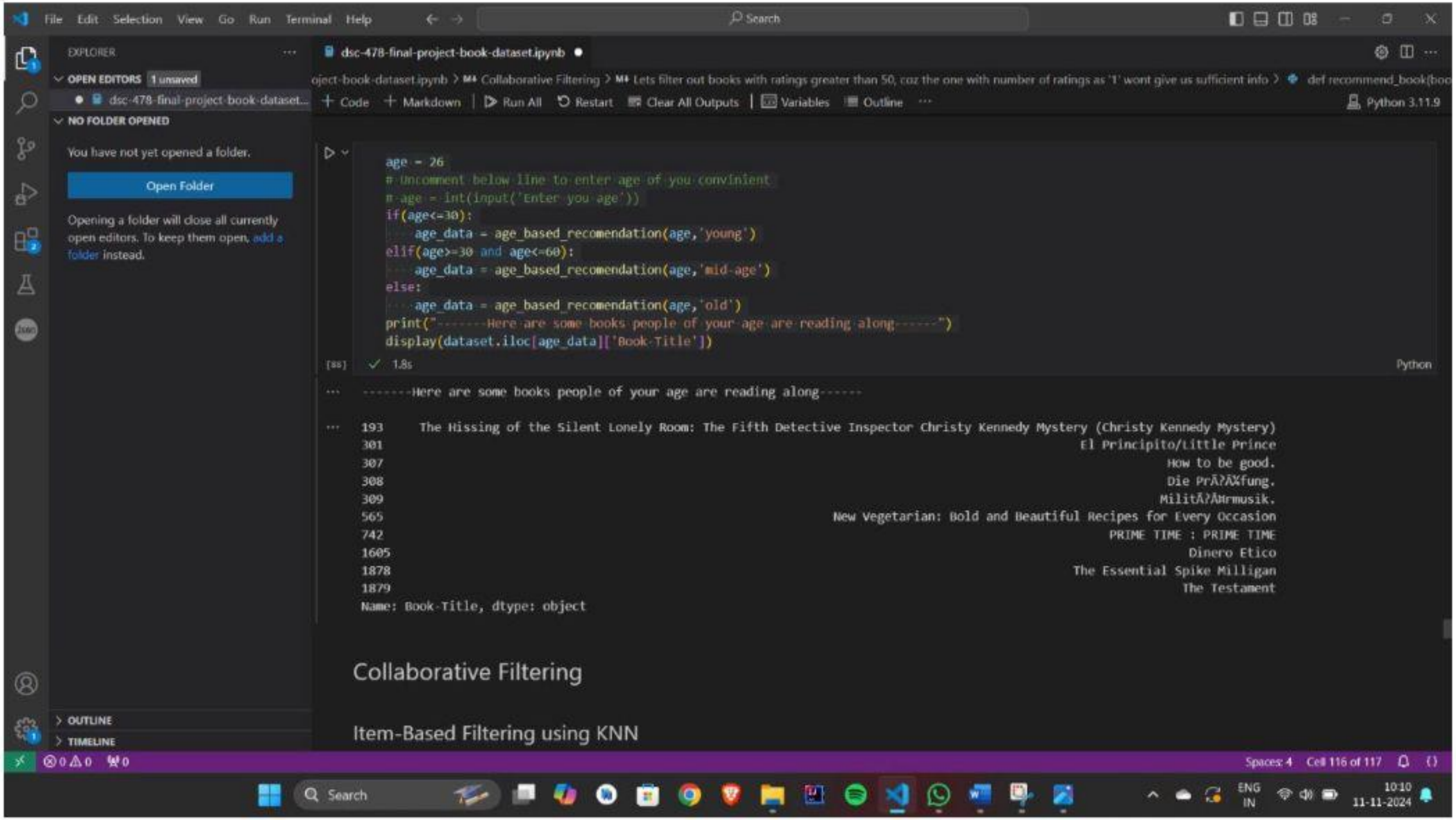
```
------- Here are some of the highest rated books you may like -------
-----Happy Reading!!!-------

0                                                 1,001 Things Everyone Should Know About American History
1    1,001 Computer Hints &amp; Tips: An A-To-Z Guide to Making the Most of Your Computer and the Internet
2                                                                              10 Real SATs, Third Edition
3                                        Zoltan Szabo Paints Landscapes: Advanced Techniques in Watercolor
4         Zolar's Magick of Color : Use the Power of Color to Transform Your Luck, Prosperity, or Romance
5                                                                                          Ã?Ã?. Kolumnen.
6                                                 Zolar's Encyclopedia of Ancient and Forbidden Knowledge.
7                                                        Zombification: Stories from National Public Radio
8                                              Ziegen. Halten und ZÃ?Â¼chten von Milch- und Fleischziegen.
9                                                             100 Best TV Commercials: And Why They Worked
Name: Book-Title, dtype: object
```

```python
for i in range(len(indeces)):
    knn_dataset = data[data['Clusters']==samples_pred[i]]
    knn_dataset = knn_dataset.reset_index()
    knn = NearestNeighbors()
    knn.fit(knn_dataset.iloc[:,1:-1])
    neighbors = knn.kneighbors(pd.DataFrame(samples.loc[indeces[i]]).T,5,return_distance = False)
```

[83]

# Results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Opening a folder will close all currently open editors. To keep them open, add a folder instead.
OUTLINE
TIMELINE
oject-book-dataset.ipynb > M↓ Collaborative Filtering > M↓ Lets filter out books with ratings greater than 50, coz the one with number of ratings as '1' wont give us sufficient info > def recommend_book(boo
+ Code + Markdown | Run All Restart Clear All Outputs | Variables Outline ...
Python 3.11.9
Python
Spaces: 4 Cell 116 of 117
Search
ENG IN
10:10
11-11-2024

```python
age = 26
# Uncomment below line to enter age of you convinient
# age = int(input('Enter you age'))
if(age<=30):
    age_data = age_based_recomendation(age,'young')
elif(age>=30 and age<=60):
    age_data = age_based_recomendation(age,'mid-age')
else:
    age_data = age_based_recomendation(age,'old')
print("-------Here are some books people of your age are reading along------")
display(dataset.iloc[age_data]['Book-Title'])
```

[88] ✓ 1.8s

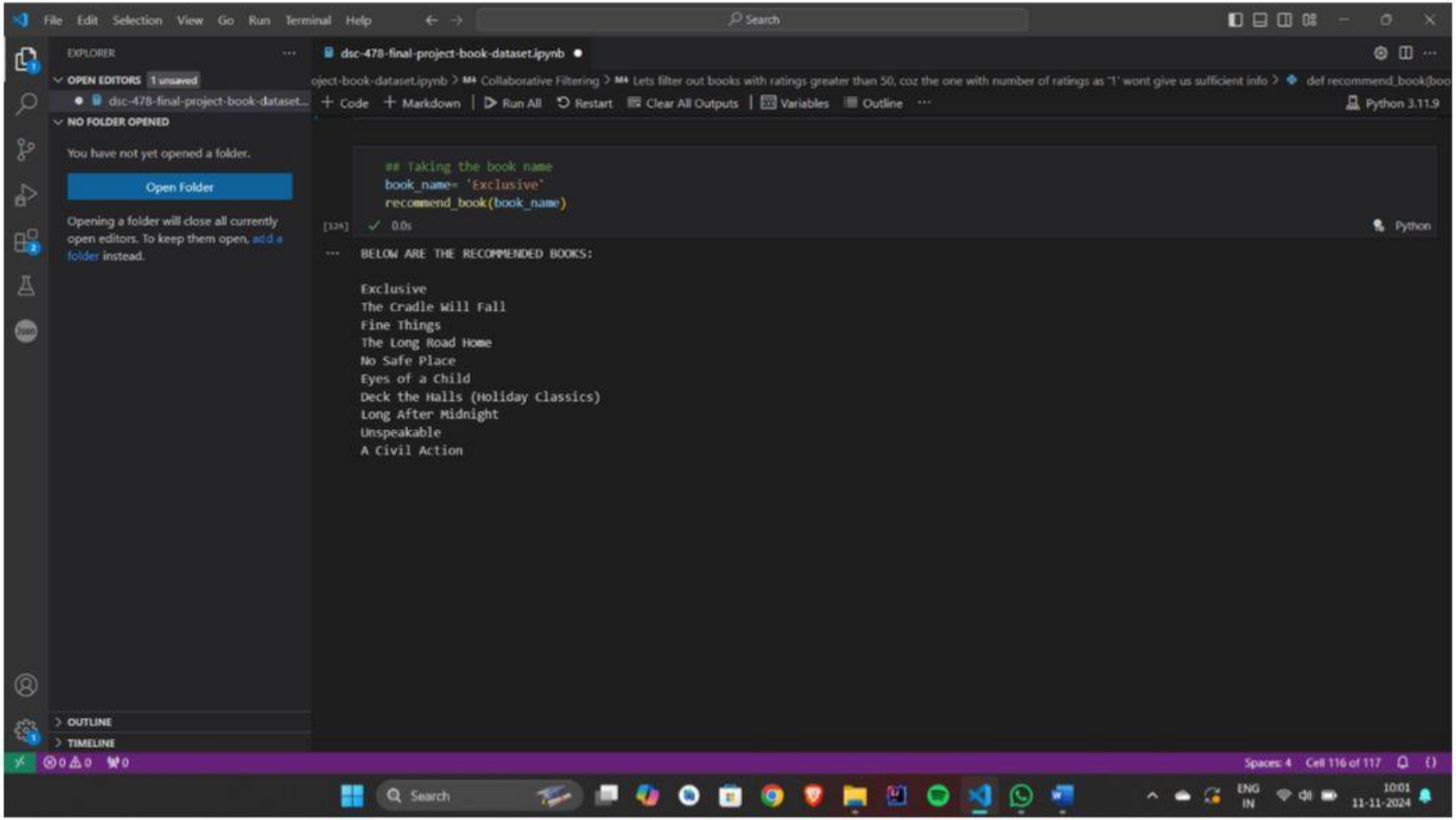
```
-------Here are some books people of your age are reading along------

193     The Missing of the Silent Lonely Room: The Fifth Detective Inspector Christy Kennedy Mystery (Christy Kennedy Mystery)
301                                                                                               El Principito/Little Prince
307                                                                                                          How to be good.
308                                                                                                         Die PrÃ?Ã¼fung.
309                                                                                                       MilitÃ?Ã¤rmusik.
565                                                              New Vegetarian: Bold and Beautiful Recipes for Every Occasion
742                                                                                                     PRIME TIME : PRIME TIME
1605                                                                                                             Dinero Etico
1878                                                                                              The Essential Spike Milligan
1879                                                                                                            The Testament
Name: Book-Title, dtype: object
```

## Collaborative Filtering

## Item-Based Filtering using KNN

# Results



```
## Taking the book name
book_name= 'Exclusive'
recommend_book(book_name)
```

```
BELOW ARE THE RECOMMENDED BOOKS:

Exclusive
The Cradle Will Fall
Fine Things
The Long Road Home
No Safe Place
Eyes of a Child
Deck the Halls (Holiday Classics)
Long After Midnight
Unspeakable
A Civil Action
```

dsc-478-final-project-book-dataset.ipynb
Collaborative Filtering
Lets filter out books with ratings greater than 50, coz the one with number of ratings as '1' wont give us sufficient info
def recommend_book(boo
Python 3.11.9
Cell 116 of 117

# Conclusion and Future Enhancements

The book recommendation system has proven effective in delivering personalized book suggestions based on user preferences, reading history, and other relevant data. By utilizing algorithms such as collaborative filtering, or hybrid models, the system can provide users with relevant book choices, enhancing their reading experience and engagement. It is based on machine learning algorithms. The system's ability to adapt to individual preferences demonstrates its potential to be a valuable tool for book lovers.

Future Enhancements are further to improve the recommendation system, future enhancements could include the integration of deep learning techniques for more accurate and dynamic recommendations. Adding user sentiment analysis from reviews and ratings could refine the system's suggestions. Moreover, incorporating multimodal features, such as audiobook preferences or social media data, would broaden the scope of recommendations. Real-time recommendation updates based on trending books and seasonal changes could make the system even more responsive and relevant to user interests