SOCIAL DATA MINING TECHNIQUES

Assignment 1 – Social and Open Data Sources (Group 6)

TOP 100 COMEDY MOVIES

AGENDA

- COLLECT DATA FROM AN OUTSIDE SOURCE
- COLLECT MINIMUM 100 ENTRIES
- BUILD A DATA MODEL SUITABLE FOR DATA COLLECTION
- STORE THE DATA IN CLOUD DATABASE
- BUILD A PRESENTATION TO DESCRIBE DATA SOURCES, DATA MODEL AND DATA ACQUISITION
- BUILD A WEB APPLICATION TO MANAGE ENTRIES IN THE DATABASE

TEAM PROFILE

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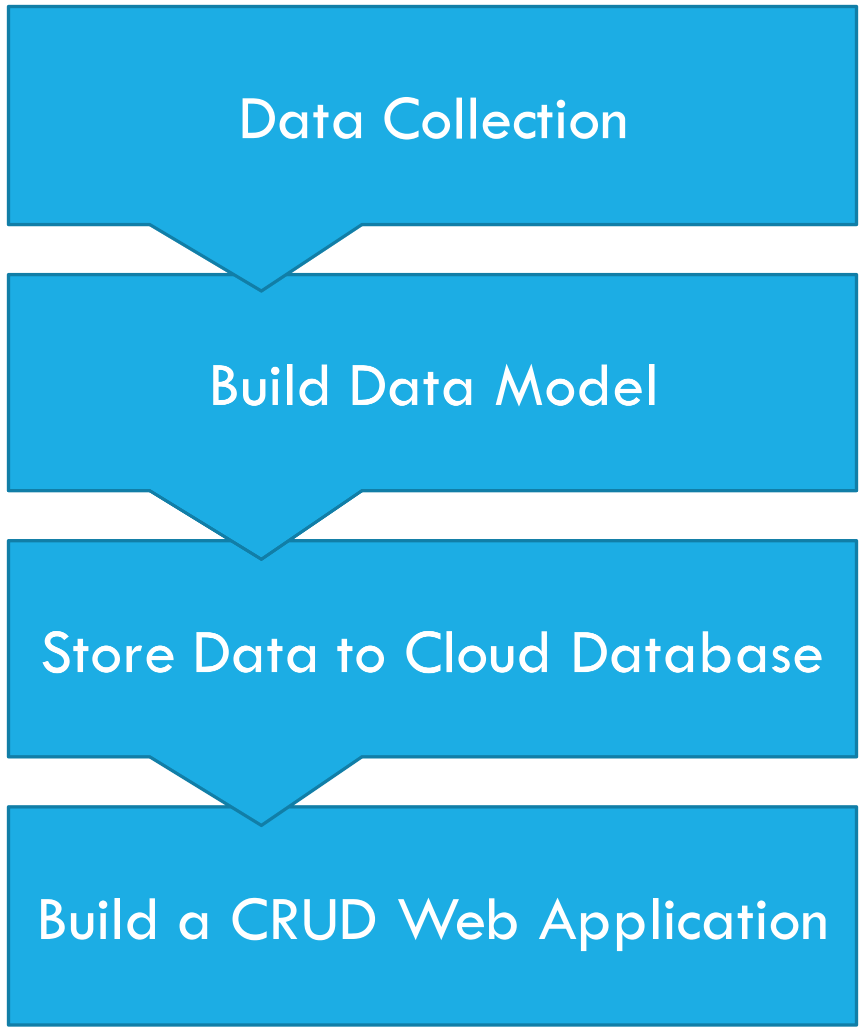
WORK-FLOW

1. Collect data from an open Source (Web Scraping)

2. Build a data model for collected data

3. Store the data to cloud Database (MongoDB)

4. Build a web application to manage database entries



ABOUT THE DATA

What is Rotten Tomatoes?

- Rotten Tomatoes is an American review-aggregation website for film and television. The company was launched in August 1998 by three undergraduate students at the University of California, Berkeley: Senh Duong, Patrick Y. Lee, and Stephen Wang.
- Rotten Tomatoes is the world's most trusted recommendation resources for quality entertainment that helps fans to decide what to watch based on opinion of hundred of critics.

Why use of this data source?

- Rotten tomatoes is the simplest and effective source of the data from where we can easily scrap the data to build a web application and manage CRUD operations.
- The data provided on the website is changing with the time for top entries depends upon critic reviews and ratings as new releases.

WEB SCRAPING

- Web Scraping refers to the extraction of the data from a data source(website).
- The information from the HTML page can be exported into the format which is more useful for users to perform needed operations.
- The data from the website can be collected in the form of spreadsheets or an API.
- Although web scraping can be done manually, in most cases, automated tools are preferred when scraping web data as they can be less costly and work at a faster rate.
- In many cases, web scraping is not a simple task. Websites come in many shapes and forms, as a result, web scrapers vary in functionality and features

TECHNOLOGIES

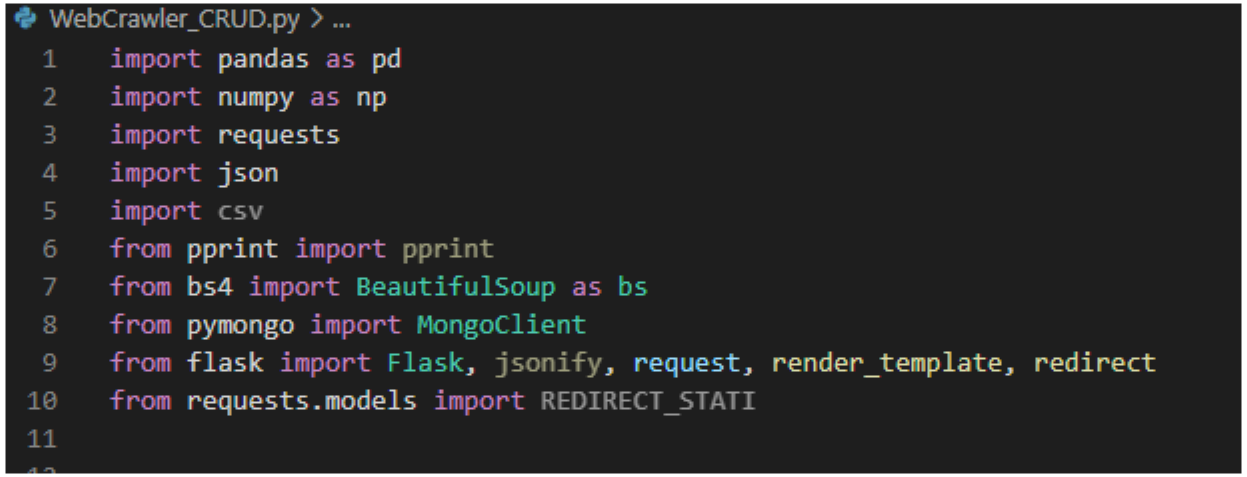
Python is an interpreted high-level general-purpose, object-oriented programming language. It has great number of libraries that provides high-level functionalities.

Flask is a micro web framework written in Python. It is an API of Python that allows us to build up web-applications. It is easier to learn because it has less base code to implement a simple web-Application.

MongoDB is based on a NoSQL database that is used for storing data in a key-value pair. Its working is based on the concept of document and collection. It is also an open-source, a document-oriented, cross-platform database system that is written using C++.

DATA COLLECTION

- Web Scraping with the use of Python programming and BeatifulSoup library is performed.
- By importing required libraries, we can fetch the data from the website required for further operations.



WebCrawler_CRUD.py > ...

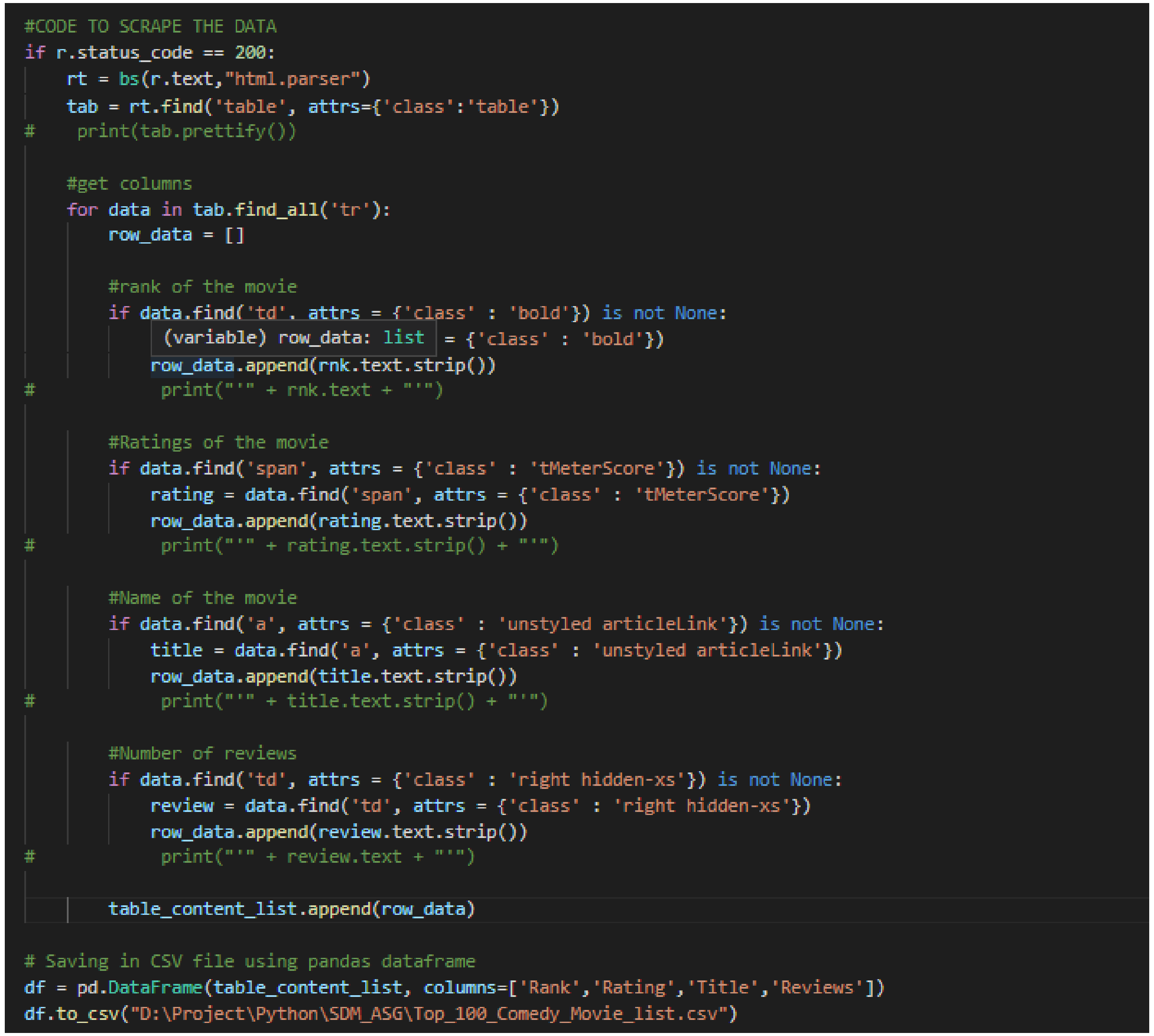
```python
import pandas as pd
import numpy as np
import requests
import json
import csv
from pprint import pprint
from bs4 import BeautifulSoup as bs
from pymongo import MongoClient
from flask import Flask, jsonify, request, render_template, redirect
from requests.models import REDIRECT_STATI

```

DATA MODEL

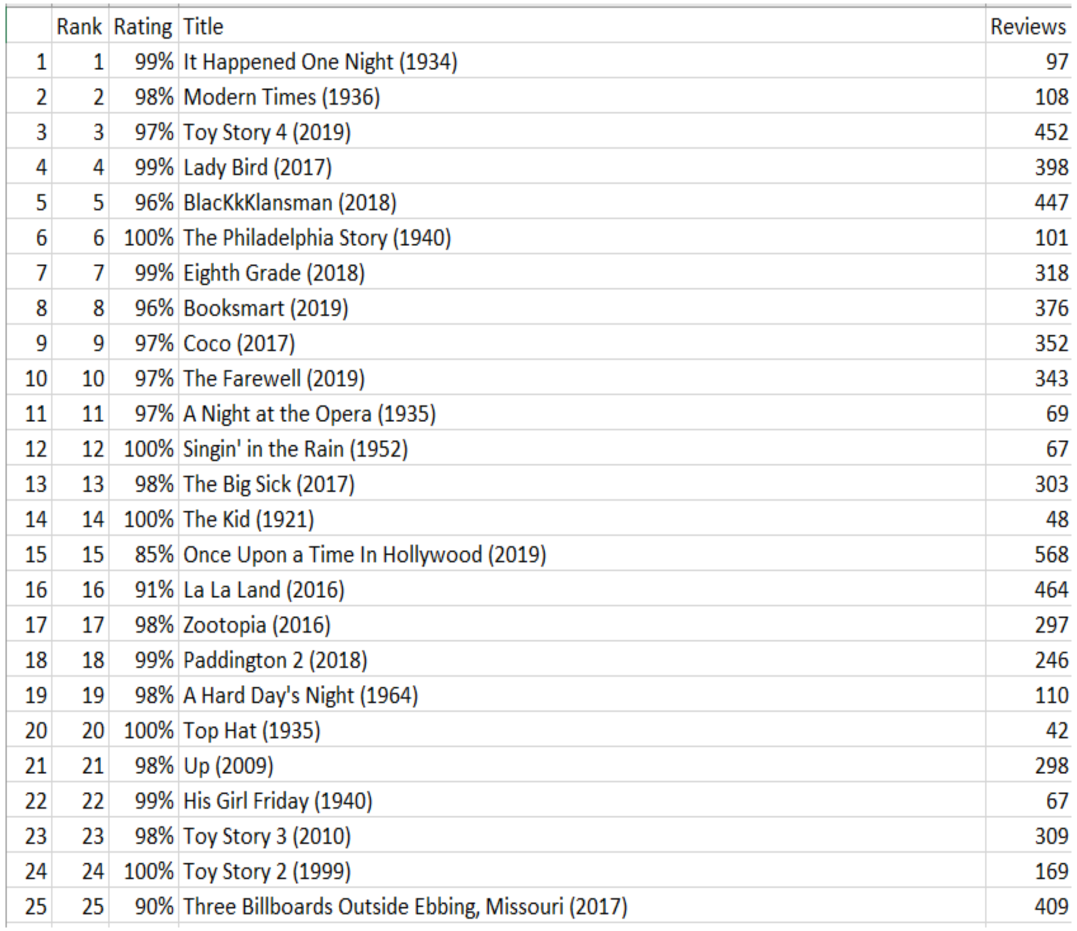
Field	Data Type	Description
Rank	Int	Rank of the movie (PK)
Rating	Decimal	Overall ratings
Title	Varchar, String	Name of the movie
Reviews	Int	No. of reviews

BEAUTIFULSOUP

- ➢ BeatifulSoup is the library in Python to pull the data from the HTML and XML files.
- ➢ It creates a parse tree for parsed pages that can be used to extract data from HTML, which is useful for web scraping.
- ➢ BeautifulSoup act as a fast Parser.
- ➢ It helps to fetch the content from the website by removing markups in HTML formats and save this information that can be used in form of user choice.
- ➢ It is considered as the best option when user want to pull out some of the data fields having multiple range of data.



```
#CODE TO SCRAPE THE DATA
if r.status_code == 200:
    rt = bs(r.text,"html.parser")
    tab = rt.find('table', attrs={'class':'table'})
#    print(tab.prettify())

    #get columns
    for data in tab.find_all('tr'):
        row_data = []

        #rank of the movie
        if data.find('td', attrs = {'class' : 'bold'}) is not None:
            (variable) row_data: list = {'class' : 'bold'})
            row_data.append(rnk.text.strip())
#            print("'" + rnk.text + "'")

        #Ratings of the movie
        if data.find('span', attrs = {'class' : 'tMeterScore'}) is not None:
            rating = data.find('span', attrs = {'class' : 'tMeterScore'})
            row_data.append(rating.text.strip())
#            print("'" + rating.text.strip() + "'")

        #Name of the movie
        if data.find('a', attrs = {'class' : 'unstyled articleLink'}) is not None:
            title = data.find('a', attrs = {'class' : 'unstyled articleLink'})
            row_data.append(title.text.strip())
#            print("'" + title.text.strip() + "'")

        #Number of reviews
        if data.find('td', attrs = {'class' : 'right hidden-xs'}) is not None:
            review = data.find('td', attrs = {'class' : 'right hidden-xs'})
            row_data.append(review.text.strip())
#            print("'" + review.text + "'")

        table_content_list.append(row_data)

# Saving in CSV file using pandas dataframe
df = pd.DataFrame(table_content_list, columns=['Rank','Rating','Title','Reviews'])
df.to_csv("D:\Project\Python\SDM_ASG\Top_100_Comedy_Movie_list.csv")
```

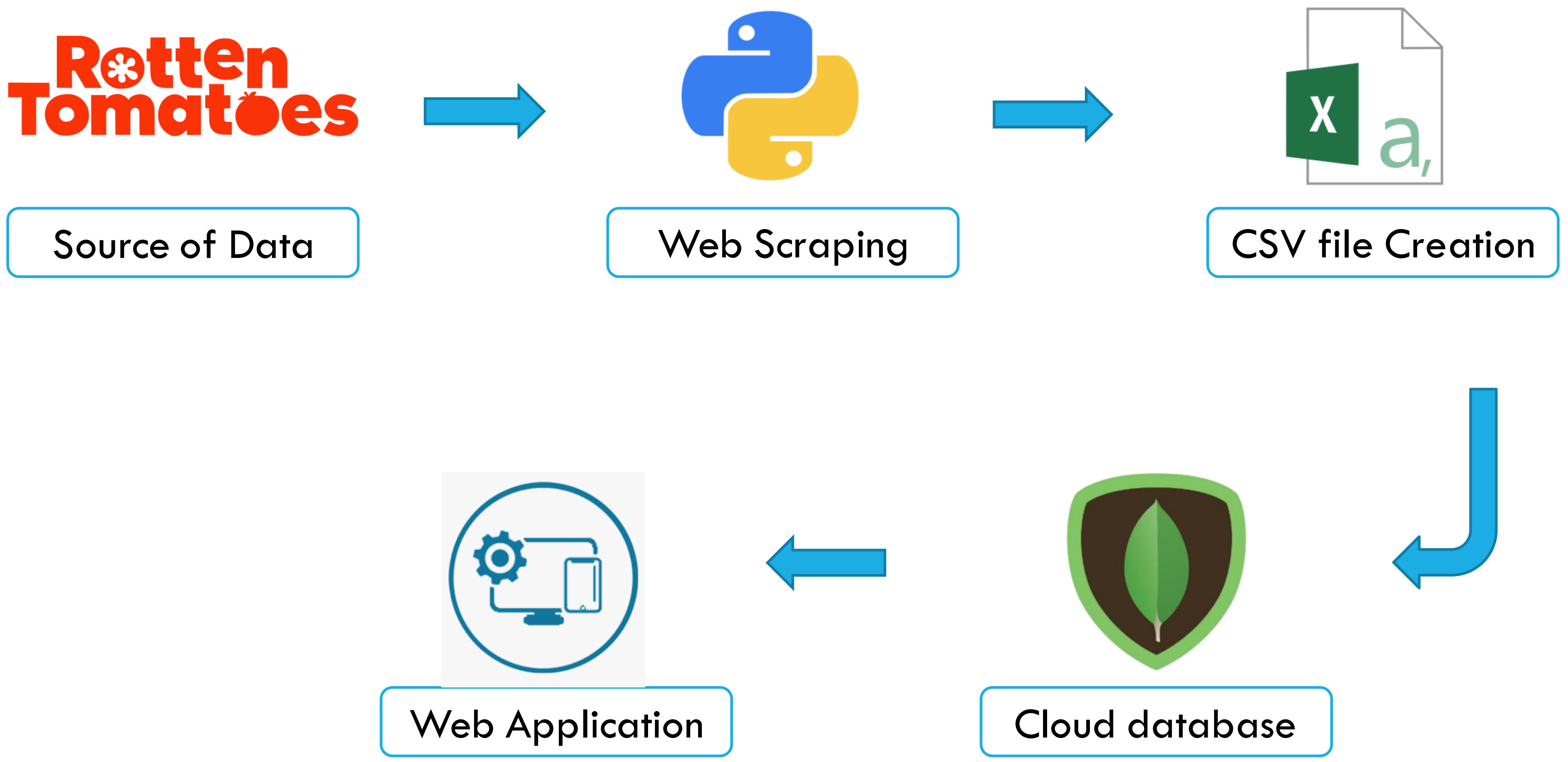


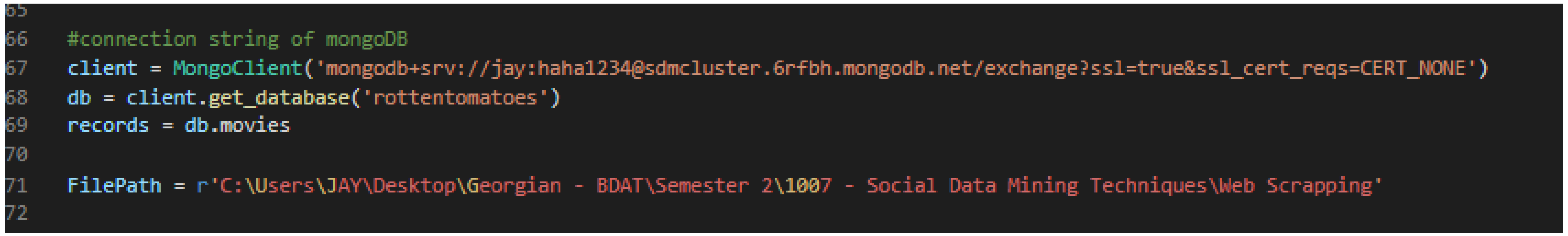
	Rank	Rating	Title	Reviews
1	1	99%	It Happened One Night (1934)	97
2	2	98%	Modern Times (1936)	108
3	3	97%	Toy Story 4 (2019)	452
4	4	99%	Lady Bird (2017)	398
5	5	96%	BlacKkKlansman (2018)	447
6	6	100%	The Philadelphia Story (1940)	101
7	7	99%	Eighth Grade (2018)	318
8	8	96%	Booksmart (2019)	376
9	9	97%	Coco (2017)	352
10	10	97%	The Farewell (2019)	343
11	11	97%	A Night at the Opera (1935)	69
12	12	100%	Singin' in the Rain (1952)	67
13	13	98%	The Big Sick (2017)	303
14	14	100%	The Kid (1921)	48
15	15	85%	Once Upon a Time In Hollywood (2019)	568
16	16	91%	La La Land (2016)	464
17	17	98%	Zootopia (2016)	297
18	18	99%	Paddington 2 (2018)	246
19	19	98%	A Hard Day's Night (1964)	110
20	20	100%	Top Hat (1935)	42
21	21	98%	Up (2009)	298
22	22	99%	His Girl Friday (1940)	67
23	23	98%	Toy Story 3 (2010)	309
24	24	100%	Toy Story 2 (1999)	169
25	25	90%	Three Billboards Outside Ebbing, Missouri (2017)	409

Code used for fetching data from website to the CSV file

CSV file created with extracted Data

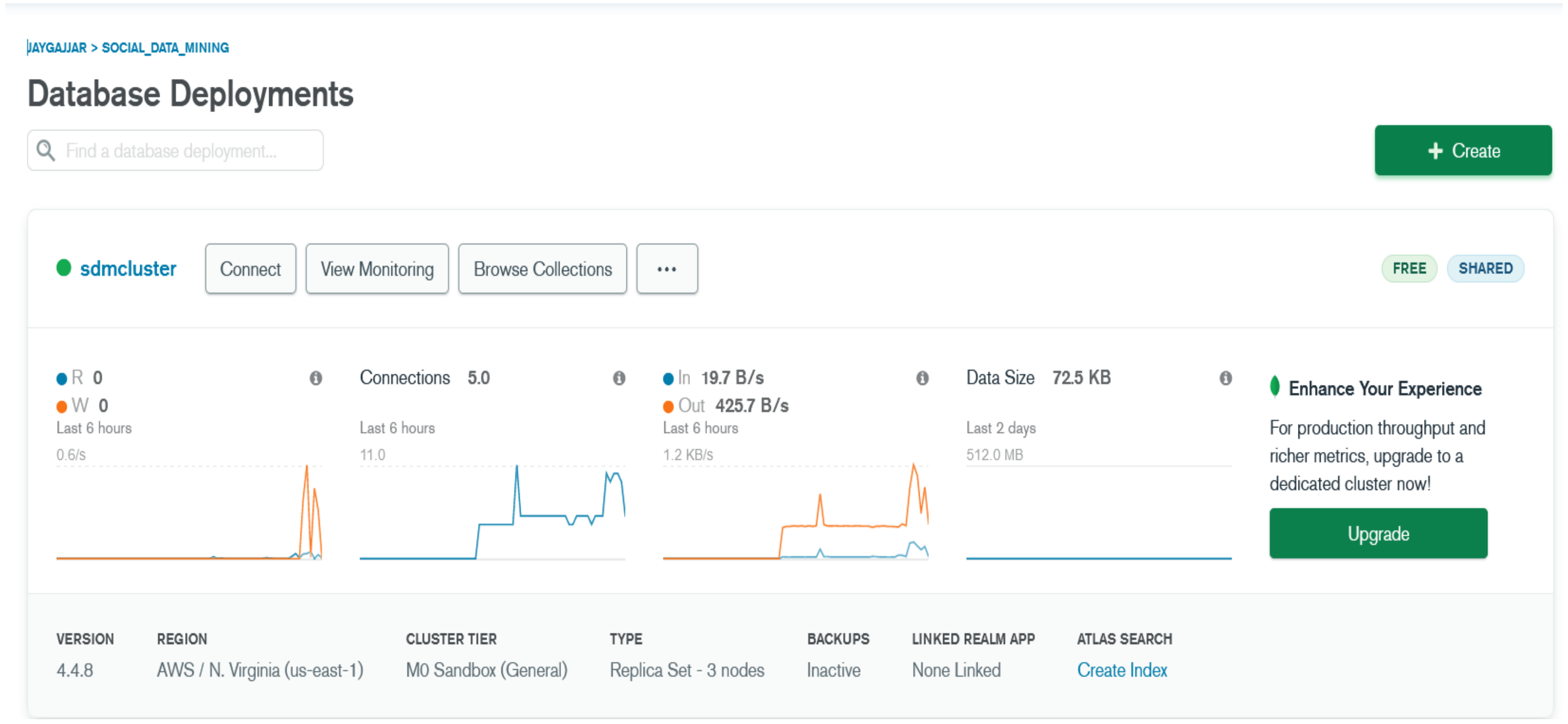
FLOW OF APPLICATION





```python
#connection string of mongoDB
client = MongoClient('mongodb+srv://jay:haha1234@sdmcluster.6rfbh.mongodb.net/exchange?ssl=true&ssl_cert_reqs=CERT_NONE')
db = client.get_database('rottentomatoes')
records = db.movies

FilePath = r'C:\Users\JAY\Desktop\Georgian - BDAT\Semester 2\1007 - Social Data Mining Techniques\Web Scrapping'
```

Connect to the MongoDB



JAYGAJJAR > SOCIAL_DATA_MINING

Database Deployments

R 0
W 0
Last 6 hours
0.6/s

Connections 5.0
Last 6 hours
11.0

In 19.7 B/s
Out 425.7 B/s
Last 6 hours
1.2 KB/s

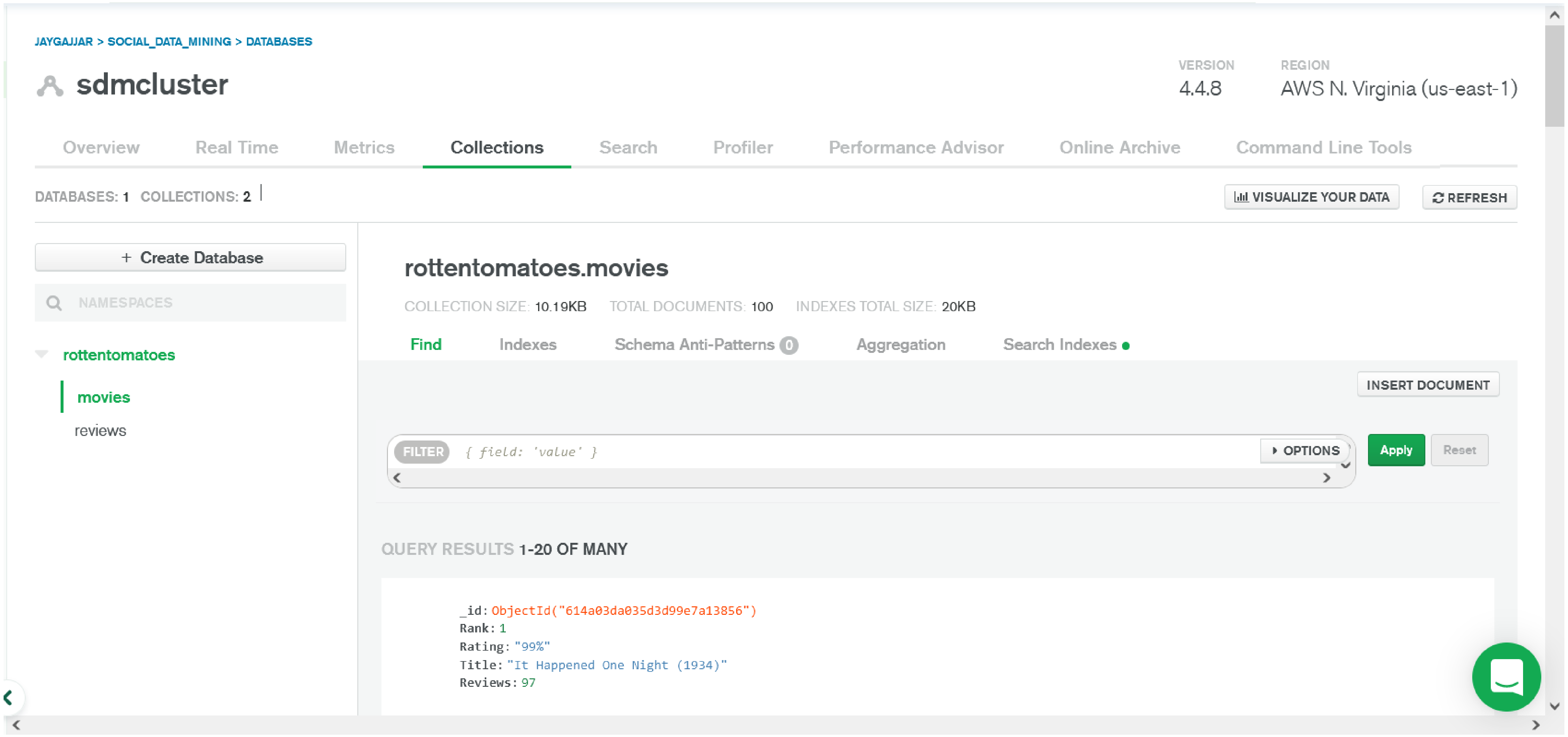
Data Size 72.5 KB
Last 2 days
512.0 MB

Enhance Your Experience

For production throughput and richer metrics, upgrade to a dedicated cluster now!

VERSION	REGION	CLUSTER TIER	TYPE	BACKUPS	LINKED REALM APP	ATLAS SEARCH
4.4.8	AWS / N. Virginia (us-east-1)	M0 Sandbox (General)	Replica Set - 3 nodes	Inactive	None Linked	Create Index

Database Deployment


JAYGAJJAR > SOCIAL_DATA_MINING > DATABASES

sdmcluster

VERSION 4.4.8

REGION AWS N. Virginia (us-east-1)

DATABASES: 1 COLLECTIONS: 2

rottentomatoes.movies

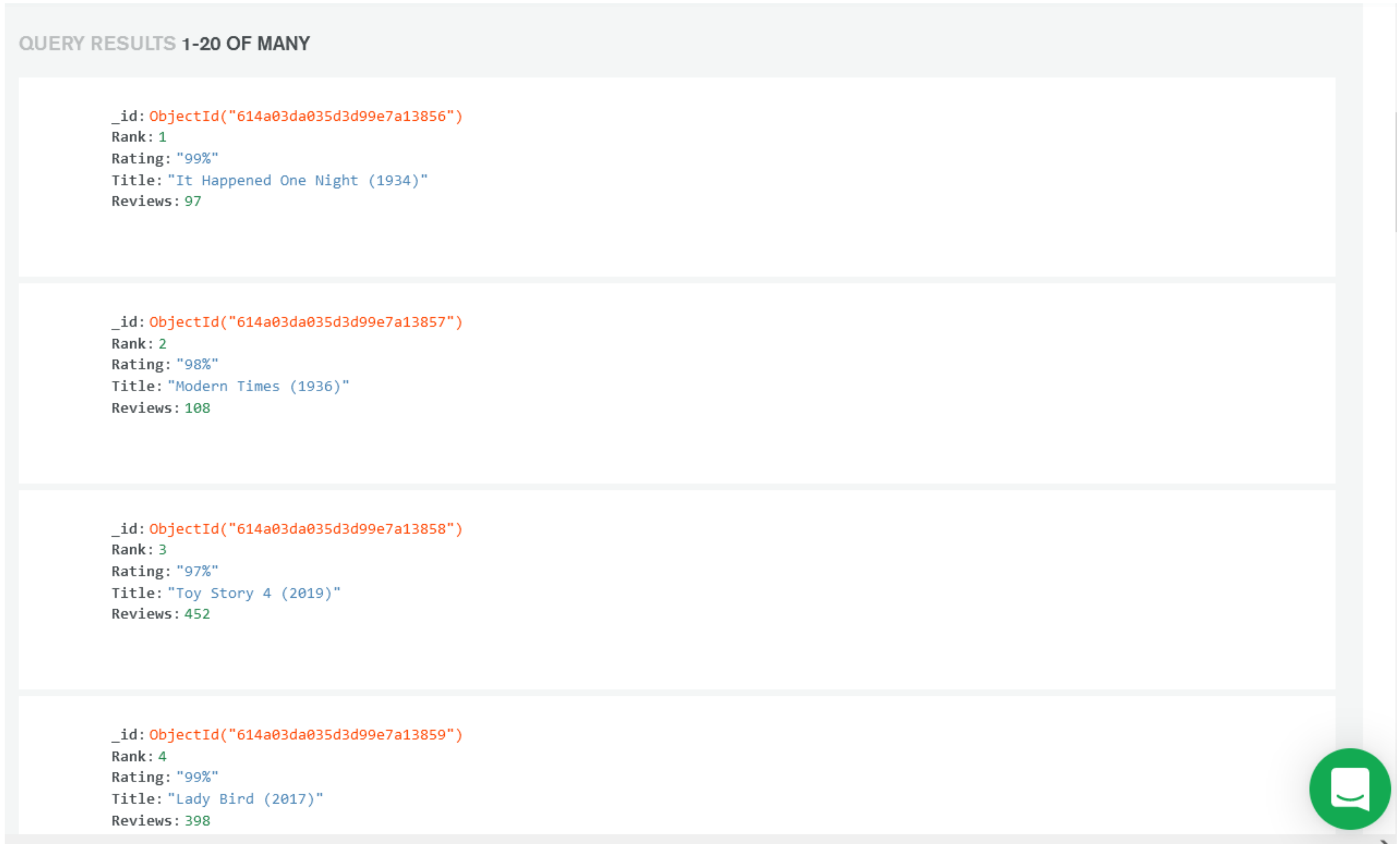
COLLECTION SIZE: 10.19KB TOTAL DOCUMENTS: 100 INDEXES TOTAL SIZE: 20KB

```
{ field: 'value' }
```

QUERY RESULTS 1-20 OF MANY

```
_id: ObjectId("614a03da035d3d99e7a13856")
Rank: 1
Rating: "99%"
Title: "It Happened One Night (1934)"
Reviews: 97
```

Collection of data in a database


QUERY RESULTS 1-20 OF MANY

```
_id: ObjectId("614a03da035d3d99e7a13856")
Rank: 1
Rating: "99%"
Title: "It Happened One Night (1934)"
Reviews: 97
```

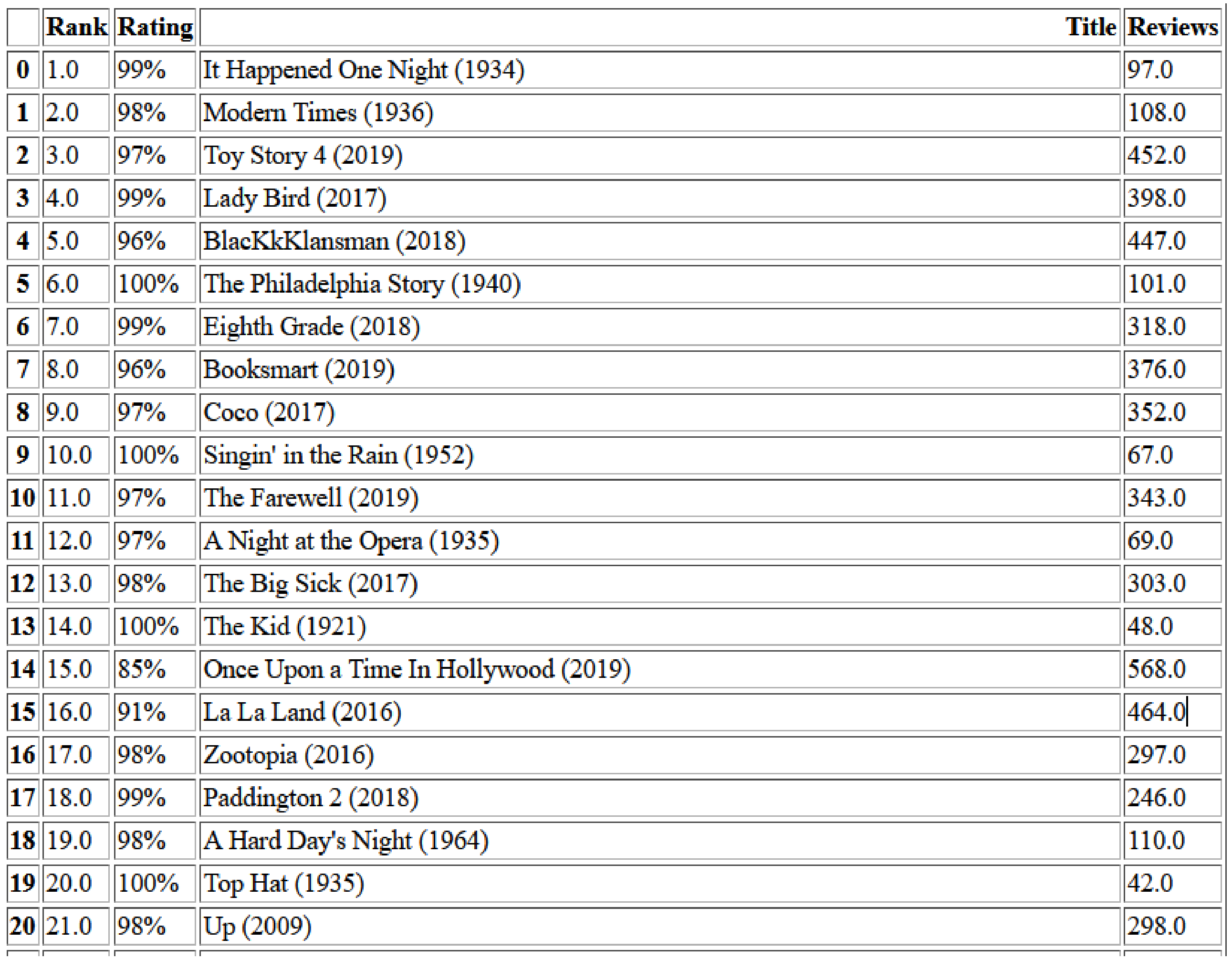
```
_id: ObjectId("614a03da035d3d99e7a13857")
Rank: 2
Rating: "98%"
Title: "Modern Times (1936)"
Reviews: 108
```

```
_id: ObjectId("614a03da035d3d99e7a13858")
Rank: 3
Rating: "97%"
Title: "Toy Story 4 (2019)"
Reviews: 452
```

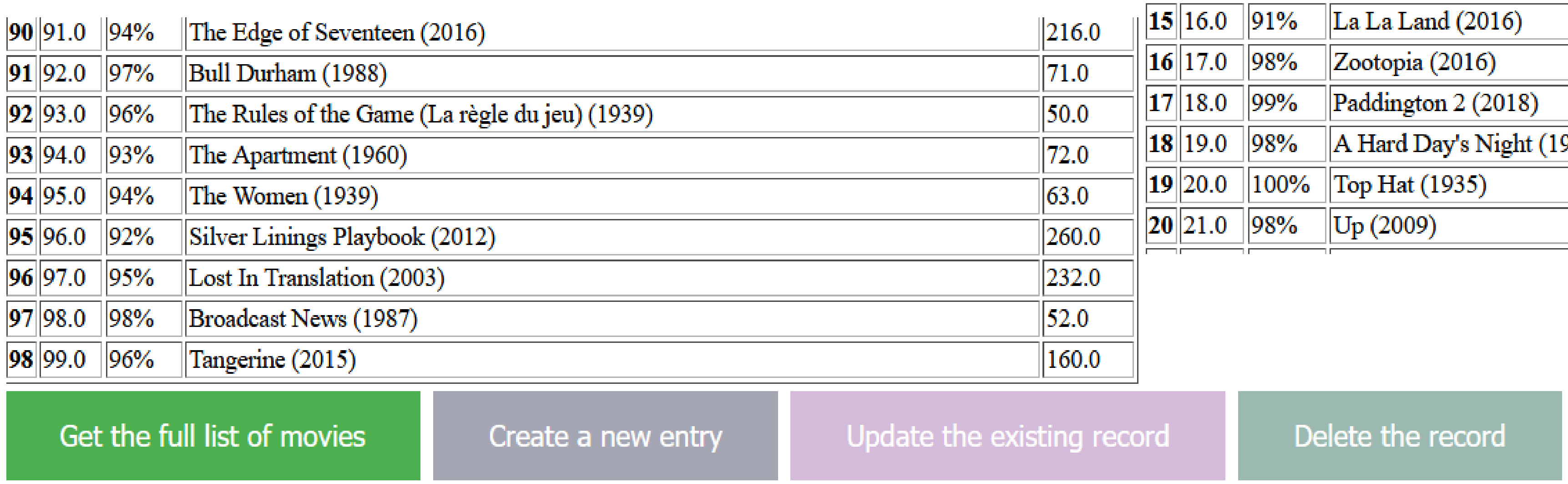
```
_id: ObjectId("614a03da035d3d99e7a13859")
Rank: 4
Rating: "99%"
Title: "Lady Bird (2017)"
Reviews: 398
```

Data entries in a MongoDB

VIEW OF THE DATA



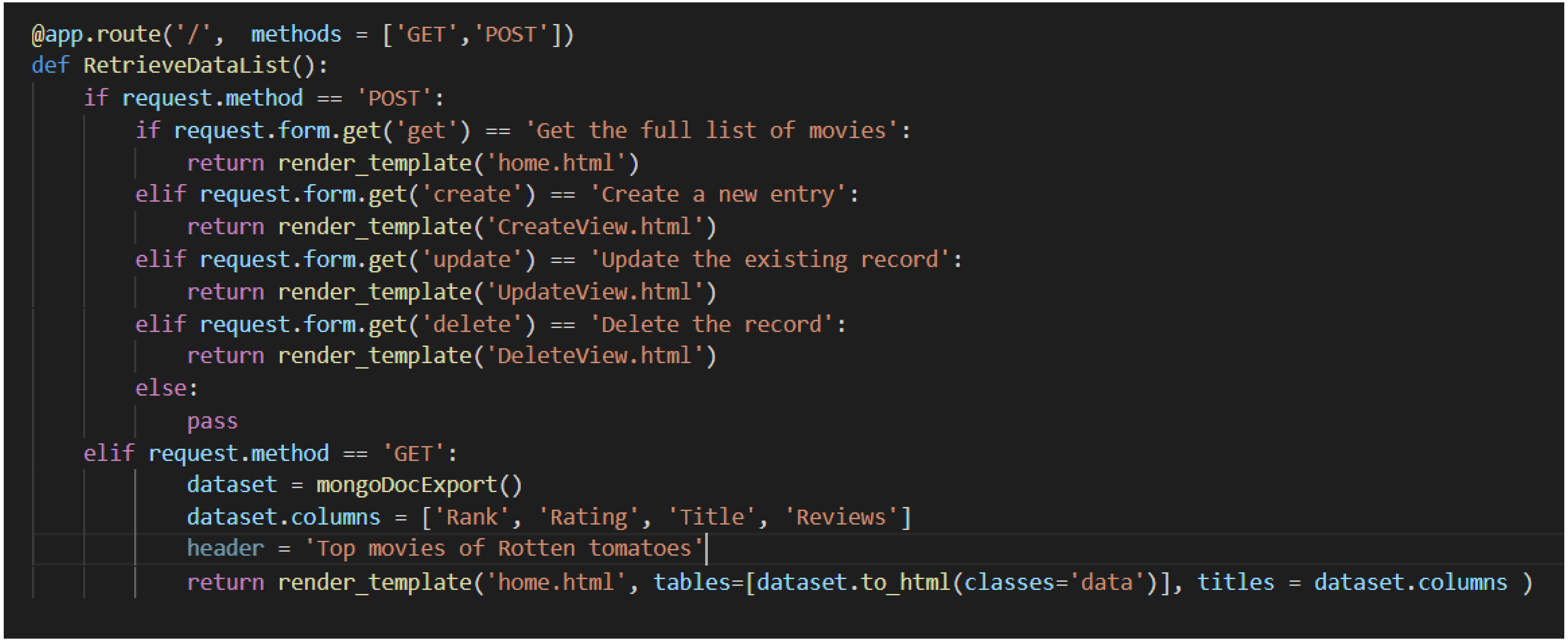
	Rank	Rating	Title	Reviews
0	1.0	99%	It Happened One Night (1934)	97.0
1	2.0	98%	Modern Times (1936)	108.0
2	3.0	97%	Toy Story 4 (2019)	452.0
3	4.0	99%	Lady Bird (2017)	398.0
4	5.0	96%	BlacKkKlansman (2018)	447.0
5	6.0	100%	The Philadelphia Story (1940)	101.0
6	7.0	99%	Eighth Grade (2018)	318.0
7	8.0	96%	Booksmart (2019)	376.0
8	9.0	97%	Coco (2017)	352.0
9	10.0	100%	Singin' in the Rain (1952)	67.0
10	11.0	97%	The Farewell (2019)	343.0
11	12.0	97%	A Night at the Opera (1935)	69.0
12	13.0	98%	The Big Sick (2017)	303.0
13	14.0	100%	The Kid (1921)	48.0
14	15.0	85%	Once Upon a Time In Hollywood (2019)	568.0
15	16.0	91%	La La Land (2016)	464.0
16	17.0	98%	Zootopia (2016)	297.0
17	18.0	99%	Paddington 2 (2018)	246.0
18	19.0	98%	A Hard Day's Night (1964)	110.0
19	20.0	100%	Top Hat (1935)	42.0
20	21.0	98%	Up (2009)	298.0



90	91.0	94%	The Edge of Seventeen (2016)	216.0
91	92.0	97%	Bull Durham (1988)	71.0
92	93.0	96%	The Rules of the Game (La règle du jeu) (1939)	50.0
93	94.0	93%	The Apartment (1960)	72.0
94	95.0	94%	The Women (1939)	63.0
95	96.0	92%	Silver Linings Playbook (2012)	260.0
96	97.0	95%	Lost In Translation (2003)	232.0
97	98.0	98%	Broadcast News (1987)	52.0
98	99.0	96%	Tangerine (2015)	160.0

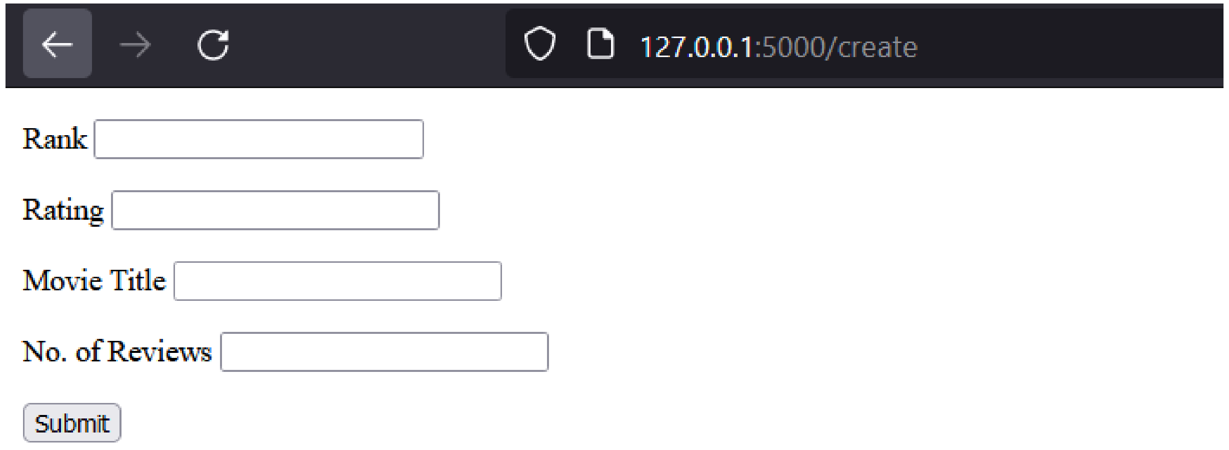
Web Application Home page view

PYTHON CODE

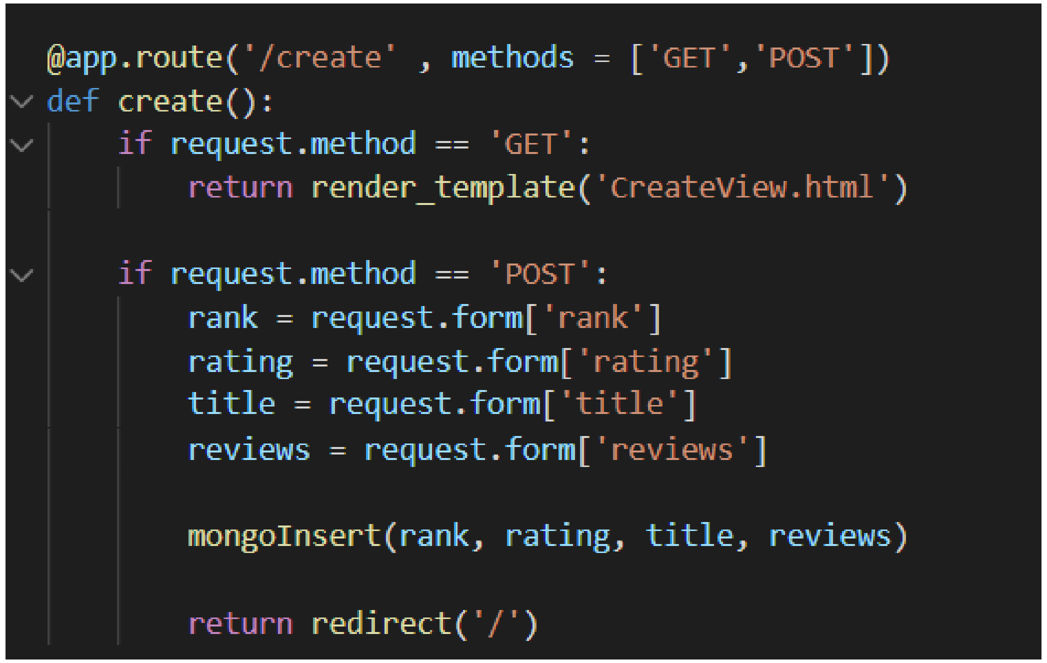


```python
@app.route('/',  methods = ['GET','POST'])
def RetrieveDataList():
    if request.method == 'POST':
        if request.form.get('get') == 'Get the full list of movies':
            return render_template('home.html')
        elif request.form.get('create') == 'Create a new entry':
            return render_template('CreateView.html')
        elif request.form.get('update') == 'Update the existing record':
            return render_template('UpdateView.html')
        elif request.form.get('delete') == 'Delete the record':
            return render_template('DeleteView.html')
        else:
            pass
    elif request.method == 'GET':
            dataset = mongoDocExport()
            dataset.columns = ['Rank', 'Rating', 'Title', 'Reviews']
            header = 'Top movies of Rotten tomatoes'
            return render_template('home.html', tables=[dataset.to_html(classes='data')], titles = dataset.columns )
```

ADD RECORD

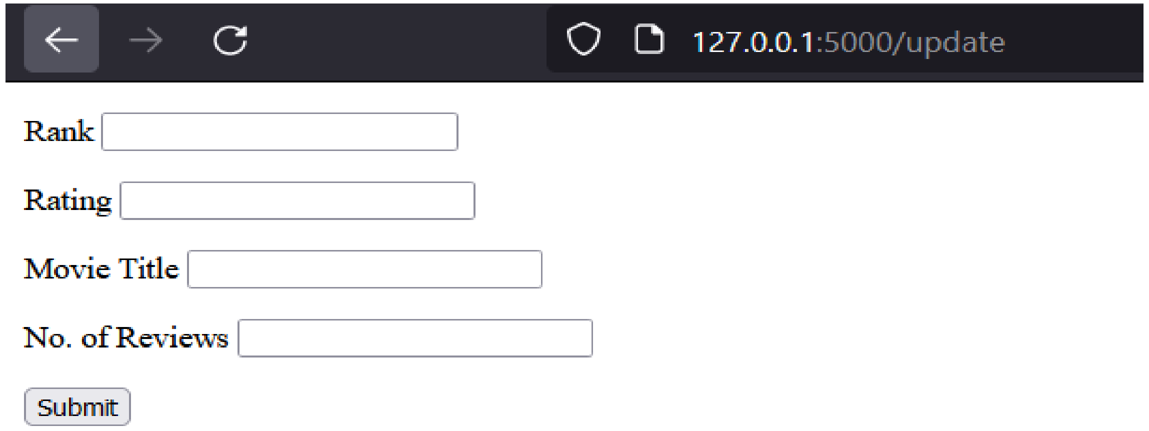

127.0.0.1:5000/create

Rank	
Rating	
Movie Title	
No. of Reviews	


```python
@app.route('/create' , methods = ['GET','POST'])
def create():
    if request.method == 'GET':
        return render_template('CreateView.html')

    if request.method == 'POST':
        rank = request.form['rank']
        rating = request.form['rating']
        title = request.form['title']
        reviews = request.form['reviews']

        mongoInsert(rank, rating, title, reviews)

        return redirect('/')
```

Add a new record to the list/database

UPDATE RECORD

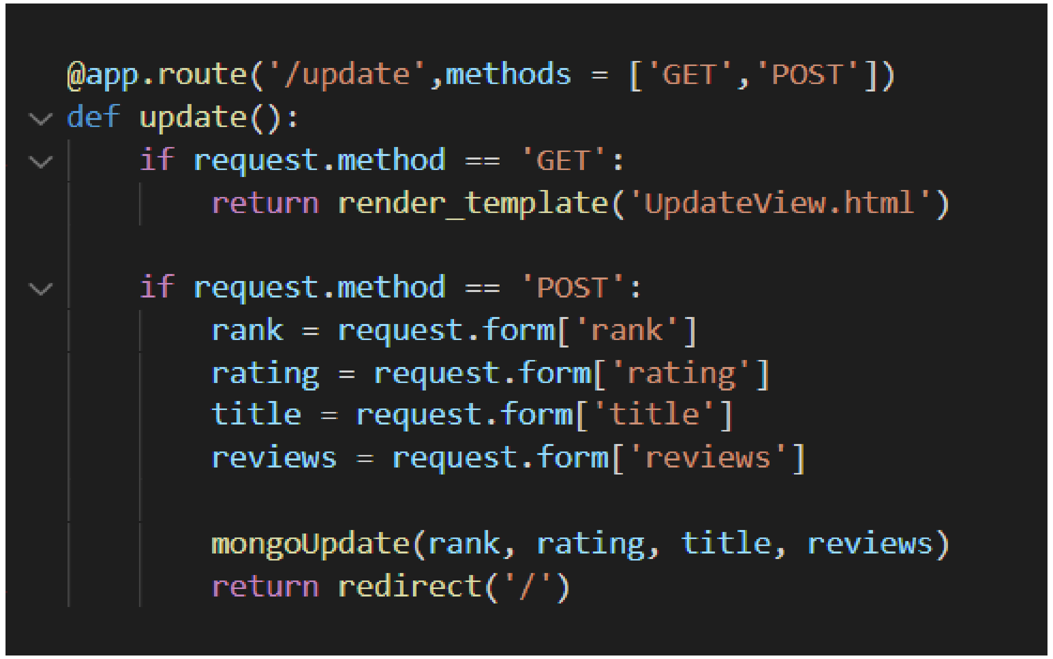


Rank

Rating

Movie Title

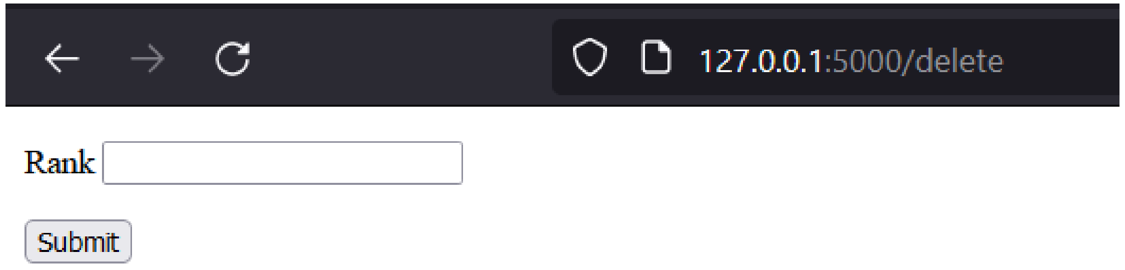
No. of Reviews



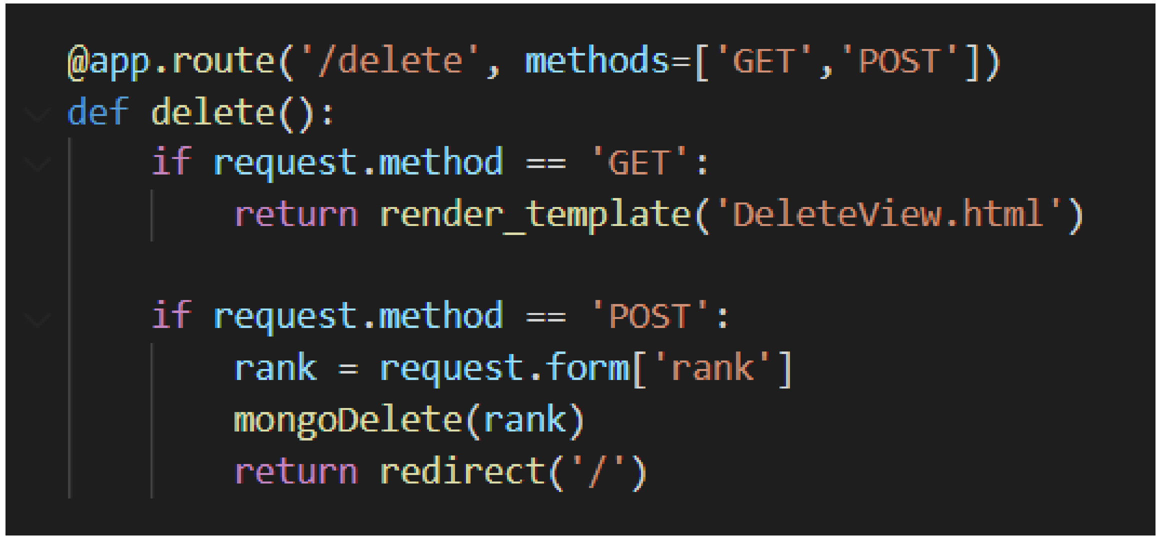
```python
@app.route('/update',methods = ['GET','POST'])
def update():
    if request.method == 'GET':
        return render_template('UpdateView.html')

    if request.method == 'POST':
        rank = request.form['rank']
        rating = request.form['rating']
        title = request.form['title']
        reviews = request.form['reviews']

        mongoUpdate(rank, rating, title, reviews)
        return redirect('/')
```

Update the existing record

DELETE RECORD


127.0.0.1:5000/delete

Rank


```
@app.route('/delete', methods=['GET','POST'])
def delete():
    if request.method == 'GET':
        return render_template('DeleteView.html')

    if request.method == 'POST':
        rank = request.form['rank']
        mongoDelete(rank)
        return redirect('/')
```

Delete the entry from the list

LINK TO THE VIDEO PRESENTATION

REFERENCES

- https://kb.objectrocket.com/mongo-db/how-to-import-and-export-mongodb-data-using-pandas-in-python-355
- https://predictivehacks.com/?all-tips=how-to-add-action-buttons-in-flask

Thank You