Movies Dashboard (Project Report)

> DS5003A Data Engineering

Team Details

Name	Roll No.
142402001	Adarsh G
142402006	Geddam Gowtham
142402012	Suman Pal

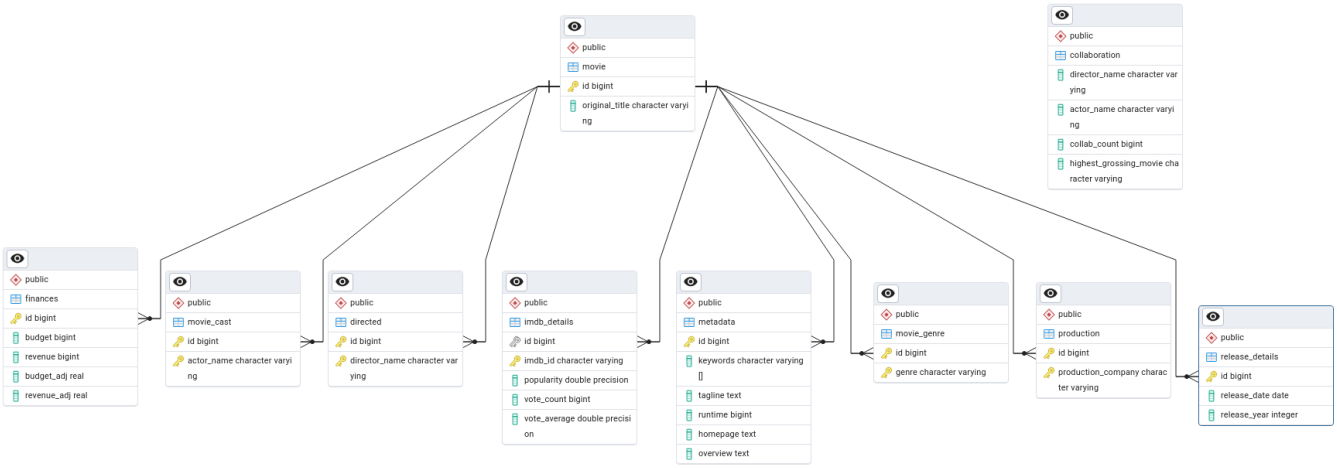
Problem Description

- Analyze a CSV file containing detailed information about movies, including metadata such as titles, genres, cast, directors, budget, revenue, and release dates.
- Extract meaningful insights from the dataset.
- Design relational database schema to store the movie data.
- Develop a dashboard with different user roles to connect to the designed database and visualize various aspects of the data.

Key Implementation

Data Preprocessing

- To start with the project, first preprocessing the given dataset is done using jupyter notebook
- **Libraries used:** pandas
- Pandas is used to read csv data and turn it into dataframe and all the successive processing are done on that dataframe.
- **Handling null values:**
  - `nan` values in actor names, director names, production company names have been removed.
  - `0` values in budget and revenue are unaltered since some of the database queries depend on it. Instead those movies were ignored in such queries.
- **Data Formatting:**
  - To insert values into our Database, they need to be of matching datatype and format should be considered (eg: `Date: YYYY-MM-DD`)
  - Once we decided on Database Schema, we formatted each column to required format for us to insert into our database.



Database Schema

- PostgreSQL, pgAdmin is used to design and implement relational database schema.
- The whole movie dataset is divided into 9 tables:
    - **movie** (**id** bigint, **original_title** character varying, **PRIMARY KEY** (id))
    - **imdb_details** (**id** bigint, **imdb_id** character varying , **popularity** double precision, **vote_count** bigint, **vote_average** double precision, **PRIMARY KEY** (imdb_id))
    - **movie_genre**(**id** bigint , **genre** character varying , **PRIMARY KEY** (id, genre))
    - **release_details**(**id** bigint , **release_date** date, **release_year** integer, **PRIMARY KEY** (id))
    - **finances**(**id** bigint , **budget** bigint, **revenue** bigint, **budget_adj** real, **revenue_adj** real, **PRIMARY KEY** (id))
    - **metadata**(**id** bigint , **keywords** character varying[], **tagline** text, **runtime** bigint, **homepage** text, **overview** text, **PRIMARY KEY** (id))
    - **directed**(**id** bigint , **director_name** character varying, **PRIMARY KEY** (id, director_name))
    - **movie_cast**(**id** bigint , **actor_name** character varying , **PRIMARY KEY** (id, actor_name))
    - **production**(**id** bigint , **production_company** character varying, **PRIMARY KEY** (id, production_company))
- Data values are inserted from the export files created in preprocessing.
- Additional function are added for query retrieval to be used from dashboard.

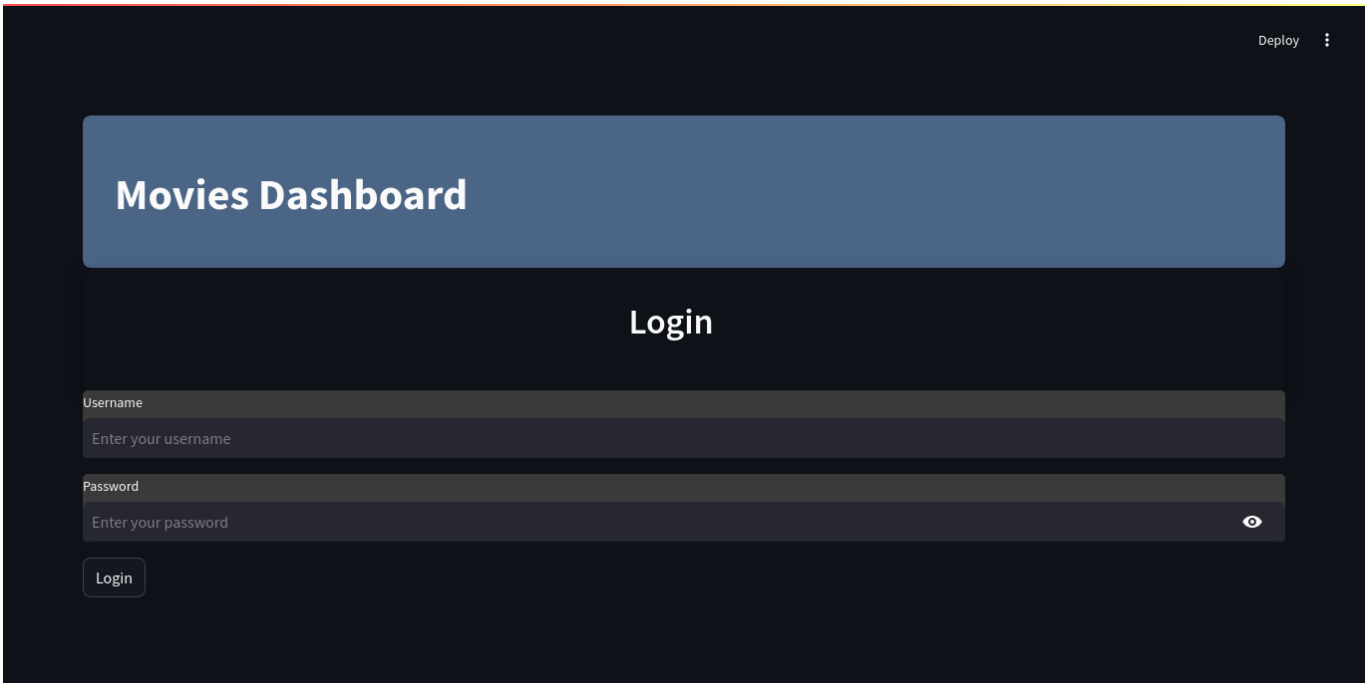
Dashboard

- Streamlit is used to create the dashboard
- Their is a login page, which allows for two types of users: **admin** and **user**.
- **User** role has access to user dashboard.
- User dashboard has 5 pages:
    - `Home`: Contains basic stats about the database (Eg: `Total movies`, `Total directors`, `Total Actors`)
    - `Page 1`, `Page 2`, `Page 3` : Contains all the 10 queries that were part of project description
    - `Page 4`: Contains 5 functions that user can use.
        - Get Movie Details giving (input: Movie Name)
        - Get Actor's Highest Grossing Movie (input: actor name)
        - Get Movie Director (input: Moive name)

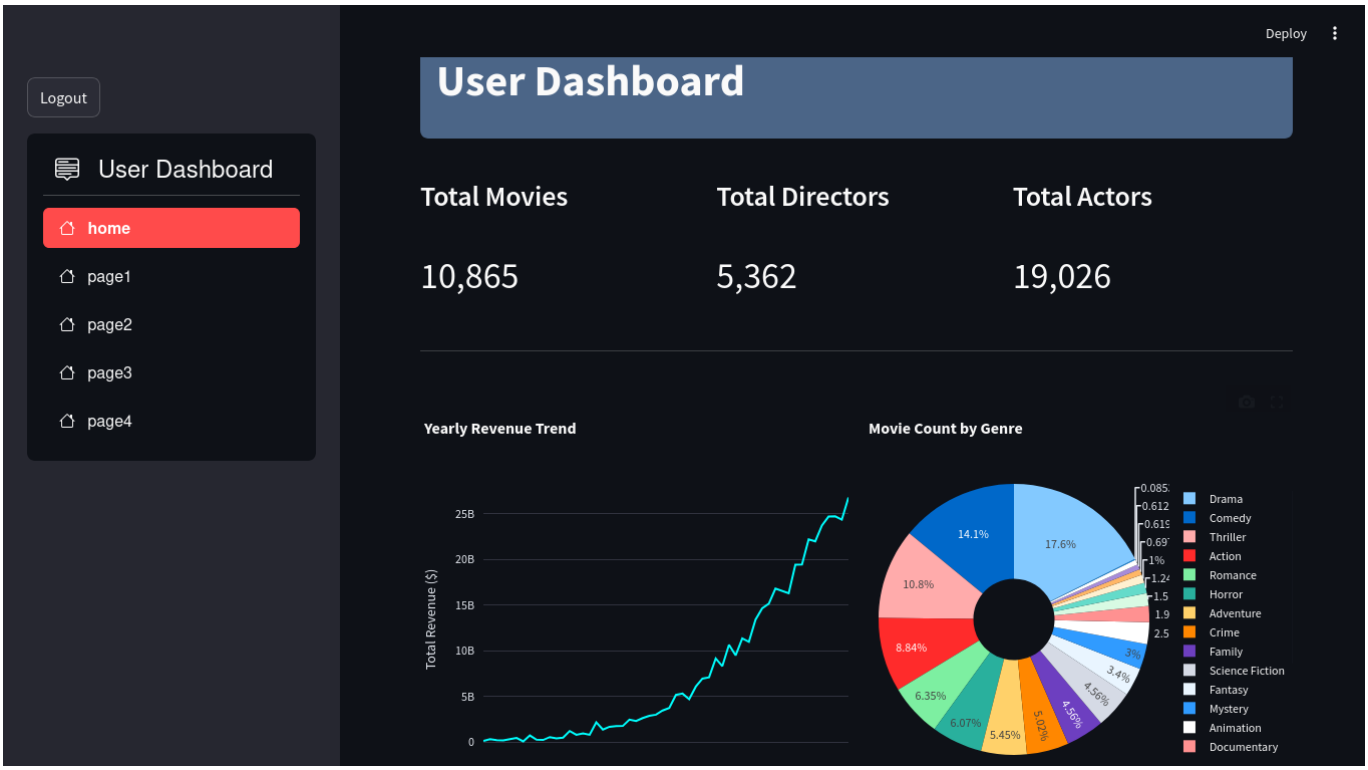
        - Count Movies by Year (inpput: Year)
        - Genre by Movie Name (input: Movie name)
- **Admin** role has access to admin dashboard.
    - Admin page contains Home page similar to user dahsboard.
    - And it have 10 other pages
    - First 9 pages, each shows data from 9 respective tables and ability to add new row to the repsective table (contains a form and `add detials` button). There is a refresh button to refresh the data shown
    - 10th page is to add all the details of the movie at once.

Demo

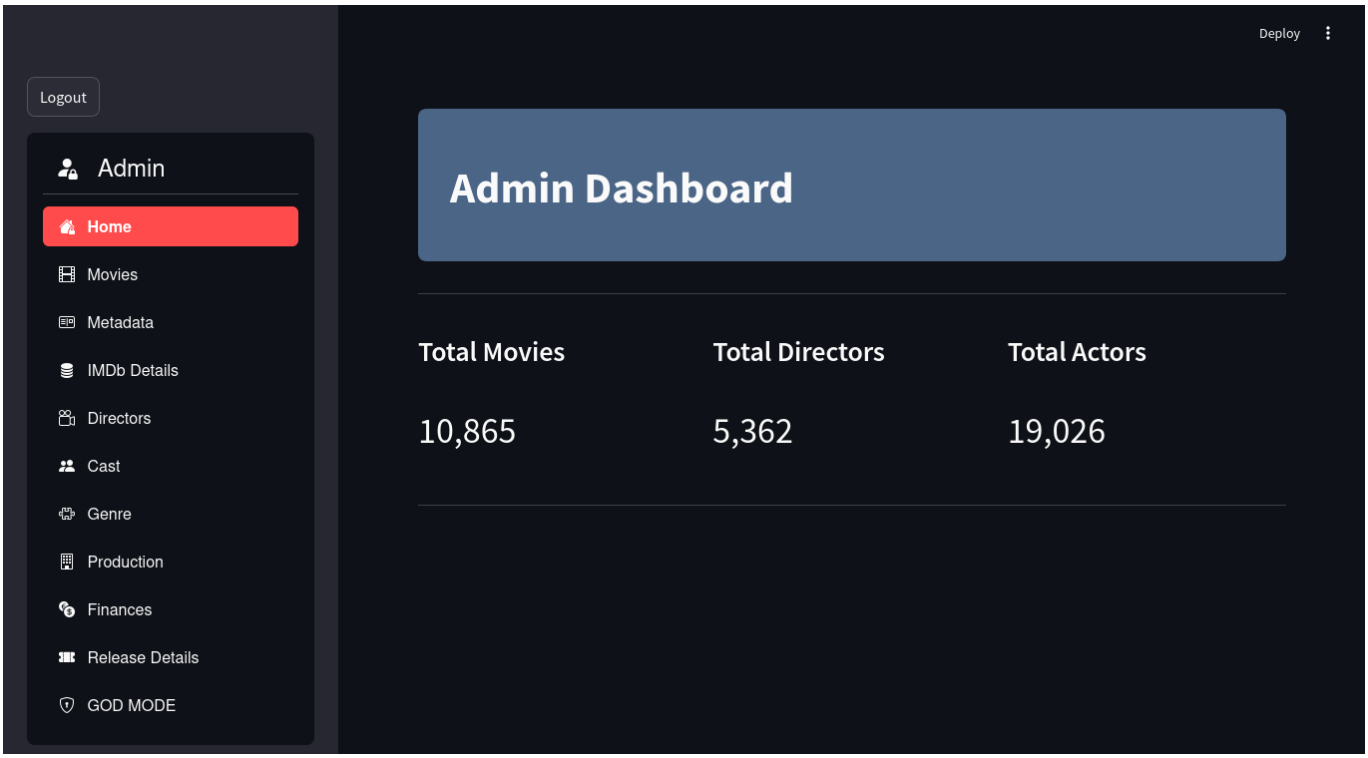
Login Page



User Dashboard



Admin Dashboard



Individual Contributions

- **Adarsh G**: queries (last 5), streamlit setup, user dashboard
- **Geddam Gowtham**: preprocessing (formatting), database setup, admin dashboard
- **Suman Pal**: preprocessing, queries (first 5), functions

Github Repository : Movie dashboard DE Project