Product Review and Recommendation System

Final Project Technical Report

Team Name: ADT_Team_AAP

Team Members:

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2. Ayesha Tajammul Ahmed Mulla (amulla@iu.edu)
3. Aazin Asif Shaikh (aazshaik@iu.edu)

Section 1:

Application URL:

We have hosted our application on PythonAnywhere, a platform which allows users to run and develop Python applications in the cloud and offers a web-based integrated development environment. The below link is valid for 3 months as the account is a Beginner account on PythonAnywhere with limited capabilities.

URL: http://aazshaik.pythonanywhere.com/

[Note: To access the admin view of our webapp, the credentials are:

Username: admin

Password: Password@123]

GitHub URL:

We have uploaded all the phases of our project and the complete code on the following github link:

URL: https://github.iu.edu/kumarip/ADT_amulla_kumarip_aazshaik

Section 2:

Project Summary:

Our project builds an e-commerce application which enhances the customer experience by providing insights that are relevant to their needs and interests, ultimately leading to increased sales and revenue for businesses. We have used the data from Kaggle website 'Amazon Sales' as the database for our application. We have used the data and visualizations to show the distribution of data and compare the products.

Purpose:

The purpose of our project was to develop a user-friendly application allowing users to obtain an overview of various products, check reviews and ratings, and compare prices before making a purchase. We intend to simplify the process of finding the best available discounts and top-rated products by providing corresponding features to the users. Our goal is to enhance the overall user experience and eliminate the hassle of manually searching for such information.

Usefulness:

Our application provides numerous benefits, including the following:

1. Personalized shopping experience: By utilizing customer data such as reviews, ratings, and preferences, our application provides personalized product insights to customers, increasing their satisfaction and loyalty.
2. Increased customer engagement: Personalized insights keep customers engaged, resulting in increased website traffic, sales, and revenue.
3. Sales growth: By showcasing products that customers may have missed, our application can help drive sales and revenue growth.
4. Improved customer retention: Our application's interactivity and insights keep customers engaged and satisfied, resulting in higher customer retention and lifetime value.
5. Valuable insights for businesses: By analyzing customer data and identifying patterns and trends, our application can provide businesses with valuable insights to inform product development, marketing, and sales strategies.

Project Structure and Tools (How we built our project):

Our project has been implemented using the MVC (Model View Controller) architecture pattern. Our web application makes use of Flask for handling retrieval, processing, and analysis of data stored in our SQLite database.

Model: For our web application, we are using SQLite as our database for storing data.

View: For our web application, we are using HTML, CSS and Javascript (JS) for creating out front-end view.

Controller: For our web application, we are using Flask for the back-end development and connections. We are also using Flask for performing the CRUD database operations.

Deployment: Our application has been deployed using PythonAnywhere, a popular cloud-based platform that allows a user to deploy, run, and manage Python applications and websites in the cloud.

Front End Language: Flask, HTML, CSS and JavaScript

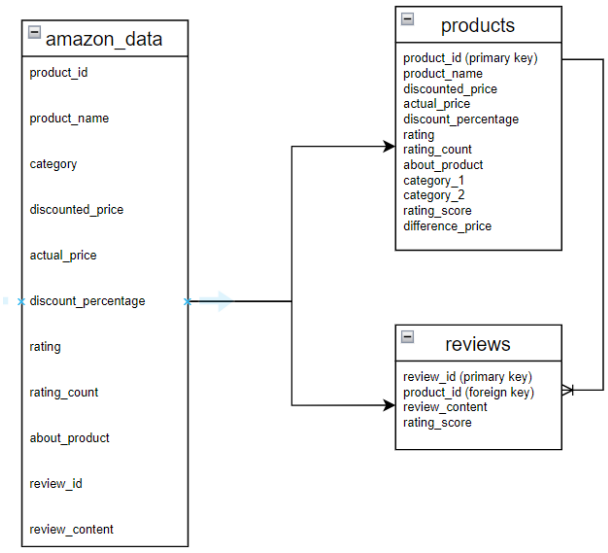
Back End Language: Python and its libraries

Connections and access: Flask libraries

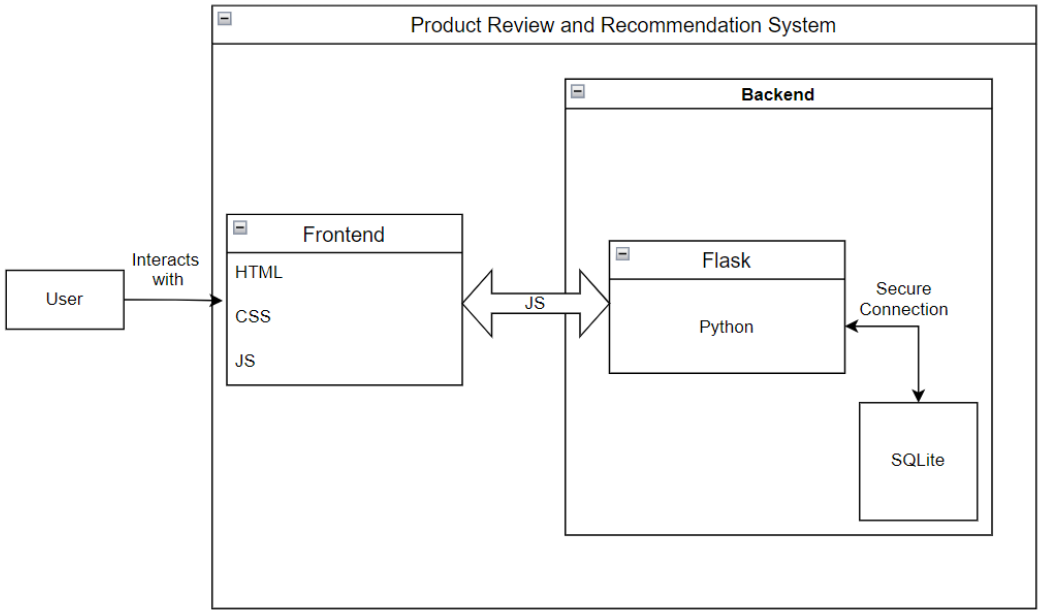
Database: SQLite

Conceptual Diagram:

The conceptual diagram shows that we had an amazon_data table which was cleaned and normalized into two tables: products and reviews.



Architecture Diagram:



Data:

The Amazon Sales dataset is a collection of data related to various products sold on Amazon. This dataset was compiled by an individual or organization with access to Amazon's sales data and it contains data from 1995 to 2015.

We loaded this dataset in sqlite and performed the following:

1. Removing duplicates
2. Using functions and procedures to clean the data
3. Creating new additional columns using the information from original columns
4. Normalizing the whole dataset into two tables: products and reviews

Dataset URL: https://www.kaggle.com/datasets/karkavelrajaj/amazon-sales-dataset

Functionalities:

Our project has the following functionalities:

1. Login/SignUp: Allows users to sign up for the first time and gives different kinds of access, including admin access allowing them to modify the database.
2. Add a new record: Allows users to add a new record in the database while following the below constraint:
    a. Uniqueness rule applied while creating a new product record to help maintain data integrity.
    b. Datatype of fields are appropriately restricted to contain integer, string or float values etc.
    c. Mandatory fields such as ID, Name and description are required to be entered.

3. Update record: Every record has an update button which takes the corresponding product ID and allows record fields to be updated.
4. Delete record: Every record has a delete button which takes corresponding product ID, checks for dependencies and prompts the user before deleting the record.
5. Search Bar: Allows user to search the records depending on the fields in the database.
6. View data: Shows the list of total records in the database.
7. Visualizations: Simple graphs implemented to give an overview of various fields related to product prices and rating to users and show the topmost products.

Section 3. Team Work Assessment:

Name	Personal Assessment
Priya Kumari	On our recent project, I believe that our team collaborated effectively with each member contributing equally to various tasks. In my case, I took on responsibilities related to writing some queries, data cleaning, selecting and understanding proper workflows, and designing the initial web layout, which I then integrated with Flask. However, I recognize that there is room for improvement in future projects, particularly in the area of data preprocessing. We should focus more on ensuring consistency and accuracy in our datasets to improve the overall quality of our work. Additionally, we could enhance the user interface by incorporating more product pictures to make it more engaging and user-friendly. Exploring additional functionalities and using different database management systems could also help us gain a better understanding of their capabilities. Despite these areas for improvement, I enjoyed working on this project and found it to be an excellent opportunity for personal and professional growth. Overall, I feel that our team worked effectively and efficiently, and we were able to produce a high-quality end result.
Aazin Asif Shaikh	In this project, I believe that concepts learned through module videos and lab sessions proved to be particularly useful while designing and developing. We were able to implement the CRUD operations effectively and we also learned how to connect the front-end with the back-end. The flow of the web application was smooth and that was our major goal which we were able to achieve.

	My contribution in this project was to normalize the data, create appropriate views and queries, develop a couple of front-end pages and deploy the application on PythonAnywhere. In terms of what could have been better, I would like to say that the interface could have had more images and icons to convey messages easily. Also, more visualizations can be added and made even more interactive to enhance the user experience. In the future, more fields can be added to increase the scope of the project and data. In conclusion, a rating of 9/10 is what I would like to assign to our team taking into consideration the efforts and hours spent in developing this project.
Ayesha Mulla	Working on this project was an excellent learning experience for me. During the project, I had the opportunity to spend a significant amount of time analyzing the data and delivering insights to the team, which helped us design queries and add new functionalities to the application. Moving forward, I believe that there is room for improvement in the application's design. Specifically, I think that adding more visualizations to the dashboard would help users explore and understand the data more easily. Additionally, incorporating images for items could enhance the user experience. In terms of my contribution to the teamwork, I wrote the backend queries to perform the CRUD operations, which allowed the application to interact with the database. Additionally, I worked on the initial design of the web-architecture layout using Figma, which helped to visualize the application's structure and functionality. Finally, I was responsible for the development of the User Interface, which involved creating the design and implementing it in code. Overall, it was an amazing collaboration with the team in delivering the vision to reality, and I am proud of the work we accomplished together.