5 – DAY INTERNSHIP PROGRAM

Analysis of Walmart Visitors Data on an Interactive Dashboard using Python

By:

Pratiksha Barman

4VV21CS113

Department of Training and Placement

VVCE, Mysuru

Under the guidance of Saritha B M Acharya

"10 Seconds"

Problem Statement:

Maximum profit is earned by retailers by learning the factors that affect sales. Develop an interactive dashboard to count the number of visitors visiting the Walmart website to analyse and draw conclusions of the data logged. Without proper data, it will be difficult to suspect the variety of people and will directly affect the revenue of Walmart.

Solution to Problem:

1. An Analytics Dashboard was built based on the data logged by the customers.

2. Total Number of Visitors for the Day, Week, Month, Year, Peak Hours (which hour in a day had highest visitors) were recorded.

3. Number of visitors based on age classification were recorded.

Age Group Classification:

   a. Kid boy (Age 5 - 12)
   b. Kid Girl (Age 5 - 12)
   c. Teen Boy (Age 13-19)
   d. Teen Girl (Age 13-19)
   e. Youngster Male (Age 20 - 30)
   f. Youngster Female (Age 20 - 30)
   g. Adult Male (Age 31 – 60)
   h. Adult Female (Age 31 - 60)
   i. Senior Citizen Male (Age 61 - 100)
   j. Senior Citizen Female (Age 61 - 100)

4. Conclusions were drawn by analysing the data.

For Ex: Walmart has the highest Kids Visitors at the holidays which tells the decision maker to have more products / items related to kids in the inventory.

Tech Stack used To Build the solution:

HTML, CSS, Bootstrap, Python (Flask), JavaScript, Database and Ajax

Brief Explanation of how project was built using the tech stack:

There are 2 sides of this project:

   a. Client side
   b. Server side

1.Front end

The Client Side is called the Front End. Front-end development focuses on the visual aspects of a website – the part that users see and interact with. HTML, CSS, Bootstrap were used for the creation of user interface (UI).

Bootstrap is a free framework for faster and easier web development. It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins. Bootstrap also gives you the ability to easily create responsive designs. With the help of these, we created designs Walmart Visitor Counter and Admin Dashboard.

a) Walmart visitor counter
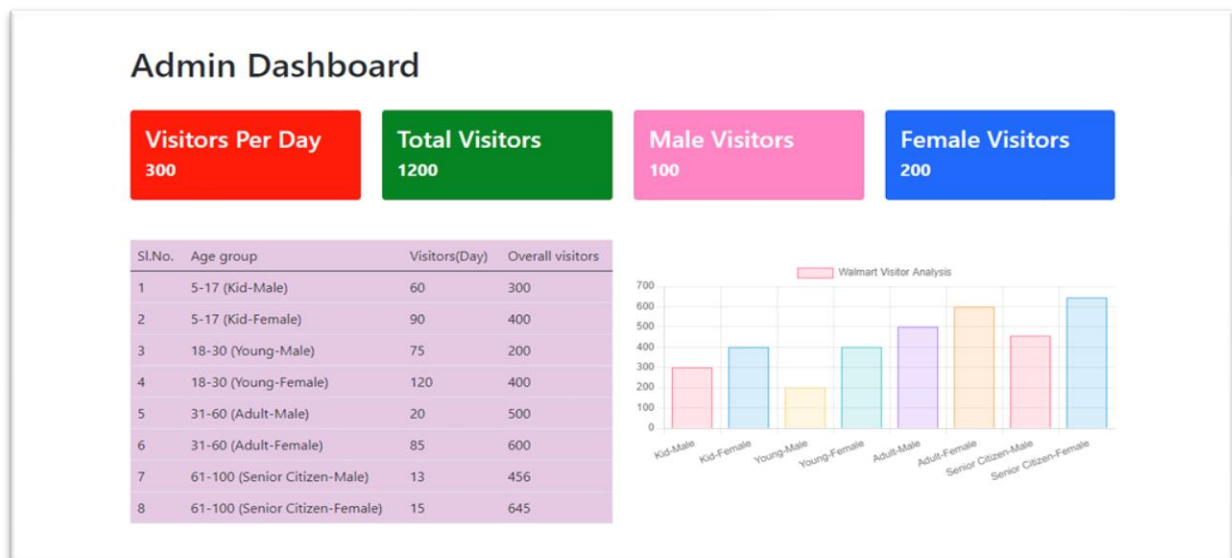
b) Admin Dashboard

2. Validation

It is important to validate the form submitted by the user because it can have inappropriate values. So, validation is must to authenticate user. JavaScript provides facility to validate the form on the client-side so that the data processing will be faster. JavaScript is a scripting or programming language that allows you to implement complex features on web pages like displaying timely content updates, interactive maps, scrolling video jukeboxes, etc.

a) Validation for gender (Please Select Gender)

b) Validation for age group (Please Select Age Group)

c) Validation for Comment (Only Alphanumeric Characters are allowed)

3. Backend

The Server Side is called the Backend. The back end refers to parts of a computer application or a program's code that allow it to operate and that cannot be accessed by a user. It uses Python & Flask for API. The Database-DB was created based on MySQL.
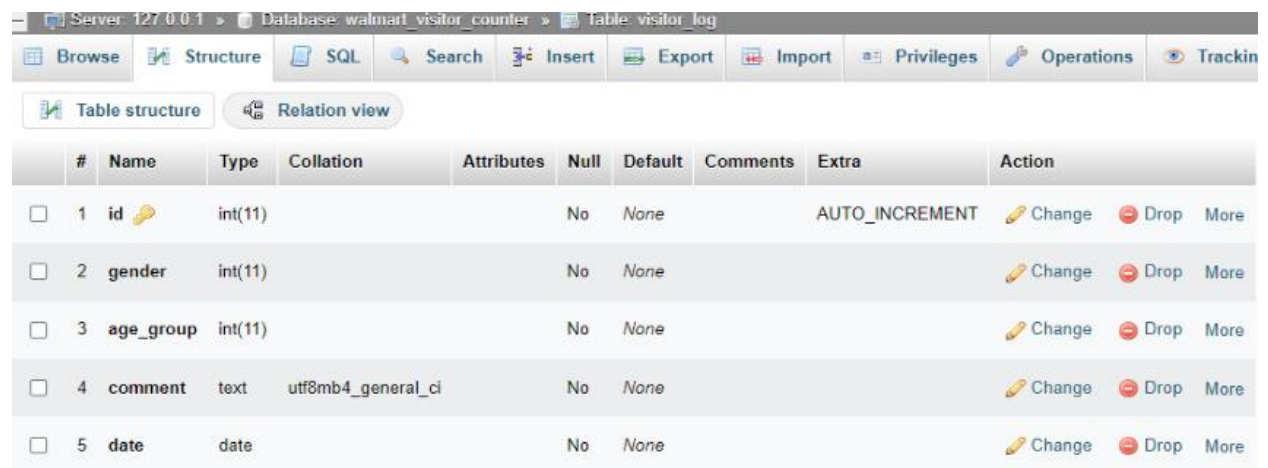
Database is a collection of highly structured tables, wherein each row reflects a data entity, and every column defines a specific information field. The specifications of the table created to store the data is as follows:

DB Name: walmart_visitor_counter

Table Name: visitor_log

Column Names: id, gender, age_group, comment, date

Queries we used in program (Server-Walmart): We used queries like select and insert so that the data gets stored in the database and it gets reflected on the dashboard.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action		
1	id 🔑	int(11)			No	None		AUTO_INCREMENT	✎ Change	⊖ Drop	More
2	gender	int(11)			No	None			✎ Change	⊖ Drop	More
3	age_group	int(11)			No	None			✎ Change	⊖ Drop	More
4	comment	text	utf8mb4_general_ci		No	None			✎ Change	⊖ Drop	More
5	date	date			No	None			✎ Change	⊖ Drop	More

Columns of the database

4. API (Application Programming Interface)

APIs are mechanisms that enable two software components to communicate with each other using a set of definitions and protocols. We used Python and Flask for API development for this project. **Python** is a high-level, general-purpose programming language. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming.

API used in the programs:

1. Walmart visitor counter

- xhttp.open ("POST", "http://localhost:5000/add_visitors", true);

2. Admin dashboard

- xhttp.open("GET", "http://localhost:5000/today_visitors", true);

  xhttp.send();

- xhttp.Totalvisitors.open("GET","http://localhost:5000/overall_visitors", true);

  xhttp.Totalvisitors.send();

- xhttp.maleVisitors.open("GET", "http://localhost:5000/male_visitors", true);

  xhttp.maleVisitors.send();

- xhttp.FemaleVisitors.open("GET", "http://localhost:5000/female_visitors", true);

  xhttp.FemaleVisitors.send();

- xhttp.Dashboard.open("GET", "http://localhost:5000/age_group_classification", true);

  xhttp.FemaleVisitors.send();

- xhttp.BarChart.open("GET", "http://localhost:5000/bargraph", true);

  xhttp.BarChart.send();

Data logged successfully

←T→				id	gender	age_group	comment	date
☐	🖉 Edit	Copy	⊖ Delete	1	2	2	vfgeth	2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	12	2	2	abc	2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	13	2	2	abc	2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	14	2	5	xyz	2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	15	2	4	Good	2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	16	1	1		2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	17	2	4		2022-10-15
☐	🖉 Edit	Copy	⊖ Delete	18	2	3		2022-10-15

Stored data
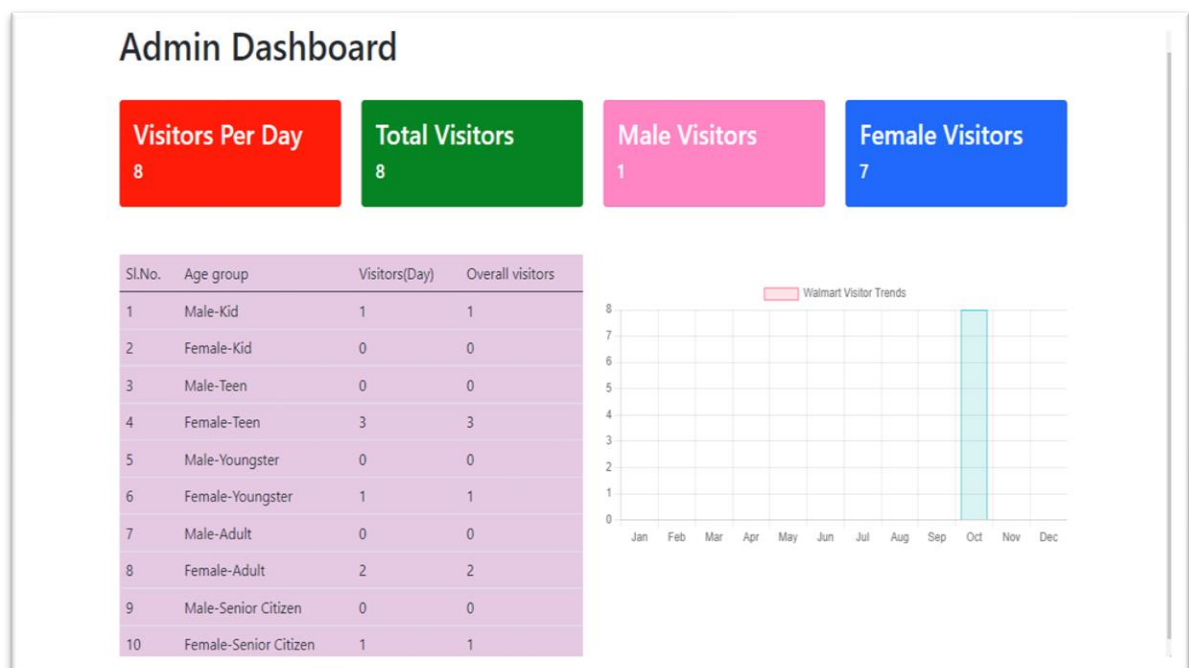
Data shown on cards, table and bar chart

The overall project structure looks as shown below:

UI(HTML+CSS+Bootstrap)+JS+AJAX ←→API(Python+Flask)+DB(MySQL)

Conclusion

With the help of this project, the company will be able to understand the business trends, customer needs and improve their sales. Without the proper data it was difficult to suspect the variety of people, which was directly affecting the Walmart revenue.

Reference Links used:

Bootstrap 5 CDN - getbootstrap.com

Flask link - https://flask.palletsprojects.com

Chartjs link - https://www.chartjs.org

Python link - https://www.python.org

Xampp - https://www.apachefriends.org