FLAVOR FINDER

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Technologies uses:

o Frontend: HTML, CSS

o Backend: PHP

o Database: MySQL (Implemented using XAMPP)

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1. Project Scope and Requirements

1.1 Scope of the Platform:

1) Scope:

"Flavor Finder"

2) Description:

This platform allows users to find nearby restaurants based on their GPS location. Users can register, log in, search for restaurants, and leave reviews and ratings for restaurants they have visited.

1.2 Types of Services:

- Restaurant Search
- Restaurant Details
- User Reviews
- Ratings

1.3 Key Functionalities:

- User Registration: Users can create accounts and log in.
- Restaurant Search: Users can search for nearby restaurants based on their GPS location.
- **Restaurant Details:** View detailed information about restaurants.
- User Reviews and Ratings: Users can leave reviews and rate restaurants.
- User Management: Admin can manage users and view reviews.

1.4 Advanced Features:

- Recommendation System: Recommend restaurants based on user preferences and reviews.
- User Profile Management: Users can manage their profiles and view their review history.
- **Geolocation Services:** Use GPS to find nearby restaurants.

2. Database Design

2.1 ER Model:

1) Entities:

- Users, Restaurants, Reviews, Cuisines, Locations

2) Relationships:

- A user can leave multiple reviews for different restaurants.
- A restaurant can have multiple reviews from different users.
- A restaurant can belong to multiple locations and cuisines.

2.2 Attributes:

1) Users:

- **ID** (INT, PRIMARY KEY)
- Username (VARCHAR(50), NOT NULL)
- Email (VARCHAR(100), NOT NULL, UNIQUE)
- Password (VARCHAR(255), NOT NULL)
- RegistrationDate (DATETIME, DEFAULT CURRENT_TIMESTAMP)

2) Restaurants:

- **ID** (INT, PRIMARY KEY)
- Name (VARCHAR(100), NOT NULL)
- Address (VARCHAR(255), NOT NULL)
- LocationID (INT, FOREIGN KEY)
- CuisineID (INT, FOREIGN KEY)
- Rating (FLOAT)

3) Reviews:

- **ID** (INT, PRIMARY KEY)
- **UserID** (INT, FOREIGN KEY)
- RestaurantID (INT, FOREIGN KEY)
- Rating (INT, CHECK (Rating >= 1 AND Rating <= 5))
- Comment (TEXT)
- ReviewDate (DATETIME, DEFAULT CURRENT TIMESTAMP)

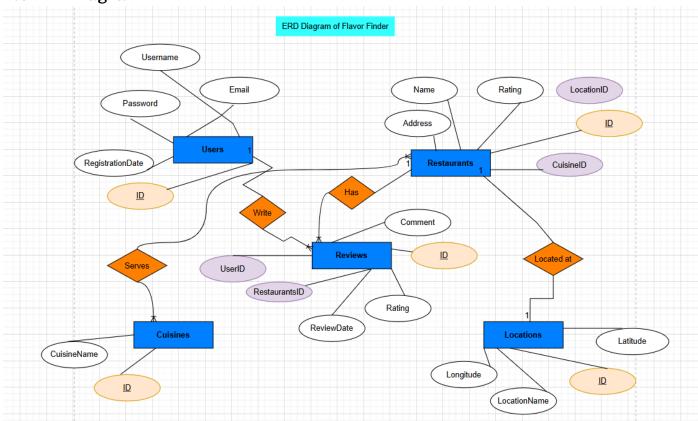
4) Cuisines:

- **ID** (INT, PRIMARY KEY)
- CuisineName (VARCHAR(50), NOT NULL)

5) Locations:

- ID (INT, PRIMARY KEY)
- LocationName (VARCHAR(100), NOT NULL)
- Latitude (DECIMAL(10, 8), NOT NULL)
- Longitude (DECIMAL(11, 8), NOT NULL)

2.3 ER Diagram:



2.4 SQL for Table Creation and Data Management:

1) Creation of Database:

- 1 CREATE DATABASE restaurant_finder;
- 2 USE restaurant_finder;

2) Creation of Tables:

- Users:

- Cuisines:

```
12 -- Cuisines Table
13 CREATE TABLE cuisines (
14 id INT AUTO_INCREMENT PRIMARY KEY,
15 name VARCHAR(50) NOT NULL
16 );
```

- Restaurants:

```
1 -- Create Restaurants table
2 CREATE TABLE Restaurants (
       ID INT AUTO_INCREMENT PRIMARY KEY,
 3
       Name VARCHAR(100) NOT NULL,
       Address VARCHAR(255) NOT NULL,
 5
       LocationID INT,
 6
       CuisineID INT,
 7
 8
       Rating FLOAT,
       FOREIGN KEY (LocationID) REFERENCES Locations(ID),
       FOREIGN KEY (CuisineID) REFERENCES Cuisines(ID)
10
11 );
```

- Reviews:

Locations:

```
1 CREATE TABLE locations (
2 id INT AUTO_INCREMENT PRIMARY KEY,
3 name VARCHAR(100) NOT NULL,
4 latitude DECIMAL(10, 8) NOT NULL,
5 longitude DECIMAL(11, 8) NOT NULL
6 );
```

3) Inserting into Tables:

- Cuisines:

```
1 -- Insert Sample Data into Cuisines Table
2 INSERT INTO Cuisines (CuisineName) VALUES
3 ('Italian'),
4 ('Chinese'),
5 ('Indian'),
6 ('Mexican'),
7 ('Japanese'),
8 ('American'),
9 ('Thai'),
10 ('Greek'),
11 ('French'),
12 ('Spanish');
```

- Users:

```
1 -- Insert Sample Data into Users Table
2 INSERT INTO Users (Username, Email, Password) VALUES
3 ('Muhammad', 'Muhammad123@gmail.com', 'muhammad095'),
4 ('Husnain', 'Husnain5667@gmail.com', 'husnain1122'),
5 ('Ahsan', 'Ahsan768@gmail.com', 'Ahsan66'),
6 ('Salaar', 'Salaar456@gmail.com', 'salaar023'),
7 ('Saad', 'Saadhassan2233@gmail.com', 'Saad0654'),
8 ('Hassaan', 'Hassaan99@gmail.com', 'Hassan654'),
9 ('Inayah', 'Inayah56@gmail.com', 'inayah4433'),
10 ('Muniba', 'Muniba786@gmail.com', 'Muniba786'),
11 ('Tayyab', 'Tayyab454@gmail.com', 'Tayyab321'),
12 ('Ahmad', 'Ahmad99@gmail.com', 'Ahmad9955');
```

- Restaurants:

```
1 -- Insert Sample Data into Restaurants Table
2 INSERT INTO Restaurants (Name, Address, LocationID, CuisineID, Rating) VALUES
3 ('Luigi\'s Italian Bistro', '123 Main St', 1, 1, 4.5),
4 ('Dragon Palace', '456 Elm St', 2, 2, 4.0),
5 ('Taj Mahal', '789 Oak St', 3, 3, 3.5),
6 ('El Sombrero', '101 Pine St', 4, 4, 4.2),
7 ('Sakura Sushi', '202 Maple St', 5, 5, 4.8),
8 ('Burger Haven', '303 Birch St', 6, 6, 3.9),
9 ('Thai Spice', '404 Cedar St', 7, 7, 4.7),
10 ('Olympus Taverna', '505 Spruce St', 8, 8, 3.6),
11 ('Café de Paris', '606 Fir St', 9, 9, 4.3),
12 ('Tapas Delight', '707 Ash St', 10, 10, 4.9);
```

- Locations:

```
1 -- Insert Sample Data into Locations Table
2 INSERT INTO Locations (LocationName, Latitude, Longitude) VALUES
3 ('New York', 40.712776, -74.005974),
4 ('Los Angeles', 34.052235, -118.243683),
5 ('Chicago', 41.878113, -87.629799),
6 ('Houston', 29.760427, -95.369804),
7 ('Denver', 39.739236, -104.990251),
8 ('Phoenix', 33.448376, -112.074036),
9 ('San Diego', 32.715736, -117.161087),
10 ('San Antonio', 29.424349, -98.491142),
11 ('Philadelphia', 39.952583, -75.165222),
12 ('San Francisco', 37.774929, -122.419418);
```

- Reviews:

```
1 -- Insert Sample Data into Reviews Table
2 INSERT INTO Reviews (UserID, RestaurantID, Rating, Comment) VALUES
3 (1, 1, 5, 'Authentic and delicious Italian cuisine!'),
4 (2, 2, 4, 'Great Chinese food, very flavorful.'),
5 (3, 3, 3, 'Indian food was okay, not very spicy.'),
6 (4, 4, 5, 'Loved the Mexican dishes, very tasty!'),
7 (5, 5, 4, 'Fresh and delicious Japanese sushi.'),
8 (6, 6, 3, 'Typical American food, nothing special.'),
9 (7, 7, 4, 'Nice and spicy Thai food.'),
10 (8, 8, 5, 'Amazing Greek food, loved the gyros!'),
11 (9, 9, 4, 'Elegant French cuisine, very good.'),
12 (10, 10, 5, 'Fantastic Spanish tapas, highly recommend!');
```

4) Normalization:

1) 1st Normal Form:

- 1NF ensures that the table is flat and has no repeating groups.
- The tables provided are already in 1NF because they have atomic values and each column contains only one value.

2) 2nd Normal Form:

- ⁻ 2NF ensures that the table is in 1NF and all non-key attributes are fully functional dependent on the primary key.
- The tables provided are already in 2NF because they don't have any partial dependencies.

3) 3rd Normal Form:

- 3NF ensures that the table is in 2NF and all non-key attributes are non-transitively dependent on the primary key.
- The tables provided are already in 3NF because they don't have any transitive dependencies.

5) Data Manipulation:

1. SQL Queries

o Search:

```
1 SELECT u.Username, r.Rating, r.Comment
2 FROM Users u
3 JOIN Reviews r ON u.ID = r.UserID;
            Rating Comment
Username
                   5 Authentic and delicious Italian cuisine!
Muhammad
Husnain
                   4 Great Chinese food, very flavorful.
Ahsan
                   3 Indian food was okay, not very spicy
Salaar
                   5 Loved the Mexican dishes, very tasty!
                   4 Fresh and delicious Japanese sushi.
Saad
Hassaan
                   3 Typical American food, nothing special.
Inayah
                   4 Nice and spicy Thai food
Muniba
                   5 Amazing Greek food, loved the gyros!
Tayyab
                   4 Elegant French cuisine, very good
Ahmad
                   5 Fantastic Spanish tapas, highly recommend!
```

Update:

```
1 UPDATE Restaurants
2 SET Rating = 4.8
3 WHERE Name = 'Sakura Sushi';
```

ID	Name	Address	LocationID	CuisineID	Rating
1	Luigi's Italian Bistro	123 Main St	1	1	4.5
2	Dragon Palace	456 Elm St	2	2	4
3	Taj Mahal	789 Oak St	3	3	3.5
4	El Sombrero	101 Pine St	4	4	4.2
5	Sakura Sushi	202 Maple St	5	5	4.8
6	Burger Haven	303 Birch St	6	6	3.9
7	Thai Spice	404 Cedar St	7	7	4.7
8	Olympus Taverna	505 Spruce St	8	8	3.6
9	Café de Paris	606 Fir St	9	9	4.3
10	Tapas Delight	707 Ash St	10	10	4.9
11	New Restaurant	789 New St	3	3	4.5

2. Creating Store Procedure:

i) AddUser

```
1 DELIMITER //
2 CREATE PROCEDURE AddUser(
3
     IN p_username VARCHAR(50),
4
      IN p_email VARCHAR(100),
 5
      IN p_password VARCHAR(255)
6)
7 BEGIN
8
      INSERT INTO Users (Username, Email, Password)
9
      VALUES (p_username, p_email, p_password);
10 END //
11 DELIMITER;
13 CALL AddUser('newuser', 'newuser@example.com', 'newpassword');
```

ii) UpdateUserEmail

iii) DeleteUser

```
1 DELIMITER //
2 CREATE PROCEDURE DeleteUser(
3    IN p_userID INT
4 )
5 BEGIN
6    DELETE FROM Users
7    WHERE ID = p_userID;
8 END //
9 DELIMITER;
```

CALL DeleteUser(1);

iv) GetRestaurantsByCuisine

```
1 DELIMITER //
2 CREATE PROCEDURE GetRestaurantsByCuisine(
3
       IN p_cuisineName VARCHAR(50)
4
   )
5 BEGIN
       SELECT r.*
6
7
       FROM Restaurants r
8
       JOIN Cuisines c ON r.CuisineID = c.ID
9
       WHERE c.CuisineName = p_cuisineName;
10 END //
11 DELIMITER;
3 CALL GetRestaurantsByCuisine('Italian');
```

3. Creating Trigger:

i) LogUserDeletion

```
CREATE TABLE user_deletions (
   id INT AUTO_INCREMENT PRIMARY KEY,
   user_id INT,
   deleted_at DATETIME
);
-- Create the trigger
DELIMITER //
CREATE TRIGGER LogUserDeletion
AFTER DELETE ON Users
FOR EACH ROW
BEGIN
   INSERT INTO user_deletions (user_id, deleted_at)
   VALUES (OLD.ID, NOW());
END //
DELIMITER;

12 DELETE FROM Users WHERE ID = 1;
```

id user_id deleted_at

ii) LogCuisineUpdates

```
1 CREATE TABLE cuisine_updates (
2
     id INT AUTO_INCREMENT PRIMARY KEY,
      cuisine_id INT,
4
      old_name VARCHAR(50),
5
      new_name VARCHAR(50),
      updated_at DATETIME
6
7);
9 DELIMITER //
 10 CREATE TRIGGER LogCuisineUpdate
 11 AFTER UPDATE ON Cuisines
12 FOR EACH ROW
 13 BEGIN
     INSERT INTO cuisine_updates (cuisine_id, old_name, new_name, updated_at)
 15
      VALUES (OLD.ID, OLD.CuisineName, NEW.CuisineName, NOW());
16 END //
17 DELIMITER ;
20 UPDATE Cuisines SET CuisineName = 'Updated Italian' WHERE ID = 1;
 23 SELECT * FROM cuisine_updates;
```

id	cuisine_id	old_name	new_name	updated_at
1	1	Italian	Updated Italian	2024-06-03 20:46:4

iii) RestaurantInserts

```
1 CREATE TABLE restaurant_inserts (
      id INT AUTO_INCREMENT PRIMARY KEY,
      restaurant_id INT,
      inserted_at DATETIME
5);
6 -- Create the trigger
7 DELIMITER //
8 CREATE TRIGGER LogRestaurantInsert
9 AFTER INSERT ON Restaurants
10 FOR EACH ROW
11 BEGIN
12
      INSERT INTO restaurant_inserts (restaurant_id, inserted_at)
13
     VALUES (NEW.ID, NOW());
14 END //
15 DELIMITER ;
18 INSERT INTO Restaurants (Name, Address, LocationID, CuisineID, Rating) VALUES ('New Restaurant',
     '789 New St', 3, 3, 4.5);
21 SELECT * FROM restaurant_inserts;
```

id restaurant_id inserted_at

1 11 2024-06-03 11:32:14

iv) LogReviewInsert

```
1 -- Create a table to log review insertions
2 CREATE TABLE review_inserts (
      id INT AUTO INCREMENT PRIMARY KEY,
3
4
      review_id INT,
      inserted at DATETIME
5
6);
8 -- Create the trigger
 9 DELIMITER //
 10 CREATE TRIGGER LogReviewInsert
 11 AFTER INSERT ON Reviews
12 FOR EACH ROW
13 BEGIN
       INSERT INTO review inserts (review id, inserted at)
15
       VALUES (NEW.ID, NOW());
 16 END //
17 DELIMITER;
20 INSERT INTO Reviews (UserID, RestaurantID, Rating, Comment) VALUES (1, 1, 5, 'New review
   comment');
2 SELECT * FROM review_inserts;
```

review_id id inserted_at 11 2024-06-03 11:24:36

4. Creating Function:

1

GetUserEmailByUsername

```
1 DELIMITER //
2 CREATE FUNCTION GetUserEmailByUsername(p_username VARCHAR(50))
3 RETURNS VARCHAR(100)
4 DETERMINISTIC
5 BEGIN
     DECLARE v_email VARCHAR(100);
     SELECT Email INTO v_email
     FROM Users
     WHERE Username = p_username;
9
10
     RETURN v_email;
11 END //
12 DELIMITER :
 2 SELECT GetUserEmailByUsername('Muhammad');
```

GetUserEmailByUsername('Muhammad')

updatedemail@gmail.com

ii) GetAverageRating

```
2 CREATE FUNCTION GetAverageRating(p_restaurantID INT)
3 RETURNS FLOAT
4 DETERMINISTIC
6
      DECLARE v_avgRating FLOAT;
      SELECT AVG(Rating) INTO v_avgRating
8
      FROM Reviews
9
      WHERE RestaurantID = p_restaurantID;
      RETURN v_avgRating;
10
11 END //
12 DELIMITER;
```

SELECT GetAverageRating(1);

GetAverageRating(1)

5

iii) GetRestaurantNameByID

```
2 CREATE FUNCTION GetRestaurantNameByID(p restaurantID INT)
3 RETURNS VARCHAR(100)
4 DETERMINISTIC
5 BEGIN
      DECLARE v_name VARCHAR(100);
      SELECT Name INTO v_name
      FROM Restaurants
      WHERE ID = p_restaurantID;
      RETURN v_name;
11 END //
12 DELIMITER;
```

SELECT GetRestaurantNameByID(1);

GetRestaurantNameByID(1)

Luigi's Italian Bistro

iv) CountReviewByUser

```
DELIMITER //
CREATE FUNCTION CountReviewsByUser(p_userID INT)
RETURNS INT
DETERMINISTIC
BEGIN
DECLARE v_reviewCount INT;
SELECT COUNT(*) INTO v_reviewCount
FROM Reviews
WHERE UserID = p_userID;
RETURN v_reviewCount;
PND //
DELIMITER;
SELECT CountReviewsByUser(1);
```

CountReviewsByUser(1)

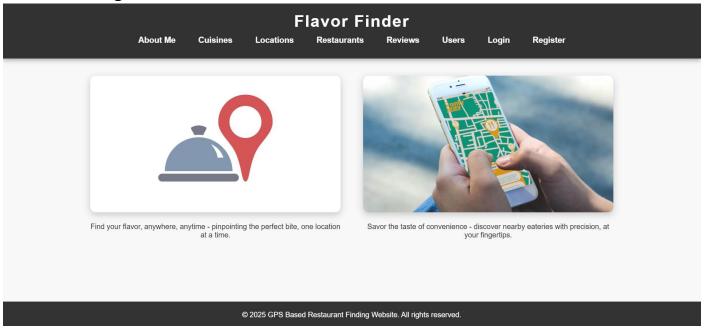
1

3. Testing and Validation

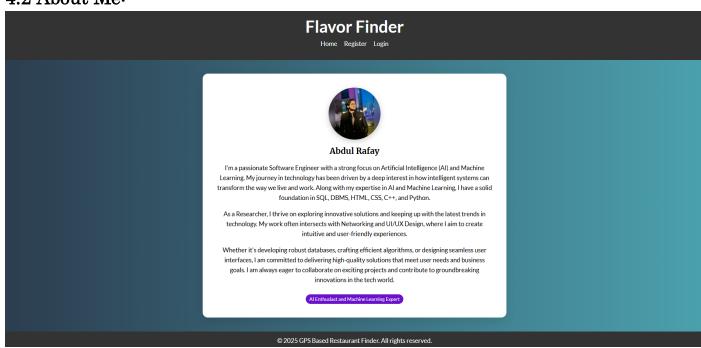
- 3.1 Test Cases:
- 1) User Registration:
- Input: Username, Email, Password
- **Expected Result:** User record created in the Users table.
- 2) Restaurant Search by Location:
- Input: Location Name
- **Expected Result:** List of restaurants in the specified location.
- 3) Leave a Review:
- Input: UserID, RestaurantID, Rating, Comment
- **Expected Result:** Review record created, and restaurant rating updated.

4. Web Interface

4.1 Home Page:



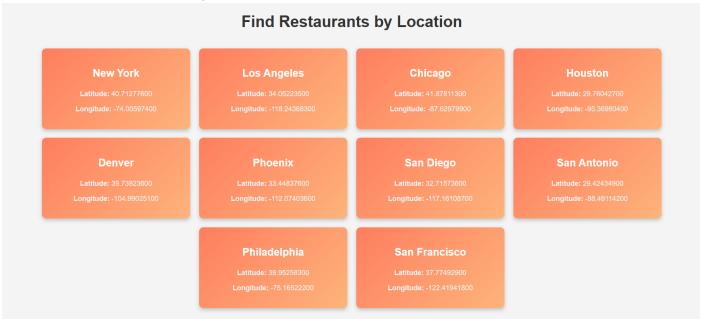
4.2 About Me:



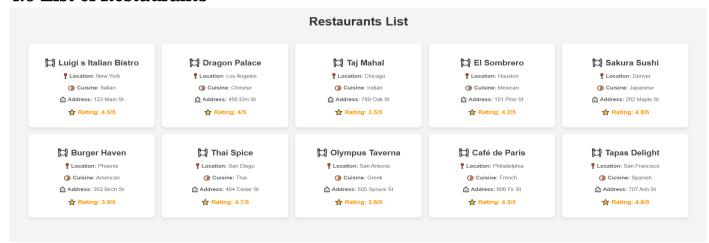
4.3 Explore Cuisines:



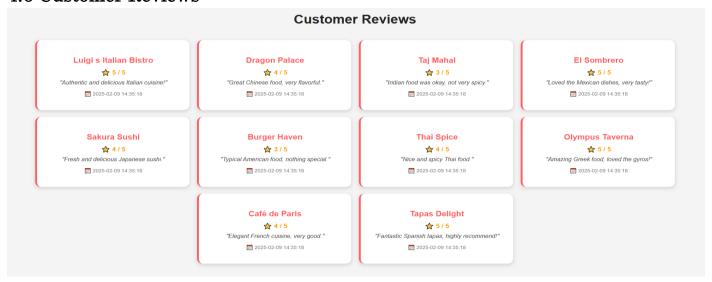
4.4 Find Restaurants by Location:



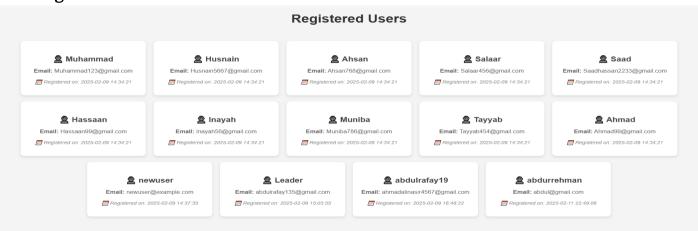
4.5 List of Restaurants:



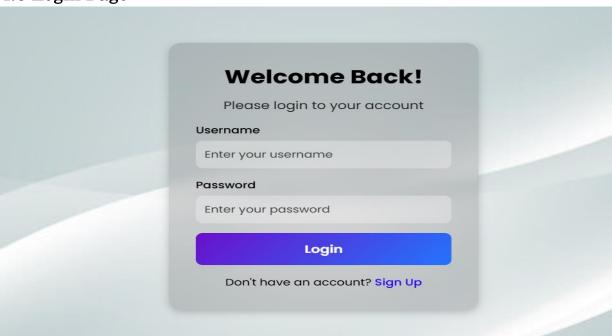
4.6 Customer Reviews:



4.7 Registered Users:



4.8 Login Page:



4.9 Register Page:

