DBMS - Mini Project
Title of the Project:

<u>Club Membership Management</u>

Submitted By:

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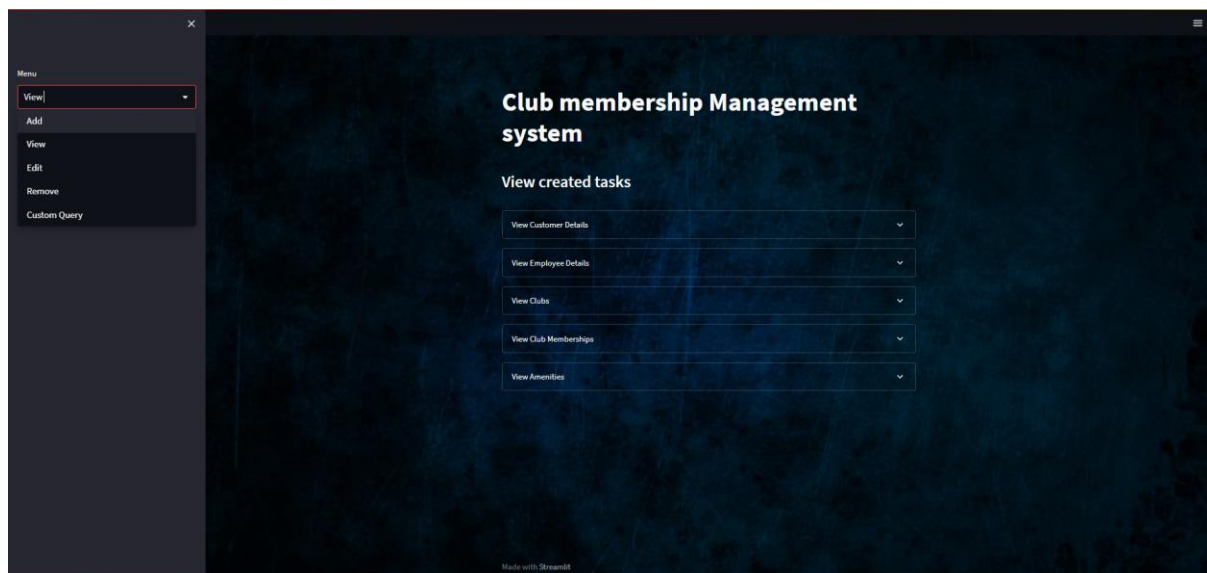V Semester Section : K

Short Description and Scope of the Project:

A **D**ata **B**ase **M**anagement **S**ystem is a system software for easy, efficient and reliable data processing and management. It can be used for:
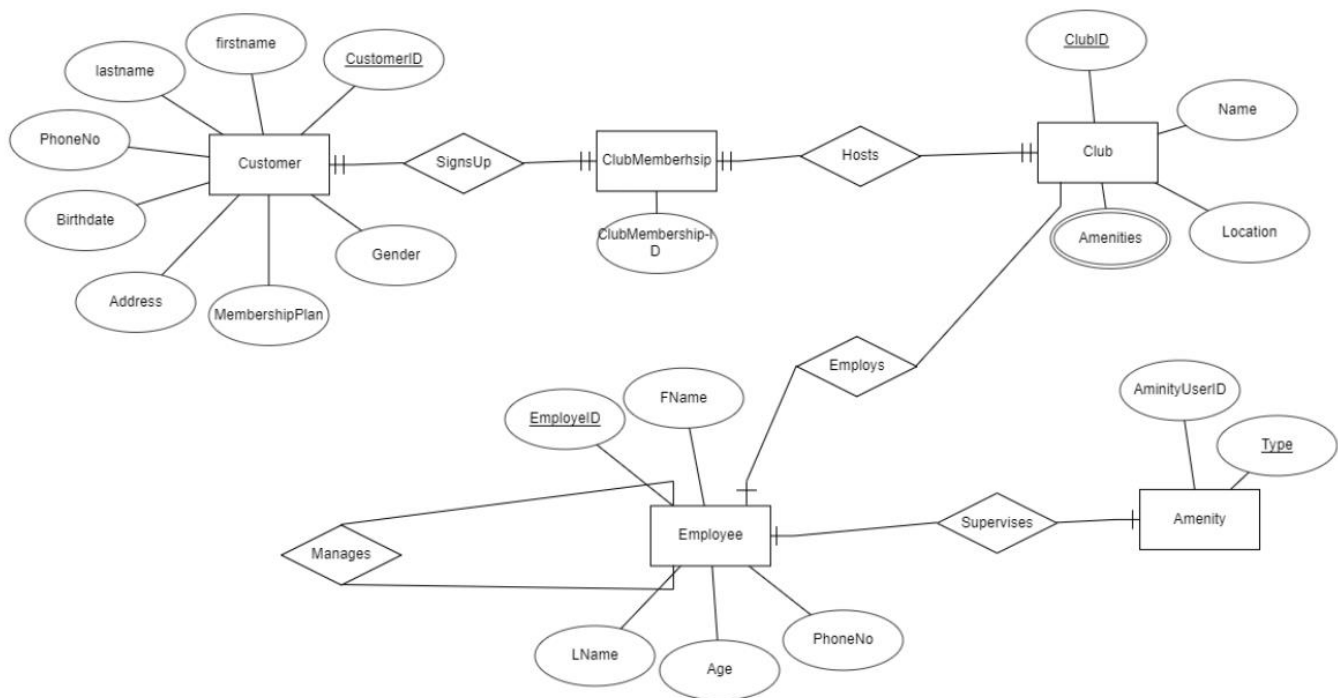- Creation of a database.
- Retrieval of information from the database.
- Updating the database.
- Managing a database.

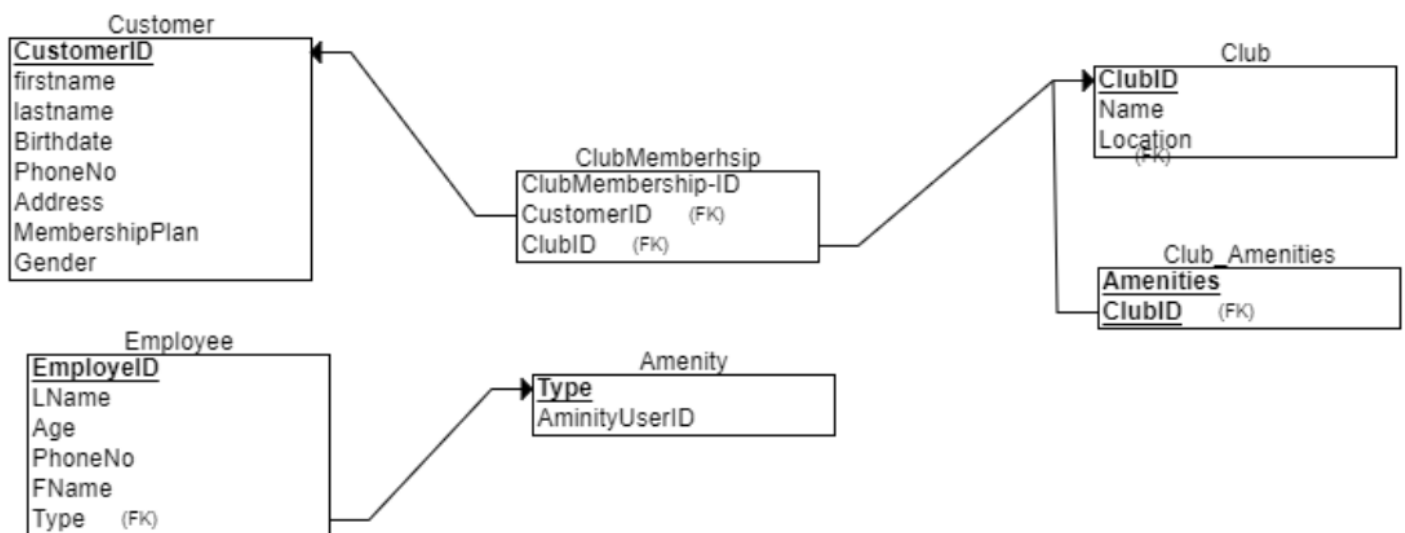This is a simple database managements project made using mysql, streamlit, python.

It facilitates management of user database information like customer details, employee's details, and club details. The features include creation /insertions, deletion, viewing and updating of database through user interactive interface.

ER Diagram:

Relational Schema:

Customer
- **CustomerID**
- firstname
- lastname
- Birthdate
- PhoneNo
- Address
- MembershipPlan
- Gender

ClubMemberhsip
- ClubMembership-ID
- CustomerID (FK)
- ClubID (FK)

Club
- **ClubID**
- Name
- Location (FK)

Club_Amenities
- **Amenities**
- **ClubID** (FK)

Employee
- **EmployeID**
- LName
- Age
- PhoneNo
- FName
- Type (FK)

Amenity
- **Type**
- AminityUserID

DDL statements - Building the database

```sql
CREATE TABLE customer_details(
  customer_id int NOT NULL,
  customer_fname varchar(20) NOT NULL,
  customer_lname varchar(20) NOT NULL,
  customer_addr varchar(20) not null,
   customer_club varchar(20) not null,
   customer_membershiplan int not null,
   customer_phone varchar(20) not null;
  PRIMARY KEY(customer_id)
);

CREATE TABLE club(
    club_id int not null,
    club_name varchar(20) not null,
    club_location varchar(20) not null,
    PRIMARY KEY(club_id)
);

CREATE TABLE employee_details(
  employee_id int NOT NULL,
  employee_fname varchar(20) NOT NULL,
  employee_lname varchar(20) NOT NULL,
  employee_addr varchar(20) not null,
  employee_phone varchar(20) not null,
  employee_club varchar(20) not null,

  PRIMARY KEY(employee_id)
);

CREATE TABLE club_membership(
  club_membership_id int not null,
  customer_id int not null,
  club_id int not null,
  FOREIGN KEY(customer_id) REFERENCES customer_details(customer_id) ON DELETE CASCADE ON UPDATE CASCADE,
  FOREIGN KEY(club_id) REFERENCES club(club_id) ON DELETE CASCADE ON UPDATE CASCADE,
  PRIMARY KEY(club_membership_id)

);

CREATE TABLE amenity(
   type varchar(20) not null,
   Aminity_user_id int not null,
   PRIMARY KEY(type)
);

CREATE TABLE club_amenities(
  amenities varchar(20) not null,
  club_id int not null,
  FOREIGN KEY(club_id) REFERENCES club(club_id) ON DELETE CASCADE ON UPDATE CASCADE
);
```

Populating the Database:

```
--Inserting data

--customer_details
INSERT INTO customer_details values(101,'John','Wick','123 Bel St. Newyork','Royal Orchid',1,'9823193542');
INSERT INTO customer_details values(102,'Dare','Devil','623 Church St. Newyork','Palm Meadows',2,'9992376342');
INSERT INTO customer_details values(103,'Leo','Messi','428 Dollar St. London','Signature Club',3,'7833193545');
INSERT INTO customer_details values(104,'Christiano','Ronaldo','888 Bel St. London','Royal Orchid',1,'9462438153');
INSERT INTO customer_details values(105,'Chris','Hemsworth','223 Kamikaze St. Tokyo','Clarks Exotica',2,'88745619820');
INSERT INTO customer_details values(106,'Henry','Cavill','998 Hiroshima St. Tokyo','Clarks Exotica',3,'9370157284');


--employee_details
INSERT INTO employee_details values(201,'emp','1','123 Bel St. Newyork','9823193542','Royal Orchid');
INSERT INTO employee_details values(202,'emp','2','613 Church St. Newyork','9992376342','Palm Meadows');
INSERT INTO employee_details values(203,'emp','3','418 Dollar St. London','7833193545','Signature Club');
INSERT INTO employee_details values(204,'emp','4','215 Bel St. London','9462438153','Royal Orchid');
INSERT INTO employee_details values(205,'emp','5','225 Kamikaze St. Tokyo','88745619820','Clarks Exotica');
INSERT INTO employee_details values(206,'emp','6','298 Hiroshima St. Tokyo','9370157284','Clarks Exotica');

--club
INSERT INTO club values(1,'Royal Orchid','London');
INSERT INTO club values(2,'Royal Orchid','Newyork');
INSERT INTO club values(3,'Palm Meadows','Newyork');
INSERT INTO club values(4,'Signature Club','London');
INSERT INTO club values(5,'Clarks Exotica','Tokyo');

--club_membership
INSERT INTO club_membership values(302,101,2);
INSERT INTO club_membership values(303,102,3);
INSERT INTO club_membership values(304,103,4);
INSERT INTO club_membership values(301,104,1);
INSERT INTO club_membership values(305,105,5);
INSERT INTO club_membership values(306,106,5);

--amenity
INSERT INTO amenity values('Swimmingpool',401);
INSERT INTO amenity values('Gym',402);
INSERT INTO amenity values('IndoorGames',403);
INSERT INTO amenity values('Badminton',404);
INSERT INTO amenity values('Yoga room',405);
INSERT INTO amenity values('Billiards',406);
INSERT INTO amenity values('Table tennis',407);
INSERT INTO amenity values('Zumba room',408);
INSERT INTO amenity values('Golf court',409);
INSERT INTO amenity values('Tennis court',410);
INSERT INTO amenity values('Squash room',411);
```

Join Queries:

1. Joining all club membership with the club using club_id as key:

```
MariaDB [club_members]> select * from club inner join club_membership on club.club_id=club_membership.club_id;
+---------+----------------+----------------+-------------------+--------------+----------+
| club_id | club_name      | club_location  | club_membership_id | customer_id | club_id  |
+---------+----------------+----------------+-------------------+--------------+----------+
|       1 | Royal Orchid   | London         |               301 |          104 |        1 |
|       5 | Clarks Exotica | Tokyo          |               305 |          105 |        5 |
|       5 | Clarks Exotica | Tokyo          |               306 |          106 |        5 |
+---------+----------------+----------------+-------------------+--------------+----------+
3 rows in set (0.106 sec)
```

2. Joining Customer_details and club tables using club_name;

```
MariaDB [club_members]> select * from customer_details inner join club on club.club_name=customer_details.customer_club;
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+
| customer_id | customer_fname | customer_lname | customer_addr      | customer_club  | customer_membershiplan | phone_no | club_id | club_name      | club_location |
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+
|         104 | Christiano    | Ronaldo       | 888 Bel St. London | Royal Orchid   |                   1 | 9462438153 |       1 | Royal Orchid   | London        |
|         104 | Christiano    | Ronaldo       | 888 Bel St. London | Royal Orchid   |                   1 | 9462438153 |       2 | Royal Orchid   | Newyork       |
|         105 | Chris         | Hemsworth     | 223 Kamikaze St. Tok | Clarks Exotica |                 2 | 88745619820 |       5 | Clarks Exotica | Tokyo         |
|         106 | Henry         | Cavill        | 998 Hiroshima St. To | Clarks Exotica |                 3 | 9370157284 |       5 | Clarks Exotica | Tokyo         |
|         108 | John          | Wick          | 123 Bel St. Newyork | Royal Orchid   |                   1 | 9823193542 |       1 | Royal Orchid   | London        |
|         108 | John          | Wick          | 123 Bel St. Newyork | Royal Orchid   |                   1 | 9823193542 |       2 | Royal Orchid   | Newyork       |
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+
6 rows in set (0.031 sec)
```

3. Creating temp view and then joining using club id

```
MariaDB [club_members]> create view temp as select * from customer_details inner join club on club.club_name = customer_details.customer_club;
Query OK, 0 rows affected (0.257 sec)

MariaDB [club_members]> select * from temp inner join club_membership on temp.club_id=club_membership.club_id;
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+--------------------+--------------+---------+
| customer_id | customer_fname | customer_lname | customer_addr      | customer_club  | customer_membershiplan | phone_no | club_id | club_name      | club_location | club_membership_id | customer_id | club_id |
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+--------------------+--------------+---------+
|         104 | Christiano    | Ronaldo       | 888 Bel St. London | Royal Orchid   |                   1 | 9462438153 |       1 | Royal Orchid   | London        |                301 |          104 |       1 |
|         105 | Chris         | Hemsworth     | 223 Kamikaze St. Tok | Clarks Exotica |                 2 | 88745619820 |       5 | Clarks Exotica | Tokyo         |                305 |          105 |       5 |
|         105 | Chris         | Hemsworth     | 223 Kamikaze St. Tok | Clarks Exotica |                 2 | 88745619820 |       5 | Clarks Exotica | Tokyo         |                306 |          106 |       5 |
|         106 | Henry         | Cavill        | 998 Hiroshima St. To | Clarks Exotica |                 3 | 9370157284 |       5 | Clarks Exotica | Tokyo         |                305 |          105 |       5 |
|         106 | Henry         | Cavill        | 998 Hiroshima St. To | Clarks Exotica |                 3 | 9370157284 |       5 | Clarks Exotica | Tokyo         |                306 |          106 |       5 |
|         108 | John          | Wick          | 123 Bel St. Newyork | Royal Orchid   |                   1 | 9823193542 |       1 | Royal Orchid   | London        |                301 |          104 |       1 |
+-------------+---------------+---------------+---------------------+----------------+---------------------+------------+---------+----------------+---------------+--------------------+--------------+---------+
6 rows in set (0.057 sec)
```

Aggregate Functions:

1. Finding most frequent membership plan bought:

```sql
SELECT
    customer_membershiplan as most_frequent_plans
FROM
    (
        SELECT
            customer_membershiplan,
            cnt,
            DENSE_RANK() OVER(
                ORDER BY
                    cnt DESC
            ) as rnk
        FROM
        (
            SELECT
                customer_membershiplan,
                COUNT(*) as cnt
            FROM
                customer_details
            GROUP By
                customer_membershiplan
        )x
    )y
WHERE
    rnk = 1;
```

```
MariaDB [club_members]> SELECT
    ->      customer_membershiplan as most_frequent_plans
    -> FROM
    ->      (
    ->          SELECT
    ->              customer_membershiplan,
    ->              cnt,
    ->              DENSE_RANK() OVER(
    ->                  ORDER BY
    ->                      cnt DESC
    ->              ) as rnk
    ->          FROM
    ->          (
    ->              SELECT
    ->                  customer_membershiplan,
    ->                  COUNT(*) as cnt
    ->              FROM
    ->                  customer_details
    ->              GROUP By
    ->                  customer_membershiplan
    ->          )x
    ->      )y
    -> WHERE
    ->      rnk = 1;
+---------------------+
| most_frequent_plans |
+---------------------+
|                   1 |
+---------------------+
1 row in set (0.104 sec)
```

2. Counting the number of customers in each club:

```sql
SELECT
    customer_club,
    COUNT(*) as cnt
FROM
    customer_details
GROUP By
    customer_club
```

```
MariaDB [club_members]> SELECT
    ->      customer_club,
    ->      COUNT(*) as cnt
    -> FROM
    ->      customer_details
    -> GROUP By
    ->      customer_club;
+----------------+-----+
| customer_club  | cnt |
+----------------+-----+
| Clarks Exotica |   4 |
| Palm Meadows   |   2 |
| Royal Orchid   |   5 |
| Signature Club |   2 |
+----------------+-----+
4 rows in set (0.096 sec)
```

Set Operations:

1. Union:

```
MariaDB [club_members]> SELECT customer_fname,customer_lname,customer_id FROM customer_details
    -> UNION
    -> SELECT club_id,customer_id,club_membership_id FROM club_membership
    -> ORDER BY customer_id;
+----------------+----------------+-------------+
| customer_fname | customer_lname | customer_id |
+----------------+----------------+-------------+
| John           | Wick           |         101 |
| Dare           | Devil          |         102 |
| Leo            | Messi          |         103 |
| Christiano     | Ronaldo        |         104 |
| Chris          | Hemsworth      |         105 |
| Henry          | Cavill         |         106 |
| John           | Wick           |         107 |
| John           | Wick           |         108 |
| Dare           | Devil          |         109 |
| Leo            | Messi          |         110 |
| Christiano     | Ronaldo        |         111 |
| Chris          | Hemsworth      |         112 |
| Henry          | Cavill         |         113 |
| 1              | 104            |         301 |
| 5              | 105            |         305 |
| 5              | 106            |         306 |
+----------------+----------------+-------------+
16 rows in set (0.000 sec)
```

2. Intersection:

```
MariaDB [club_members]> SELECT *
    ->     FROM customer_details
    ->     LEFT JOIN club
    ->     ON customer_details.customer_club = club.club_name
    -> INTERSECT
    ->     SELECT *
    ->     FROM customer_details_check
    ->     RIGHT JOIN club
    ->     ON customer_details_check.customer_club = club.club_name;
+-------------+----------------+----------------+----------------------+----------------+----------------------+-----------+---------+----------------+---------------+
| customer_id | customer_fname | customer_lname | customer_addr        | customer_club  | customer_membershipplan | phone_no | club_id | club_name      | club_location |
+-------------+----------------+----------------+----------------------+----------------+----------------------+-----------+---------+----------------+---------------+
|         107 | John           | Wick           | 123 Bel St. Newyork  | Royal Orchid   |                    1 | 9823193542 |       1 | Royal Orchid   | London        |
|         107 | John           | Wick           | 123 Bel St. Newyork  | Royal Orchid   |                    1 | 9823193542 |       2 | Royal Orchid   | Newyork       |
|         102 | Dare           | Devil          | 623 Church St. Newyo | Palm Meadows   |                    2 | 9992376342 |       3 | Palm Meadows   | Newyork       |
|         109 | Dare           | Devil          | 623 Church St. Newyo | Palm Meadows   |                    2 | 9992376342 |       3 | Palm Meadows   | Newyork       |
|         103 | Leo            | Messi          | 428 Dollar St. Londo | Signature Club |                    3 | 7833193545 |       4 | Signature Club | London        |
|         110 | Leo            | Messi          | 428 Dollar St. Londo | Signature Club |                    3 | 7833193545 |       4 | Signature Club | London        |
+-------------+----------------+----------------+----------------------+----------------+----------------------+-----------+---------+----------------+---------------+
6 rows in set (0.090 sec)
```

Functions and Triggers:

```sql
-- trigger querie
delimiter $$
CREATE OR REPLACE TRIGGER phone_no_changes
BEFORE INSERT ON customer_details
FOR EACH ROW
BEGIN
    DECLARE x varchar(20);
    declare mess varchar(100);
    set mess = "ERROR: Invalid phone number";
    -- set x="yes";
    set x=fphno(new.phone_no);

    if(x="NO") THEN
        signal sqlstate '45000'
        set message_text = mess;
    end if;
END;
$$
delimiter ;

-- function
delimiter $$
CREATE OR REPLACE FUNCTION fphno(phone_no VARCHAR(20))
RETURNS varchar(20)
BEGIN
    declare x varchar(15);
    declare phonenum int;
    set phonenum = cast(phone_no as int);
    -- return phone_no;
    IF((phonenum<1000000000 or phonenum>9999999999)) THEN
        set x = "NO";
    ELSE
        set x = "YES";
    end if;
    return x;
END;
$$
```

1. Trigger to check the mobile number before insert:

```
MariaDB [club_members]> delimiter $$
MariaDB [club_members]> CREATE OR REPLACE TRIGGER phone_no_changes
    -> BEFORE INSERT ON customer_details
    -> FOR EACH ROW
    -> BEGIN
    ->     DECLARE x varchar(20);
    ->     declare mess varchar(100);
    ->     set mess = "ERROR: Invalid phone number";
    ->     -- set x="yes";
    ->     set x=fphno(new.phone_no);
    ->
    ->     if(x="NO") THEN
    ->         signal sqlstate '45000'
    ->         set message_text = mess;
    ->     end if;
    -> END;
    -> $$
Query OK, 0 rows affected (0.131 sec)

MariaDB [club_members]> delimiter ;
MariaDB [club_members]>
MariaDB [club_members]> -- function
MariaDB [club_members]> delimiter $$
MariaDB [club_members]> CREATE OR REPLACE FUNCTION fphno(phone_no VARCHAR(20))
    -> RETURNS varchar(20)
    -> BEGIN
    ->     declare x varchar(15);
    ->     declare phonenum int;
    ->     set phonenum = cast(phone_no as int);
    ->     -- return phone_no;
    ->     IF((phonenum<1000000000 or phonenum>9999999999)) THEN
    ->         set x = "NO";
    ->     ELSE
    ->         set x = "YES";
    ->     end if;
    ->     return x;
    -> END;
    -> $$
Query OK, 0 rows affected (0.499 sec)
```

Valid:

```
MariaDB [club_members]> INSERT INTO customer_details values(111,'John','Wick','123 Bel St. Newyork','Royal Orchid',1,'982319');
ERROR 1644 (45000): ERROR: Invalid phone number
```

Invalid:

```
MariaDB [club_members]> INSERT INTO customer_details values(111,'John','Wick','123 Bel St. Newyork','Royal Orchid',1,'9823191234');
Query OK, 1 row affected (0.113 sec)
```

```
MariaDB [club_members]> select fphno(phone_no) from customer_details;
+-----------------+
| fphno(phone_no) |
+-----------------+
| NO              |
| YES             |
| YES             |
| YES             |
| YES             |
| YES             |
| YES             |
| NO              |
+-----------------+
8 rows in set (0.001 sec)
```

Developing a Frontend:

1. Front Page:

2. View : (users)
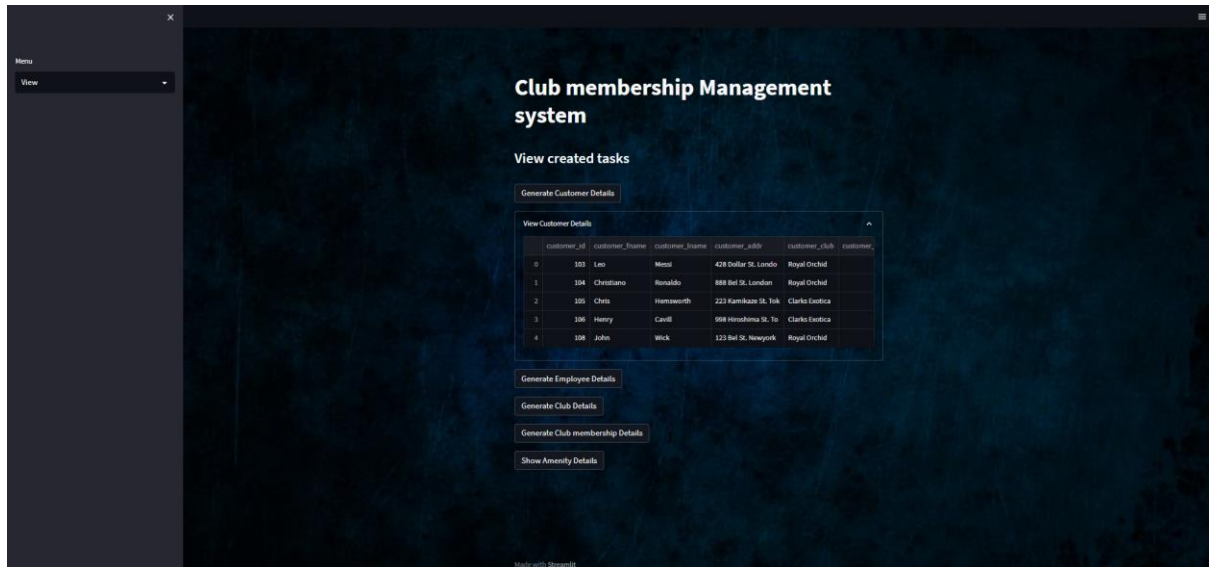
3. Add and Delete: (add or remove customers)

4. Removing /Deleting

5. Edit/Update:

6. Custom Query: