

DATABASE MANAGEMENT SYSTEM & ADVANCE PROGRAMMING

PROJECT ON
RFP

PREVENTATION OF SQL INJECTION IN ARILINE

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Abstract



- In today's world, online flight booking is the easiest way to book flight ticket from any corner in the world.
- It is important to have a flight booking portal and flight reservation system for this purpose.
- In this project, we will be developing a MySQL database which will help users to find flight details, which will then enable them to book tickets.
- We know that SQL injection attack is a common attack that injects malicious code into the backend to breach passenger data.
- So, we have implemented a program to prevent SQL injection in this DataBase to avoid data breaches.

OBJECTIVE

- It is used for the customer to book ticket from the comfort of their home and system are specially vulnerable to attack such as SQL injection.
- And we implemented this project to require protection.



Software Used

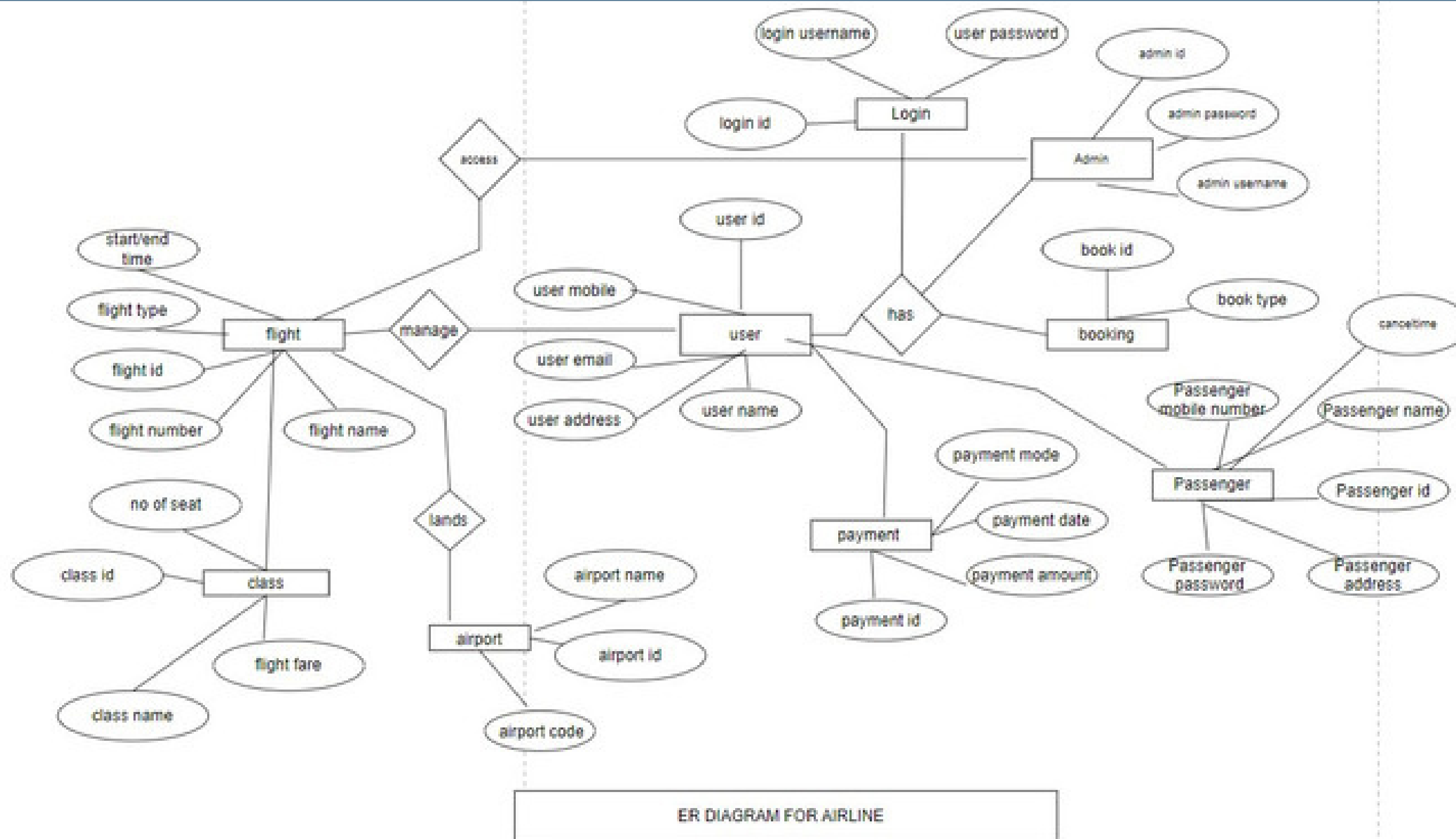
PYTHON

We have used python to link MYSQL and HTML.

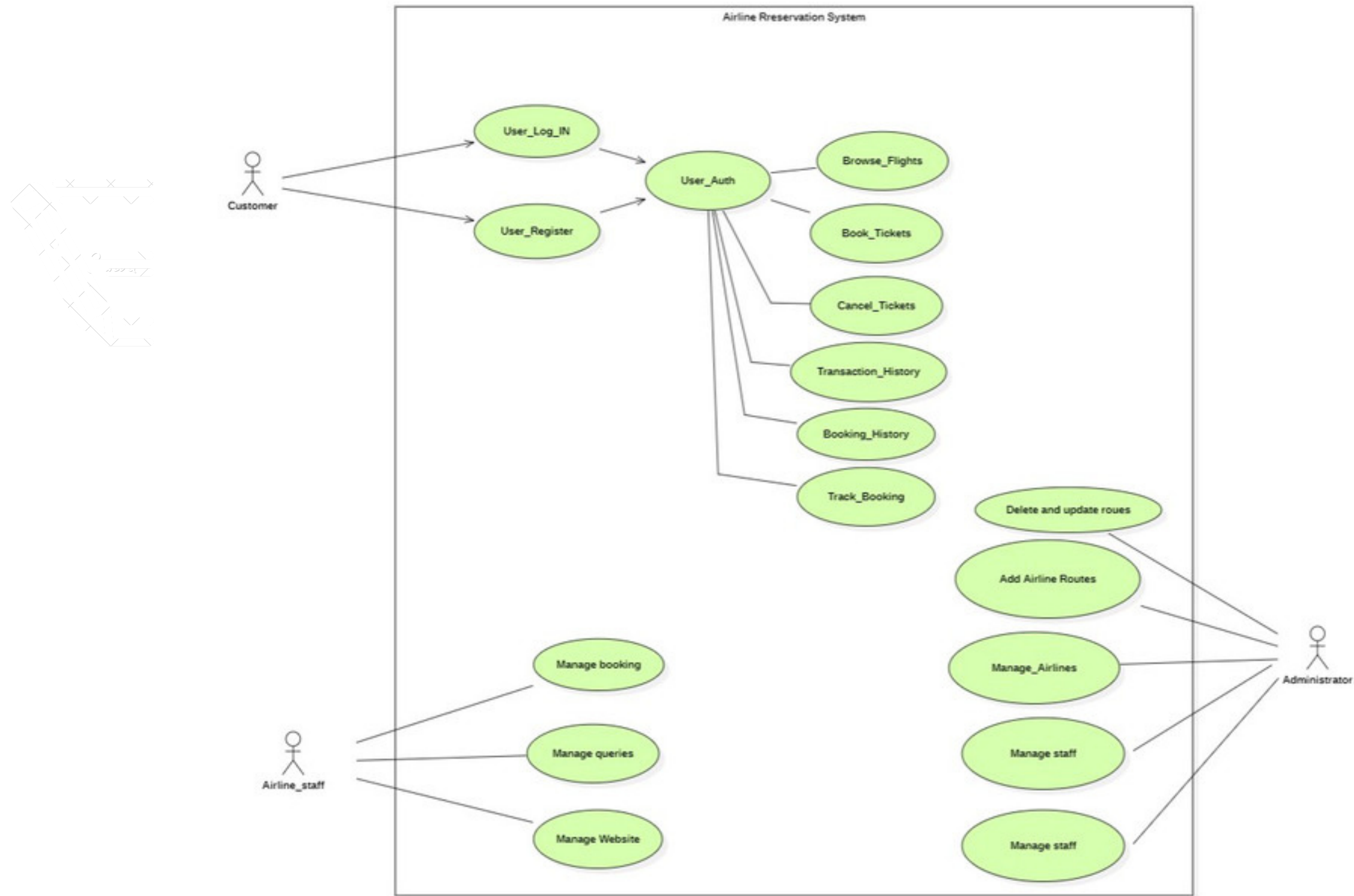
MySQL

To create database and store data.

ER DIAGRAM



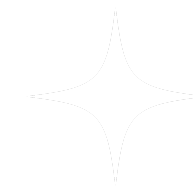
USECASE DIAGRAM



OUR INNOVATION

As the present airline booking application are breached easily through various attack like sql injection, brute force.

we have taken meticulous measures to prevent sql injection and database breach.



QUERIES:

- Customer register:

```
INSERT INTO customer VALUES (%s, %s, md5(%s), %s, %s, %s, %s, %s, %s, %s, %s, %s)
```

- Customer login:

```
SELECT * FROM customer WHERE email = %s and customer_password = md5(%s)'
```

- View past flights:

```
SELECT flight.airline_name, flight.flight_number,  
flight.departure_datetime, flight.departure_airport, flight.arrival_datetime,  
flight.arrival_airport, purchase.sold_price FROM customer, purchase, ticket  
NATURAL JOIN flight WHERE customer.email = purchase.email AND  
purchase.ticket_id = ticket.ticket_id AND flight.departure_datetime <=  
CURRENT_TIMESTAMP AND customer.email = %s
```


Price of the Ticket

```
SELECT COUNT(ticket_id) AS capacity FROM ticket  
WHERE (airline_name,flight_number,departure_datetime) = (%s,%s,%s)
```

- Delete the comment:

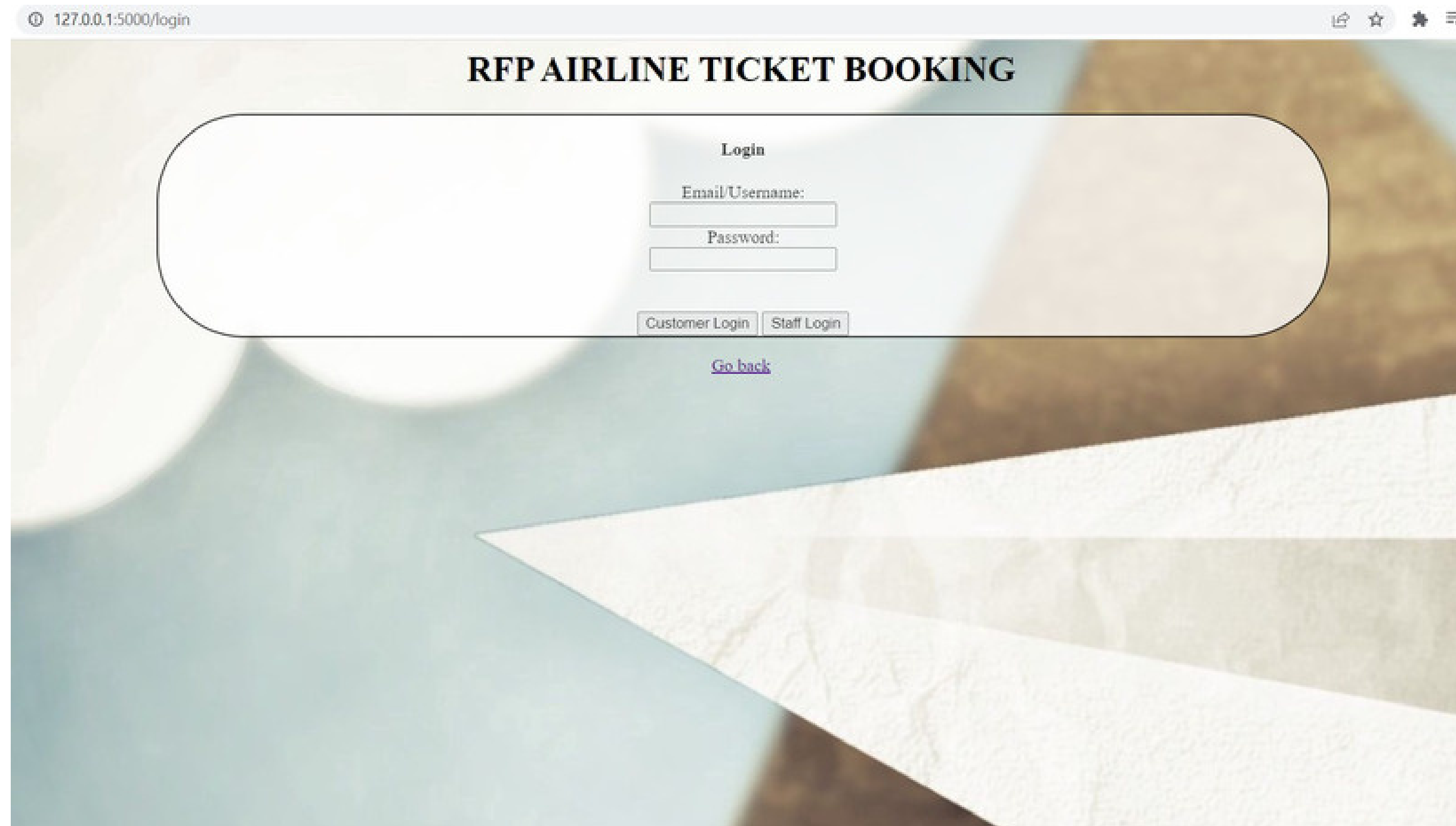
```
DELETE FROM customerrate  
WHERE (email,airline_name,flight_number,departure_datetime)
```

- Track the total money spent for the past year

```
·SELECT SUM(sold_price) AS yearSpending, CURRENT_DATE  
AS enddate,date(CURRENT_DATE-10000) AS startdate FROM purchase  
WHERE email=%s AND purchase_datetime >= date(CURRENT_DATE-10000)  
GROUP BY email
```

IMPLEMENTATION OF CODE

LOGIN PAGE



The screenshot displays a web browser window with the address bar showing '127.0.0.1:5000/login'. The page title is 'RFP AIRLINE TICKET BOOKING'. The login form is centered and contains the following elements:

- Login** (Section Header)
- Email/Username:** (Label) followed by a text input field.
- Password:** (Label) followed by a text input field.
- Customer Login** (Button)
- Staff Login** (Button)
- [Go back](#) (Link)

CUSTOMER REGISTRATION PAGE

127.0.0.1:5000/customer_register

Customer Register:

Email:

Password:

Personal Information:

Name:

Tel:

Date of birth:
 ☐

Passport Number:

Passport Country:

Passport Expiration Date:
 ☐

Address:

Building number:

Street:

City:

State:

[Go back](#)

FLIGHT DETAILS

← → ↻ 127.0.0.1:5000/view_flights

Hi, hello at Airways! [Logout](#)

Search Flights (please search with a pair of dates, or a pair of airports, or both):

Departure Date Range:

From To

Departure Airport:

Destination Airport:

Search

Flights for the next 30 days:

Airline	Flight Number	Departure Date&Time	Departure Airport	Arrival Date&Time	Arrival Airport	Base Price	Airplane	Status	Choose
Airways	AP1029	2022-12-22 15:25:00	JFK	2022-12-23 22:30:00	HKG	8500.00	AP1029	on-time	<input type="radio"/>

on-time/delayed

Update Status

[Go back \(staff\)](#)

THE TICKET BOOKED BY CUSTOMER

```
mysql> select * from purchase;
+-----+-----+-----+-----+-----+-----+-----+
| ticket_id | email | sold_price | card_type | card_number | name_on_card | expiration_date | purchase_ |
| datetime | | | | | | | |
+-----+-----+-----+-----+-----+-----+-----+
| B345323 | user3@gmail.com | 6000.00 | Visa | 1231928742492 | Jin | 2021-09-30 | 2020-05-3 |
0 16:35:23 | | | | | | | |
| A123124 | user2@gmail.com | 5000.00 | Visa | 9253228759492 | Jack | | |
| 2024-05-02 | 2019-09-03 21:35:23 | | | | | | |
| B222222 | user1@gmail.com | 6000.00 | Visa | 1231928742492 | Steven | 2021-09-30 | 2020-05-3 |
0 16:35:23 | | | | | | | |
| A111111 | user2@gmail.com | 5000.00 | Visa | 9253228759492 | Jack | 2024-05-02 | 2019-09-0 |
3 21:35:23 | | | | | | | |
| 1ChinaEasternAB123420231225133000 | user2@gmail.com | 5500.00 | Visa | 9253228759492 | Jack | 2024-05-02 | 2021-10-1 |
0 19:45:00 | | | | | | | |
| 2ChinaEasternAB123420231225133000 | yw3602@nyu.edu | 5500.00 | Visa | 1234123412341234 | Yilun | 2025-05-05 | 2021-11-1 |
2 20:45:00 | | | | | | | |
| 3ChinaEasternAB123420231225133000 | user2@gmail.com | 5500.00 | Visa | 1234432112344321 | JackCard2 | 2024-01-01 | 2021-12-0 |
5 11:00:53 | | | | | | | |
| 132AirwaysAP1029202212221525 | srishnambirajan@gmail.com | 8500.00 | Visa | 2750850230121081 | Srish | 2027-07-07 | 2022-12-0 |
9 12:34:54 | | | | | | | |
| 121AirwaysAP1029202212221525 | k4l4din@stormlightarchive.com | 8500.00 | Visa | 2750850230121081 | Srish | 2026-11-19 | 2022-12-0 |
9 17:30:02 | | | | | | | |
+-----+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)

mysql> select * from staff;
+-----+-----+-----+-----+-----+-----+
| username | userpassword | first_name | last_name | date_of_birth | airline_name |
+-----+-----+-----+-----+-----+-----+
| srish | 81dc9bdb52d04dc20036dbd8313ed055 | Srish | N | 1999-10-13 | Airways |
| hello | 81dc9bdb52d04dc20036dbd8313ed055 | kuku | kuku | 1995-06-16 | Airways |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

HERE WE ARE DELETING THE CUSTOMER DETAILS

```
| user4@gmail.com | Kevin | 60a7e954fde05b08d26269b6cab13f4b | 16 | ??Sandilands Road | null | null | 1239
48239 | EA92384 | 2019-02-07 | Singapore | 1999-11-02 |
| user5@gmail.com | Renee | 208969c79d95a090067e6f448cf2749c | 111 | ??Sandilands Road | null | null | 2343
94734 | EA23242 | 2020-07-26 | US | 2004-04-02 |
| user6@gmail.com | Ken | deff6aa31b45aec5682b232fc7d82928 | 2 | Peachtree Street | Atlanta | GA | 6827
499538 | MU34827 | 2024-07-16 | US | 1988-09-03 |
| srishnambirajan@gmail.com | Srish | 73ec8c23c1e49b48c02b1f8b6db03616 | plot 12 | 4th main road | chennai | tamilnadu | 8925
324440 | IN124748 | 2028-10-26 | India | 2003-10-20 |
| k4l4din@stormlightarchive.com | Kaladin | 7730de69e01e890be313b7e407b60c1b | Plot 5 | Bridge Four | Srish N Co | Tamil Nadu | 8925
328880 | IN21081 | 2027-10-15 | Alethkar | 2003-08-18 |
+-----+-----+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> delete from customer where customer_name="Renee";
Query OK, 1 row affected (0.00 sec)

mysql> select * from customer;
+-----+-----+-----+-----+-----+-----+-----+-----+
| email | customer_name | customer_password | building_number | street | city | state | phon
e_number | passport_number | passport_expiration | passport_country | date_of_birth |
+-----+-----+-----+-----+-----+-----+-----+-----+
| user1@gmail.com | Steven | 482c811da5d5b4bc6d497ffa98491e38 | 101 | Johnson St | Brooklyn | NY | 9293
344454 | EA23842 | 2022-07-25 | US | 1990-01-02 |
| user2@gmail.com | Jack | 8279309a6fa82723da732043c3620f81 | 102 | Prospect St | San Francisco | CA | 9493
343454 | EA23242 | 2023-07-26 | US | 1990-04-02 |
| user4@gmail.com | Kevin | 60a7e954fde05b08d26269b6cab13f4b | 16 | ??Sandilands Road | null | null | 1239
48239 | EA92384 | 2019-02-07 | Singapore | 1999-11-02 |
| user6@gmail.com | Ken | deff6aa31b45aec5682b232fc7d82928 | 2 | Peachtree Street | Atlanta | GA | 6827
499538 | MU34827 | 2024-07-16 | US | 1988-09-03 |
| srishnambirajan@gmail.com | Srish | 73ec8c23c1e49b48c02b1f8b6db03616 | plot 12 | 4th main road | chennai | tamilnadu | 8925
324440 | IN124748 | 2028-10-26 | India | 2003-10-20 |
| k4l4din@stormlightarchive.com | Kaladin | 7730de69e01e890be313b7e407b60c1b | Plot 5 | Bridge Four | Srish N Co | Tamil Nadu | 8925
328880 | IN21081 | 2027-10-15 | Alethkar | 2003-08-18 |
+-----+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

UPDATING THE AIRPORT

```
mysql> select * from airport;
+-----+-----+-----+
| airport_code | airport_name                | airport_city |
+-----+-----+-----+
| JFK          | John F. Kennedy International Airport | NYC          |
| PVG          | Shanghai Pudong International Airport | Shanghai     |
| HJI          | Hartsfield-Jackson International Airport | GA          |
| SIN          | Singapore Changi Airport          | Changi       |
| HKG          | Hong Kong International Airport      | Hongkong     |
| ABC          | Test Airport                     | Test City    |
| SSS          | test2                           | test2        |
+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> insert into airport values("CHN","Chennai International Airport","Chennai");
Query OK, 1 row affected (0.01 sec)

mysql> select * from airport;
+-----+-----+-----+
| airport_code | airport_name                | airport_city |
+-----+-----+-----+
| JFK          | John F. Kennedy International Airport | NYC          |
| PVG          | Shanghai Pudong International Airport | Shanghai     |
| HJI          | Hartsfield-Jackson International Airport | GA          |
| SIN          | Singapore Changi Airport          | Changi       |
| HKG          | Hong Kong International Airport      | Hongkong     |
| ABC          | Test Airport                     | Test City    |
| SSS          | test2                           | test2        |
| CHN          | Chennai International Airport      | Chennai      |
+-----+-----+-----+
8 rows in set (0.00 sec)
```

UPDATE THE AIPOINT CODE

```
mysql> select * from airport;
```

airport_code	airport_name	airport_city
JFK	John F. Kennedy International Airport	NYC
PVG	Shanghai Pudong International Airport	Shanghai
ATL	Hartsfield-Jackson International Airport	GA
SIN	Singapore Changi Airport	Changi
HKG	Hong Kong International Airport	Hongkong
ABC	Test Airport	Test City
SSS	test2	test2

```
7 rows in set (0.00 sec)
```

```
mysql> update airport set airport_code='HJI' where airport_code="ATL";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from airport;
```

airport_code	airport_name	airport_city
JFK	John F. Kennedy International Airport	NYC
PVG	Shanghai Pudong International Airport	Shanghai
HJI	Hartsfield-Jackson International Airport	GA
SIN	Singapore Changi Airport	Changi
HKG	Hong Kong International Airport	Hongkong
ABC	Test Airport	Test City
SSS	test2	test2

```
7 rows in set (0.00 sec)
```


Conclusion



A lot of websites today are not secure enough from cyber attacks like SQL injection, which is the root cause for data breaches and leaks. So, in this project, we have implemented a program to prevent SQL injection.

This program will secure the data that is being entered in the Airplane Database Management System, so that user information is safe.

Thank You!