FLIGHT BOOKING SYSTEM

Project submitted to the

SRM University – AP, Andhra Pradesh

for the partial fulfillment of the requirements to award the degree of

Bachelor of Technology

Computer Science and Engineering

School of Engineering and Sciences

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Certificate

This is to certify that the work present in this Project entitled "**Flight Booking System**" has been carried out by M. Mohith, K. Abhiram Reddy, K. Surya Tej, C. Keertana under our supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology in **School of Engineering and Sciences**.

Supervisor

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Acknowledgements

I extend my heartfelt thanks to Mr. Aurobindo Behera, his guidance and support throughout this project. His insightful advice greatly contributed to its successful completion.

I am grateful to my parents and close friends who stood by me from conceptualization to implementation. This project wouldn't have come to fruition without their collaboration. The journey of crafting this project has been both enriching and enlightening, providing me with valuable technical knowledge.

This endeavor was not solely about obtaining marks but was a deliberate attempt to enhance my technical proficiency. Through this project, we have acquired numerous valuable skills that I believe will positively impact my future career. My sincere appreciation to everyone involved in this project for their contributions from inception to conclusion.

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ABSTRACT

Flight booking systems have become indispensable tools in the modern travel landscape, revolutionizing the way individuals plan and book their journeys. This abstract offers a succinct overview of flight booking systems, highlighting their significance, functionalities, challenges, and future prospects.

Flight booking systems serve as digital platforms that enable users to search, compare, and reserve flights from various airlines. These systems leverage advanced technologies, including user-friendly interfaces, real-time data integration, and secure payment gateways, to streamline the booking process.

Challenges such as cybersecurity threats, pricing complexities, and the dynamic nature of the travel industry require continuous innovation and adaptation. However, advancements in artificial intelligence, machine learning, and blockchain technology offer opportunities to overcome these challenges and enhance the efficiency and reliability of flight booking systems.

In conclusion, flight booking systems play a pivotal role in simplifying travel arrangements, providing travellers with convenience, flexibility, and choice. As technology continues to evolve, these systems are poised to deliver even more personalized and seamless booking experiences, further enriching the journey of travellers worldwide.

Introduction

The flight booking system described in the SQL code serves as a foundational structure for managing airline operations and passenger bookings. It acts as a centralized hub where crucial information about airlines, airports, flights, and passengers is stored and organized. This system is vital for ensuring smooth airline operations and efficient passenger management.

Airlines List:

The Airlines List table contains details about different airlines, such as their names. This table helps in identifying the airlines operating within the system and allows for easy reference when associating flights with specific airlines.

Airport List:

The Airport List table stores information about various airports, including their names and locations. This table is essential for identifying departure and arrival airports for flights and helps in providing accurate airport information to passengers.

Flight List:

The Flight List table manages detailed flight schedules, including information like the airline associated with the flight, the plane number, departure and arrival airports, departure and arrival times, available seats, and ticket prices. This table serves as a central repository for flight-related information, enabling airlines to efficiently manage their flight schedules and bookings.

Booked Flight:

The Booked Flight table records passenger bookings for flights. It includes details such as the flight ID, passenger name, address, and contact information. This table helps in managing passenger bookings and facilitates communication with passengers regarding their travel details.

Users:

The Users table stores information about users who can access the system. This includes their usernames, passwords, email addresses, and phone numbers. This table ensures secure access to the system and allows for user-specific functionalities, such as booking flights and managing reservations.

In conclusion, the flight booking system outlined by the SQL code is a comprehensive database schema that plays a crucial role in managing airline operations and passenger bookings.

Methodology

- ❖ **Database Design:**
  - o Describe the database schema, including tables for airlines, airports, flights, booked flights, and users.
  - o Explain the rationale behind the design decisions, such as the use of primary keys, foreign keys, and data types.

- ❖ **Data Population:**
  - o Discuss the process of populating the database with sample data, including airlines, airports, flights, and passenger bookings.
  - o Highlight any challenges or considerations in data population.

- ❖ **System Functionality:**
  - o Explain the functionality of the flight booking system, including how it manages flight schedules, seat availability, and passenger bookings.
  - o Describe how users interact with the system, such as searching for flights and making reservations.

- ❖ **SQL Queries:**
  - o Provide examples of SQL queries used in the system, such as retrieving flight information, booking flights, and updating passenger details.
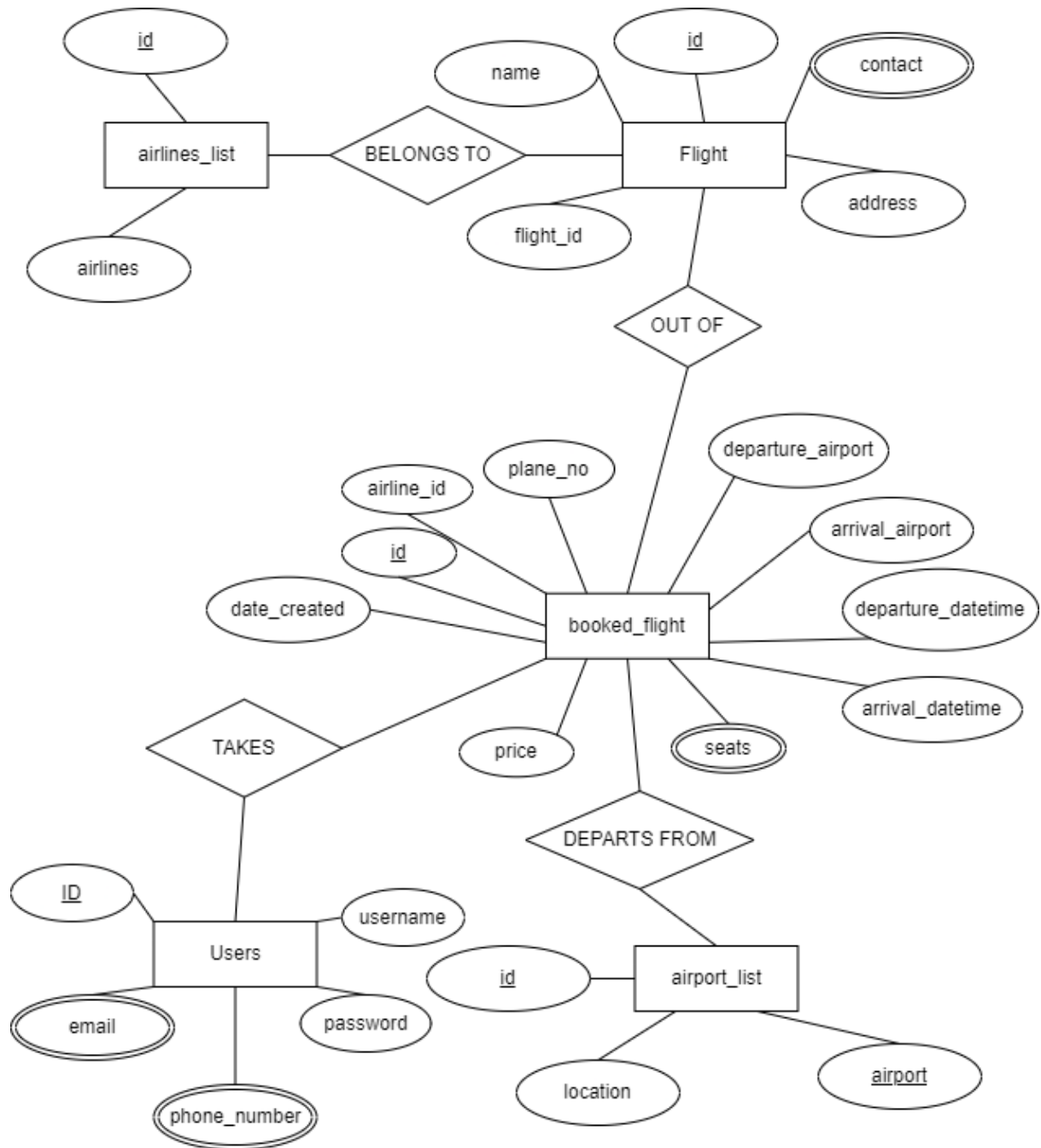 - o Explain the purpose and functionality of each query.

- ❖ **Normalization and Optimization:**
  - o Applied normalization techniques to reduce data redundancy and improve database performance.
  - o Optimized SQL queries and database operations to improve overall system efficiency and responsiveness.

Entity Relation Diagram
(ER Diagram)

Output

id	flight_id	name	address	contact
1	1	Rahul Sharma	123, New Delhi	+91 9876543210
2	2	Priya Singh	456, Mumbai	+91 9876543211
3	3	Amit Patel	789, Bengaluru	+91 9876543212
4	4	Sneha Patel	456, Ahmedabad	+91 9876543213

id	airline_id	plane_no	departure_airport_id	arrival_airport_id	departure_datetime	arrival_datetime	seats	price	date_created
1	1	AI101	1	2	2024-04-21 08:00:00	2024-04-21 11:00:00	199	8000	2024-04-21 05:46:13
2	2	6E205	2	3	2024-04-22 10:00:00	2024-04-22 12:30:00	150	6000	2024-04-21 05:46:13
3	3	SG321	3	4	2024-04-23 12:00:00	2024-04-23 15:00:00	180	7000	2024-04-21 05:46:13
4	1	AI102	1	2	2024-04-21 14:00:00	2024-04-21 17:00:00	179	8500	2024-04-21 05:46:13
5	2	6E206	2	3	2024-04-22 08:30:00	2024-04-22 10:30:00	160	6200	2024-04-21 05:46:13
6	3	SG322	4	5	2024-04-23 09:00:00	2024-04-23 12:00:00	200	7200	2024-04-21 05:46:13

id	airport	location
1	Indira Gandhi International Airport	New Delhi
2	Chhatrapati Shivaji Maharaj International Airport	Mumbai
3	Kempegowda International Airport	Bengaluru
4	Netaji Subhas Chandra Bose International Airport	Kolkata
5	Rajiv Gandhi International Airport	Hyderabad

id	airlines
1	Air India
2	IndiGo
3	SpiceJet

id	username	password	email	phone_number
1	rahul_sharma	rs@123	rahul.sharma@example.com	+91 98765 43210
2	priya_singh	ps@456	priya.singh@example.com	+91 98765 43211
3	amit_patel	ap@789	amit.patel@example.com	+91 98765 43212

Discussion

❖ **Database Design:**

   o Discuss the chosen tables (airlines_list, airport_list, flight_list, booked_flight, Users) and their relationships.

   o Mention the data types used for each column and why they were chosen (e.g., int for auto-incrementing IDs, datetime for timestamps).

   o Highlight the use of FOREIGN KEY constraints to ensure referential integrity between tables.

❖ **Functionality:**

   o Explain how the schema allows users to search for flights based on airlines, departure/arrival airports, and dates.

   o Discuss how bookings are handled with the booked_flight table.

   o Briefly mention if the schema allows for functionalities like flight cancellations or user account management (based on the inclusion of the Users table).

❖ **Assumptions and Limitations:**

   o Discuss any assumptions made during the design process (e.g., fixed number of passenger seats per flight).

   o Mention limitations of the schema, such as not storing passenger information for booked flights or not including features for flight modifications.

❖ **Further Enhancements:**

   o Propose improvements to the schema, such as adding tables for passengers or flight classes.

   o Discuss how features like search filters (price range, travel duration) or user accounts with login functionality could be implemented.

Concluding Remarks

To sum up, the flight booking system we've discussed is a solid tool for airlines to manage their flights and for passengers to book their trips. The way it stores and organizes information about airlines, airports, flights, and passengers is effective and helps keep things running smoothly.

The system works well for managing flight schedules, seat availability, and passenger bookings, which makes it convenient for both airlines and passengers.

It performs well in terms of quickly finding information and managing data, but there are areas where it could be improved. For example, making the system easier to use for passengers and adding more security features to protect passenger information.

Overall, the flight booking system is a good foundation that can be even better with a few tweaks and improvements.

Future Works

- ❖ **Enhanced User Interface:**
  Improving the user interface to make it more intuitive and user-friendly, potentially incorporating features like interactive seat maps and streamlined booking processes.

- ❖ **Mobile Compatibility:** Developing a mobile application to allow users to book flights and manage their reservations on the go, increasing accessibility and convenience.

- ❖ **Personalized Recommendations:** Implementing algorithms to provide personalized flight recommendations based on user preferences and past booking history, enhancing the user experience.

- ❖ **Integration with Payment Gateways:** Integrating the system with secure payment gateways to allow for seamless and secure online payments for flight bookings.

- ❖ **Real-Time Updates:** Implementing real-time updates for flight statuses, including delays and cancellations, to keep passengers informed and improve overall customer satisfaction.

- ❖ **Enhanced Security Measures:** Implementing additional security measures, such as two-factor authentication and data encryption, to protect user information and prevent unauthorized access.

- ❖ **Integration with External Services:** Integrating the system with external services, such as travel insurance providers and hotel booking platforms, to offer a comprehensive travel booking experience.

- ❖ **Feedback and Reviews:** Incorporating a feedback and review system to collect feedback from passengers and improve services based on their input.

- ❖ **Internationalization:** Adding support for multiple languages and currencies to cater to a global audience and improve accessibility for users worldwide.

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