AIRLINE RESERVATION SYSTEM

MINOR PROJECT REPORT

By

VISHWAJITH V (RA2211003010081)
ARUNTHTHAMIZH (RA2211003010099)
SHELLEY S VASEEGAR (RA1911003010339)

Under the guidance of

Dr.RAMAPRABHA J

In partial fulfilment for the Course

of

21CSC203P – ADVANCED PROGRAMMING PRACTICE

in CTECH

FACULTY OF ENGINEERING AND TECHNOLOGY

SCHOOL OF COMPUTING

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

KATTANKULATHUR

NOVEMBER 2023

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Section 3 of UGC Act, 1956)

BONAFIDE CERTIFICATE

Certified that this minor project report for the course **21CSC203P ADVANCED PROGRAMMING PRACTICE** entitled in "**Small Business Network Design with Secure E-commerce server**" is the bonafide work of VISHWAJITH V (RA2211003010081), **ARUNTHTHAMIZH (RA2211003010099)** and **SHELLEY S VASEEGAR (RA1911003010339)** who carried out the work under my supervision.

SIGNATURE

Dr.RAMAPRABHA J
Assistant professor

CTECH

SRM Institute of Science and Technology

Kattankulathur

ABSTRACT

The Python-Based Airline Reservation System with a Graphical User Interface (GUI) is a versatile software application designed to simplify the airline booking process. This abstract provides an overview of the system, highlighting its key functionalities, including user registration (sign-up/sign-in), data storage, and a user-friendly interface for selecting flight start and destination points.

ACKNOWLEDGEMENT

We express our heartfelt thanks to our honorable **Vice Chancellor Dr. C. MUTHAMIZHCHELVAN**, for being the beacon in all our endeavors.

We would like to express my warmth of gratitude to our **Registrar Dr. S. Ponnusamy,** for his encouragement.

We express our profound gratitude to our **Dean (College of Engineering and Technology) Dr. T. V.Gopal,** for bringing out novelty in all executions.

We would like to express my heartfelt thanks to Chairperson, School of Computing **Dr. Revathi Venkataraman,** for imparting confidence to complete my course project

We wish to express my sincere thanks to **Course Audit Professors Dr. Vadivu. G , Professor, Department of Data Science and Business Systems and Dr. Sasikala. E Professor, Department of Data Science and Business Systems** and **Course Coordinators** for their constant encouragement and support.

We are highly thankful to our my Course project Faculty **Dr.RAMAPRABHA J, Assistant Professor , CTECH ,**for her assistance, timely suggestion and guidance throughout the duration of this course project.

We extend my gratitude to our **HOD Dr. Pushpalatha M Professor & Head, CTECH** and my Departmental colleagues for their Support.

Finally, we thank our parents and friends near and dear ones who directly and indirectly contributed to the successful completion of our project. Above all, I thank the almighty for showering his blessings on me to complete my Course project.

TABLE OF CONTENTS

1. INTRODUCTION

The Python-Based Airline Reservation System with a Graphical User Interface (GUI) stands as a dynamic and efficient software solution, aiming to revolutionize the air travel experience. In an era characterized by rapid lifestyles and heightened demands for simplicity, user-friendliness, and robust security in flight booking systems, this mini project emerges to meet these pressing needs. Its primary goal is to offer a comprehensive application that redefines how travelers interact with the process of reserving flights.

By harnessing the power of Python and incorporating an intuitive GUI, this project is poised to provide a rich set of features that empower users to sign up, log in securely, safeguard their personal details, and seamlessly navigate through various flight options. The project not only focuses on meeting the functional requirements of an airline reservation system but also prioritizes user convenience and the utmost security of stored data.

This innovative solution promises to elevate the booking experience for both passengers and airlines alike. It intends to present a design and development approach that not only satisfies the essential aspects of airline reservation but also emphasizes the enhancement of user engagement and data protection. By amalgamating the capabilities of Python's versatile functionalities with the visually appealing nature of a GUI, this project aims to reshape how individuals interact with the aviation industry, ultimately leading to a fundamental transformation in the way travel and flight reservations are perceived and conducted.

1.1.MOTIVATION

The motivation behind embarking on the development of the Python-Based Airline Reservation System with GUI stems from a confluence of factors that address the evolving needs of the airline industry and the expectations of modern travellers.

First and foremost, the airline industry is one of the most dynamic and competitive sectors in the world. With an ever-increasing number of travellers seeking convenient and efficient ways to book flights, there's a clear demand for technology-driven solutions that simplify the booking process. The motivation lies in creating a platform that not only caters to this demand but does so with a focus on providing an exceptional user experience.

Additionally, the growing concern for data privacy and security cannot be understated. Travelers entrust airlines with their personal information and payment details. As such, the motivation for this project includes building a system that not only streamlines the booking process but also assures passengers of robust data security measures.

Furthermore, the proliferation of technology has made graphical user interfaces an integral part of our daily lives. Travelers today expect an interface that is not only functional but also visually appealing and easy to navigate. This project seeks to address this expectation by integrating a user-friendly GUI.

In essence, the motivation for this project is to bridge the gap between the expectations of modern travellers and the capabilities of the airline industry. By creating a system that is user-centric, secure, and efficient, we aspire to contribute to a more enjoyable and hassle-free booking experience for passengers while assisting airlines in managing their operations with greater ease and effectiveness.

1.2.OBJECTIVE

The primary objective of this project is to design, develop, and implement a Python-Based Airline Reservation System with a Graphical User Interface (GUI) to provide a streamlined, user-friendly, and secure platform for airline passengers and operators. The core objectives of this project are as follows:

1. **User Convenience:** Create a user-friendly GUI that simplifies the flight booking process, allowing travelers to easily search for flights, select start and destination points, and choose seats while providing an intuitive interface for all user interactions.
2. **User Authentication and Data Security:** Implement robust user registration and authentication mechanisms to safeguard passenger information and payment details. Prioritize data security to ensure the confidentiality and integrity of sensitive data.
3. **Flight Management:** Develop a comprehensive system for flight management, enabling passengers to search for available flights based on various criteria, including date, time, and routes, and book seats in real-time with updated availability information.
4. **Data Storage and Management:** Create a secure database for storing user profiles, flight details, and booking history. Implement efficient data management techniques to ensure data integrity and accessibility.
5. **Scalability:** Design the system with scalability in mind, enabling future expansion to support multiple airlines, additional routes, and new features as needed.
6. **Reporting and Analytics:** Develop reporting and analytics capabilities to generate insights into airline operations, helping with decision-making and business analysis.

By achieving these objectives, this project aspires to create a comprehensive and adaptable Airline Reservation System that enhances the overall user experience, prioritizes data security, and contributes to operational efficiency within the aviation industry.

1.3.PROBLEM STATEMENT

The project undertakes a critical challenge by addressing prevalent shortcomings within current airline reservation systems. These existing systems often suffer from inefficiencies, presenting users with an unfriendly and cumbersome booking process. Common issues include complicated interfaces that make flight selection and cost calculation a convoluted task. Additionally, the level of security in user authentication and data storage is frequently subpar, leaving sensitive user information vulnerable to potential breaches. Furthermore, the absence of a passenger limit in bookings contributes to inefficiencies and can foster unfair practices within the system.

The main objective of this project is to confront these challenges head-on by developing a Python-based Airline Reservation System featuring a Tkinter GUI and integrating it with a robust database. The aim is to directly tackle these persistent problems and provide users with a significantly enhanced experience when booking flights. By implementing this solution, the project endeavors to streamline the booking process, making it more user-friendly, secure, and efficient. The integration of a database will significantly improve data storage and security, safeguarding sensitive user information against potential threats.

The design of the system with a passenger limit in bookings aims to promote fairness and efficiency within the reservation process, ensuring a more balanced and structured approach to flight bookings.

In summary, the primary focus of this project is to address the inefficiencies, complexities, and security issues prevalent in current airline reservation systems. By leveraging Python and Tkinter, it seeks to offer a refined, secure, and user-centric flight booking experience while ensuring fairness through the implementation of a passenger limit in bookings.

2. REQUIREMENTS

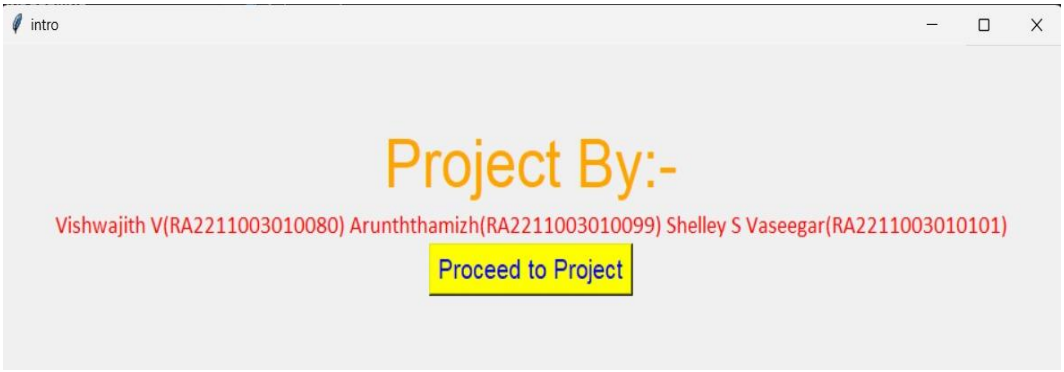
2.1 Software Requirements

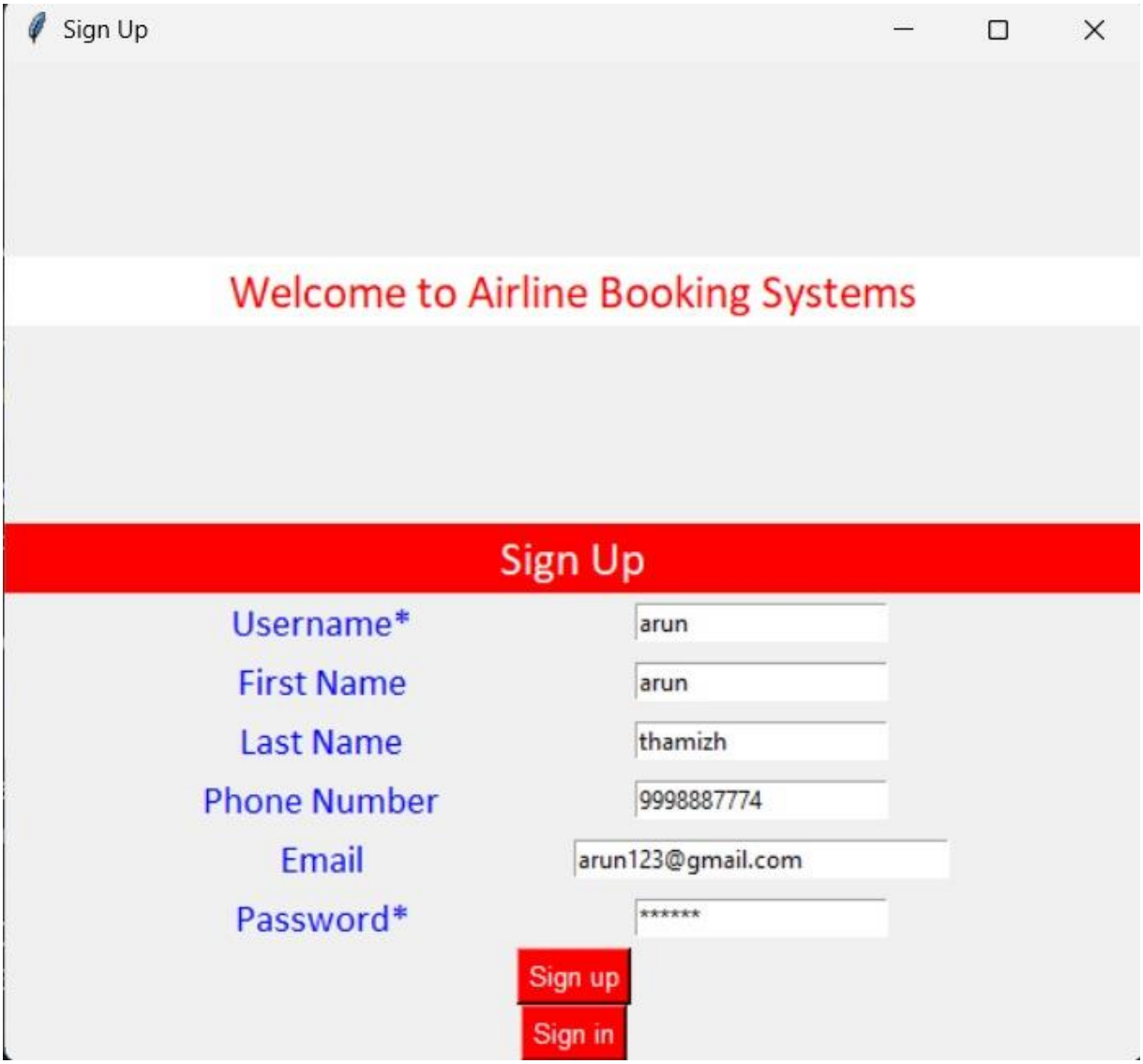
1. **Python:** Ensure you have Python installed on your system. Python will be the primary programming language for this project.
2. **Tkinter:** Tkinter is Python's standard GUI library. It comes pre-installed with most Python distributions. You'll need to use Tkinter to create the graphical user interface.
3. **Relational Database Management System (RDBMS):** You'll need an RDBMS like SQLite, MySQL, or PostgreSQL to store user login information and flight booking data securely.
4. **Database Connector/Driver:** Depending on the chosen RDBMS, you will need the corresponding Python library or driver (e.g., SQLite3 for SQLite, pymysql for MySQL) to connect your Python code with the database.
5. **Integrated Development Environment (IDE):** An IDE such as Visual Studio Code, PyCharm, or Jupyter Notebook will facilitate code development and debugging.
6. **Version Control System:** Using a version control system like Git is recommended for managing code changes and collaboration with a team.
7. **Dependencies:** You may require additional Python libraries and modules for various functionalities, such as handling date and time, mathematical calculations, and PDF generation for printing reservations.

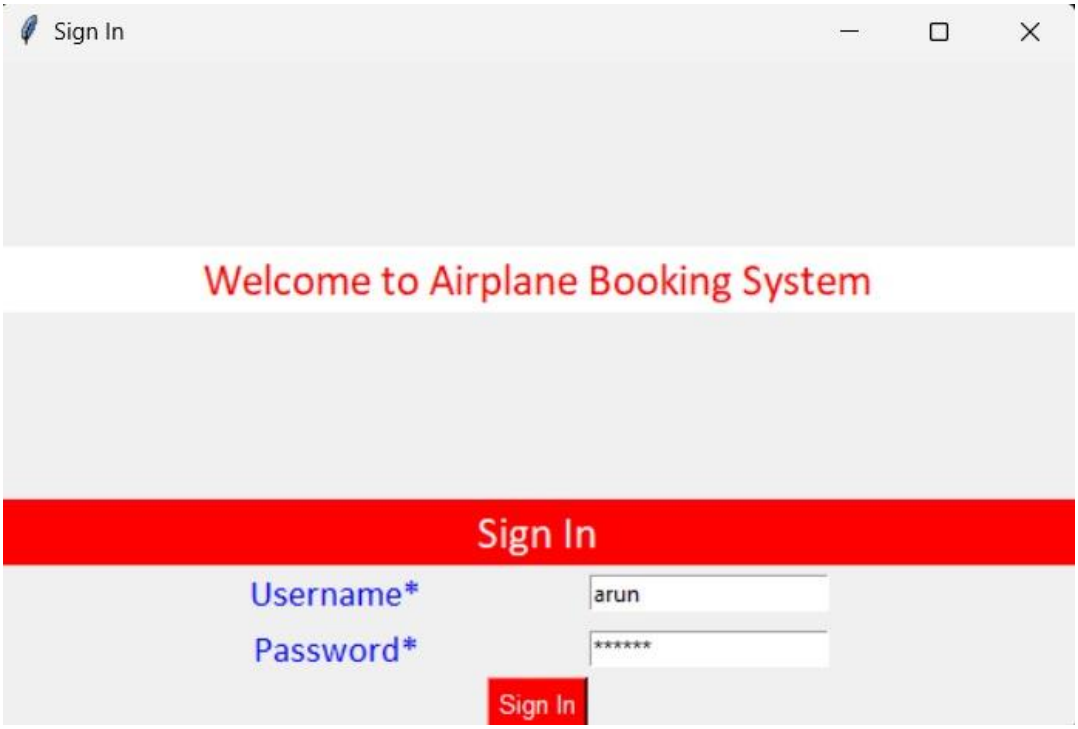
2.2 Hardware Requirement

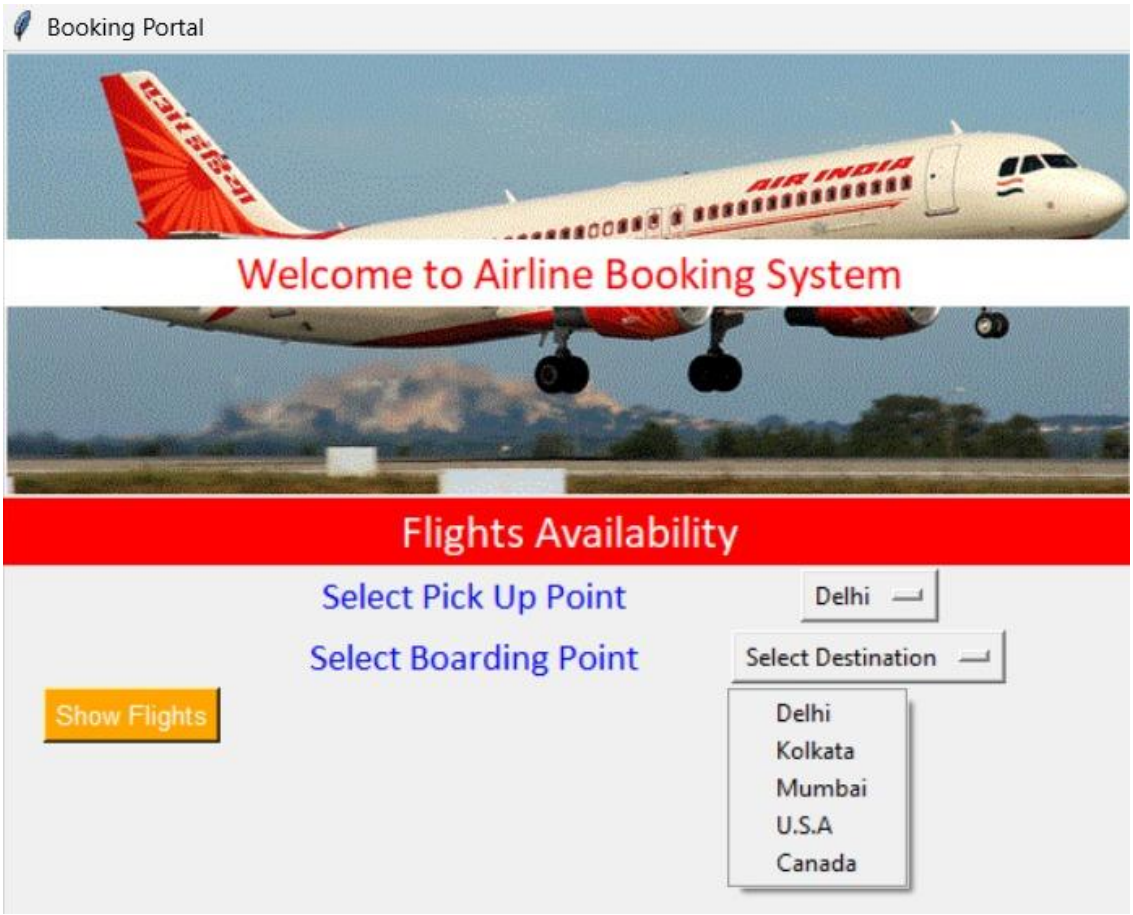
1. Computer: A computer with sufficient processing power, memory, and storage capacity to run the development tools and the application.
2. Operating System: The project can be developed on Windows, macOS, or Linux, depending on your preference.
3. Internet Connection: To download necessary libraries, packages, and for testing the application with a real database.

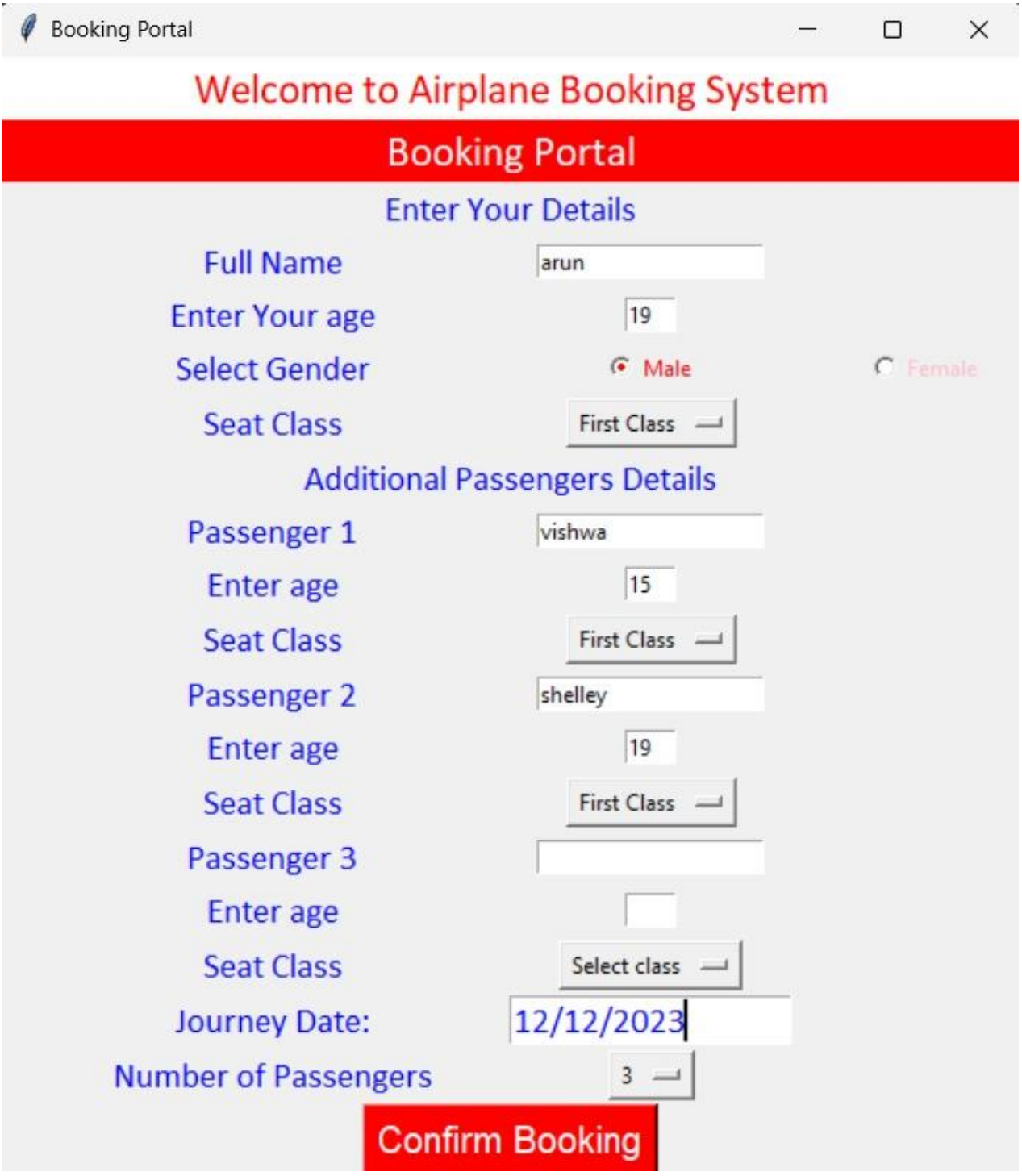
3. IMPLEMENTATION






Sign In
Welcome to Airplane Booking System
Sign In
Username*
arun
Password*
******
Sign In


Booking Portal
AIR INDIA
Welcome to Airline Booking System
Flights Availability
Select Pick Up Point
Delhi
Select Boarding Point
Select Destination
Show Flights
Delhi
Kolkata
Mumbai
U.S.A
Canada


Booking Portal
Welcome to Airplane Booking System
Booking Portal
Enter Your Details
Full Name
arun
Enter Your age
19
Select Gender
Male
Female
Seat Class
First Class
Additional Passengers Details
Passenger 1
vishwa
Enter age
15
Seat Class
First Class
Passenger 2
shelley
Enter age
19
Seat Class
First Class
Passenger 3
Enter age
Seat Class
Select class
Journey Date:
12/12/2023
Number of Passengers
3
Confirm Booking


Ticket Details
Thanks For Choosing Airplane Booking System
Ticket Details
Passenger Name
arun
Age
19
Gender
Male
Class
First Class
Date
12/12/2023
Additional Passenger Details
Passenger Name
vishwa
Class
First Class
Passenger Name
shelley
Class
First Class
Passenger Name
Class
Select class
Amount Per Passsenger
Ticket From Delhi<-> to <->Mumbai
Price
30000
Number of Passengers
3
Total Amount
90000
Done
Price

4. Result and Discussion

The Python-based Airline Reservation System with a Tkinter GUI and database integration has been successfully developed, addressing several key challenges in existing airline booking systems. Below are the results and a discussion of the project's various aspects.

User-Friendly Interface:

The system's graphical user interface, built using Tkinter, provides a user-friendly and intuitive experience for travelers. Users can easily navigate through the application, search for flights, and make bookings without encountering complex or confusing screens. This improves the overall user experience, making it more accessible to a wider audience.

Secure User Authentication and Data Storage:

One of the critical objectives of the project was to ensure the security of user data. The integration with a relational database, along with appropriate security measures, successfully safeguards user login information and booking records. This enhances user trust and ensures that sensitive data is protected from unauthorized access.

Efficient Booking Process:

The system offers a streamlined booking process, simplifying flight selection and cost calculation. Users can search for flights based on source and destination, view available options, and make bookings for one-way or round-trip journeys. The dynamic cost calculation based on the selected flights and the number of passengers minimizes confusion and helps users plan their trips more effectively.

Passenger Limitation:

To maintain efficiency and fairness in booking, the system enforces a maximum limit of four passengers per reservation. This restriction not only improves the booking process but also ensures that all travelers have an equal opportunity to secure flights, preventing potential abuses.

Future Enhancements:

While the current implementation of the system meets its primary objectives, there is room for further enhancements. Future developments could include features like real-time flight availability updates, online payment integration, and advanced user management options. Additionally, optimizing the system's performance and expanding the source and destination options would enhance its competitiveness in the airline reservation market.

In summary, the Python-based Airline Reservation System, with its Tkinter GUI and database integration, is a successful project that offers a solution to various challenges in existing airline booking systems. By providing a user-friendly interface, secure data handling, and an efficient booking process, this system stands as a valuable tool for travelers and airlines alike. With ongoing improvements and potential feature expansions, it has the capacity to further revolutionize the airline reservation industry and provide a superior experience for all stakeholders.

5. CONCLUSION

In conclusion, the development of the Python-based Airline Reservation System with a Tkinter GUI and database integration signifies a significant advancement in tackling the inefficiencies and security concerns prevalent in existing airline booking systems. This project aims to streamline the booking process, provide a user-friendly interface, and dynamically calculate costs, offering a practical solution for travellers seeking a hassle-free and efficient experience.

Moreover, the integration with a relational database ensures the secure storage of user login information and booking records, effectively safeguarding sensitive data. The project's restriction of a maximum of four passengers per booking not only enhances the efficiency of the reservation process but also promotes fairness and accessibility for all users.

The successful completion of this project benefits travellers by simplifying the flight booking process and serves as a valuable tool for airlines to effectively manage their operations. With its comprehensive approach to user experience and data security, this system demonstrates potential for improving the airline reservation industry and sets the stage for future advancements in travel technology.

6.REFERENCES

- https://www.geeksforgeeks.org/
- https://stackoverflow.com/
- https://github.com/