Software Engineering

CSF3023 System Thinking and Logic

Online Sport Facilities Booking System

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Group 13

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Introduction

An online sport facilities booking system is a web-based application that allows users to make reservations for sport facilities like courts, fields, and halls through an online platform. In the past, reservations for sport facilities were made manually through walk in counters, phone calls, or paper records. These manual techniques frequently lead to scheduling conflicts, double booking, and ineffective facility use (SportMember, 2023). As the demand for sports facilities continues to grow, a more systematic and efficient solution is required to manage booking effectively. With the advancement of information systems, online booking platforms provide real time access to facility availability and automate the reservation process. Users are able to view available time slots, make reservations, and receive confirmations instantly. According to SuperSaaS (2024), online booking systems reduce administrative workload by eliminating manual scheduling and offering automated updates, which enhances overall accuracy.

Overall, the system operates in a self service environment where registered users can access real time information about available facilities and make reservations at any time. In sports facility management, such systems also support structured user management, booking history tracking, and transparent scheduling. These features improve user satisfaction and ensure fair access to facilities while allowing administrators to monitor usage effectively (SportMember, 2023). Therefore, implementing an online sport facilities booking system is essential for modern sport organisations for efficiency, transparency, and better service delivery

Functional Requirements

1. User Login and Registration
The system allows users to register an account and log in securely before accessing booking services. During registration, users are required to provide basic information such as name, email address, and password. After successful registration, users can log in using their credentials to access system features.

Pseudocode

1. Start
2. Display "User Registration"
3. Input username, password, email, phone number
4. Display "Registration successful"
5. Display"User Login"
6. Input login username
7. Input login password
8. If (login username == registered username && login password == registered password)THEN
    a. Display "login successful"
9. Else
    a. Display"Invalid username or password"
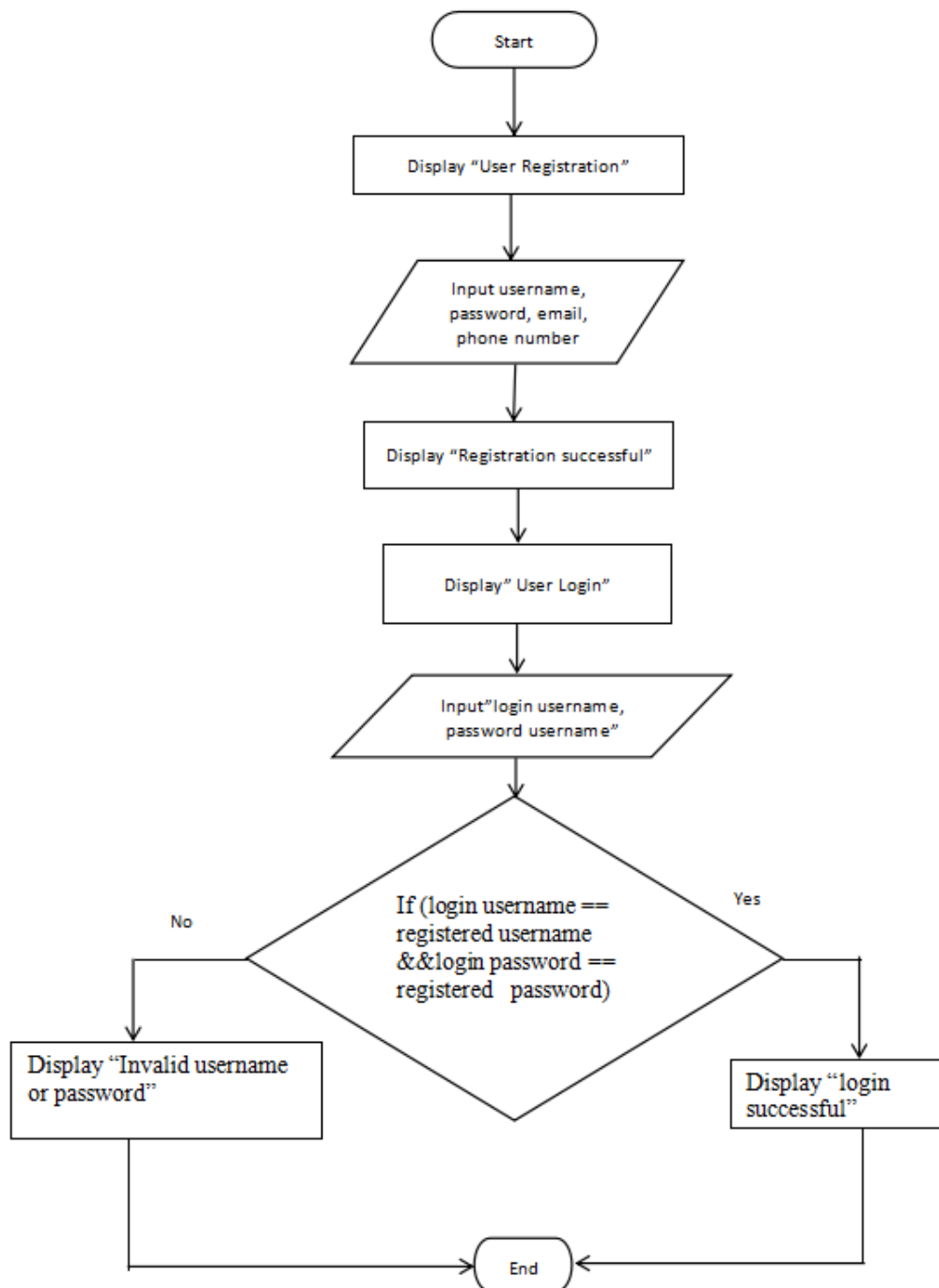10. End if
11. End

Flowchart

Figure 1 : Illustrates the flow of the user registration and login process in the online

sport facilities booking system

2. View Facility Availability

The system allow users to view a list of available sport facilities that are available for booking. This includes displaying basic information such as the facility name and current availability status. The purpose of this feature is to provide users with a clear overview of the facilities offered by the organisation before proceeding to any booking action.

Pseudocode:

1. ViewFacility()
2. Display facilities list
3. Input facility
4. If (facility == available) THEN
      a. Display "Facility Available"
5. Else
      a. Display "Facility Not Available"
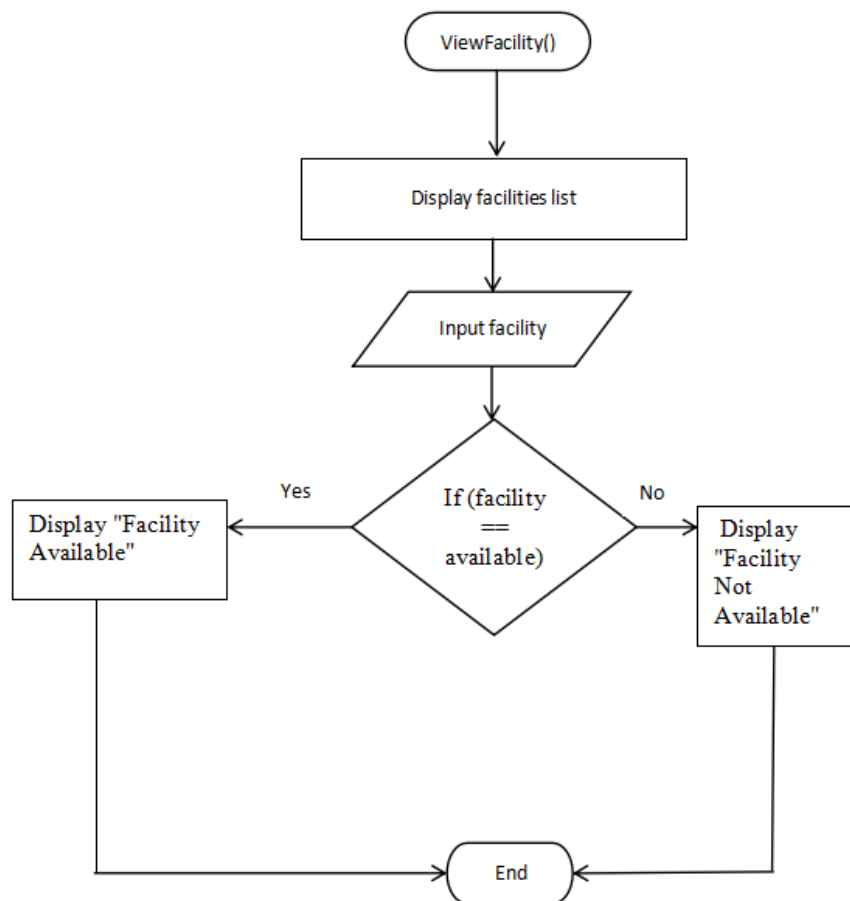6. End if
7. End

Flowchart

Figure 2: shows the flowchart for viewing available sport facilities

3. Book a Specific Time Slot

The requirement is a feature that allows a user to reserve a facility for a specific date and time. The system validates that the slot is available then displays the fee and asks for user confirmation before finalizing the booking.

Pseudocode:

1. bookSlot()
2. INPUT facility, date, start_time, end_time, user_id
3. IF(facility, date, start_time, end_time) != "Reserved" THEN
    a. Display "Facility : ", facility
    b. Display "Date :", date
    c. Display "Time :", start_time, "to", end_time
    d. Display "Fee : RM", fee
    e. Display "Confirm? (Y/N)"
    f. INPUT answer
    g. IF answer == "Y" THEN
        i. booking_id++
        ii. Display "Booking successful!"
        iii. Display "Booking ID :", booking_id
    h. ELSE
        i. Display "Booking cancelled"
    i. END IF
4. ELSE
    a. Display "Slot not available"
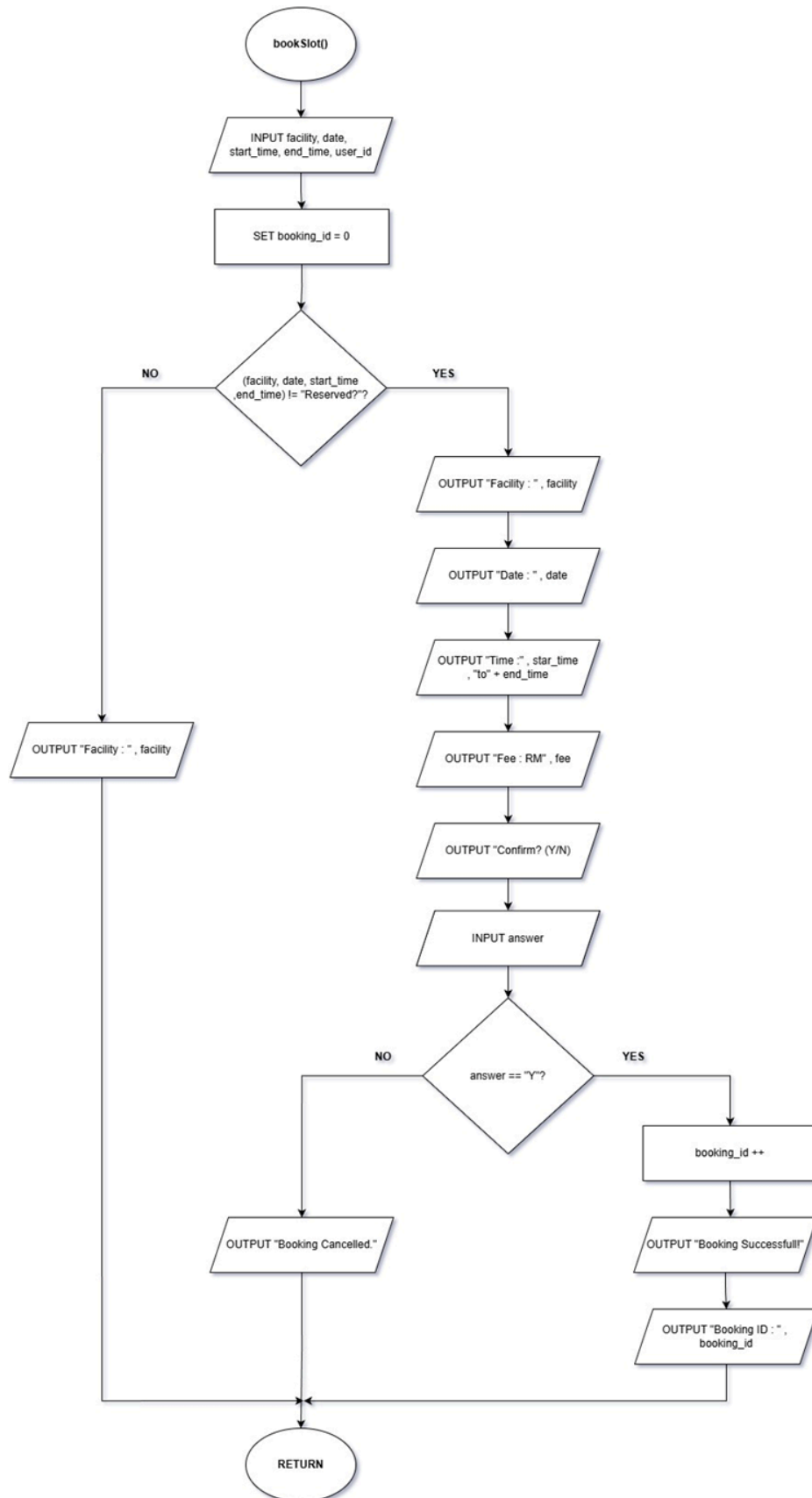5. END IF
6. RETURN

Flowchart

Figure 3 : Flowchart for Booking a Specific Time Slot

4. Online Payment Process

The requirement is a secure transaction feature that finalizes a booking. It validates the booking ID and the user's credit card details (validity and expiration) before processing the charge through a payment gateway and updating the system status to "Paid".

Pseudocode:

1. payOnline()
2. INPUT booking_id, card_number, expiry, name
3. SET booking = booking_id
4. IF booking == NULL THEN
   a. Display "Invalid booking ID"
   b. RETURN
5. END IF
6. IF booking == "Reserved" THEN
   a. Display "Payment not allowed"
   b. RETURN
7. END IF
8. SET totalPrice = booking_fee
9. IF(card_number, expiry) == "Not Valid" THEN
   a. Display "Invalid card details"
   b. RETURN
10. END IF
11. IF(expiry < current_month && year) THEN
    a. Display "Card has expired"
    b. RETURN
12. END IF
13. IF(payment_gateway == "Success" THEN
    a. SET booking_status = "Paid"
    b. SET payment_date = current_date
    c. Display "Receipt"
    d. Display "Booking ID :", booking_id
    e. Display "Amount : RM" , total_amount
    f. Display "Status : Paid"
    g. Display "Date : ", payment_date
    h. Display "Payment successful!"
14. ELSE
    a. Display "Payment failed : Card declined"
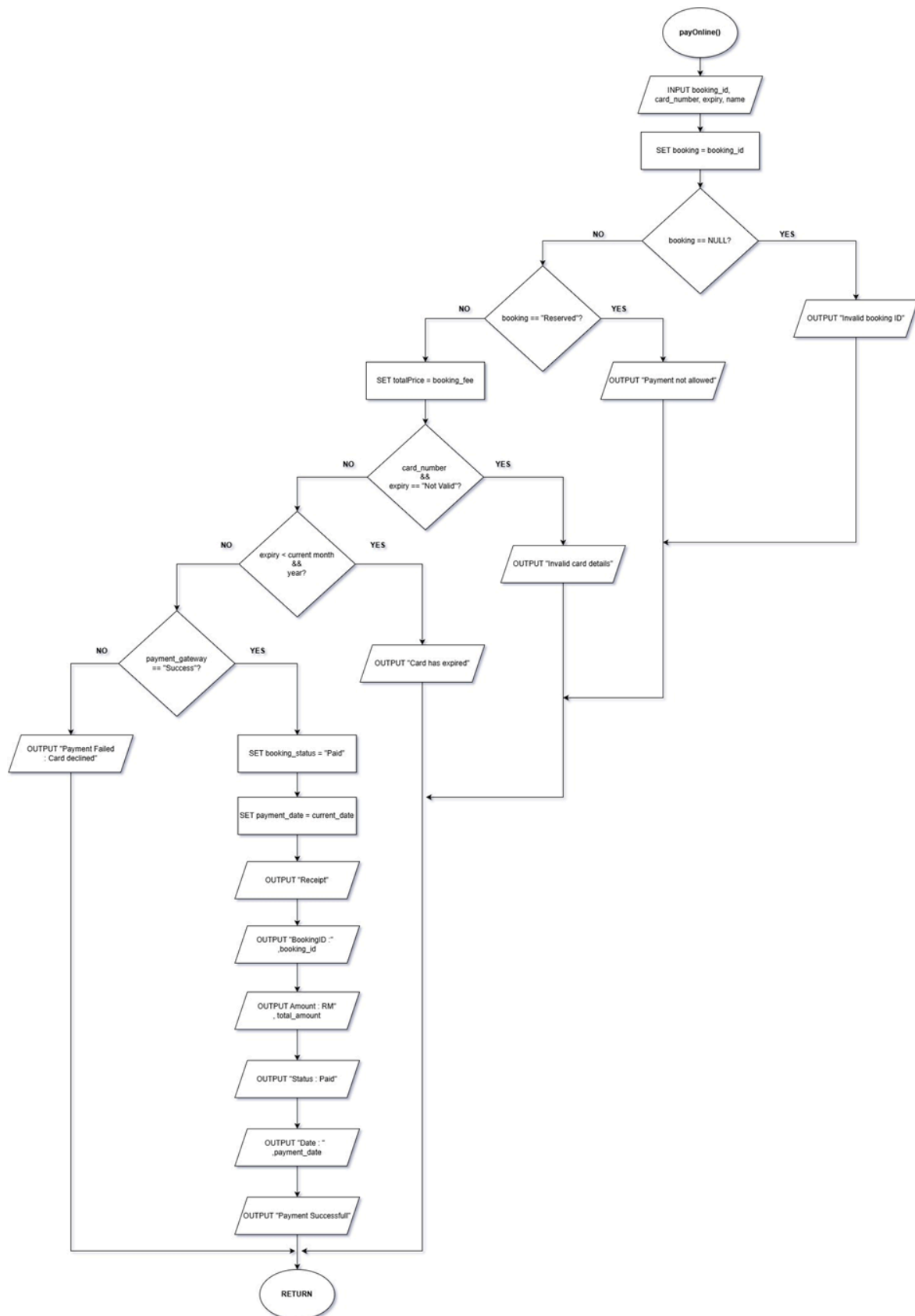15. END IF
16. RETURN

Flowchart

Figure 4 : Flowchart for Online Payment Process

5. Booking Confirmation

This pseudocode describes a basic booking confirmation function that checks a user's booking ID and payment status before confirming the booking. The user is asked to enter a booking ID; if no valid ID is provided, an error message is displayed and the function stops. If a valid booking exists and its status is "successful", the system changes the status to "Confirmed" and displays the booking details such as booking ID, facility name, date, and confirmation status. If the payment was not successful, the function instead displays a message indicating that the payment failed and then ends.

Pseudocode:

1. bookConfirm()
2. Display "Enter your booking ID :"
3. Input booking_id
4. If (booking_id == NULL) THEN
    a. Display "Error : Booking ID Not Found"
    b. Return
5. EndIF
6. If (bookingStatus == "successful") THEN
    a. Set status = "Confirmed"
    b. Display "Booking ID : ", booking_id
    c. Display "Facility Name : ", facilityName
    d. Display "Date : ", date
    e. Display "Booking : ", status
7. Else
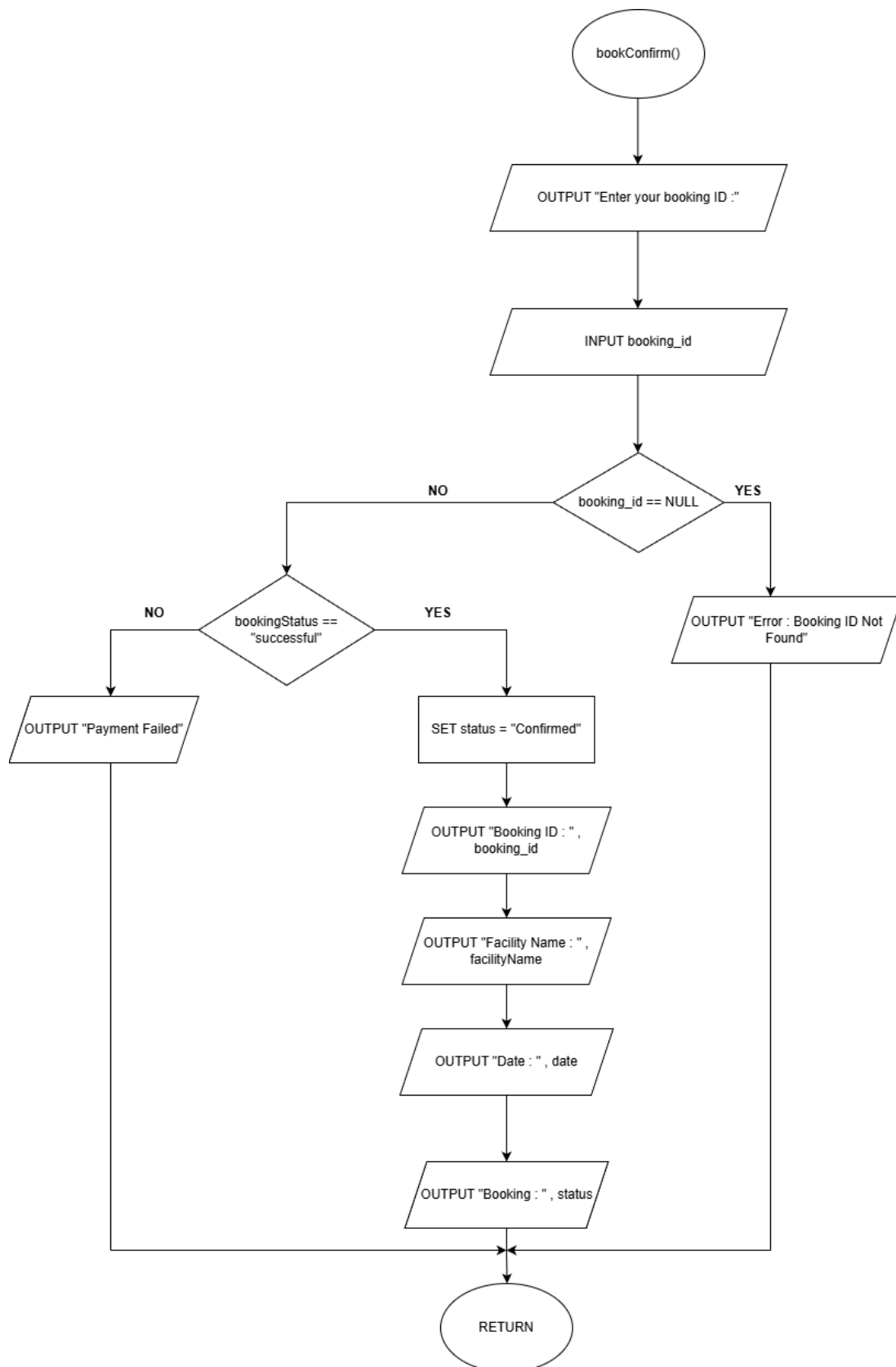   a. Display "Payment Failed"
8. EndIF
9. Return

Flowchart

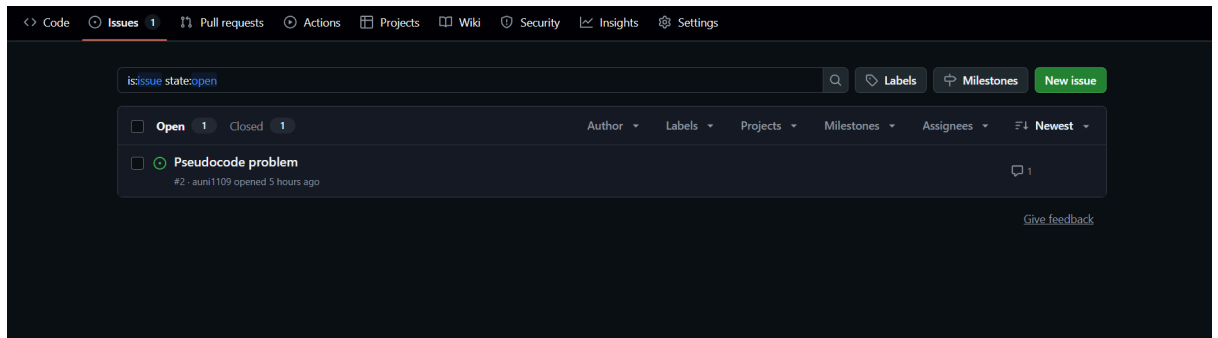*Figure 5 : Flowchart for Booking Confirmation*

Conclusion

In conclusion, the Online Sport Facilities Booking System is designed to provide a more efficient, organized, and user-friendly way for users to reserve sports facilities. Through this system, users are able to register and log in, check facility availability, book specific time slots, make online payments, and receive booking confirmations. The system also allows users to view their booking history, which helps them keep track of their past reservations.

Throughout this project, the system was divided into several functional requirements. Each requirement was represented using flowcharts and pseudocode to clearly demonstrate the logical flow of the system. This step-by-step approach helps in understanding how each function of the system works such as processes user input, validates data, and produces the correct output. It also ensures that all processes are logically connected and easy to follow.
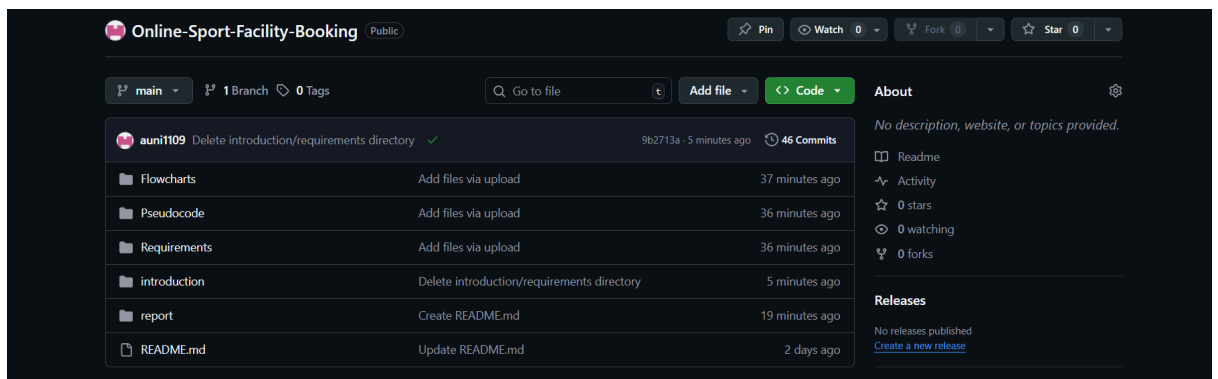
Overall, this project highlights the importance of system thinking and logical design in developing an effective online booking system. By automating the booking process, the system can reduce human errors, prevent double bookings, and improve user experience. According to Setmore (2024), the online booking systems help users view availability and manage their reservations more effectively. With proper implementation, the Online Sport Facilities Booking System can improve service efficiency, user satisfaction, and enhance the overall sports facilities management in a more systematic and reliable way.
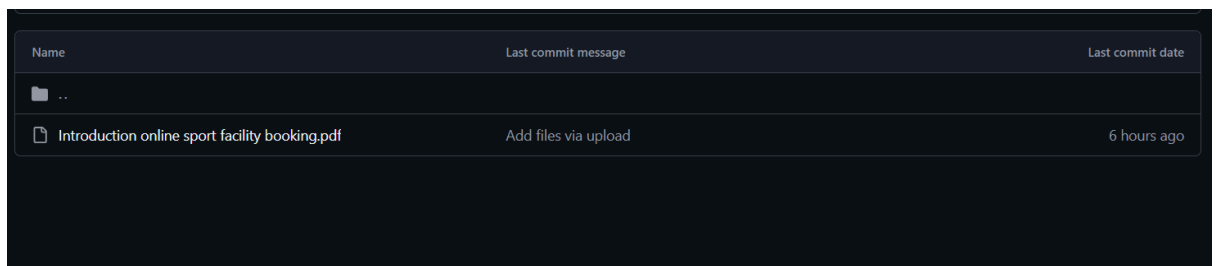
Appendices

1. Create issues on Github

2. List of folders to separate items

3. Introduction folder

4. Requirement folder

5. Pseudocode folder

6. Flowchart folder

7. Github link to access our Repository

https://github.com/auni1109/Online-Sport-Facility-Booking.git

References:

SportMember. (2023). Free booking system for clubs and associations. Retrieved from
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SuperSaaS. (2024). Online sports court booking system. Retrieved from
https://www.supersaas.com/info/sports-courts-booking-system

Setmore. (2024). Online booking software for appointments and bookings. Retrieved from

https://www.setmore.com/features/booking-system