Game-On

28th March 2023

(Version 1.1)

Design Document

Summary

Here is the brief summary of our design review, which focuses on the most important aspects of our design solution:

1. **User-interface**: We have focused on designing an intuitive interface which would be easy to use for all types of users, even non tech-savvy ones. The application would have a lean, modern aesthetic with focus on ease of navigation. We'd be making use of vector arts for the UI design alongside appealing color themes. We'd be using websites like Figma and Canva for carrying out the UI design.

2. **Performance**: We have a high focus on making the application run without crashes and minimizing the number of bugs. Since multiple users might be making a booking at any given time, we'll make use of semaphores in the backend development to prevent simultaneous booking from multiple users. Moreover, the application loading times would be minimized in order to allow for quick response times and faster booking of facilities.

3. **Functionality**: The various functionalities offered by the application have been broken down into modules and would be developed individually by making use of Android Studio. Henceforth, this classification also makes it

easier for the user to understand what they need to do in order to avail some functionality of the application. We've focussed on highly cohesive and low coupled modules so as to better be able to evolve the functionalities and even add more functionalities down the road.

4. **Security**: Each user would have a distinct email-id, username and password that they'll use to register to the application. We'll be storing the same in a SQL database integrated with Android Studio. In order to protect the user password, we'll be making use of password salting while storing the same in the database.

5. **Accessibility**: We'll provide the user with the facility of being able to turn on/off high contrast. We'll support multiple languages in our application which would be implemented in android studio accordingly. The user would be able to switch language under settings of the application.

6. **Feedback**: In order to improve the quality of the various sports facilities offered by our client, we'll also be integrating a "Give Feedback" option in the application, with the help of which the users can express their vexations and provide constructive feedback so as to be able to hope for a better future experience.

7. **Cancellation Policy**: Bookings once made can also be canceled by the user within a given time limit of booking. This would simply be implemented by a button on the appropriate screen of "Bookings Made" of the application which when triggered, would cancel the booking and thus, update the calendar and database accordingly.

8. **Calendar**: Apart from showing the facilities booked by a given user, we'd also give them the option to view the booking calendar, which would show the various bookings of the sports facilities made across the various days. The bookings for a given sport would be differentiated based on colors and accents in coordination with a given sport. A suitable calendar

library would be chosen in android studio and its design would be updated to define the positioning and layout of the various UI elements. The data to be displayed would be retrieved from the integrated database which would be updated as bookings are made.

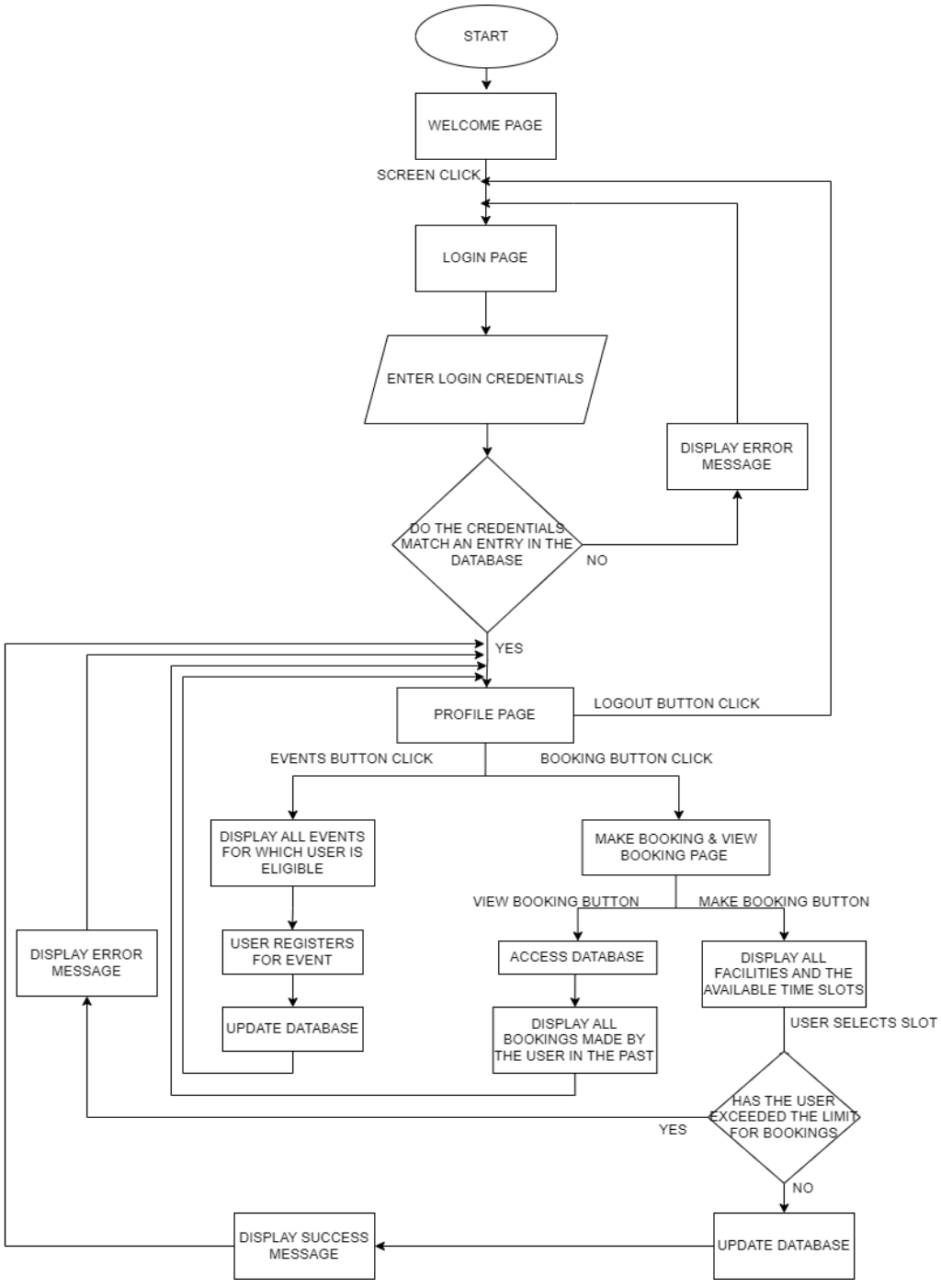
9. **Notifications**: Push notifications would be implemented so as to provide users with information such as a sports facility being unavailable for booking due to maintenance or prior events. Notifications would also be sent for successful registration and confirmations would be shown when changes are made to the user profile within the application. We'll be making use of the notification channel class in order to specify the behavior of notifications and customize them. By making use of the NotificationManager class, the notifications can then be triggered and posted.

The main languages that are used are Java and the database would be SQL integrated with Android Studio. The design of the UI would be carried out by making use of websites such as Figma and Canva and the other various UI components would be developed. There are no major data structures and algorithms used in this project, only sorting and searching algorithms would be made use of which are available in pre-built libraries in Java.

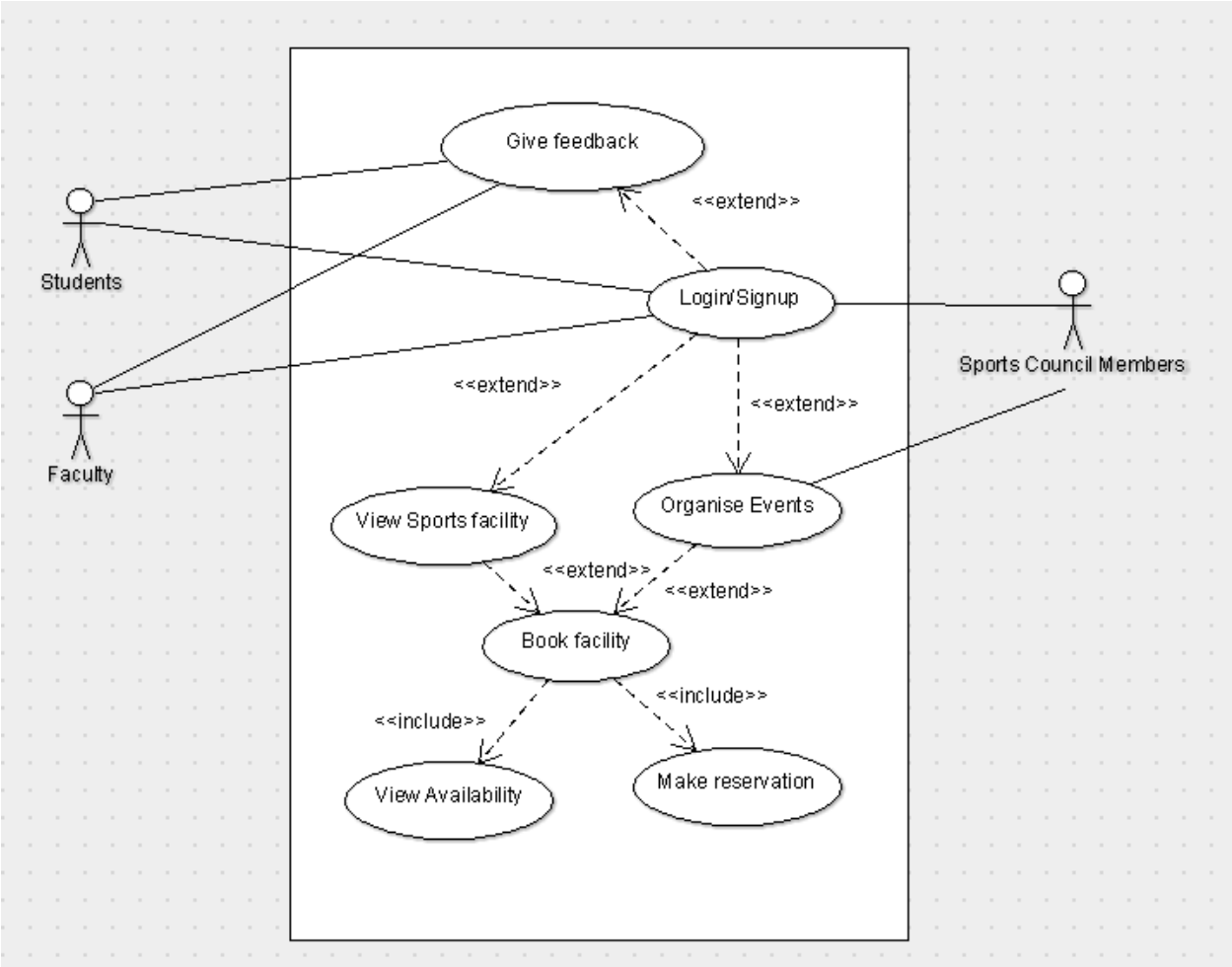
Diagrams:

The following relevant diagrams were constructed as a follow up to our design review mentioned above.

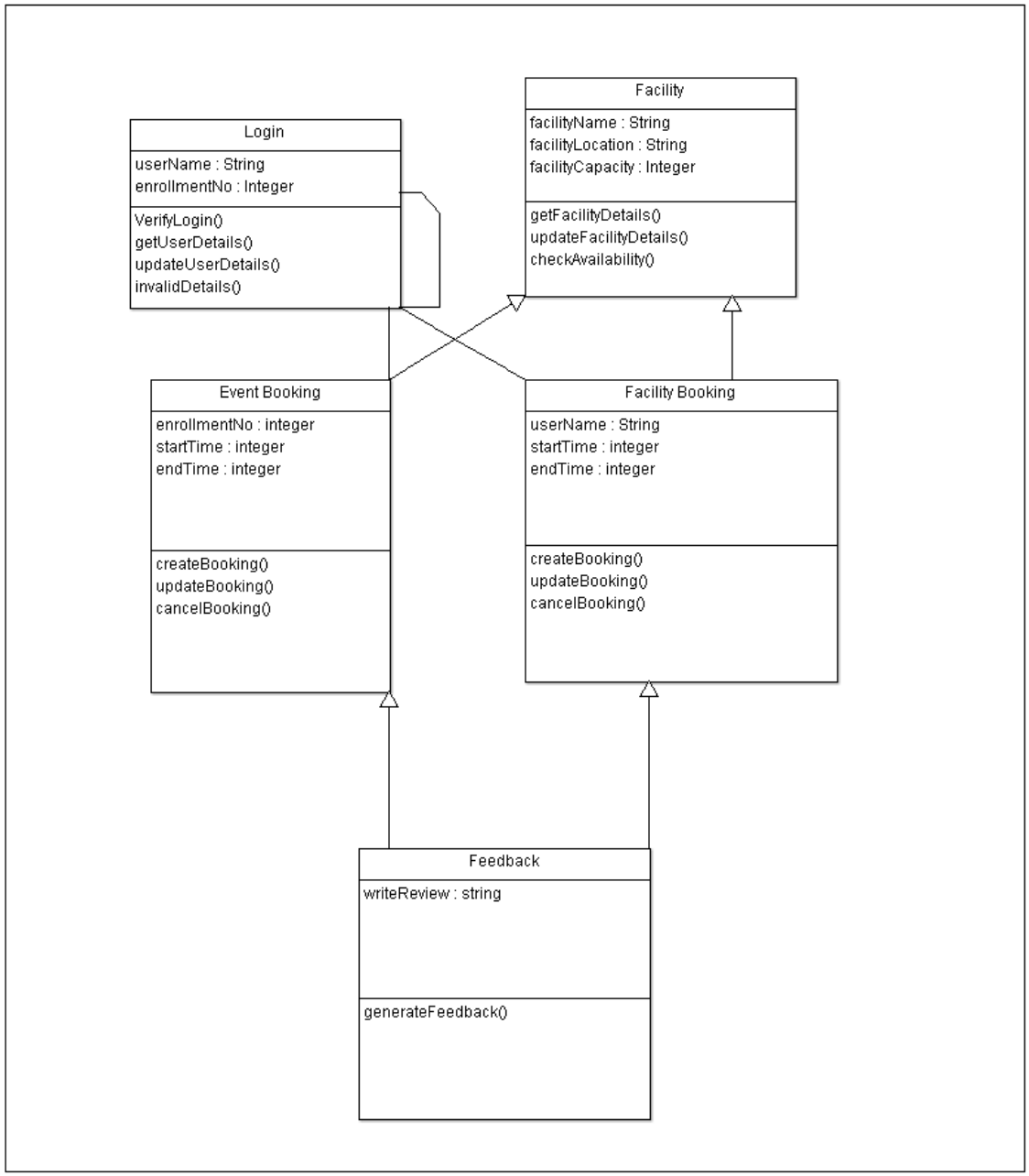
Flowchart:



Use Case Diagram:

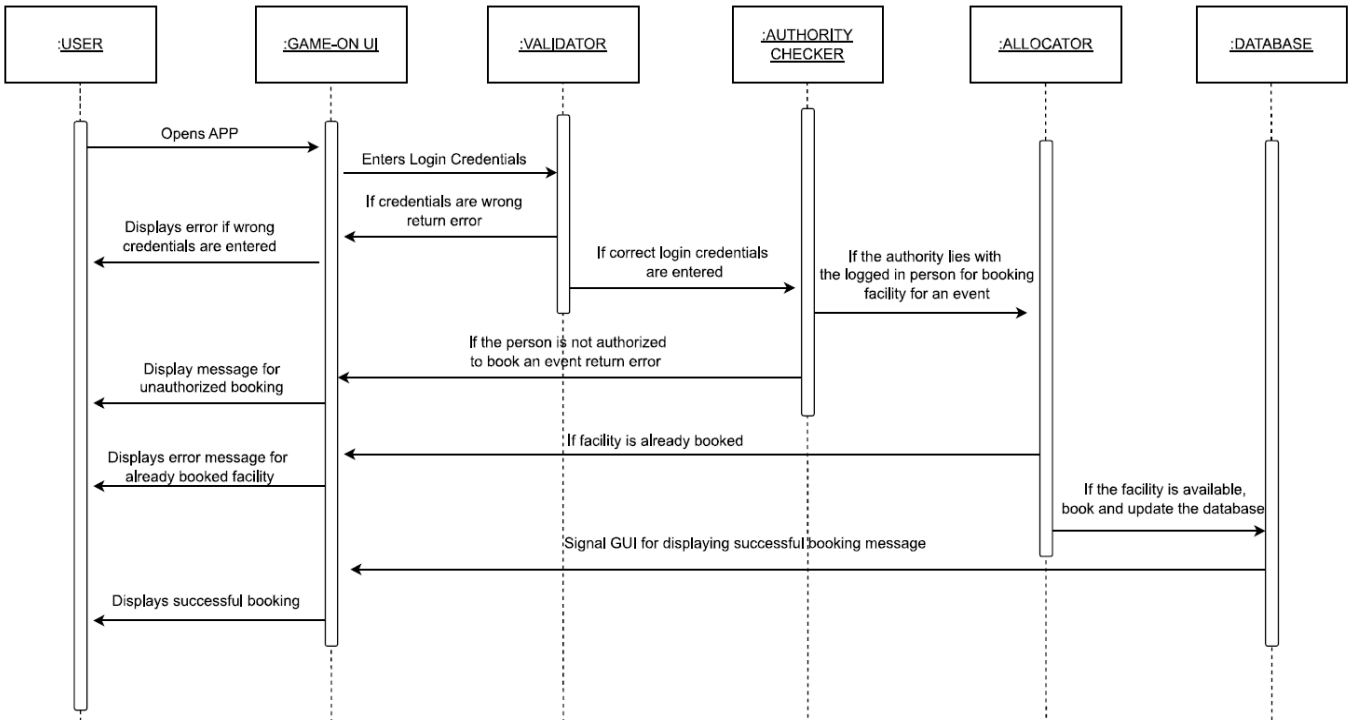


Class Diagram:

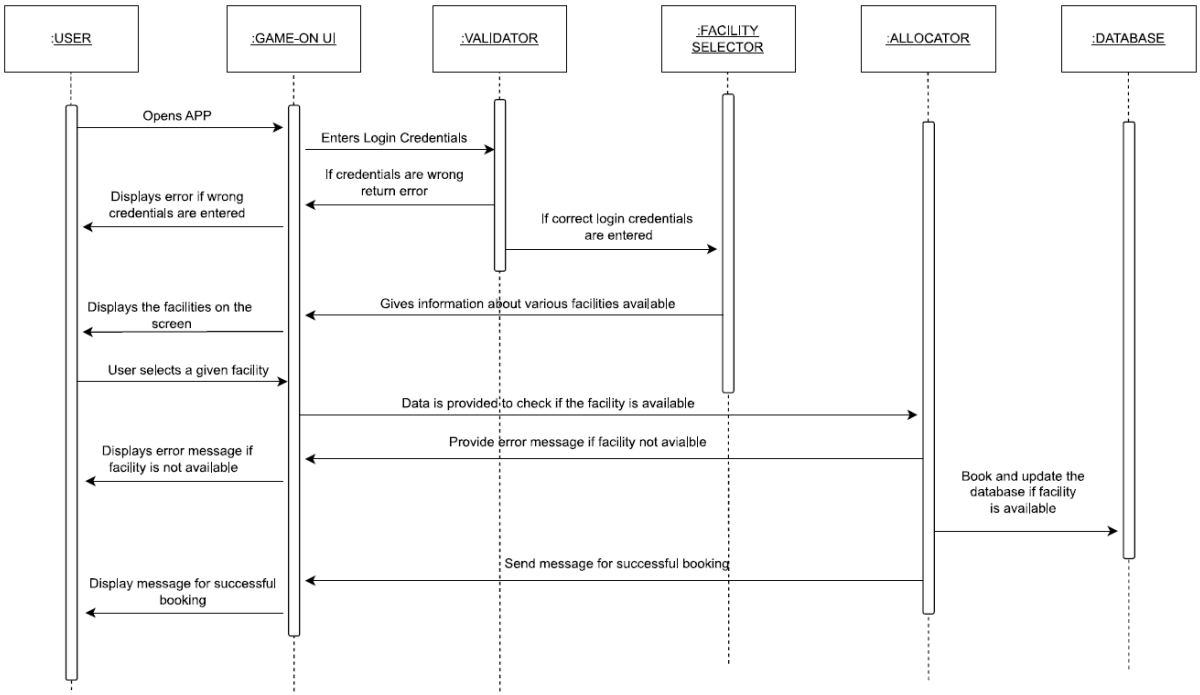


Sequence Diagrams:

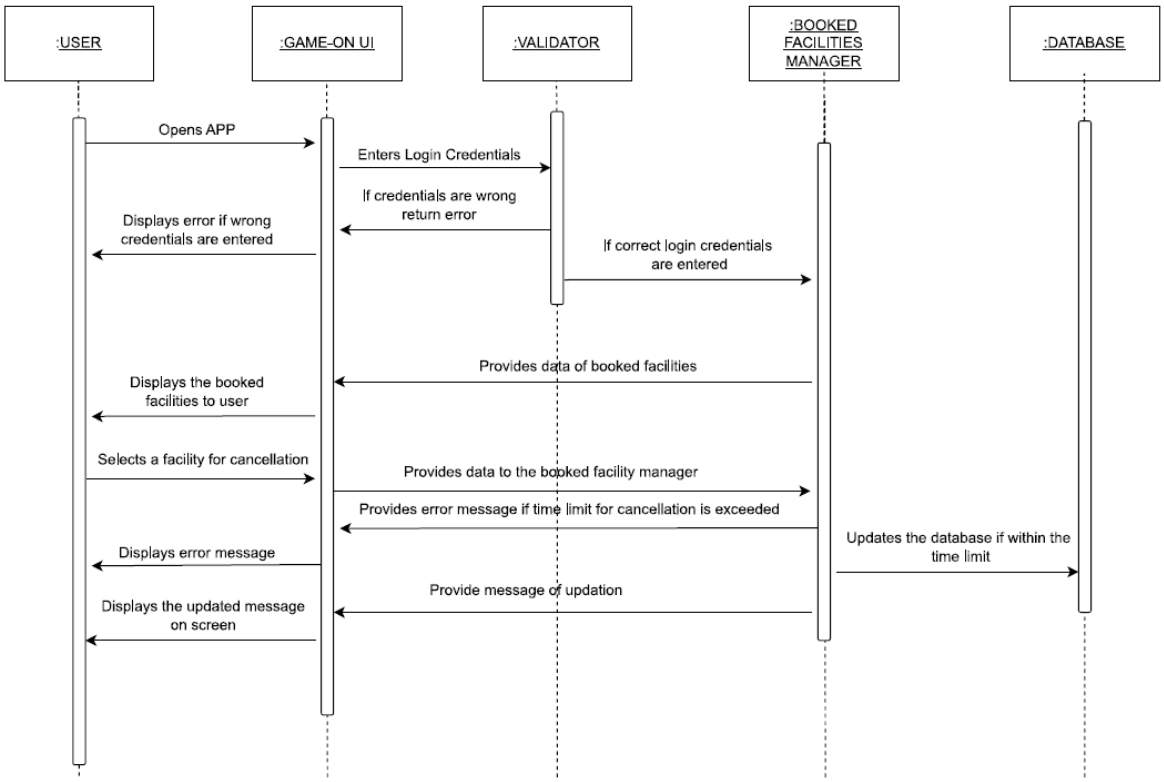
Booking Facility for an Event By the Authorized Faculty:



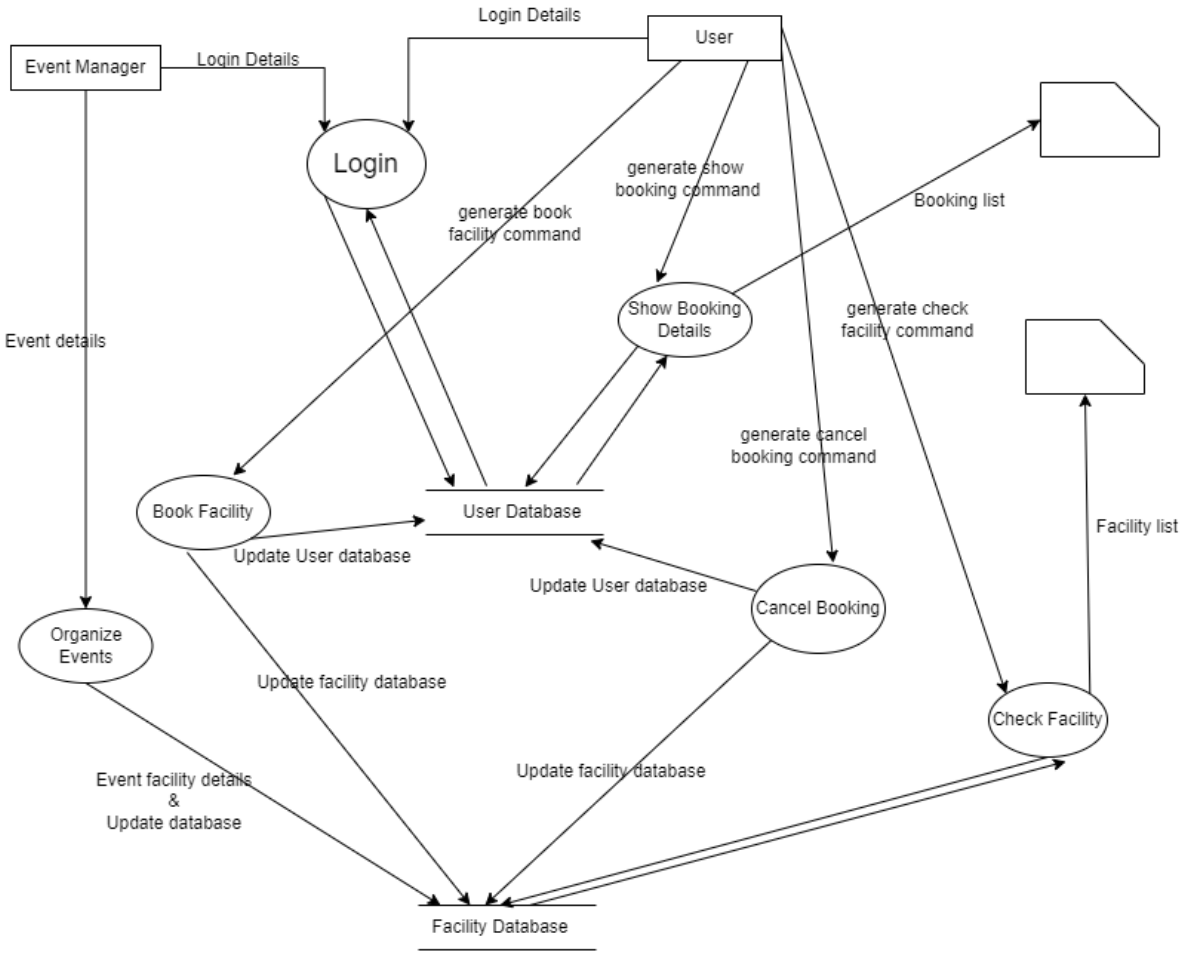
Booking Facility by a User:



Canceling a Booked Facility:



Data Flow Diagram:



The following questions have been proposed and answered in order to judge the quality of our design solution.

1. **Are we using the appropriate methods to represent the design solutions?**
   Yes, we are using UML diagrams such as use case diagram, class diagram, sequence diagram and data flow diagram(DFD) which appropriately represents all the required perspectives of our design solution.

2. **Does the design satisfy the specified requirements?**
   Our design solution satisfies all of the functional requirements specified in the Software Requirement Specification (SRS) document.

3. **What requirements are not met and why?**
   Some of the non-functional requirements like scalability and maintainability depend on the coding and implementation phase and therefore were not discussed in the design solution.

4. **Is the user interface design well documented?**
   All the UI design elements have been discussed in the design document sufficiently but detailed diagrams regarding the same are not properly documented and can be included in the further version as the development proceeds.

5. **Does the design appear to be satisfactory to proceed to the next phase of the development?**
   Yes, the design document specifies all the required design elements satisfactorily along with necessary diagrams which is sufficient to proceed to the next phase of the development activity.