

Testing and Evaluation

The testing and evaluation phase ensures the Crown Hotel booking system functions correctly, meets user requirements, and performs reliably under various conditions. A combination of manual and automated testing methods was employed to validate the system's performance, usability, and security.

Testing Strategy

A black-box testing approach was used, focusing on inputs and expected outputs without examining internal code structures. The following types of testing were performed:

- **Unit Testing:** Tested individual backend modules (e.g., booking handler, payment processor, room availability checker).
- **Integration Testing:** Verified the correct interaction between frontend and backend components.
- **System Testing:** Ensured the system as a whole meets the specified requirements. For example, users could make bookings, and receive confirmation emails.
- **User Acceptance Testing (UAT):** Conducted with real users (e.g., fellow students and a mock hotel staff member) to validate usability and functionality from an end-user perspective.
- **Database Testing:** Validated data integrity, constraints, and SQL queries with various edge cases in PostgreSQL.

Test Cases

Description	Input	Expected Output	Result
Search for available rooms	Check-in: 2025-06-01, Check-out: 2025-06-05	List of available rooms	Pass
Book a room with valid user credentials	Name, Email, Room ID, Dates	Booking success message + confirmation email	Pass
Attempt booking with invalid email	Name, Invalid Email, Room ID	Validation error message	Pass
Check double booking prevention	Same room, overlapping dates	Error: Room not available	Pass
Admin login and room management	Valid admin credentials	Admin dashboard access	Pass

Evaluation Criteria

To evaluate the effectiveness and quality of the system, the following criteria were used:

- **Functionality:** The system performs all core tasks (searching, booking, admin tasks).

- **Usability:** The interface is user-friendly and intuitive, based on user feedback from UAT.
- **Performance:** Pages load quickly, and queries execute efficiently on the PostgreSQL database.
- **Security:** Input validation and protection against common vulnerabilities (e.g., SQL injection) were implemented and tested.
- **Responsiveness:** The frontend adapts well to different screen sizes using responsive CSS techniques.

Evaluation Summary

Overall, the Crown Hotel booking system met its functional and non-functional requirements. Testing confirmed that the system is reliable, user-friendly, and secure. Feedback from user testing highlighted minor improvements (such as clearer date pickers), which were addressed in the final implementation.