Professional Project Proposal

A Detailed Proposal for the Bookify Hotel Reservation System.

Bookify Hotel Reservation System: A Robust and Scalable .NET Core Solution

Project Name

Bookify Hotel Reservation System

Developer Role

Full Stack .NET Web Developer

Core Technology

ASP.NET Core MVC, Entity Framework Core

Architectural Pillars

N-Tier Architecture, Repository Pattern, Unit of Work

Estimated Duration

4 Weeks

1. Project Planning: Strategy and Technology

The primary objective ofthe Bookify projectistobuilda robust and scalablehotelreservation webapplication. The core goal is to establish a professional, maintainable codebase by utilizing industry-leading design patterns, specifically the N-Tier Architecture, the Repository Pattern, and the Unit of Work Pattern.

Technology Stack

The application will be developed using a modern technology stack to ensure performance, security, and maintainability:

→ Backend

ASP.NET Core MVC.

→ Data/ORM

Entity Framework Core.

→ Authentication

ASP.NET Identity is used to manage user registration, login, and roles.

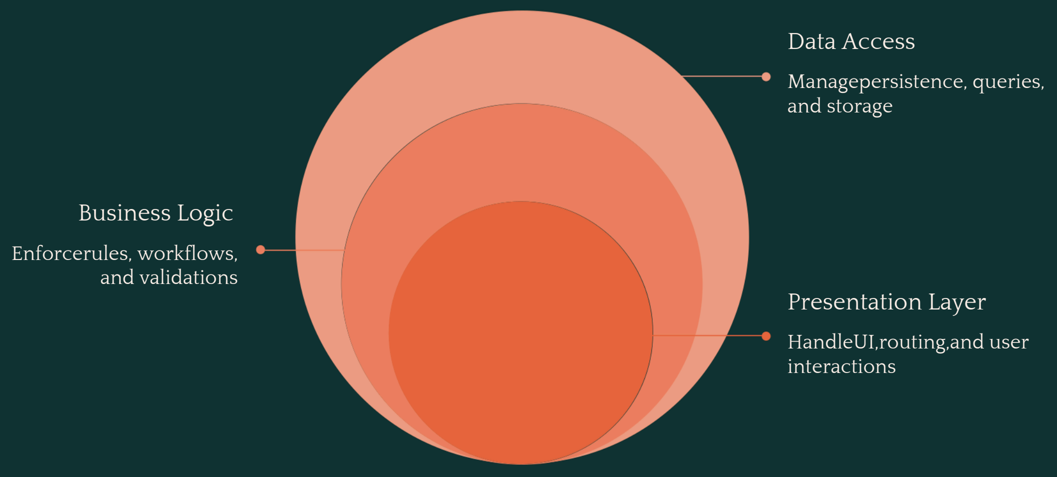
→ Payments

Integrated with **Stripe** for secure handling of payments during confirmation.

→ Frontend

JQuery, DataTables, and Toaster JS are utilized for a dynamic and interactive user experience.

Architectural Approach (N-Tier)



Data Access

Managepersistence, queries, and storage

Business Logic

Enforcerules, workflows, and validations

Presentation Layer

HandleUI,routing,and user interactions

The strict separation of concerns into three distinct layers ensures modularity, scalability, and ease of testing for future development cycles.

4-Week Execution Plan

Week	Focus Area	Key Deliverables
Week 1	**Foundation and Data Listing**	Complete N-Tier architecture setup. Database schema defined with EF Core Migrations. User registration/login, and a public room listing page using the Repository Pattern.
Week 2	**Core Booking Flow & Admin RBAC**	Functional "reservation cart" using Session State. Secure **Role-Based Access Control (RBAC)** for the admin panel. Admin interface for managing rooms and bookings using **DataTables**.
Week 3	**Payment Integration & User Prof ile**	Complete booking confirmation with **Stripe payment integration**. Implementation of the **Unit of Work pattern** to ensure booking creation and availability updates are an atomic transaction. Customer profile page live.
Week 4	**Quality, Monitoring, and Polish**	Implementation of **ASP.NET Core Health Checks** for monitoring. Integration of a **structured logging framework** for detailed debugging. Final, polished, and responsive UI across all components.

2. Stakeholder Analysis and System Features

TheBookifysystemisdesignedtoprovideoptimalfunctionalityandsecuritytailoredtothedistinctneedsof the customer and the hotel staff (admin).

Customer Stakeholder

The system focuses on creating a seamless and secure digital experience for the end-user throughout the booking journey.

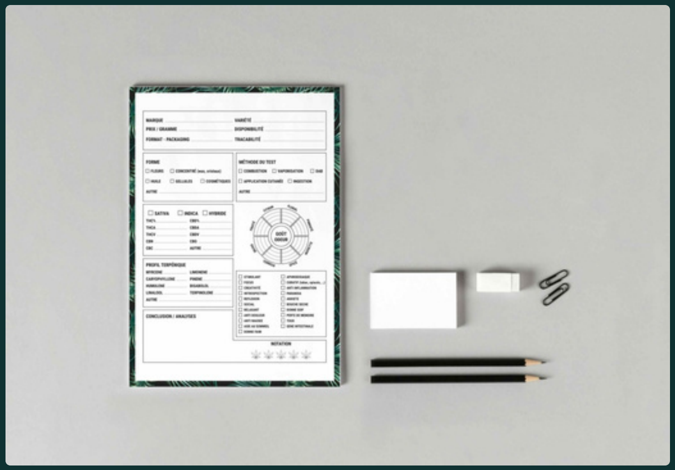
- Seamless room search and viewing across all devices.
- Secure reservation and payment integration via Stripe.
- Easy access to a dedicated user profile for booking history management.

Admin/Hotel Staff Stakeholder

For hotel staff, the system provides powerful, efficient tools for managing inventory and customer data with robust access control.

- Efficient management tools for hotel assets and customer reservations.
- Strict security via **Role-Based Access Control (RBAC)** for the admin panel.
- Data presentation via **DataTables** for quick data sorting and pagination.

To illustrate the user interface distinction, the following images showcase the expected aesthetic:



> The implementation of separate interfaces ensures that design decisions meet the unique workflow demands of both the public user (focus on conversion) and the internal staff (focus on efficiency).

3. Data Layer Design and Integrity

Thefoundationofthe Bookifysystem's reliabilityliesinitsdatalayerdesign,whichstrictly adheres to architectural patterns that enforce consistency and integrity.

Core Database Schema

The relational database schema is structured using **Entity Framework Core (EF Core)** to define relationships and constraints. Key entity groups ensure comprehensive tracking of assets and transactions:

Rooms and RoomTypes

Manages the hotel inventory, attributes, and availability status.

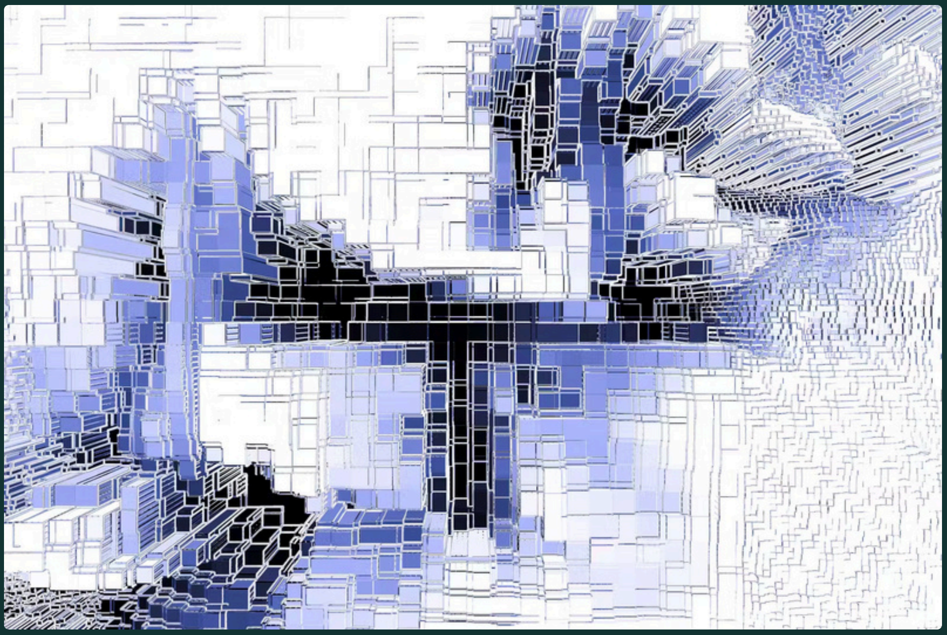
Bookings

Tracks all confirmed and pending reservations, linked to users and rooms.

Users

Secured management of customer and staff accounts via ASP.NET Identity.

Data Integrity Implementation (Patterns)



Repository Pattern

Abstracts all database operations, providing a clean, consistent, and testable API for the Business Logic Layer. This decoupling minimizes code repetition and centralizes data access logic.

Unit of Work Pattern

Critical for **data integrity**. It ensures that complex, related operations4such as creating a booking and simultaneously reducing room availability4are grouped and committed in a single, atomic transaction.

This architectural approach separates the concerns of data persistence from business rule execution, leading to a system that is both robust and flexible for future maintenance.

4. UI/UX Design and Implementation

Thedesignstrategyprioritizes a smoothandeffectiveuserexperience. Thisisachievedthrough leveraging modern frontend technologies for responsiveness, dynamism, and task efficiency across both public and administrative interfaces.

Customer-Facing UI (Focus: Conversion)

Design and Responsiveness

The use of **Bootstrap** and custom CSS ensures a polished, professional, and fully responsive look on all devices4from desktop to mobile phones.

Interactivity and Feedback

JQuery handles dynamic interactions (e.g., live availability checks). **Toaster JS** provides immediate, non-intrusive pop-up notifications to confirm actions and guide the user.

Admin Panel UI (Focus: Efficiency)

> The Admin UI is purposefully separate and highly functional, prioritizing data management efficiency over aesthetic flair.

- High-Efficiency Tools

  The interface is built to manage large volumes of data. It utilizes **DataTables** to display all bookings and room inventory in a user-friendly, paginated, and sortable format for hotel staff.

- Task-Oriented Experience

  The dedicated Admin UI ensures a focused environment, separated from the public site, which is crucial for hotel staff managing daily operations and assets effectively.

Search:

Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical
China	80,881	+21	3,226	+13	68,715	8,940	3,226
Italy	31,506	+3,526	2,503	+345	2,941	26,062	2,060
Iran	16,169	+1,178	988	+135	5,389	9,792	
Spain	11,409	+1,467	510	+168	1,028	9,871	563
Germany	8,639	+1,367	23	+6	67	8,549	2
S. Korea	8,320	+84	81	+6	1,401	6,838	59
France	6,633		148		12	6,473	400
USA	5,704	+1,041	97	+11	74	5,533	12
Switzerland	2,742	+389	27	+8	15	2,700	
UK	1,950	+407	71	+16	52	1,827	20
Netherlands	1,705	+292	43	+19	2	1,660	45
Norway	1,452	+104	3		1	1,448	27
Austria	1,332	+314	4	+1	8	1,320	12
Belgium	1,243	+185	10		14	1,219	33
Sweden	1,191	+70	8	+1	1	1,182	12
Denmark	977	+63	4		1	972	18
Japan	878	+45	29	+1	144	705	41
Diamond Princess	696		7		456	233	15
Malaysia	673	+107	2	+2	49	622	10
Australia	452	+51	5		27	420	1
Canada	452	+11	5	+1	11	436	1
Portugal	448	+117	1		3	444	18
Qatar	439				4	435	
Czechia	396	+52			3	393	2
Greece	387	+35	5	+1	14	368	11
Israel	324	+26			11	313	5
Finland	322	+44			10	312	2
Brazil	301	+67	1	+1	2	298	18
[illegible]	275	+22	1			274	