EEC 521/CIS 634 Software Engineering

Software Design Specification

Submitted by,

Sreekanth Mullamuri – 2872139

Ruthvi Metical – 2868919

Poojithaanad Yerra -2833835

1.0 Introduction

The Unitravells Software Design Document offers an in-depth overview of the entire software design, covering data design, architectural and component-level design, user interface design, and other essential aspects. This document serves as a comprehensive guide for the design phase of the Unitravells project.

1.1 Goals and objectives

Overall Goals:

The primary goal of Unitravells is to create a robust and user-friendly travel enquiry booking platform that simplifies the process of discovering, planning, and enquiring booking trips. The overarching objectives include:

1. Enhancing the user experience through an intuitive interface.
2. Streamlining the booking process for various travel services.
3. Providing travelers with a one-stop platform for planning their journeys.
4. Ensuring data security and privacy in compliance with industry standards.

1.2 Statement of scope

The statement of scope provides a high-level description of the software, highlighting major inputs, processing functionality, and desired outputs without delving into implementation details.
Scope Elements:

- **Input:** User travel preferences, booking enquiry requests.
- **Processing Functionality:** Booking management, user enquiry management, travel itinerary creation.
- **Outputs:** Travel itineraries, booking request return confirmations.

1.3 Software context

Unitravells is positioned within the context of the travel and tourism industry. It addresses the need for a digital platform that connects travelers with a wide range of travel services, from flight bookings to accommodation and activities. Key strategic considerations within this context include:

- **Industry Trends:** Adapting to evolving travel trends and user expectations.
- **Competitive Landscape:** Understanding competitors and offering unique features and services.
- **User Expectations:** Meeting user expectations for ease of use, information accessibility, and travel planning capabilities.

- **Data Security:** Ensuring the privacy and security of user data is of paramount importance, in compliance with industry regulations.

1.4 Major constraints

Several constraints impact the design and implementation of Unitravells:

- **Time Constraint:** The project has a defined timeline for development and delivery.
- **Resource Constraints:** Limited resources, including human resources and budget, influence design decisions and development priorities.
- **Security Constraints:** Ensuring the security of user data and privacy is a top priority, leading to the implementation of robust security measures.
- **Scalability Constraint:** The software must be designed to handle potential growth in users and data, requiring a scalable architecture.

2.0 Data design

This section covers all aspects of data design, including data structures and databases.

2.1 Data structures

Data Structures for Major Portions of the Architecture:

Unitravells utilizes various data structures for key components, such as:

- **User Data:** Storing user booking enquiry.
- **Travel Itineraries:** Structuring travel plans and bookings.
- **Service Listings:** Managing details of available travel services.

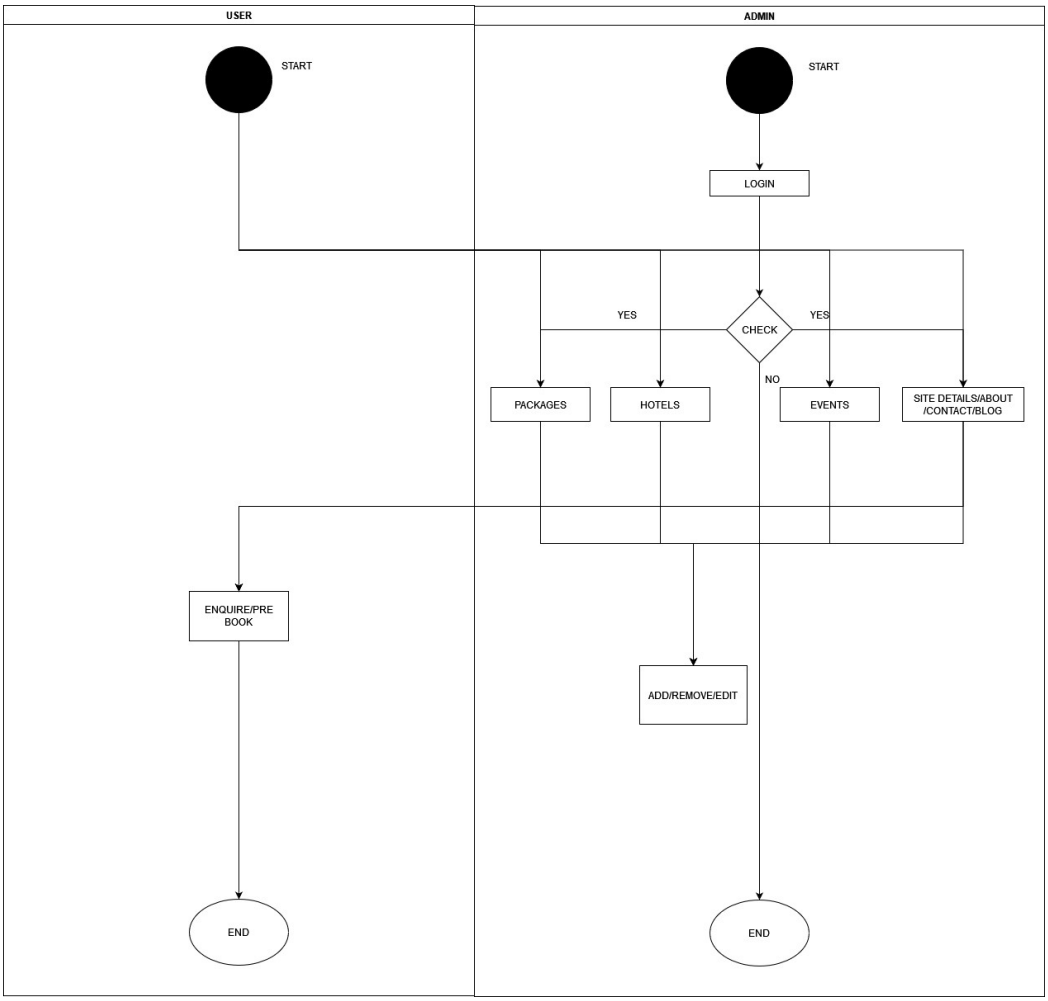
2.2 Database description

Database(s) created as part of the application is(are) described.

3.0 Architectural and component-level design

This section outlines the software's architectural design, providing architectural diagrams and component-level descriptions.

3.1 Architecture diagrams



Architecture Views:

Unitravells offers various architectural views, including:

- **Logical View:** Describing the logical organization of software components.
- **Process View:** Detailing process and system interactions.
- **Physical View:** Defining the physical distribution of software components.
- **Development View:** Explaining how the software will be developed.

3.2 Description for Components

Major Software Components:

Unitravells is composed of several major software components, each playing a crucial role in the architecture.

3.2.1 Component n description

Component: User Management

Interface Description:

- Input: User contact.
- Output: User enquiry booking.
- Exceptions: submission errors.

Static Models:

- Class Diagram: Describes classes and relationships for user management.
- Composite Structure Diagram: Illustrates the interaction of user components.

Dynamic Models:

- Activity Diagram: Depicts the flow of user enquiry.
- State Diagram: Represents the different states of user.

3.3 External Interface Description

Unitravells interfaces with various external systems, including payment gateways and external travel service providers. These interfaces are designed to facilitate seamless data exchange.

4.0 User Interface Design

This section presents the user interface design for Unitravells, offering a description and design rules.

4.1 Description of the User Interface

User Interface:

Unitravells features a clean and intuitive user interface, with screen images and prototypes that demonstrate the look and feel of the software. The design emphasizes ease of use and efficient navigation for travelers.

4.2 Interface Design Rules

Unitravells follows industry conventions and standards for user interface design, ensuring a consistent and user-friendly experience for all users. These standards cover aspects such as visual design, navigation, and accessibility.

5.0 Restrictions, Limitations, and Constraints

This section highlights design issues impacting the software's design and implementation.

- **Time Constraint:** The project has a defined timeline for completion, influencing design decisions and development schedules.
- **Resource Constraints:** Limited resources, including human resources and budget, require efficient design and development strategies.
- **Security Constraints:** Ensuring data security and privacy is paramount and necessitates stringent security measures.
- **Scalability Constraint:** The software must be designed to accommodate future growth in user numbers and data volume.

6.0 Appendices

This section includes information that supplements the design specification.

6.1 Requirements Traceability Matrix

A requirements traceability matrix is developed to map stated components and data structures to software requirements. This matrix ensures that each design component is aligned with the project's requirements, enabling effective tracking and validation.

6.2 Implementation Issues

Implementation issues, including technical challenges, solutions, and best practices, are documented in this section. These insights are valuable for the development team and provide a roadmap for addressing potential challenges during the implementation phase.

In summary, the Unitravells Software Design Document offers a detailed overview of the software's design, including its goals and objectives, scope, constraints, data design, architectural and component-level design, user interface design, and associated restrictions and limitations. This comprehensive document serves as a critical reference for the development and implementation of Unitravells, ensuring that it aligns with its objectives and provides a seamless and secure travel booking experience for users.