Software Requirements Specification

# 1) Introduction

## a) Purpose

The purpose of this system is to develop a local train ticketing and arrival-time prediction application that allows users to book tickets and receive real-time updates on train arrivals using delay prediction. It aims to enhance user experience and provide accurate, real-time information about train movements, in addition to enabling online booking of various ticket types.

## b) Project Scope

The project involves developing a complete system for local train ticket booking, including interfaces for both regular users and administrators. Users can book one-way or round-trip tickets, select travel class (first or second), and receive an electronic ticket. The system also provides real-time train tracking and displays train statuses (on-time, delayed, or cancelled), with automatic updates based on accurate input from station officials.

## c) Glossary and Abbreviations

- ETA: Estimated Time of Arrival  
- Admin: System administrator  
- User: Regular user of the application  
- SRS: Software Requirements Specification

## d) List of System Stakeholders

- End-users (passengers)  
- Station staff (administrators)  
- Railway management  
- Software developers

## e) References

- Software Engineering 1 course lectures  
- Online resources on software requirements documentation

# 2) Functional Requirements

## a) User Requirements Specification

- Users can log in.  
- Book tickets by selecting source and destination.  
- Choose ticket type: one-way or round-trip.  
- Choose travel class: first or second.  
- Print the ticket.  
- Check train schedules.  
- Track real-time train status.

## b) System Requirements Specification

- Login for users and admins.  
- Database of stations and trains.  
- Entry and update of train schedules.  
- Automatic ETA updates when delays occur.  
- Station-specific interface for updating times.  
- Display all train trips for any station.  
- Send notifications for changes or delays.

## c) Requirements Priorities (MoSCoW)

- Must Have: Login, ticket booking, schedule display, ETA updates  
- Should Have: Ticket printing, delay notifications  
- Could Have: Live map tracking  
- Won’t Have (initial release): Online payment integration

# 3) Non-functional Requirements

## a) Categories

- Performance  
- Security  
- Usability  
- Reliability  
- Scalability

## b) Specification

- Performance: Response time < 2 seconds  
- Security: Encrypted login  
- Usability: User-friendly interface  
- Reliability: <2% monthly downtime  
- Scalability: Easy station addition

## c) Fit Criteria

- Response time tests  
- Encryption verification  
- Usability tests  
- Error log analysis  
- Scalability testing

## d) Impact on Architecture

- Performance affects DB and update tech.  
- Security needs encryption and access control.  
- Scalability impacts backend and DB design.

# 4) Design & Implementation Constraints

- Backend: Python or Java  
- Database: MySQL  
- Mobile-friendly UI  
- Operate over local station network

# 5) System Evolution

## a) Anticipated Changes

- Online payment  
- Interactive maps  
- Multi-language support

## b) Handling Changes

- Modular design  
- REST API-based integration

# 6) Requirements Discovery Approaches

- Interviews with station staff  
- Passenger surveys  
- Current system analysis  
- User scenarios

# 7) Requirements Validation Techniques

- Stakeholder reviews  
- Prototyping  
- Consistency/completeness checks  
- Early user testing