
Software Requirements Specification for E-ticketing System

Version 2.0 approved

Prepared by:

Sanskriti P – 22BD1A661A

Bharadwaj Reddy V – 22BD1A661Z

Pooja M – 22BD1A660X

Dhanya Sri K – 22BD1A660D

Nandini D – 22BD1A660C

Keshav Memorial Institute Of Technology

19-10-2024

Contents

Chapter 1 Revision History	
1. Introduction.....	1
Purpose:	1
Document Convention:	1
Intended Audience and Reading Suggestions:	1
Product Scope:	2
References:	4
2. Overall Description:.....	5
Product Perspective:.....	5
Product Functions:.....	6
Operating Environment:	7
User Characteristics:	8
Design and implementation constraints:	9
User Documentation:	10
Assumptions and Dependencies:	11
3. Specific Requirements:	13
3.1 User Interfaces	13
3.2 Hardware Interfaces	13
3.3 Software Interfaces	14
3.4 Communications Interfaces	14
4. Functional Requirements:	15
5. Non-Functional Requirements:	17
6. Appendix Diagram:	19
Use Case Template:.....	19
Class Diagram	21
Use Case Diagram	22
Sequence Diagram.....	23
Component Diagram	24

Chapter 1 Revision History

Name	Date	Reason for changes	Version
Week-1	26-09-2024	SRS creation (Introduction)	1.0
Week-2	18-10-2024	SRS Documentation- Class diagram, Use Case diagram	2.0
Week-3	25-10-2024	SRS Documentation- (final) Sequence diagram, Component diagram, Use case template	3.0

1.Introduction

The Software Requirement Specification(SRS) of E-Ticketing is designed to document and describe the agreement between the customer/user and developer regarding the specification of the software product requested. This documentation is done to provide a clear idea of customer requirements. This document can be used as reference in further development of the software system.

Purpose:

This is the software Requirement Specification(SRS) for our E-Ticketing web-site .The project is all about booking tickets via online. It will facilitate the user to purchase tickets without going to ticket booking station(offline) and make travelling easy for everyone.

Document Convention:

Heading:

Font-Size:16

Font-Style: Bold

Font: Times New Roman

Subheading:

Font-Size:14

Font-Style: Bold

Font: Times New Roman

Content:

Font-Size:12

Font: Times New Roman

Intended Audience and Reading Suggestions:

The intended audience for e-ticketing can vary widely depending on the context and industry. E-ticketing systems are commonly used in transportation, entertainment, and event management sectors. Here are some potential audiences and reading suggestions for each:

a) Travel and Transportation Industry:

- **Airline Executives and Managers:** Those responsible for airline ticketing systems should look into industry-specific publications and reports. Reading materials from the International Air Transport Association (IATA) and airline technology providers like Amadeus and Sabre would be beneficial.
- **Public Transportation Authorities:** Professionals in charge of public transportation can explore government reports and industry-specific websites, such as the American Public Transportation Association (APTA) in the United States.
- **Travel Agents:** Travel agents should stay updated with the latest trends and technologies in e-ticketing. Travel industry magazines, blogs, and forums can be helpful.

b) Entertainment and Event Management:

- Event Organizers and Planners: Eventbrite's blog and resources can provide insights into e ticketing for events. Additionally, industry-specific magazines like Event Marketer can be informative.
- Concert and Theater Managers: Professionals in the entertainment industry can explore resources like Pollstar, which covers ticketing and event management trends.
- Sports Venue Operators: Sports Business Journal and resources specific to sports ticketing can offer valuable information.

c) General Readers Interested in Technology and E-Ticketing:

- Tech Enthusiasts: People interested in the technology behind e-ticketing can explore general technology news websites like TechCrunch or Wired.

d) Small Business Owners and Entrepreneurs:

- Event Planners and Small Venue Owners: Small business owners can benefit from practical guides and blog posts on platforms like Eventbrite or EventMB.
- Tour Operators: Those in the tourism industry can explore resources from industry associations like the U.S. Travel Association or the World Tourism Organization (UNWTO).

e) Government Officials and Policymakers:

- Transportation Authorities: Government officials responsible for transportation policies should refer to industry reports, studies, and recommendations from organizations like the Federal Transit Administration (FTA) in the United States or similar bodies in other countries.

f) Students and Researchers:

- Academic Texts: Students and researchers interested in e-ticketing can delve into academic textbooks on transportation systems, ticketing technologies, and event management.
- Scholarly Journals: Explore academic databases like JSTOR, IEEE Xplore, or Google Scholar for peer-reviewed research articles on e-ticketing system.

Product Scope:

The product scope for an e-ticketing system can vary depending on the specific industry and use case. However, in a broad sense, the product scope for e-ticketing typically includes the following components:

a) User Interface (UI) and User Experience (UX):

The system should provide an intuitive and user-friendly interface for customers to browse, select, and purchase tickets. - It should also offer an easy-to-navigate interface for event organizers, transportation companies, or ticketing agents to manage events, inventory, and customer data.

b) Ticket Sales and Booking Functionality:

Customers should be able to browse available events, venues, or transportation options. - The system should facilitate secure online ticket purchasing, including options for different payment methods. - Booking and reservation capabilities, including seat selection, should be included for events that require seating assignments.

c) Ticket Generation and Delivery:

The system should generate electronic tickets (e-tickets) with unique identifiers for each transaction. - E-tickets should be deliverable via email, mobile apps, or text messages, ensuring easy access for customers.

d) Event or Transportation Management:

Event organizers or transportation companies should have tools to create and manage events, schedules, and routes. - Inventory management features should allow organizers to control ticket availability and pricing.

e) Security and Fraud Prevention:

Robust security measures should be in place to protect customer data and prevent fraudulent ticket sales. - Features such as barcode scanning and validation can help verify the authenticity of tickets at entry points.

f) Mobile Accessibility:

A mobile-responsive website or dedicated mobile apps should be available to cater to customers who prefer to purchase and manage tickets on their smartphones or tablets.

g) Integration Capabilities:

The e-ticketing system should integrate with payment gateways for seamless transactions. - Integration with customer relationship management (CRM) systems can help event organizers manage customer data effectively. - In transportation, integration with scheduling and fleet management systems may be necessary.

h) Reporting and Analytics:

Event organizers and transportation companies should have access to data analytics and reporting tools to track ticket sales, revenue, attendance, and customer demographics. - Insights from these reports can inform marketing and business strategies.

i) Customer Support and Communication:

The system should provide channels for customer support, including chat, email, or phone assistance. - Automated notifications and updates, such as event reminders or travel alerts, can enhance customer communication.

j) Accessibility and Compliance:

Ensure that the e-ticketing system complies with accessibility standards, making it usable by individuals with disabilities. - Compliance with industry regulations and standards, such as PCI DSS for payment processing, may also be required.

k) Customization and Branding:

Event organizers should be able to customize the look and feel of ticketing pages to align with their branding and event themes.

l) Scalability and Performance:

The system should be able to handle high traffic loads during peak booking times without performance degradation. - Scalability features should allow for easy expansion as the business grows.

m) Localization and Internationalization:

If the e-ticketing system serves a global audience, it should support multiple languages, currencies, and regional preferences.

References:

We took references from different websites like Flipkart, Amazon, Snapdeal, Myntra and Walmart.

<https://ieeexplore.ieee.org/document/6223244>

<https://eticketsolutions.com/>

2.Overall Description:

Product Perspective:

The product perspective for an e-ticketing system involves examining the system from various angles to ensure it meets the needs of both the business and its users. Here's a breakdown of the product perspective for e-ticketing:

a) User Perspective:

User-Friendly Interface: The e-ticketing system should have an intuitive and easy-to-use interface for both customers buying tickets and event organizers managing events. **Mobile**

Accessibility: Ensure that the system is mobile-responsive or has dedicated mobile apps to cater to users who prefer to access and manage tickets on their smartphones or tablets.

Accessibility: Consider the needs of individuals with disabilities by providing features that comply with accessibility standards, such as screen readers and keyboard navigation.

b) Business Perspective:

- **Revenue Generation:** The system should facilitate ticket sales efficiently, enabling the business to generate revenue.
- **Cost Management:** Implement a pricing structure that balances the costs of operating the system with revenue generated, including considerations for transaction fees, subscription models, or revenue-sharing agreements with event organizers.
- **Scalability:** Ensure that the system can scale to handle increased demand during peak booking times without sacrificing performance.
- **Data Security:** Implement robust security measures to protect customer data, prevent fraud, and comply with data protection regulations.

c) Regulatory and Legal Perspective:

- **Compliance:** Ensure that the e-ticketing system complies with relevant industry regulations and standards, including those related to ticket sales, privacy, and accessibility.
- **Data Privacy:** Safeguard user data in accordance with data protection laws, such as GDPR or HIPAA, if applicable.

d) Environmental and Sustainability Perspective:

- **Green Practices:** Consider environmental impact by implementing energy-efficient hosting solutions, reducing paper ticket usage, and promoting eco-friendly practices.

e) Feedback and Improvement Perspective:

Feedback Mechanisms: Provide mechanisms for customers and event organizers to leave feedback and suggestions, facilitating continuous improvement of the system. Taking all these perspectives into account is crucial for developing a successful e-ticketing system that not only meets the business objectives but also provides a positive experience for both customers and event organizers. Collaboration among stakeholders and ongoing monitoring of the system's performance and user feedback are essential for its continuous improvement and success.

Product Functions:

The functions of an e-ticketing system can vary depending on the industry and specific use case. However, here are some common product functions for e-ticketing systems:

a) Event Listing and Management:

- Create and manage events, including details such as event name, date, time, and location.
- Specify event categories (e.g., concerts, sports, movies).
- Set pricing and ticket availability.

b) Ticket Sales and Booking:

- Allow customers to browse and select events.
- Provide a secure and user-friendly interface for purchasing tickets.
- Support various payment methods (credit cards, digital wallets, PayPal, etc.).
- Offer options for seat selection or general admission.

c) E-Ticket Generation and Delivery:

- Automatically generate electronic tickets (e-tickets) upon successful purchase.
- Deliver e-tickets to customers via email, mobile apps, or SMS.
- Include QR codes or barcodes on e-tickets for validation.

d) Event Promotion and Marketing:

- Enable event organizers to create promotional codes and discounts.
- Integrate with social media platforms for event marketing.
- Provide tools for email marketing and customer communication.

e) Customer Account Management:

- Allow customers to create accounts and manage their profiles.
- Store purchase history for reference.
- Implement secure authentication and password recovery.

f) Ticket Validation and Access Control:

- Provide scanning capabilities for e-ticket validation at event entry points.
- Integrate access control hardware (e.g., turnstiles, barcode scanners).
- Real-time validation status updates.

g) Reporting and Analytics:

- Generate reports on ticket sales, revenue, attendance, and customer demographics.
- Provide event organizers with insights to improve marketing and planning.

h) Customization and Branding:

- Allow event organizers to customize ticket designs and branding.
- Offer white-label options for event organizers to promote their own branding.

i) Localization and Internationalization:

- Support multiple languages and currencies.
- Adapt to regional preferences, including date formats and time zones.

j) Security and Fraud Prevention:

- Implement robust data encryption to protect customer and transaction data.
- Utilize fraud detection mechanisms to prevent counterfeit tickets.
- Ensure compliance with data protection regulations.

Operating Environment:

The operating environment for e-ticketing, often referred to as an Electronic Ticketing System (ETS), can vary depending on the specific application and industry. However, there are some common components and considerations that apply to most e-ticketing systems. Here's a general overview of the operating environment for e-ticketing:

a) Hardware Components:

- **Ticketing Devices:** These can include ticket machines, point-of-sale (POS) terminals, mobile devices (smartphones and tablets), and self-service kiosks for printing or displaying e-tickets.
- **Servers and Data Centers:** Backend servers and data centers are responsible for processing ticket transactions, storing user data, and generating e-tickets. These may be cloud-based or on-premises.
- **Network Infrastructure:** A robust network infrastructure is crucial for real-time communication between ticketing devices and servers. This includes internet connectivity, LANs (Local Area Networks), and WANs (Wide Area Networks).

b) Software Components:

- **Ticketing Software:** This includes the application or software responsible for issuing, validating, and managing e-tickets. It often includes payment processing and user authentication modules.
- **Database Management:** A database system is needed to store user profiles, ticketing data, and transaction records securely.
- **Payment Gateway Integration:** For online ticket purchases, integration with payment gateways is necessary for processing payments securely.
- **Mobile Apps and User Interfaces:** If the e-ticketing system is accessible via mobile apps or websites, front-end user interfaces need to be developed.
- **Security Software:** Robust security measures are essential to protect sensitive user data and prevent fraud. This includes encryption, firewalls, intrusion detection systems, and access controls.

c) Communication Protocols:

- **APIs (Application Programming Interfaces):** These are used for communication between ticketing devices, mobile apps, and backend servers.
- **Encryption:** Data transmitted between devices and servers should be encrypted to ensure data security.

d) Data Storage and Management:

- **Data Backup:** Regular backups of ticketing data are essential to prevent data loss.

- **Data Analytics:** Analyzing ticketing data can provide valuable insights for service optimization and marketing.
- e) **User Interfaces:**
 - **User-Friendly Interfaces:** Intuitive user interfaces are crucial for ticket purchase, validation, and management.
 - **Accessibility:** Ensure the system is accessible to individuals with disabilities in compliance with relevant regulations. The specific requirements and components of an e-ticketing system will vary depending on its use case, whether it's for transportation, events, cinema, sports venues, or other purposes. It's crucial to consider security, usability, and scalability when designing and operating an e-ticketing environment.

User Characteristics:

When designing an e-ticketing system, it's important to consider the characteristics and needs of the users who will interact with the system. Understanding the user base helps in creating a user-friendly and efficient system. Here are some key user characteristics for e ticketing:

a) Diverse User Demographics:

E-ticketing systems serve a wide range of users, from different age groups and backgrounds. Consider the varying levels of tech-savviness among users .

b) Accessibility Needs:

Some users may have disabilities or special accessibility requirements. Ensure that the system complies with accessibility standards, such as WCAG (Web Content Accessibility Guidelines), to accommodate all users.

c) Language Preferences:

Users may speak different languages or have language preferences. Offer multilingual support to cater to a diverse user base.

d) Device Preferences:

Users may access the e-ticketing system from various devices, including smartphones, tablets, laptops, and desktop computers. Ensure that the system is responsive and works well on different screen sizes.

e) Internet Connectivity:

Consider users with limited internet connectivity or slower connections. Optimize the system to well under varying network conditions.

Design and implementation constraints:

Designing and implementing an e-ticketing system involves various constraints that must be considered to ensure its successful development and operation. These constraints can arise from technical, financial, regulatory, or practical limitations. Here are some common design and implementation constraints for e-ticketing systems:

a) Technical Constraints:

- **Hardware and Infrastructure:** Limited availability of hardware resources, server capacity, and network bandwidth can impact system performance and scalability.
- **Compatibility:** Ensuring compatibility with a wide range of devices, operating systems, and web browsers can be challenging.
- **Security:** Stringent security measures and encryption requirements may impose constraints on system architecture and data storage.

b) Financial Constraints:

- **Budget:** Limited budget allocation can restrict the scope of development, feature implementation, and scalability.
- **Cost of Maintenance:** Ongoing maintenance costs, including server hosting, software updates, and customer support, must be considered.
- **Return on Investment (ROI):** The system must demonstrate a positive ROI to justify its implementation and continued operation.

c) Regulatory and Legal Constraints:

- **Data Privacy and Security Regulations:** Compliance with data protection regulations, such as GDPR or HIPAA, may require specific data handling practices and additional security measures.
- **Payment Industry Regulations:** If processing payments, compliance with payment card industry standards (e.g., PCI DSS) is mandatory.
- **Accessibility Standards:** Legal requirements for accessibility, such as WCAG, must be met to ensure inclusivity.
- **Local Regulations:** Compliance with local laws, taxes, and regulations can add complexity and cost to the system.

d) Operational Constraints:

- **User Adoption:** Constraints related to user acceptance and adoption may arise if users are resistant to change or unfamiliar with digital ticketing.
- **Staff Training:** Ensuring that staff members are adequately trained to operate and support the system can be time-consuming and costly.
- **System Downtime:** Minimizing system downtime during updates and maintenance is crucial, especially for critical services like transportation.

e) Scalability Constraints:

- **User Growth:** Anticipating user growth and ensuring that the system can scale to accommodate an increasing number of users is essential.

- **Peak Load Handling:** Designing the system to handle peak usage times, such as during major events or holidays, can be challenging.

f) Usability Constraints:

- **User Experience:** Ensuring a positive user experience across different devices and user interfaces can be constrained by design limitations and resource availability.
- **Usability Testing:** Conducting usability testing to identify and address usability issues requires time and resources.

User Documentation:

User documentation for an e-ticketing system is crucial to help users understand how to use the system effectively and confidently. Well-prepared documentation can reduce user confusion, enhance user satisfaction, and minimize support requests. Here are the key components and considerations for creating user documentation for an e-ticketing system:

a) Getting Started Guide:

- Provide a brief overview of the e-ticketing system and its benefits.
- Explain how users can access the system, whether through a website, mobile app, or physical kiosk.
- Include step-by-step instructions for creating an account or logging in.

b) Navigation and Interface Guide:

- Describe the layout of the user interface and the functions of different elements.
- Provide guidance on how to navigate within the system, including menus, buttons, and links.
- Include screenshots or illustrations to visually guide users.

c) Ticket Purchase Instructions:

- Walk users through the process of purchasing tickets, whether for transportation, events, movies, or other purposes.
- Explain how to select ticket types, quantities, and seating preferences.
- Include details on payment methods and security.

d) Booking and Reservation Guide:

- If applicable, provide instructions for making reservations or booking tickets in advance.
- Explain any booking policies, such as cancellation or modification rules.

e) Ticket Management:

- Describe how users can view and manage their purchased tickets, including access to digital tickets or e-coupons.
- Explain how to retrieve tickets or reservation confirmations.

f) Ticket Validation and Entry:

- Explain how to use the e-ticket for entry, whether through a QR code, barcode, or other means.
- Include instructions for presenting the e-ticket to attendants or scanning devices.

g) Troubleshooting and FAQs:

- Create a section that addresses common issues and provides troubleshooting steps.
- Include frequently asked questions and their answer.

Assumptions and Dependencies:

When designing and developing an e-ticketing system, it's essential to identify and document the assumptions and dependencies that can impact the project's success. These assumptions and dependencies help guide the project team and stakeholders in understanding what must be in place for the e-ticketing system to function as intended. Here are common assumptions and dependencies for an e-ticketing system:

Assumptions:

a) User Internet Connectivity:

It is assumed that users have access to a stable internet connection or mobile data for purchasing, accessing, and validating e-tickets.

b) Device Compatibility:

The system assumes that users have access to compatible devices, such as smartphones, tablets, or computers, to access and use the e-ticketing platform.

c) Payment Methods:

It is assumed that users have access to acceptable payment methods, including credit/debit cards, mobile wallets, or other electronic payment options, to purchase tickets.

d) User Skill Level:

The system assumes that users have basic digital literacy skills required to navigate and use the e-ticketing platform.

e) Scalability:

Assumption that the system is designed to handle increases in user demand and ticket sales during peak periods, such as holidays or special events.

Dependencies:

a) Payment Gateway Integration:

The successful operation of the e-ticketing system depends on the integration of payment gateways and their availability for processing transactions.

b) External Data Sources:

If the system relies on external data sources, such as event schedules or transportation routes, it depends on the accuracy and availability of this data.

c) Hardware and Infrastructure:

Dependencies on the availability and performance of servers, databases, and network infrastructure that support the e-ticketing system.

d) Software Dependencies:

Any software components or libraries used in the development of the e-ticketing system must be available, compatible, and properly maintained.

e) Compliance with Regulations:

The system's functionality and operation depend on adherence to relevant laws and regulations, including data privacy and payment industry standards. It's crucial to continuously monitor and manage these assumptions and dependencies throughout the lifecycle of the e-ticketing system. Addressing any changes or issues related to these factors is essential to ensure the system's reliability, security, and effectiveness in meeting user needs and expectations.

3. Specific Requirements:

3.1 User Interfaces

- a) **Login and Signup Screens:**
 - **Elements:** Username and password fields, "Forgot Password" link, and a "Sign Up" button.
 - **Error Handling:** Clear messages for invalid login attempts.
- b) **Homepage:**
 - **Elements:** Navigation menu (Home, Courses, My Dashboard, Profile, Logout), a search bar for courses, and featured courses section.
 - **Layout:** Clean and responsive design for various devices.
- c) **Course Browsing Interface:**
 - **Elements:** Course cards showing course name, description, instructor, and available seats, with a "View Details" button.
 - **Functionality:** Sorting and filtering options for better usability.
- d) **Course Registration Page:**
 - **Elements:** Registration confirmation button, payment options, and a terms and conditions checkbox.
 - **Error Handling:** Messages for full capacity or payment issues.
- e) **Dashboard:**
 - **For Students:** Overview of enrolled courses and payment history.
 - **For Instructors:** Options to create and manage courses and view enrolment statistics.
- f) **Payment Interface:**
 - **Elements:** Fields for payment details (credit card number, expiration date, CVV) and a "Pay Now" button.
 - **Security Features:** Visual indicators for secure transactions.
- g) **Help and Support:**
 - **Elements:** Help button accessible from all pages linking to FAQ and contact information.
 - **Standards:** Contextual help tooltips for guidance on specific functions.

3.2 Hardware Interfaces

- a) **Client Devices:**
 - **Supported Devices:** The system will work on desktops, laptops, tablets, and smartphones.
 - **Operating Systems:** It will be compatible with popular operating systems like Windows, macOS, Linux, iOS, and Android.
- b) **Server:**
 - **Web Server:** The application will be hosted on a web server that processes user requests and delivers web pages.
 - **Database Server:** A server will also host a database (like MySQL or PostgreSQL) to store information about users, courses, and payments.
- c) **Data Interaction:**
 - **Data Flow:** When users interact with the application (like registering for a course), their requests will be sent to the server over the internet.
 - **Control Interaction:** The application will process these requests and save the information in the database.

d) Communication Protocols:

- **HTTP/HTTPS:** The system will use these protocols for sending and receiving data between users and the server securely.
- **REST API:** This will help different parts of the system communicate with each other, such as connecting the frontend with the backend.

e) Network Requirements:

- Users will need a stable internet connection to access the application, and the server should be capable of handling multiple users at the same time, especially during busy periods.

3.3 Software Interfaces

a) Database:

- **Type:** MySQL
- **Purpose:** To store user data, course information, and payment records.
- **Data Flow:**
 - Incoming: User registration info and course details.
 - Outgoing: Course listings and payment status.

b) Backend Framework:

- **Option:** Java (with Spring)
- **Purpose:** To process user requests and interact with the database.
- **Communication:** Uses HTTP/HTTPS to send and receive data from the frontend.

c) Frontend Technologies:

- **Languages:** HTML, CSS, JavaScript
- **Purpose:** To create the user interface where users can interact with the system.

d) Payment Gateway:

- **Example:** Stripe or PayPal
- **Purpose:** To securely process payments.
- **Data Flow:** Sends payment details and receives confirmation of payment status.

e) Authentication:

- **Method:** JSON Web Tokens (JWT)
- **Purpose:** To handle user logins and maintain secure sessions.

3.4 Communications Interfaces

a) Web Browser Communication:

- **Protocols:** The system will use **HTTP/HTTPS** for all communications to keep data secure.
- **Data Format:** Information exchanged will be in **JSON** format.

b) Email Communication:

- **Function:** The system will send confirmation emails for registrations and payments.
- **Protocol:** **SMTP** will be used to send these emails.

c) Payment Processing:

- **Integration:** The system will securely send payment details to gateways like Stripe or PayPal over HTTPS.

d) Security:

- Sensitive data will be encrypted using **SSL/TLS** to protect user information.

e) Data Synchronization:

- The system will keep data updated in real-time between the user interface and the server.

4. Functional Requirements:

Functional requirements for an e-ticketing system outline the specific features and capabilities that the system must have to meet its intended purpose. These requirements help guide the design, development, and testing of the system. The exact functional requirements may vary depending on the type of e-ticketing system (e.g., transportation, events, movies), but here are some common functional requirements for e-ticketing systems:

a) User Registration and Authentication:

- Users should be able to create accounts securely.
- Authentication methods like username/password, email verification, or two-factor authentication (2FA) should be available.

b) Ticket Purchase and Booking:

- Users should be able to browse available tickets or seats.
- Select and purchase tickets for events or services.
- Reserve seats or tickets for future use, if applicable.

c) Payment Processing:

- Support for multiple payment methods, including credit/debit cards, mobile wallets, and payment gateways.
- Secure handling of payment information and compliance with payment industry standards (e.g., PCI DSS).

d) Digital Ticket Generation:

- Generate electronic tickets in various formats (e.g., QR codes, barcodes, PDFs).
- Provide users with instant access to their digital tickets.

e) Ticket Validation:

- Validate e-tickets at entry points using barcode or QR code scanning.
- Ensure real-time validation and fraud prevention measures.

f) User Profile Management:

- Allow users to update their profiles and preferences.
- View purchase history and upcoming events.

g) Reporting and Analytics:

- Generate reports on ticket sales, user behavior, and system performance.
- Use analytics to optimize user experiences and marketing efforts.

h) Security Features:

Implement security measures to protect user data, transactions, and the system from cyber threats.

i) Data Backup and Recovery:

Regularly back up user data, transactions, and system configurations to ensure data recovery in case of system failures. These functional requirements provide a foundation for designing and building an effective e ticketing system. It's important to work closely with stakeholders to prioritize and refine these requirements to align with the specific goals and user needs of the system. Additionally, thorough testing and user feedback should be incorporated into the development process to ensure that the system meets its functional requirements effectively.

5. Non-Functional Requirements:

Non-functional requirements for an e-ticketing system define the quality attributes and constraints that the system must adhere to, ensuring that it performs reliably, securely, and efficiently. These requirements are crucial for the overall success and performance of the system. Here are some common non-functional requirements for e-ticketing systems:

a) Performance:

- **Response Time:** Specify the maximum acceptable response times for critical operations, such as ticket purchase, validation, and user login.
- **Throughput:** Define the system's capacity to handle a certain number of transactions per unit of time.
- **Scalability:** Specify how the system should scale to accommodate increasing numbers of users and transactions, especially during peak periods.

b) Availability:

- **Uptime Requirements:** Define the minimum allowable uptime percentage, including scheduled maintenance periods.
- **Redundancy:** Specify the use of redundant servers or data centers to ensure high availability.
- **Failover and Disaster Recovery:** Detail the procedures and mechanisms for failing over to backup systems and recovering from disasters.

c) Reliability:

- **Fault Tolerance:** Define how the system should respond to hardware or software failures to ensure uninterrupted service.
- **Error Handling:** Specify how errors and exceptions should be handled to prevent system crashes and data corruption.

d) Security:

- **Data Encryption:** Require data encryption in transit and at rest to protect user information and transactions.
- **Authentication and Authorization:** Specify strong user authentication and role-based access control to ensure that only authorized users can perform specific actions.

e) Usability and Accessibility:

- **Usability Guidelines:** Specify usability standards to ensure that the user interface is intuitive and user-friendly. -
- **Accessibility Standards:** Ensure compliance with accessibility standards (e.g., WCAG) to make the system usable by individuals with disabilities. Non-functional requirements are critical for ensuring the overall quality and reliability of an e-ticketing system. They should be clearly documented, tested, and monitored throughout the system's lifecycle to ensure that it consistently meets the specified criteria.

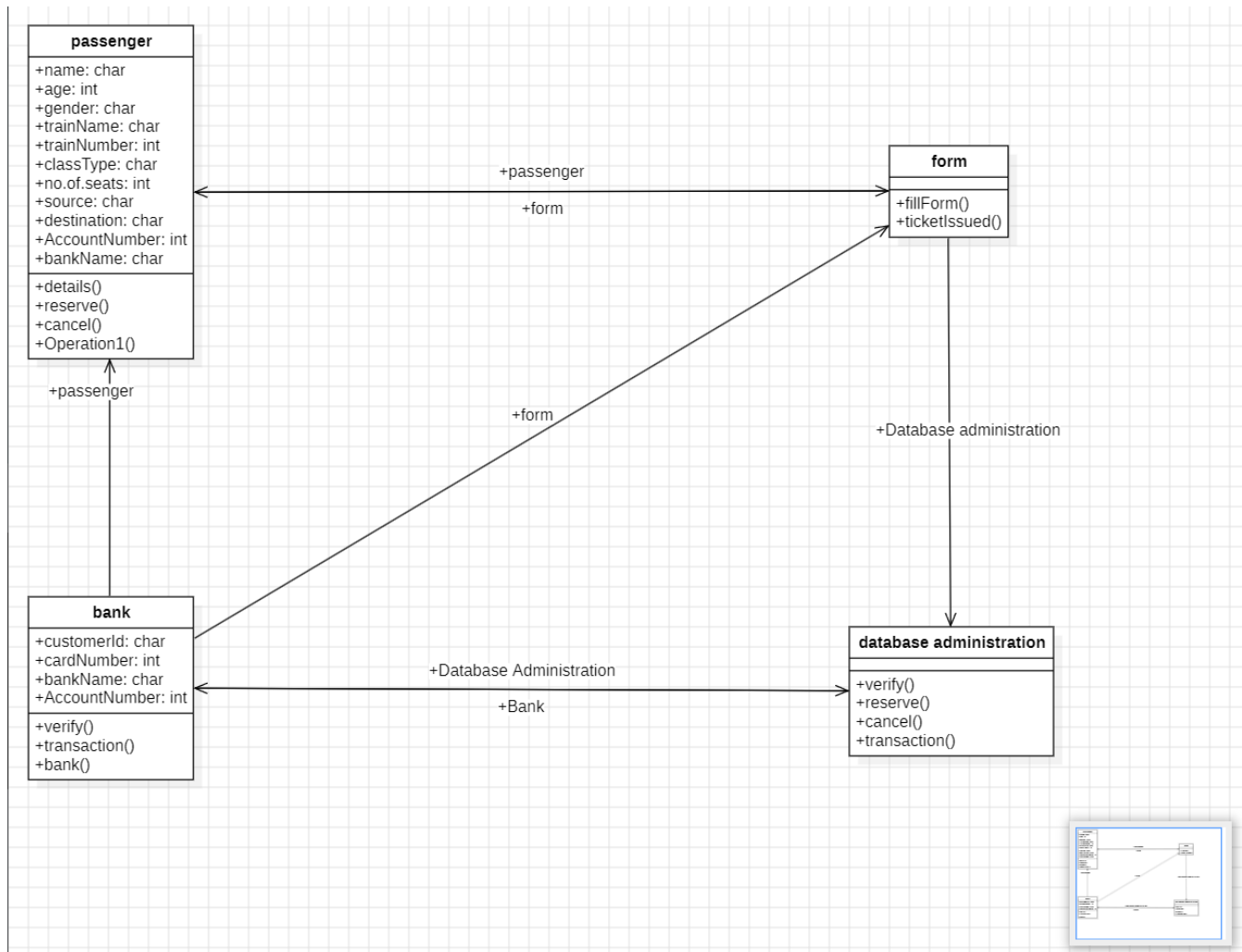
6. Appendix Diagram:

Use Case Template:

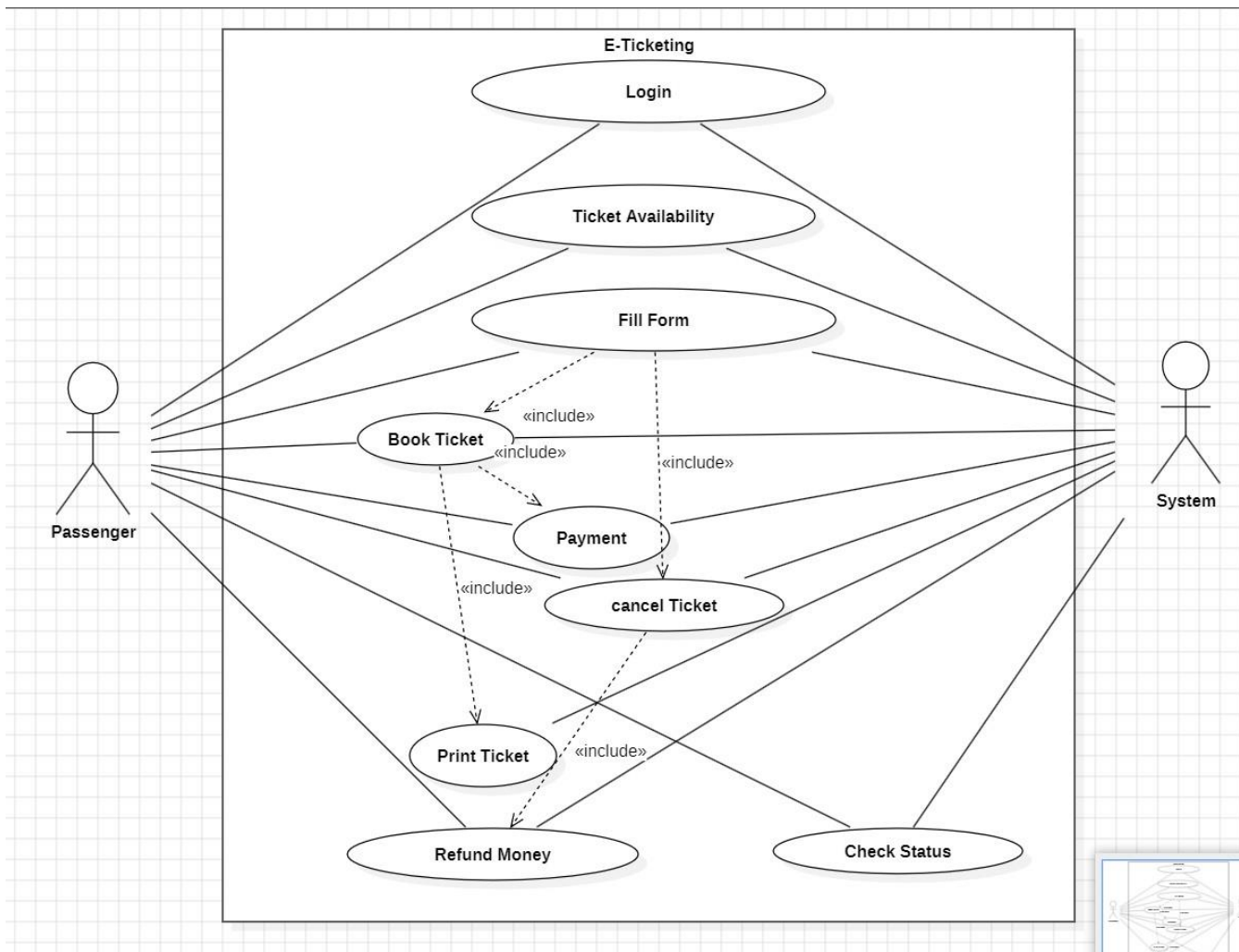
Use Case ID:	E-Ticketing-UC-001		
Use Case Name:	E-Ticketing		
EndObjective:	Provide an efficient, secure, and eco-friendly e-ticketing solution to streamline ticketing processes, reduce paper waste, and enhance user experience.		
Created by:	1.Sanskruthi .P 2. Bharadwaj.V 3.Pooja . M 4.Dhanya Sri . K 5. Nandini.D	On (date):	October 25,2024
User/Actor:	Customer, Seller, and Administrator		
Trigger:	User booking a ticket through the e-ticketing platform		

Basic/Normal Flows	
User Actions	System Actions
User logs in to the platform using credentials	The system validates the username and password and grants access.
User views upcoming events or transportation options.	The system displays relevant e-tickets and events available for booking.
User selects an event or ticket and proceeds to booking.	The system allows the user to choose seat preferences and proceed to payment.
User provides payment information and confirms booking.	The system processes the payment and sends a booking confirmation.
User wants to edit booking details or cancel.	The system provides options to modify or cancel bookings and updates records.
User logs out.	The system terminates the session and secures user data.

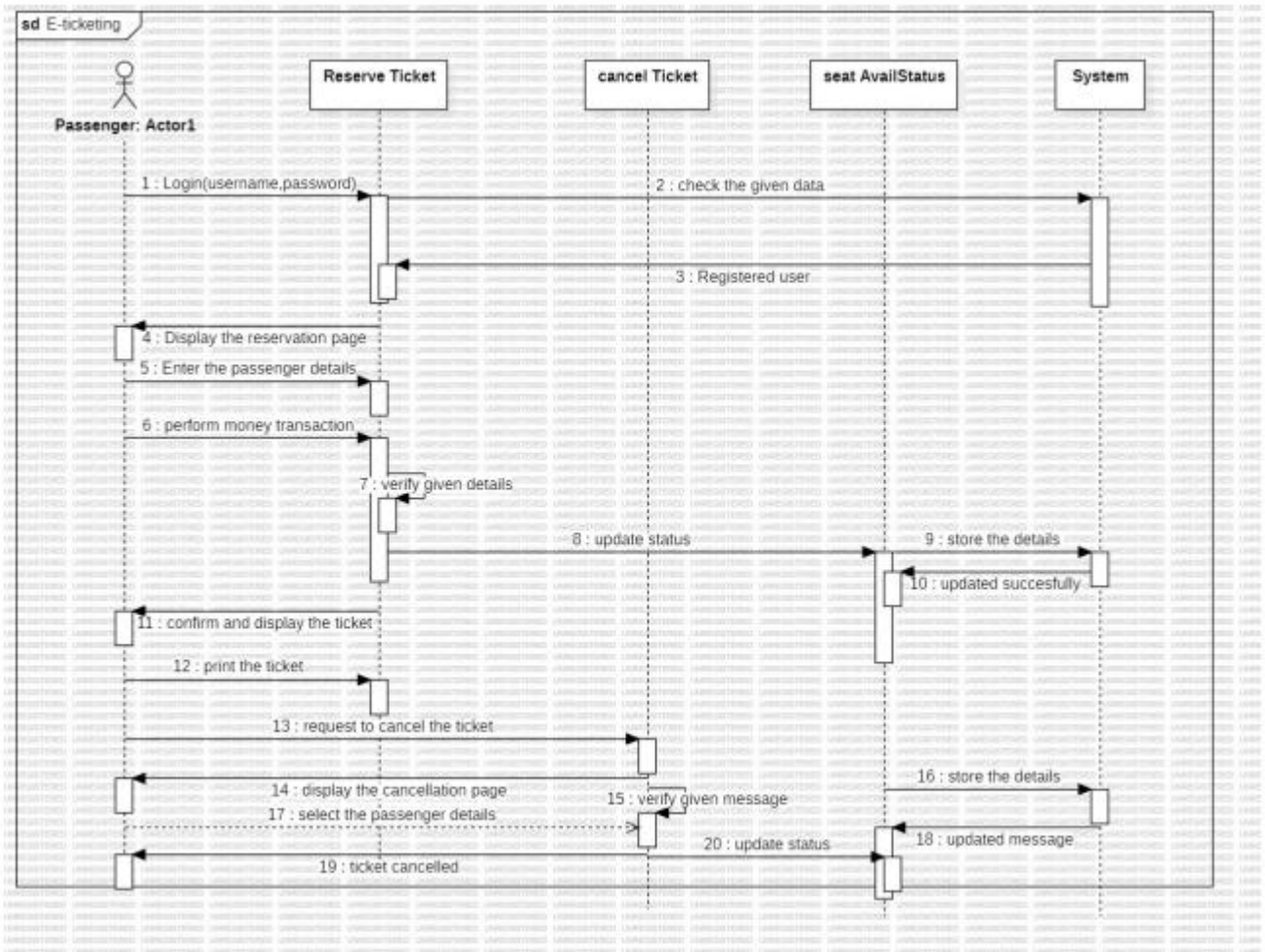
Class Diagram



Use Case Diagram



Sequence Diagram



Component Diagram

