TED UNIVERSITY

CMPE 313/SENG 214

Software Engineering

ONLINE TICKET SYSTEM

Project Proposal

SECTION 5 - TEAM 7

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Introduction

In this document, we will present proposal information for the development of an Online Ticketing System designed to improve the management of events to be held worldwide and make ticket purchasing easier. The Online Ticketing System aims to provide a comprehensive and efficient platform for ticket and event management. Users will be able to discover events, securely purchase tickets, and access event locations through QR code-based verification, making event entry faster, more convenient, and more reliable.

The Online Ticketing System will provide a comprehensive event management facility that allows organizers to manage event operations, track ticket sales, and analyze audience participation through real-time reporting and analytics.

Key features of the platform include:

- A user-friendly mobile application that makes event research and ticket purchasing faster and more seamless.
- Different user roles are protected with secure authentication, providing a secure app usage experience for customers and organizers.
- Organizers can track everything from ticket sales to ticket trends and create reports to improve event planning.
- There is a comprehensive and secure admin panel that provides control and management for the entire system.
- AI-powered event recommendations that provide users with personalized event recommendations.

Leveraging modern technologies, it will deliver an intuitive user experience and robust functionality to improve event management for a global audience.

Project Description

Overview

The Online Ticket System aims to develop a comprehensive ticket system in terms of event management and organization of the event. The system provides a platform that will allow users to purchase tickets to important events that will take place around the world quickly, efficiently and easily. In this system, users can get information about events, buy tickets and log in to events with a QR code. In addition, it helps the organizers of the event to easily manage the events and control the ticket October sale easily.

This system makes ticket sales better for people who organize events, while giving customers the right to buy a ticket easily and quickly. Thanks to the admin panel, ticket sales rates and occupancy statistics can be easily tracked.

The scope of this application includes :

* A user-friendly and Practical mobile application

* Authentication and display of access levels for different users

* Getting information about the details of the event, programs and seating arrangements.

* In order to take the user experience to the next level, it will provide a suggestion system to the user with the integration of artificial intelligence and the goal will be achieved easily and efficiently with the chat bot.

* Easy monitoring and interpretation of the sales rate by managers.

* QR code ticket sale and easy control of it.

*All cysteine can be controlled thanks to the admin panel.

Objectives

Define the objectives of this project.

Provide a short description of objectives and goals of your software project.

Objective	Brief Description of the Objective
To provide a fast and efficient ticketing time	To enable users to get tickets to events in an easy way with a user-friendly interface and to develop a paying method in a secure way.
To provide real-time analysis and reporting	To develop a panel that shares instant sales rates for both the organizers organizing the event and the admin, where they can easily see the best-selling tickets.
Speeding up event entries with QR code integration	To use the QR code ticket system in order to make the entrance and exit smooth in order to prevent participants from wasting time from entering the event quickly

To provide a powerful and comprehensive application	Reducing managers' commitment to using other systems by making the application more versatile than one-sided.
Artificial Intelligence Supported Recommendation System	It makes recommendations about activities to users based on their interests, which vary from user to user.
Artificial Intelligence Powered Chat Bot	In order for users to get the maximum benefit from the application, it acts as a customer service and guides users when they encounter any problems.

Functional Requirements :

- User Authentication and Roles: The system will allow users to register and log in and easily access the system. During the registration process, the necessary information will be requested for identity verification. System users, Customer, Organizer and Administrator (Admin) will be able to log in to the system with different roles, and each role will have different parts
- Event Management : The organizers of the event will be able to create events through the system, edit information about the event, and delete events. Events will have features such as name, date, location, ticket price.
- Access Control with QR Kodi : The system will scan the QR code for customers who want to enter the event to decide whether the ticket is real or fake (invalid), which will ensure that the system's help is effectively seen.
- Reporting and Analysis : The system will be able to analyze the occupancy rates clearly for the organizers and managers working in the organization and show the profit margin, so it will be very useful in determining how the next event can be organized according to the occupancy rates.
- Notifications and Warnings : Notifications will be sent to users registered in the system with reminders of the start of the event, the necessary information about when, where and price information of upcoming events will be written.
- Artificial Intelligence Supported Recommendation System:
  Artificial intelligence will make suggestions to users according to the activities that users mostly prefer, so the user will be able to see the activities in the system according to their interests and easily access them.

Non-functional Requirements :

- Performance: The system will be designed to respond to the user's movements and interactions within 2 seconds.
- Security: A secure pay system will be provided for ticket sales.
- Usability: The interface will be designed with a user-friendly and fun design and will contain easy and understandable instructions.
- Reliability: The system will serve with a 99% uptime guarantee.
- Scalability: The system will be designed to work efficiently without any performance loss despite the increasing number of activities and the number of customers every day.
- Maintenance and Updatability: The system will have a structure that is beautifully documented and can be updated for convenience

Target Customers

There are different types of users in the online ticket system, which is designed to make the process of purchasing tickets easier and more practical for users, and certain features have been taken into account for each of them.

Customers (Users Who Bought Tickets)

- Detailed information about the events (date, time, place, seating arrangement, ticket prices, etc.) they can acquire.
- • Thanks to the easy interface, they can buy their tickets quickly.
- • With Artificial Intelligence integration, they can see the activities proposed to the user by artificial intelligence.
- • They can log in to events quickly and smoothly with a QR code.
- • Through Artificial Intelligence integration, when any problem is encountered in the system, the efficiency in the system can be increased by using chatbot
- • By receiving notifications, they are informed of event reminders and important announcements.

Organizers (Event Organizers)

• Thanks to the administrator profiles, they have the authority to create and organize events.

* They can evaluate their sales performance with data such as occupancy rate, revenue analysis and the most sold ticket types

* They can perform ticket checks quickly and securely thanks to the QR code verification system we have developed.

• They have the right to send notifications and announcements to the participants about the events.

Administrators (Admins)

• They can manage the overall system and determine the roles of users (customer, administrator).

• They provide control of the organizers and events

• They can track the overall performance of ticket sales made by the organizers.

• They ensure the security of the platform and the regular operation of the system.

Targeted Systems and Services:

- Mobile and Web Application with a User-Friendly Interface: A practical interface will be offered that customers and organizers can use without difficulty
- Authentication and Authorization: Different access levels will be determined depending on the user roles (customer, organizer).
- QR Code Integration: When the organizers verify tickets with a QR code for secure entry, customers will be able to switch quickly.
- Real-Time Analysis and Reporting: Organization owners and managers will be able to get a chance to analyze their performance by accessing instant sales data.

- Artificial Intelligence Integration :
  In relation to which events users mostly participate, it will be possible to highlight events similar to those events with artificial intelligence and ensure that users have information about the events. In addition, when the user encounters any problems in the system, he will be able to receive information via chatbot , which will allow the user to move easily in the application.

- Notifications and Reminders: Users will be sent automatic notifications and reminders about upcoming events.

Value Proposition

The Online Ticket System project has been developed in order to eliminate the inefficient processes occurring in the event management and ticketing processes. Thanks to the

effective use of technology, the main goals have been to make the ticket purchase and event entry processes easier, safer and more user-friendly. This section explains why the project should be started and what kind of contributions it can make to the business world.

- Increasing Efficiency in the Ticket Sales Process:
  - • It eliminates the long queues that may occur and the need to purchase tickets physically by enabling users to purchase tickets easily and quickly.
  - • Thanks to QR code reading-based ticket controls, there will be a decrease in waiting times for users at event entrances and user satisfaction may increase.
- Instant Data Analysis:

  • It allows event owners to track their ticket sales instantly and to have information by analyzing their sales performance.

  • By presenting data such as best-selling ticket types, occupancy rates and revenue analyses, it enables organizers to make more informed decisions.
- User Experience and Satisfaction

  • Thanks to the user-friendly interface to be developed, it becomes easier to get information about events, buy tickets and log in. In this way, an increase in user satisfaction is observed.

  * Prevents users from missing events with notifications and reminders.
- Security and Fraud Prevention

  • Thanks to the QR code verification system, people are prevented from using fake tickets.

  • A reliable shopping experience is offered with secure paying systems that protect user information.

Preliminary Plan

Planned Deliverables

In this project, we aimed to use a planned structure that adopts agile methodologies and focused on the value we want to produce. In this way, we aim to have a more structured product within a flexible development process. The following items mention the basic time blocks that indicate the stages of our project.

The Process of Determining and Analyzing Requirements:

This stage is a process where we share common ideas about all the requirements of our project and are open to ideas on every subject in order to enter a successful development

process. It is also a process that helps us analyze these requirements and understand what our competitors prefer. Some of the documents we have prepared are as follows:

• Software Requirements Specification (SRS) Document: It is a detailed document in which we set forth all the requirements of the software system.

• Use Case Diagrams & User Stories: We will create a table consisting of diagrams and stories that show how the system we will create will benefit users and how users will interact with the system.

• Requirements List: A detailed list containing all the requirements.

Design and Prototyping:

This stage is a layout stage for the system we will create. We will design the user experience, the structure and interface of the system at this stage.

• Wireframes and User Flow Diagrams: This is the preliminary preparation process that shows the user's interaction. Here, we will simply draw the basic sketches.

• Interactive UI/UX Prototypes: This process will allow us to experience the user experience with higher accuracy ourselves.

• System Architecture Diagram: We will create a diagram where we visualize the components of the system and show the data flow.

• Database Schema Design: A properly structured database schema is very important for us to store data. At this stage, we will create our database schema and determine the relationships in which we will connect the data.

Development and Product Testing Stage:

At this stage, we will create the basic functions and bring the product to life. We will perform deep tests to ensure that we have created the product in a quality, comprehensive and reliable way. The process will work as follows:

• Frontend & Backend development: We will write the codes of the user experience and developer-side software at this stage.

• Authentication & Authorization System: We will establish a secure system for users to log in securely and create an authorization system according to their system entry roles.

• Event Management Module: We will develop features such as creating, organizing, managing and analyzing events for the organizer side.

• QR Code Integration: To make things even easier, we will develop an infrastructure that generates and controls QR codes for ticket validation and secure event entry.

• Automated Notification System: A notification will be sent specifically to users and created automatically by the system.

• AI Integration: We will create an artificial intelligence-supported suggestion system and create a chatbot that automatically answers user questions about events and, if necessary, directs them to the necessary links or transfers them to customer service.

• Testing Reports (Unit, Integration, UAT): At this stage, we will test the developer-side features of the system such as performance and security in detail and comprehensively, to see if our product really creates the planned values correctly.

Deployment and Finalization:

At this stage, our product, which has become functional and ready to be presented to the user, will be distributed and the necessary documents will be prepared for the users.

• Deployment & Server Configuration: We will make the necessary configurations for the system to be released to the market.

• Final Testing & User Acceptance Testing (UAT): We will compare the functionality of the system with the expectations for the last time and complete the tests.

• User Manual & Documentation: We will create a guide to ensure that users use the system as targeted.

• Final Project Report & Presentation: We will report the completed state of the project and prepare the presentation of our product.

At the end of these stages, our Online Ticket System application will have a functional, efficient and scalable structure that can create value for users. The requirements sought by the user and management teams will be easily met in our application.

Working Plan

Phases of the Project

The project will follow both **plan-driven and agile methodologies** to ensure flexible and adaptible development process:

- **Plan-driven approach:** At the beginning of the project we will follow sequential development stages, such as requirements analysis, design, development, testing, and deployment.
- **Agile methodologies:** Iterative approach, continuous integration, and regular feedback cycles will be the flow of our development to adapt to changing requirements and deliver incremental improvements.

Requirements Development and Analysis

- Meetings will be held with the client – which is an Event Company- to gather key requirements.
- Core functionalities of the system such as ticket purchasing, QR code check-in, event details, personalized recommendations, and promotions, will be analyzed.
- Functional and Non-Functional requirements will be discussed and defined.
- Based on client feedbacks, a software requirements analysis report will be arranged.

Design and Prototyping

- Wireframes and user flow diagrams will be created for the mobile applications to outline the project.
- Interactive prototypes will be developed to visualize key functionalities.
- UI/UX design parts for the application such as events calendar, seating selection, ticket categories, and promotions will be designed to make system more aestatic and understandable.
- Database schemas and system architecture will be designed.
- Prototype testing will be created based on some user cases to enhance user experience.

Development and Testing

- Some core functionalities such as ticket purchasing, QR code for online check-in, event calender and management, and an admin panel will be added to system.
- Via AI personalized event recommendations system, our system will enhance user experience.
- Verification for security, payment system, and dynamic promotions will be added.
- There are different testing levels such as unit testing, integration testing, and user acceptance testing (UAT), to maintain functionality and performance. System will be tested according to it.

Development Team

- **Project Manager** – Manages project planning and execution throughout all process.
- **Business Analyst** – Understands and analyzed client's expectation and requirements.
- **UI/UX Designer** – Designs user interfaces and experiences.
- **Developer** – Develops project's software requirements.
- **QA Tester** – Controls the software and ensures it meets all requirements before it goes to market.

Training

The design team will improve their UI/UX design and prototyping skills using Figma and Framer.

Collaboration and Communication

- **Primary collaboration tools:** Zoom and Whatsapp.
- **Scheduled meetings:**
    - **Daily stand-up meetings:** Quick updates and sharings about project via Whatsapp.
    - **Weekly planning meetings:** Reviewing development tasks and brainstorming about how we can improve our project.
    - **Bi-weekly client feedback meetings:** Reviewing completed task and discussing what we will do in the next weeks.

Project Milestones

1. **Completion of Requirements Analysis and Documentation** – Completion of the SRS document approved by the customer.
2. **Completion of Design and Prototyping** – Creation and finalization of UI/UX designs based on customer feedback.
3. **Implementation of Key Functionalities** – Implementation of basic features such as ticket purchase, event details, QR code login and admin panel.
4. **Integration of AI for Personalization** – Development of a system that provides personalized event recommendations based on user behavior.
5. **Testing** – Evaluation of the reliability, accuracy and performance of the system.
6. **Deployment** – Completion of all features and release of the system and provision of necessary documentation.

Roles and responsibilities

Team Member Name	Role in Project Development
Berna Danışman	Project Manager – is responsible for every detail related to the project. Leads the team to achieve success of the project.
Umut Çay	Developer – is responsible for implementing planned functions related to project.
Nuran Er	Analyst - is responsible for analysing the system to gather meaningful findings to make better the system.
Yavuz Selim Sever	Tester – is responsible for testing the system to find possible problems and make the system more understandable.
Muammer Eren	Designer – is responsible for takes part in all stages of the design process to make product more aesthetic, functional and user-friendly.