Software Requirements and Specifications for TurfMania

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Chapter 1

Introduction

TurfMania is an innovative web application designed to address the growing challenges faced by sports enthusiasts in Bangladesh due to the limited availability of open fields. As urbanization increases, the demand for turf fields has surged, but the manual booking and management processes remain cumbersome. TurfMania provides a seamless digital solution by enabling easy turf booking and efficient management for sports facilities. With the app, users can quickly reserve available slots, while turf owners can streamline operations, making sports more accessible and convenient for the young generation.

Chapter 2

Purpose

The purpose of this document is to provide a brief overview of TurfMania's Software Requirement Specification. It includes functional, non-functional, and supporting requirements that will establish a baseline for developing the system. The main objective of the SRS is to serve as an official method of communication between users, developers, and stakeholders. The SRS will continue to develop over time as users and developers collaborate to validate, clarify, and expand its contents.

Chapter 3

Inception

3.1 Stakeholders

The key stakeholders involved in the development and usage of the TurfMania app
are:

1. **Users:** These are the individuals who wish to book turf fields for various
   sports. They are the primary consumers of the service provided by the app.

2. **Turfowners:** These are the owners of turf fields who provide the facilities
   for users to book. They manage bookings and maintain the turf fields.

3. **Event Organisers:** Individuals or organizations that wish to organize events
   or tournaments using the turf fields. They may require advanced features
   for scheduling and booking multiple turfs.

4. **Admins:** The administrators who oversee the platform, ensure its func-
   tionality, manage users, turfowners, and handle any technical or customer
   support issues.

3.2 Identifying the Business Value

The TurfMania platform provides distinct business value for each group of stakeholders:

3.2.1 Turfowners' Side

For turfowners, TurfMania simplifies the process of managing bookings, reducing the need for manual handling of reservations. It provides a platform where turf availability can be easily monitored, bookings can be confirmed, and payments can be processed. This leads to more efficient turf management and the potential for increased revenue by optimizing turf usage.

3.2.2 User's Side

For users, TurfMania offers a seamless and convenient way to book turf fields for sports activities. The app removes the complexity of manual booking, allowing users to easily find available slots, make reservations, and avoid the hassle of physical bookings. This enhances the user experience and encourages more frequent use of turf facilities.

3.2.3 Event/Tournament Organizers' Side

Event and tournament organizers benefit from TurfMania by having access to a streamlined process for booking multiple turfs for events. The app allows organizers to schedule multiple games, manage bookings for large groups, and ensure smooth coordination of events. It also provides features that help with event promotion and tracking, improving the efficiency and effectiveness of organizing sports events.

3.3 Existing Solution

Currently, there is one web app available that attempts to offer a turf booking solution. However, this app is not yet functional and remains incomplete. It does not provide a finished, reliable service and is not close to being ready for general use. In contrast, TurfMania aims to provide a fully functional, user-friendly, and feature-rich platform to meet the growing demand for efficient turf booking and management.

3.4 Defining the Problems

The problems that TurfMania aims to solve include:

- **Inefficient Booking Processes:** Turf booking is currently managed manually, leading to scheduling conflicts, human errors, and a time-consuming process for both users and turfowners.

- **Lack of Transparency:** Users face difficulties in knowing turf availability, pricing, and terms of use, which creates confusion and reduces user satisfaction.

- **Difficulty in Managing Multiple Bookings:** Turfowners and event organizers struggle with managing multiple bookings, especially for tournaments or recurring reservations.

- **Inadequate Payment Systems:** Manual payments are often inconvenient, lack flexibility, and may lead to disputes regarding payment confirmation or refunds.

- **Limited Communication:** Users and turfowners lack a direct, reliable communication channel for handling queries, booking changes, or cancellations.

- **Non-Functional Existing Solutions:** The limited and non-functional existing web app fails to address these challenges effectively, leaving a significant gap in the market.

3.5 Feasibility

Is it possible to solve the addressed problems?

- **Inefficient Booking Processes:** Yes, by implementing an automated booking system, TurfMania can eliminate manual errors and streamline the process. Users can check real-time availability and make instant reservations, significantly improving efficiency.

- **Lack of Transparency:** Yes, providing a detailed dashboard with turf availability, pricing, and booking policies ensures transparency for users and builds trust.

- **Difficulty in Managing Multiple Bookings:** Yes, TurfMania can include advanced features for turfowners and event organizers to handle multiple bookings simultaneously, reducing scheduling conflicts.

- **Inadequate Payment Systems:** Yes, integrating secure and flexible online payment options can resolve issues with manual payments, offering users multiple payment methods and automatic confirmation.

- **Limited Communication:** Yes, TurfMania can integrate a messaging or notification system to enhance communication between users and turfowners for queries, updates, or cancellations.

- **Non-Functional Existing Solutions:** Yes, by developing a fully functional, user-centric, and reliable platform, TurfMania can address the shortcomings of existing apps and dominate the market.

Chapter 4

Elicitation

4.1 A Statement of Need and Feasibility

TurfMania addresses the growing demand for an efficient and user-friendly turf booking system in Bangladesh. The current manual processes are riddled with inefficiencies, leading to user dissatisfaction and operational challenges for turfowners. TurfMania is both feasible and essential due to the increasing availability of digital platforms and the widespread adoption of smartphones and online payment systems. This combination of need and feasibility makes TurfMania a viable and impactful solution.

4.2 A Bounded Statement of Scope for the System or Product

TurfMania is designed to cater to turfowners, users, and event organizers by offering:

- Real-time booking of turf fields for sports activities.

- Secure and flexible online payment options.

- A management dashboard for turfowners to handle bookings, availability, and revenue tracking.

- Features for event organizers to book multiple turfs and schedule tournaments efficiently.

- Notification and communication features to ensure smooth interactions among stakeholders.

The system will be accessible via a web application and optimized for modern browsers, ensuring a seamless experience across devices.

4.3 A Description of the System's Technical Environment

The technical environment for TurfMania includes:

- **Backend Framework:** Node.js with Express.js for server-side operations and API development.

- **Frontend Framework:** Next.js for building a dynamic, server-rendered user interface.

- **Database:** MongoDB for efficient and scalable data storage and retrieval.

- **Testing Tools:** Node.js testing modules such as Jest and Mocha to ensure the reliability and stability of the application.

4.4 A Description of the Domain Constraints

TurfMania operates within the following constraints:

- The system must handle a high volume of concurrent users during peak hours, requiring efficient database management and server optimization.

- Limited internet connectivity in certain regions of Bangladesh may affect user experience, necessitating lightweight designs and offline caching mechanisms.

- Compliance with local payment regulations and integration with popular payment gateways available in Bangladesh, such as bKash or Rocket.

- Scalability to accommodate the increasing number of turfs and users as the platform grows.

Chapter 5

Quality Function Deployment

5.1   In General User Perspective

From the perspective of a general user, the following functionalities and features
are essential:

- Ability to find and book their desired turf.

- Can filter turf by location, sports, and booking price.

- Fast and reliable booking process.

- Ability to report turfs, event managers, and other users to the admin.

- Ability to download their transaction details for turf bookings.

- Ability to see turf profiles, rate them, and leave reviews.

- Ability to book using different payment methods, such as:

  - Card payments (VISA, MasterCard).

  - Mobile banking (Bkash, Nagad, Rocket).

- Ability to request the admin for a turf owner or event manager role.

5.2   In Turf Owner's Perspective

From the perspective of a turf owner, the following features are crucial:

- Can manage their turf schedule.

- Can view their turf information.

- Can see user reviews and ratings for their turfs.

- Can request the admin to create additional turfs or update facilities of existing turfs.

- Can receive user payments and issue refunds in case of emergency booking cancellations.

5.3   In Event Manager's Perspective

From the perspective of an event manager, the system should provide the following functionalities:

- Can manage their event schedule.

- Can view their event information.

- Can see user reviews and ratings for their events.

- Can request the admin to create more events or update facilities of existing events.

- Can receive user payments and issue refunds in case of emergency event cancellations.

5.4 In Admin's Perspective

From the admin's perspective, the following capabilities are necessary:

- Can view reports, FAQs, and "Contact Us" information from users, event managers, and turf owners.

- Can respond to FAQs and "Contact Us" inquiries.

- Can ban users, turf owners, event managers, and remove inappropriate content.

- Ability to view and approve turf and event registration requests.

- Can assign roles for turf owners and event managers.

Chapter 6

Functional Requirements

6.1 General User's Perspective

6.1.1 Search and Filter Options

Users can search and filter turfs based on location, sport type, and booking price.

6.1.2 Booking Process

Users can book turfs with a fast and reliable booking system.

6.1.3 Reporting

Users can report turfs, event managers, or other users to the admin.

6.1.4 Transaction Management

Users can download their transaction history for turf bookings.

6.1.5 Turf Profile

Users can view turf profiles, including ratings and reviews, and submit their own reviews and ratings.

6.1.6   Payment Methods

Users can book turfs using different payment methods, including VISA, Master-Card, Bkash, Nagad, and Rocket.

6.1.7   Role Requests

Users can request the admin to be assigned a turf owner or event manager role.

6.2   Turf Owner's Perspective

6.2.1   Schedule Management

Turf owners can manage their turf schedules.

6.2.2   Turf Information

Turf owners can view detailed information about their turfs.

6.2.3   User Feedback

Turf owners can see user reviews and ratings for their turfs.

6.2.4   Facility Updates

Turf owners can request the admin to create more turfs or update the facilities of existing turfs.

6.2.5   Payment Management

Turf owners can receive payments and process refunds for emergency booking cancellations.

6.3   Event Manager's Perspective

6.3.1   Schedule Management

Event managers can manage their event schedules.

6.3.2   Event Information

Event managers can view detailed information about their events.

6.3.3   User Feedback

Event managers can see user reviews and ratings for their events.

6.3.4   Facility Updates

Event managers can request the admin to create more events or update the facilities of existing events.

6.3.5   Payment Management

Event managers can receive payments and process refunds for emergency event cancellations.

6.4   Admin's Perspective

6.4.1   Reports and Contact Management

Admins can view reports, FAQs, and contact submissions from users, turf owners, and event managers.

6.4.2   Response Management

Admins can respond to FAQs and Contact Us inquiries.

6.4.3   Moderation

Admins can ban users, turf owners, and event managers, and remove inappropriate content.

6.4.4   Role Approvals

Admins can view and approve registration requests for new turfs and events and assign turf owner or event manager roles.

Chapter 7

Non-Functional Requirements

7.1 Performance

The system should support fast searches, filters, and bookings, ensuring responsiveness within 2 seconds for typical operations.

7.2 Scalability

The platform should handle a growing number of users, turfs, events, and transactions without performance degradation.

7.3 Security

- Secure user authentication and role-based access control.

- Implement secure payment processing and data encryption.

7.4 Reliability

The system should include mechanisms for data backup and recovery to ensure consistency and reliability of information.

7.5   Usability

The interface should be intuitive and user-friendly for all roles, including users, turf owners, event managers, and admins.

7.6   Compatibility

The platform should work seamlessly across web browsers and mobile devices to provide a consistent experience.

7.7   Payment Integration

Ensure compatibility with multiple payment gateways, including VISA, Master-Card, Bkash, Nagad, and Rocket.

7.8   Auditability

Maintain logs of all user activities, bookings, and transactions to ensure traceability and accountability.

7.9   Localization

Provide multi-language support, especially for local languages where applicable, to enhance usability for diverse users.

Chapter 8

Userflow Diagram

This chapter contains the user flow diagram for TurfMania. The diagram can be
accessed via the following link:

TurfMania Userflow Diagram Link