

Project Name: PH Tour Management System Backend

Version: 1.0

Prepared By: Next Level Team

## 1. Introduction

### 1.1 Purpose

To develop a scalable, secure, and user-friendly web application that allows users to book tours across Bangladesh, while providing admin and management capabilities for tour operators.

### 1.2 Scope

The system will include modules for:

- User registration and authentication
- Tour listing and filtering
- Booking and payment processing
- Admin panel for managing users, tours, guides, and transactions
- Integration with SSLCommerz for online payments

### 1.3 Definitions, Acronyms, Abbreviations

JWT - JSON Web Token for authentication

RBAC - Role-Based Access Control

CRUD - Create, Read, Update, Delete

SPA - Single Page Application

## 2. Overall Description

### 2.1 Product Perspective

This is a modular and service-oriented backend designed to be consumed by any frontend (React, Next.js, etc.).

### 2.2 User Classes and Characteristics

Visitor - Unauthenticated users browsing tours

User - Registered users booking tours

Admin - Manages users, tours, bookings

## 3. Functional Requirements

- FR1: User can register using email / Google.
- FR2: OTP is sent and must be verified to activate account.
- FR3: Users can log in using credentials / Google.
- FR4: Authenticated users can view and update their profile.
- FR5: Admin can list, update, or deactivate users.
- FR6: Admin can create, update, delete tours.
- FR7: Tours must include title, description, division, price, images.

- FR8: Users can browse and search tours.
- FR9: Users can filter by division, price, keywords.
- FR10: Users can view detailed tour info.
- FR11: Authenticated users can book a tour with a date.
- FR12: System creates a booking with status `pending`.
- FR13: Users can view their booking history.
- FR14: Admin can update booking status (confirm, cancel).
- FR15: Initiate payment through SSLCommerz.
- FR16: Handle success and failure redirects.
- FR17: Update payment and booking status post-validation.
- FR18: Admin can manage tours, users, and bookings.
- FR19: Admin can assign guides to tours.
- FR20: Admin can manage division listings.

#### 4. Non-Functional Requirements

- NFR1: System should respond within 500ms for 95% of requests.
- NFR2: Should support at least 1,000 concurrent users.
- NFR3: Backend should be horizontally scalable.
- NFR4: Passwords must be hashed (e.g., bcrypt).
- NFR5: JWT tokens must be securely stored and validated.
- NFR6: Role-based access control (RBAC) must be enforced.
- NFR7: Payment data must be securely transmitted using HTTPS.
- NFR8: System must ensure 99.5% uptime.
- NFR9: Redis used for transient data like OTPs must be fault-tolerant.
- NFR10: Code should be modular and follow MVC architecture.

#### 5. System Architecture Overview

Backend: Node.js (Express), MongoDB, Redis

Frontend: React/Next.js (separate)

Auth: JWT, OTP via SMS/Email

Payment: SSLCommerz

Deployment: Vercel

#### 6. External Interface Requirements

User Interface: Separate SPA frontend that consumes JSON APIs.

API Interface: RESTful APIs structured under `/api/v1`

Hardware Interface: Hosted on cloud or VPS (e.g., Vercel, AWS, DigitalOcean)

Software Interface: Compatible with MongoDB Atlas, Redis Cloud, or local deployments

#### 7. Data Requirements

Key Entities:

- User: name, phone, email, password, role, verified
- Tour: title, description, price, images, division, slug

- Booking: userId, tourId, date, status, paymentStatus
- Payment: bookingId, transactionId, status, amount

## 8. Use Case Scenarios

Use Case: Booking a Tour

1. User registers and verifies via OTP.
2. User logs in and browses tours.
3. User selects a tour and submits booking.
4. System creates booking (status: pending).
5. User is redirected to SSLCommerz.
6. On payment success, booking is confirmed.

## 9. Acceptance Criteria

Users can register, log in, and book tours

Admin can manage tours, users, bookings

Payments update booking statuses correctly

All APIs are secured and role-protected

System meets NFRs for performance and security