



Institute of Information Technology,  
University of Dhaka



# SmileTrack: A Smart Dental Clinic Management System

SPL-02 Project Report

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# 1. Introduction

**SmileTrack** is a **smart** dental clinic management system designed to automate and streamline dental practice operations. It includes **patient management, appointment scheduling, treatment tracking** while offering an intuitive interface for both patients and dentists. This system ensures an efficient workflow, reducing administrative burdens and enhancing patient care.

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## 2. Background of the Project

### 2.1 Dental Clinic Management Challenges

Managing a dental clinic involves several challenges:

- **Manual appointment scheduling** leads to inefficiencies.
- **Tracking patient records** is complex without a digital system.

### 2.2 Existing Solutions and Limitations

Many existing **hospital management systems** do not cater specifically to dental clinics.

### 2.3 Technologies Used

- **Frontend:** React.js, Tailwind CSS
  - **Backend:** Node.js, Express.js
  - **Database:** MongoDB
  - **Authentication:** JWT (JSON Web Tokens)
-

## 3. Description of the Project

### 3.1 Registration and Authentication

- Patients, dentists, and admins can **register and log in** securely.
- **Role-based authentication** ensures access control.
- Passwords are **hashed and stored securely** for protection.

### 3.2 User Dashboard

- **Patients:** View appointments, medical history
- **Dentists:** Manage schedules, patient records, and treatments.
- **Admin:** Oversee clinic operations ,finances.

### 3.3 Appointment Scheduling

- Patients can **book, reschedule, or cancel** appointments online.
- An **interactive calendar** for tracking schedules.

### 3.4 Billing and Payments

- Patients can **pay bills securely** .
  - Admins can **track payments** easily.
- 

## 4. Implementation

### 4.1 Home Page Creation

Designed using **React.js** with a clean UI for easy navigation.

### 4.2 Registration and Login

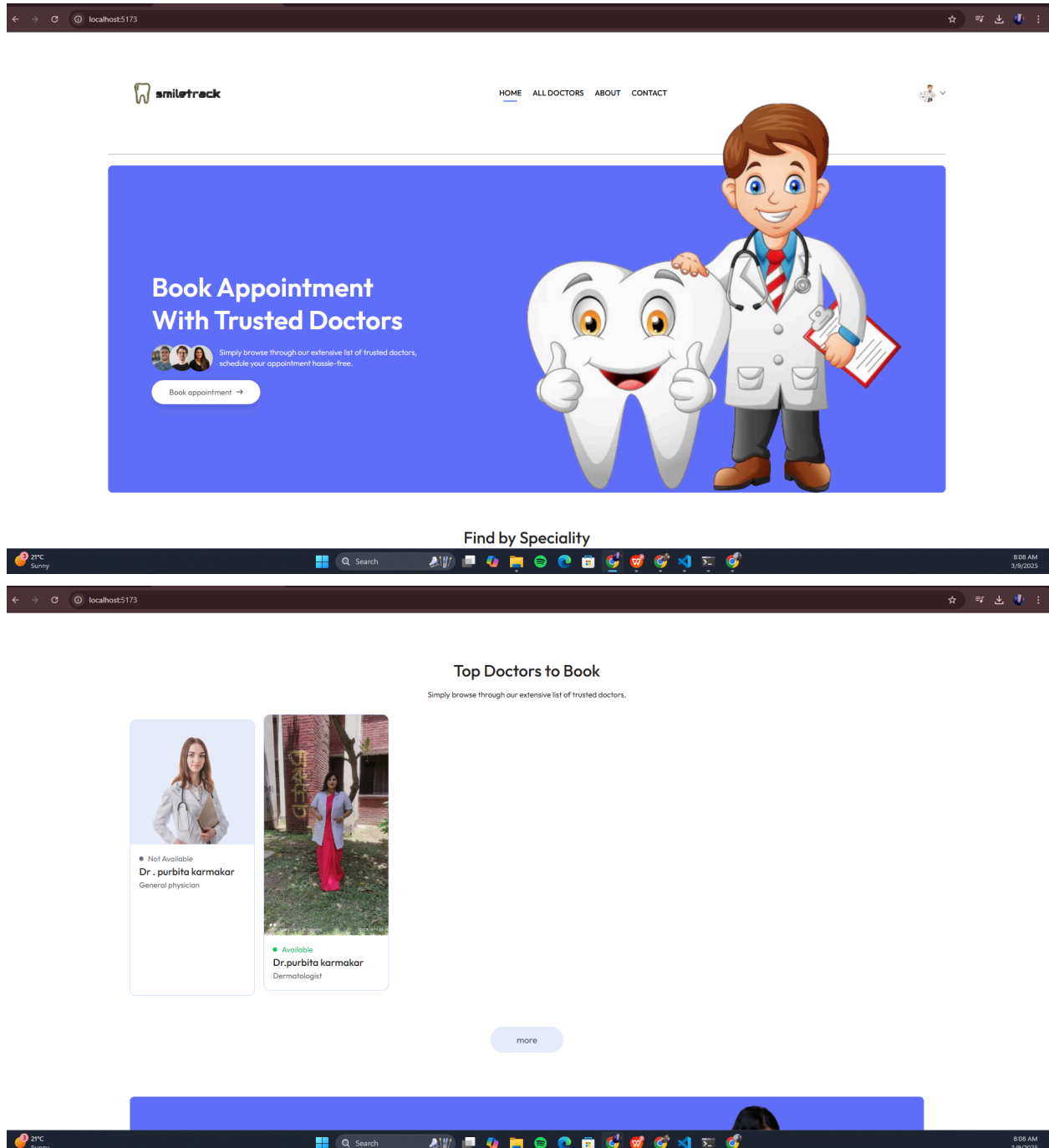
Implemented **JWT authentication** with role-based access.

### 4.3 Database Design

- **MongoDB:** Stores patient records, appointments, and invoices.
- **Mongoose ORM:** Ensures structured data handling.

# 5. User Manual

## 5.1 Home Page



## Book Appointment With 100+ Trusted Doctors

Create account



SmileTrack is a comprehensive platform designed to streamline dental clinic operations, including patient management, appointment scheduling, dental records, billing 📄.

### COMPANY

Home  
About us  
Delivery  
Privacy policy

### GET IN TOUCH

01745330624  
bsse1431@iit.du.ac.bd

Pronob karmaker - IIT,DU

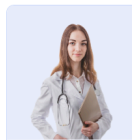


HOME ALL DOCTORS ABOUT CONTACT



Browse through the doctors specialist.

- General physician
- Gynecologist
- Dermatologist
- Pediatricians
- Neurologist
- Gastroenterologist



Not Available  
**Dr. purbita karmakar**  
General physician



Available  
**Dr. purbita karmakar**  
Dermatologist

### COMPANY

### GET IN TOUCH



## ABOUT US



### Welcome to SmileTrack!

Your trusted partner in modern dental care management. At SmileTrack, we understand the challenges dental clinics face in managing patient records, appointments, and billing efficiently. That's why we've designed a seamless, user-friendly system to simplify your workflow and enhance patient care.

### Our Vision

At SmileTrack, we aim to bridge the gap between patients and dental professionals, ensuring smooth communication, hassle-free scheduling, and easy access to medical history. Our goal is to empower clinics with smart, digital solutions that enhance both patient experience and operational excellence. With SmileTrack, managing a dental clinic has never been easier. Simplify. Organize. Smile. 😊

## WHY CHOOSE US

### EFFICIENCY:

Streamlined appointment scheduling that fits into your busy lifestyle.

### CONVENIENCE:

Access to a network of trusted healthcare professionals in your area.

### PERSONALIZATION:

Tailored recommendations and reminders to help you stay on top of your health.



## CONTACT US



### OUR OFFICE

David Co Para  
circular road , Gaibandha  
Phone: 01745330624  
Email: Smiletrack@gmail.com

### CAREERS AT Smiletrack

Learn more about our teams and job openings.

[Explore Jobs](#)

## COMPANY

Home

## GET IN TOUCH

01745330624

## 5.2 Registration and Login

- Patient Registration

### Create Account

Please sign up to book appointment

Full Name

Email

Password

Create account

Already have an account? [Login here](#)

- 
- Patient Login

### Login

Please log in to book appointment

Email

Password

Login

Create an new account? [Click here](#)

-



- Admin Login

## Admin Login

Email

Password

Login

Doctor Login? [Click here](#)

- 
- Doctor Login

## Doctor Login

Email

Password

Login


Admin Login? [Click here](#)



-

## 5.3 Booking Appointments

Patients can book for appointment

localhost:5173/appointment/67c2d39ed21aa323c7b3de9



**Dr.purbita karmakar**   
BDS - Dermatologist · 3 Year  
**About**   
Dentist, Dhaka Dental College  
Appointment fee: \$1000

Booking slots

SUN  
9

MON  
10

TUE  
11

WED  
12

THU  
13

FRI  
14

SAT  
15

10:00 am

10:30 am

11:00 am

11:30 am

12:00 pm

12:30 pm

01:00 pm

01:30 pm

02:00 pm

02:30 pm

03:00 pm

Book an appointment


21°C  
Sunny

Search

8:16 AM  
3/8/2025

localhost:5173/my-appointments


My appointments



**Dr.purbita karmakar**  
Dermatologist  
**Address:**  
Mirpur 14  
DMC  
**Date & Time:** 12 Apr 2025 | 12:00 PM


Pay Online

Cancel appointment



**Dr.purbita karmakar**  
Dermatologist  
**Address:**  
Mirpur 14  
DMC  
**Date & Time:** 11 Apr 2025 | 12:30 PM

Completed



**Dr.purbita karmakar**  
Dermatologist  
**Address:**  
Mirpur 14  
DMC  
**Date & Time:** 11 Apr 2025 | 12:00 PM

10



## Doctors access :

localhost:5174/doctor-appointments

smiletrack Doctor Logout

Dashboard Appointments Profile

### All Appointments

#	Patient	Payment	Age	Date & Time	Fees	Action
0	shuvo	CASH	22	12 Apr 2025, 12:00 PM	\$1000	 
1	soumitra paul	CASH	1	11 Apr 2025, 01:00 PM	\$1000	Cancelled
2	soumitra paul	CASH	1	11 Apr 2025, 11:30 AM	\$1000	Completed
3	soumitra paul	CASH	1	11 Apr 2025, 01:00 PM	\$1000	Cancelled
4	shuvo	CASH	22	11 Apr 2025, 12:30 PM	\$1000	Completed
5	shuvo	CASH	22	11 Apr 2025, 12:00 PM	\$1000	Completed
6	shuvo	CASH	22	14 Apr 2025, 02:30 PM	\$1000	Cancelled

22°C Sunny 8:18 AM 3/8/2025

smiletrack Doctor Logout



Dashboard Appointments Profile

\$ 3000 Earnings

7 Appointments

2 Patients

### Latest Bookings

shuvo	Booking on 12 Apr 2025	 
soumitra paul	Booking on 11 Apr 2025	Cancelled
soumitra paul	Booking on 11 Apr 2025	Completed
soumitra paul	Booking on 11 Apr 2025	Cancelled
shuvo	Booking on 11 Apr 2025	Completed

Air: Very Poor Now 8:19 AM 3/8/2025

## Admin Access:

smiletrack

Admin

Logout




















Dashboard

Appointments

Add Doctor

Doctors List

All Appointments

#	Patient	Age	Date & Time	Doctor	Fees	Action
1	 shuvo	22	12 Apr 2025, 12:00 PM	 Dr. purbita karmakar	\$1000	
2	 soumitra paul	1	11 Apr 2025, 01:00 PM	 Dr. purbita karmakar	\$1000	Cancelled
3	 soumitra paul	1	11 Apr 2025, 11:30 AM	 Dr. purbita karmakar	\$1000	Completed
4	 soumitra paul	1	11 Apr 2025, 01:00 PM	 Dr. purbita karmakar	\$1000	Cancelled
5	 shuvo	22	11 Apr 2025, 12:30 PM	 Dr. purbita karmakar	\$1000	Completed
6	 shuvo	22	11 Apr 2025, 12:00 PM	 Dr. purbita karmakar	\$1000	Completed
7	 shuvo	22	14 Apr 2025, 02:30 PM	 Dr. purbita karmakar	\$1000	Cancelled
8	 arnob das joy	NaN	9 Apr 2025, 11:00 AM	 Dr. purbita karmakar	\$1499	Cancelled
9	 arnob das joy	NaN	9 Apr 2025, 01:30 PM	 Dr. purbita karmakar	\$1499	Cancelled


Air: Very Poor  
Now

8:21 AM  
3/8/2025

## 5.4 Managing Medical Records

- Patients can view **past treatment records**.

localhost:5173/my-appointments




Dr. purbita karmakar

Dermatologist

Address:  
Mirpur14  
DMC

Date & Time: 11 Apr 2025 | 12:00 PM

Completed




Dr. purbita karmakar

Dermatologist

Address:  
Mirpur14  
DMC

Date & Time: 14 Apr 2025 | 02:30 PM

Appointment cancelled




Dr. purbita karmakar

General physician

Address:  
Mirpur14,Dhaka  
Dhaka dental College

Date & Time: 11 Apr 2025 | 11:00 AM

Completed



Dr. purbita karmakar

General physician

Address:  
Mirpur14,Dhaka  
Dhaka dental College

Date & Time: 14 Apr 2025 | 12:30 PM

Appointment cancelled

22°C  
Sunny

8:22 AM  
3/8/2025

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## 6. Challenges Faced

### 6.1 Handling Real-Time Appointments

- Synchronizing **live booking updates** between patients and dentists.

### 6.2 Ensuring Data Security

- Implementing **role-based authentication** to protect sensitive data.
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## 7. Future Scope and Conclusion

### Future Enhancements

- **Payment Gateway**
- **AI-powered diagnosis assistance.**
- **Multi-clinic support** for larger healthcare networks.

### Conclusion

SmileTrack successfully **digitizes and automates dental clinic operations**, ensuring a seamless experience for patients, dentists, and administrators. With **scalability, security, and efficiency**, it provides a **future-ready solution** for modern dental care.

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