Student-Teacher Appointment Booking System

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# Abstract / Problem Statement

Booking appointment systems, either online or through traditional queueing systems, are now popular. Several businesses, such as scheduling an appointment, employ various web-based appointment systems for their patients, which improve the efficiency of the appointment process, reducing wait times and increasing the total number of appointments. This project proposes a web-based appointment booking system that allows students and lecturers to manage their appointment times conveniently using the web or mobile devices.

# Objectives

- Reduce student waiting times

- Provide easy scheduling for students and teachers

- Ensure accessibility from anywhere through the internet

# System Modules

## Admin

• Approve/Reject student registrations  
• Add Teacher details  
• View all appointments

## Teacher

• Schedule available appointment slots  
• Approve/Reject student requests  
• View all appointments

## Student

• Register/Login securely  
• Search teachers by name or subject  
• Book appointments  
• Send messages

# System Architecture

The system is built on a client-server model with Firebase as the backend. The architecture consists of the client (browser) interacting with Firebase Authentication for login and Firebase Firestore for storing users, teachers, appointments, and logs.

# - Low-Level Design (LLD)

User: { email, role, status }

- Teacher: { name, department, subject }

- Appointment: { teacherId, studentEmail, dateTime, status }

- Log: { user, action, details, timestamp }

# Database Design

Firestore Collections:  
- users  
- teachers  
- appointments  
- logs

# Deployment

The project is deployed locally using VS Code Live Server. Local deployment was chosen for simplicity and quick academic demonstration. The frontend is static and uses Firebase services, making it easy to migrate to Firebase Hosting in the future.

# Optimization

- Modular JavaScript (admin.js, teacher.js, student.js)

- Real-time updates with Firestore onSnapshot

- Centralized logging function

- Simple and minimal UI for performance

# Test Cases

1. Student Registration → Account created, status = pending  
2. Admin Approve User → Status changes to approved  
3. Teacher Schedule Appointment → Appointment saved in Firestore  
4. Student Book Appointment → Appointment created, status = pending  
5. Teacher Approve Appointment → Status updated to approved  
6. Logging → Actions recorded in logs collection

# Conclusion & Future Scope

This project successfully demonstrates a modular, web-based student-teacher appointment booking system using Firebase. The system enables students, teachers, and administrators to manage appointments effectively. In the future, enhancements such as notifications, calendar integration, and role-based dashboards with analytics can be added.