**Internship Report**

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**Internship ID: UMIP274707**

**Company/Institution:** Unified Mentor

**Project:** Student-Teacher Booking Appointment System

### **1. Introduction**

During my internship at Unified Mentor, I worked on developing a web-based Student-Teacher Booking Appointment System. This system allows students to book appointments with teachers, while administrators manage teachers and students. The project required skills in front-end development, back-end development, database management, and Firebase authentication.

The system follows a modular and maintainable approach similar to a Clinic Management System, where role-based authentication is implemented to manage different functionalities efficiently.

### **2. Project Description**

The project is a web-based system that facilitates seamless interaction between students and teachers for appointment scheduling. It includes different user roles: Admin, Teacher, and Student, each having specific functionalities.

#### **2.1 System Features**

1. **Admin Module:**
   1. Add, remove, and manage teachers.
   2. Approve student registrations.
   3. View pending student approvals.
2. **Teacher Module:**
   1. Add available appointment slots.
   2. View and approve appointment requests.
   3. Receive and respond to messages from students.
3. **Student Module:**
   1. Search for teachers based on name or department.
   2. Send messages to teachers.
   3. Book appointments with teachers.
   4. View scheduled appointments.

### **3. Technologies Used**

* **Frontend:** HTML, CSS, JavaScript
* **Backend:** Firebase (Firestore Database, Authentication)
* **Hosting:** Firebase Hosting
* **Development Tools:** VS Code, GitHub

### **4. System Architecture**

* **Frontend:** User-friendly interface for seamless interaction.
* **Database:** Firestore for secure and real-time data management.
* **Authentication:** Firebase authentication for secure user access.
* **Deployment:** Hosted on Firebase for accessibility.

### **5. Firebase Integration**

Firebase played a crucial role in the development of the system. The following Firebase services were utilized:

* **Authentication:**
  + Implemented Firebase Authentication for secure user registration and login.
  + Role-based authentication for Admin, Teacher, and Student users.
  + Managed session persistence to keep users logged in securely.
* **Firestore Database:**
  + Stored user data (students, teachers, and admin) with role-based access.
  + Managed appointment bookings and availability of teachers.
  + Real-time updates enabled instant synchronization of user data.
* **Hosting:**
  + Deployed the web application using Firebase Hosting for global accessibility.

These Firebase services ensured secure data storage, seamless authentication, and real-time functionality.

### **6. My Contributions**

During the internship, I was responsible for:

* **Designing and developing web pages** for admin, teacher, and student modules.
* **Implementing Firebase authentication** for user registration and login.
* **Building database functionalities** to store user data and appointments.
* **Writing JavaScript functions** to handle appointment booking, teacher management, and messaging system.
* **Testing and debugging** the system to ensure smooth functionality.
* **Implementing role-based authentication and access control** to ensure different users have appropriate privileges.
* **Ensuring modular and maintainable code** to facilitate future enhancements and debugging.

### **7. Challenges Faced**

* **Integration of Firebase authentication** with different user roles.
* **Managing real-time updates** in Firestore.
* **Ensuring a user-friendly interface** for different user roles.
* **Maintaining security for role-based access control.**

### **8. Key Learnings**

* Gained experience in **full-stack web development**.
* Improved knowledge of **Firebase authentication and Firestore database**.
* Learned how to **handle real-time data and user permissions**.
* Strengthened problem-solving and debugging skills.
* Understood the importance of **maintainable and scalable system architecture**.

### **9. Conclusion**

This internship provided me with valuable experience in developing a functional web application with user authentication and database management. It enhanced my technical skills and gave me hands-on experience in real-world software development. I also learned how to design and implement a role-based system similar to a Clinic Management System, ensuring a secure and modular approach.

I am grateful for this opportunity and look forward to applying these skills in future projects.