



ORTA DOĞU TEKNİK ÜNİVERSİTESİ  
MIDDLE EAST TECHNICAL UNIVERSITY

**CNG 495 FALL -2024**

**TERM PROJECT  
PROPOSAL**

**SAFEBOOK**

**MEMBERS**

**Wendy Susan Ondola – 2413490**

**Aaron Bandado - 2476984**

## CLOUD BASED SERVICE BOOKING MANAGEMENT SYSTEM : SAFEBOOK

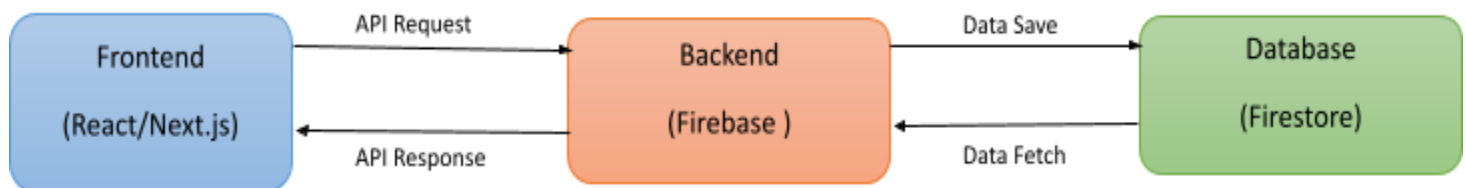
SafeBook is an all-inclusive cloud-based booking platform that enables small businesses to easily manage their appointments and schedules. Its main purpose is to enable small businesses to allow their customers to create appointments based on their availability on a publicly shared schedule and equally manage them seamlessly and efficiently. For example, a barber has many clients and would like to manage all their appointments. This software would allow the barber to specify the time slots when they are available and the services they offer along with any other vital information and their customers would be able to book an appointment with them.

Key features will include user authentication, role-based access (either the businesses or the clients), calendar integration (for efficient booking functionality), and automated reminders to reduce no-shows.

There are three different cloud delivery models in cloud computing namely Platform As A Service(PAAS), Software As A Service(SAAS), and Infrastructure As A Service (IAAS). In this project, we will implement Software As A Service (SAAS) as the cloud delivery model.

### IMPLEMENTATION

We plan on implementing a full-stack application that supports seamless working between the frontend, backend, and database systems. For example, an action performed by the user on the front end (UI) sends requests to the backend which processes the information and then interacts with the database to either store/retrieve data, and a response is reflected on the front end.



#### Frontend (React/Next.js)

This is the part where clients/users directly interact and it holds all the visuals required by the users to interact with the system. For the implementation of this part, we will use React within the Next.js framework. This provides us with a wide range of advantages including but not limited to faster page load, file-based routing, the ability to create APIs within the same project, easy deployment, etc.

## Backend (Next.js and Firebase)

Using the NextJS react framework will enable us to have routing for our web application using NextJS page routing. Also, for the backend, we will be using Firebase (BAAS-Backend As a Service) to enable us to handle our requests. The code for the development will be written using Javascript/Typescript.

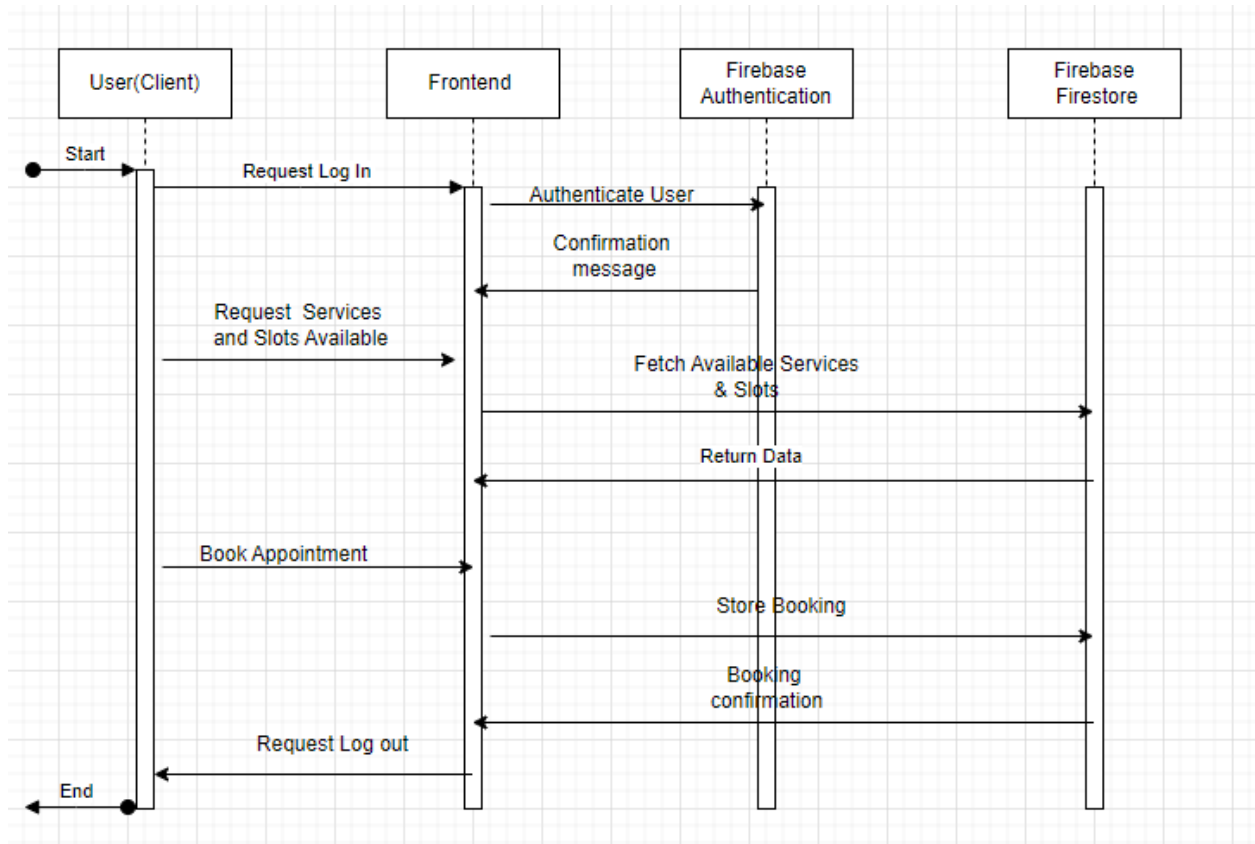
Firebase is a comprehensive app development platform owned by Google, designed to help developers build, improve, and grow applications across various platforms. Firebase is deeply integrated with Google Cloud Platform (GCP), enabling it to leverage Google's scalable infrastructure and powerful cloud services.

## Database (Firestore/External Database)

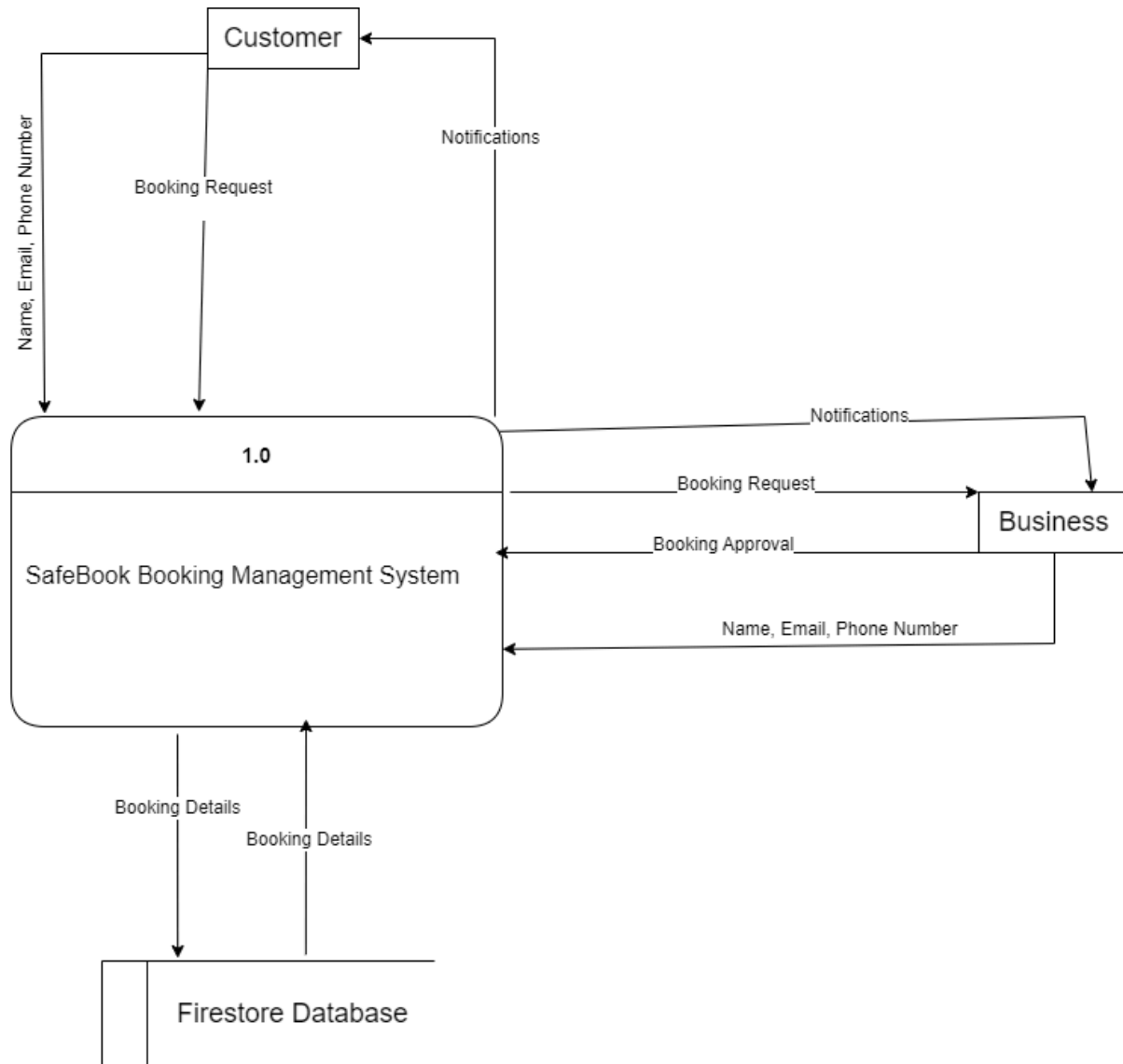
For data handling (storage and retrieval), we will use Firestore, a NoSQL database in the Firebase ecosystem. Communication with Firestore will be managed through Firebase's SDK, allowing for seamless real-time data handling. We may also use Firebase Cloud Functions for additional server-side logic as needed

## DIAGRAMS

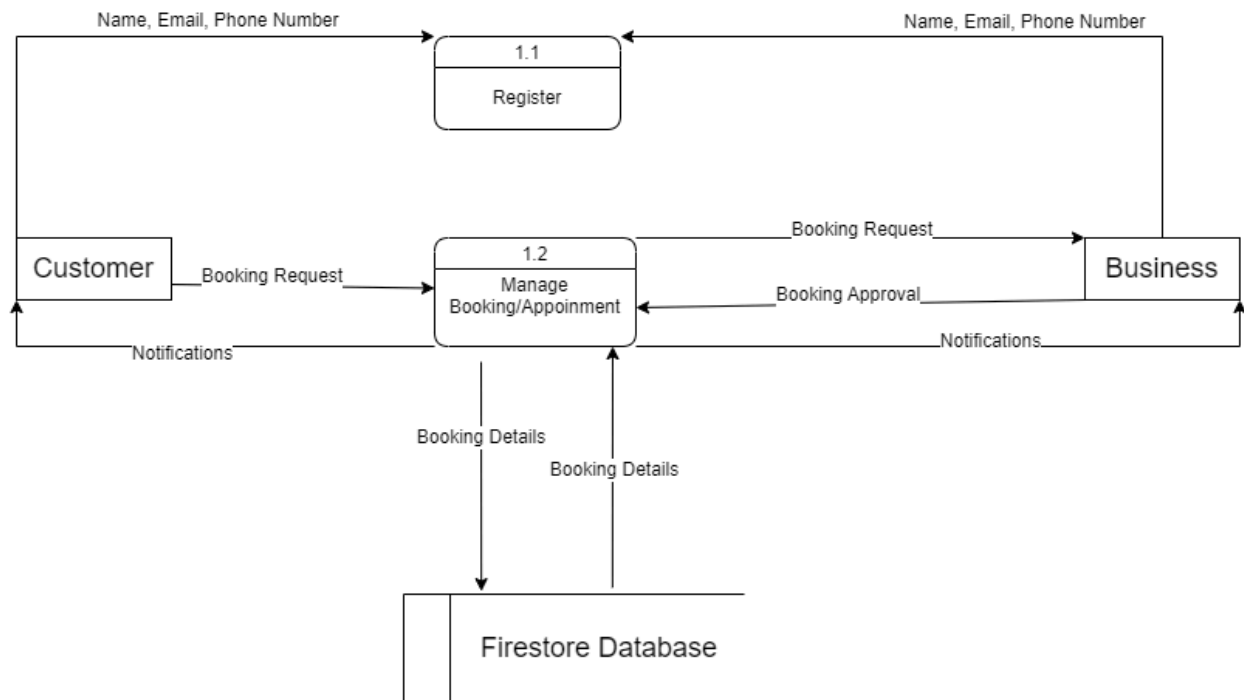
### Client Service Interaction Diagram



## Data Flow Diagrams



Level-0 Dataflow Diagram



Level-1 Dataflow Diagram

## DATA TYPES

- Text
- Numbers
- Date-time/Timestamps
- Metadata

## COMPUTATION

- Timeslot calculations/ Overlap checking: Show customers available time slots for a business and ensure they can only book free time slots.
- Notifications: Notify users of successful bookings and businesses of booking requests.
- Authentication: Ensure user accounts are secured, and users can only login to their own accounts.

## EXPECTED CONTRIBUTION

Frontend Development - Aaron

Backend Development - Both members

Database Design - Wendy

Cloud Setup - Both members

## REFERENCES

*Documentation.* (n.d.). Firebase.

[https://firebase.google.com/docs?gad\\_source=1&gclid=Cj0KCQiA\\_qG5BhDTARIsAA0UHSIG5k8NfONAFuWI2SbCf2TAGr4ofmswLlegoo4ADt\\_K4dU8CEDNLkQaAiN9EALw\\_wcB&gclsrc=aw.ds](https://firebase.google.com/docs?gad_source=1&gclid=Cj0KCQiA_qG5BhDTARIsAA0UHSIG5k8NfONAFuWI2SbCf2TAGr4ofmswLlegoo4ADt_K4dU8CEDNLkQaAiN9EALw_wcB&gclsrc=aw.ds)

*Next.js by Vercel - The React Framework.* (n.d.). <https://nextjs.org/>