Final System Architecture Research

High-Level Overview

The Fiserv onboarding application is composed of several key components, each responsible for specific functions. These components work together to provide a pleasant onboarding experience for the new employees in Fiserv.

Component Breakdown

Teaser Page

- First launch of the application, users are greeted with a teaser page that provides an overview of the company.

Help Page

- After the teaser page, users are directed to the help page that provides information on how to navigate through the application.

Home

The home page serves as the central hub of the application.

- Experience (EXP) bar to track users' progression.
- User icon display
- Horizontally scrollable panel showing achievements.

Application Bar

The application bar is displayed throughout the app on most screens that provides quick access to various sections of the application.

- Navigation Bar (Teaser, Help Page, FAQ, Settings)
- User ranking display
- User Icon

Navigation Bar

The navigation bar offers easy access to different sections of the application.

- Home
- Achievements
- General Checklist
- Colleagues
- Modules

Settings Page

- Change password
- App customization
- Logout

Profile Page

- User icon customization
- EXP and name display
- Send introduction to colleagues

Modules

In the modules section, new employees are able to select a module that contains the following tasks.

- Reading Tasks
- Watching Tasks
- Quiz Tasks

Key Design Decisions

Firebase Backend Integration

We decided to integrate firebase as the backend for our application. Firebase provides a scalable and real-time database solution which provides data synchronization across devices. This allows the team to focus on delivering a responsive and interactive onboarding experience.

Component-Based Architecture

We are using Android's native components and Firebase's Realtime database and firestore. This ensures ease of maintenance, enabling us to update individual components independently and efficiently.

Data Flow

Firebase serves as our backend, which facilitates storing data and synchronization across users. When a user interacts with the application, data flows in the following manner.

- User interacts with a feature and triggers an event within the application.
- The application sends a request to Firebase's Realtime Database / Firestore.
- Firebase processes the request and updates the data.
- Changes are synchronized in real-time with all devices.
- The application updates the user interface to reflect the changes that are necessary.

Security Considerations

When handling user data and authentication, the key security measures include the following:

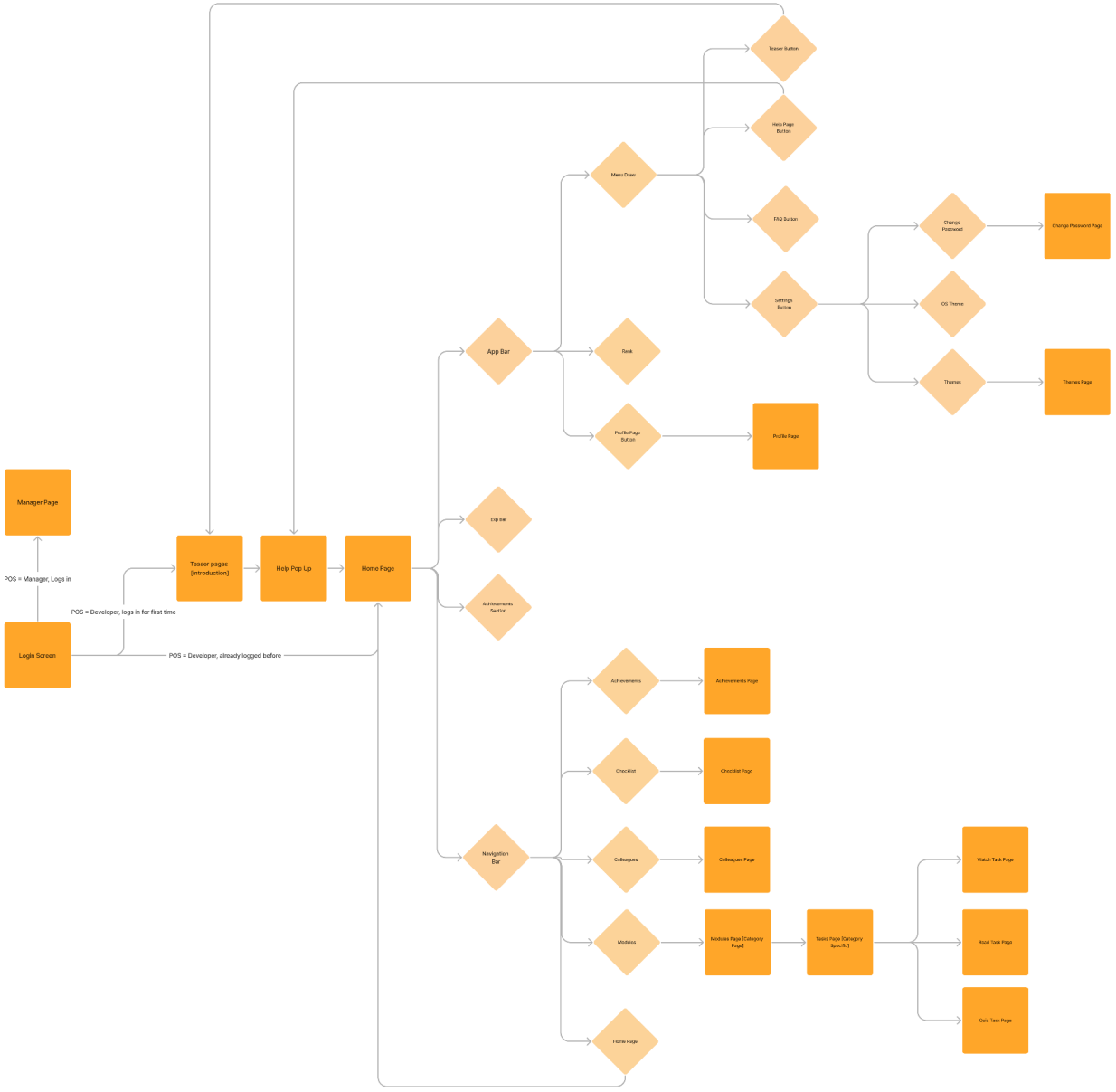
- Firebase authentication for secure user login and authentication.
- Firebase security rules to restrict access to sensitive data.
- Encryption of sensitive data during transmission and rest.
- Regular security audits and updates to address potential vulnerabilities.

Error Handling and Logging

To ensure a reliable application, we implemented a comprehensive error handling strategy.

- A colleagues page, that contains contact information for IT support or colleagues
- A feedback form, where you are able to send immediate feedback to address any issues or any improvements that are necessary within the application, which is sent straight to the firebase where the developers can retrieve.

Workflow Diagram



Schema

The onboarding application utilizes Firebase as the backend database.

User Profiles

- Maintain user profile collection to store user-specific information such as the users name, first time login, exp, level, position, icon, theme etc.
- A collection of achievements, checklist, and tasks are integrated into each user to help personalize the user experience and track progression.

Achievements

- The achievement collection tracks the milestones and achievements that the user has achieved during the onboarding process.
- Each achievement contains the name, EXP for each achievement, and hour/s it takes to complete.

Modules and Tasks

- Modules are organized into a collection which contains a series of tasks.
- There are four modules (Compliance, Customs & Culture, Health & Safety, Orientation).
- Each module contains a collection of quiz, read, and watch tasks.

User Progress

- To monitor the user progression, we track the completion status for each task that holds a certain amount of EXP.
- This collection allows us to calculate and display the user level and EXP on firebase and to display to the user to track their progression.

Settings and Preferences

- User settings and preferences like theme selections and password changes are also stored within firebase.
- This ensures that user-specific configurations are updated consistently.

Security Rules

- Firebase security rules are used to enforce access control and data validation.

Security of Firebase

Firebase provides various types of built-in security features to protect user data.

Firebase Authentication

It is used for secure user login and authentication which ensures that only authorized users are able to access the application. User credentials are secure and managed by Firebase which helps reduce the risk of unauthorized access from external users.

Firebase Security Rules

Firebase allows sensitive data to follow security rules in the Realtime Database. It allows specific users to read and write data, making sure that only authorized users are able to access the database. It can be customized to the application's access control requirements.

Cost

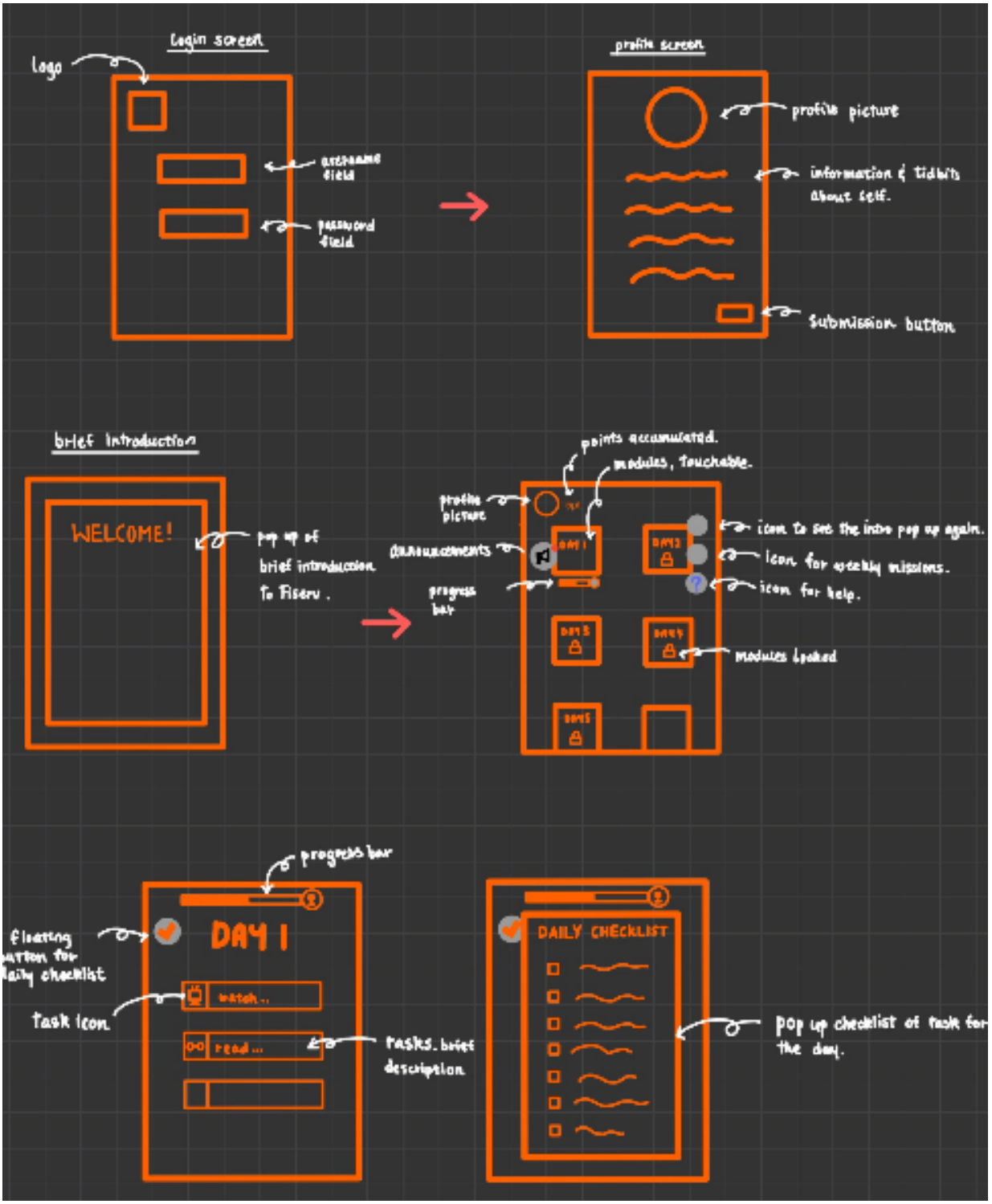
Firebase offers a free version with usage limits which includes the authentication and usage of Realtime Database and Firestore. If the application requires more resources for enhanced security, the pricing is based on usage so the costs can vary depending on the factors like the number of verifications, storage, and data transfer. The pricing can be found on the official website below.

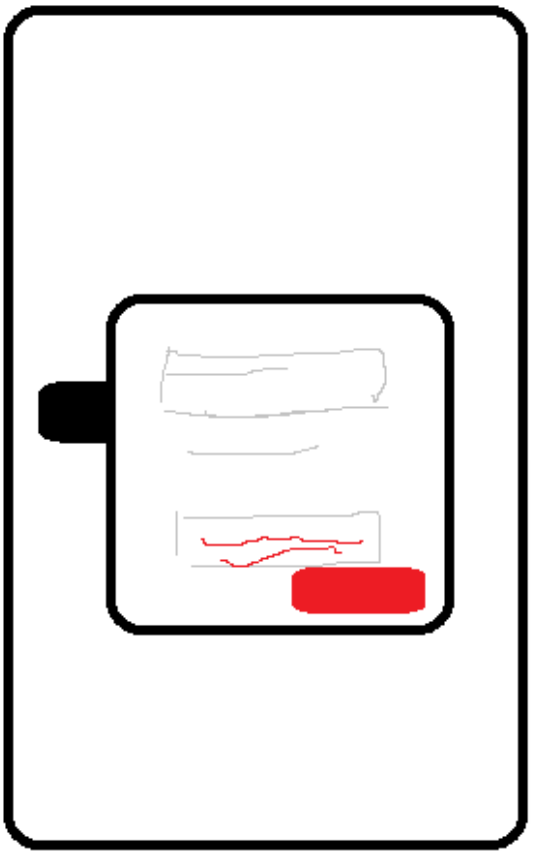
https://firebase.google.com/pricing

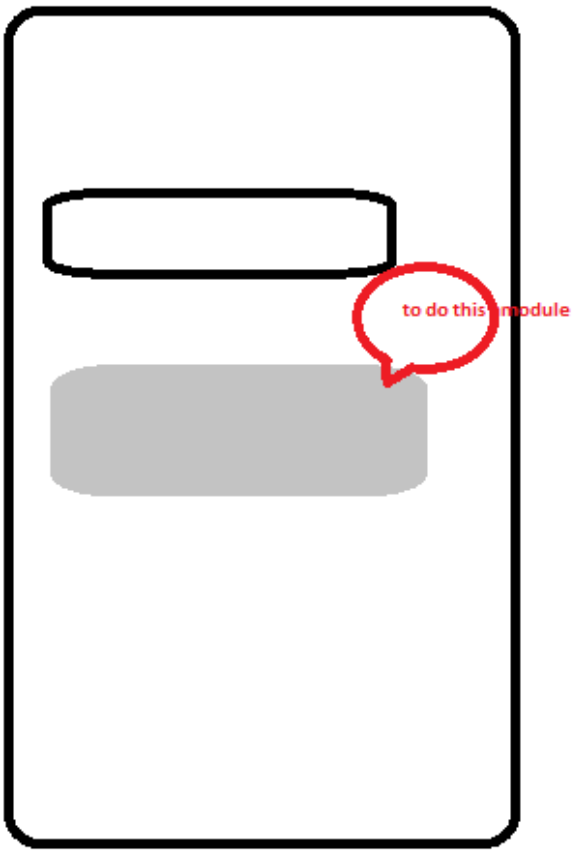
Alternative Databases

The most popular options would include AWS DynamoDB, MongoDB Atlas, Google Cloud Firestore, Azure Cosmos DB and Heroku Postgres. All of these databases offers its own set of security features and pricing.

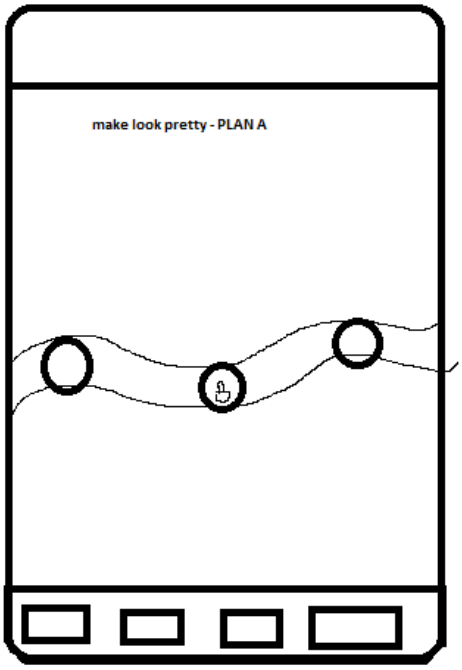
Designs

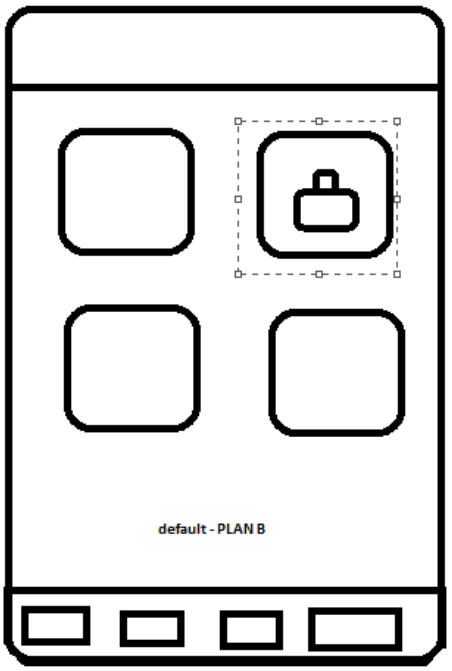

login screen
logo
username field
password field
profile screen
profile picture
information & tidbits about self.
submission button
brief introduction
WELCOME!
pop up of brief introduction to Fiserv.
points accumulated.
modules, touchable.
profile picture
announcements
progress bar
icon to see the intro pop up again.
icon for weekly missions.
icon for help.
modules locked
progress bar
floating button for daily checklist
DAY 1
task icon
watch...
read...
tasks, brief description
DAILY CHECKLIST
pop up checklist of task for the day.



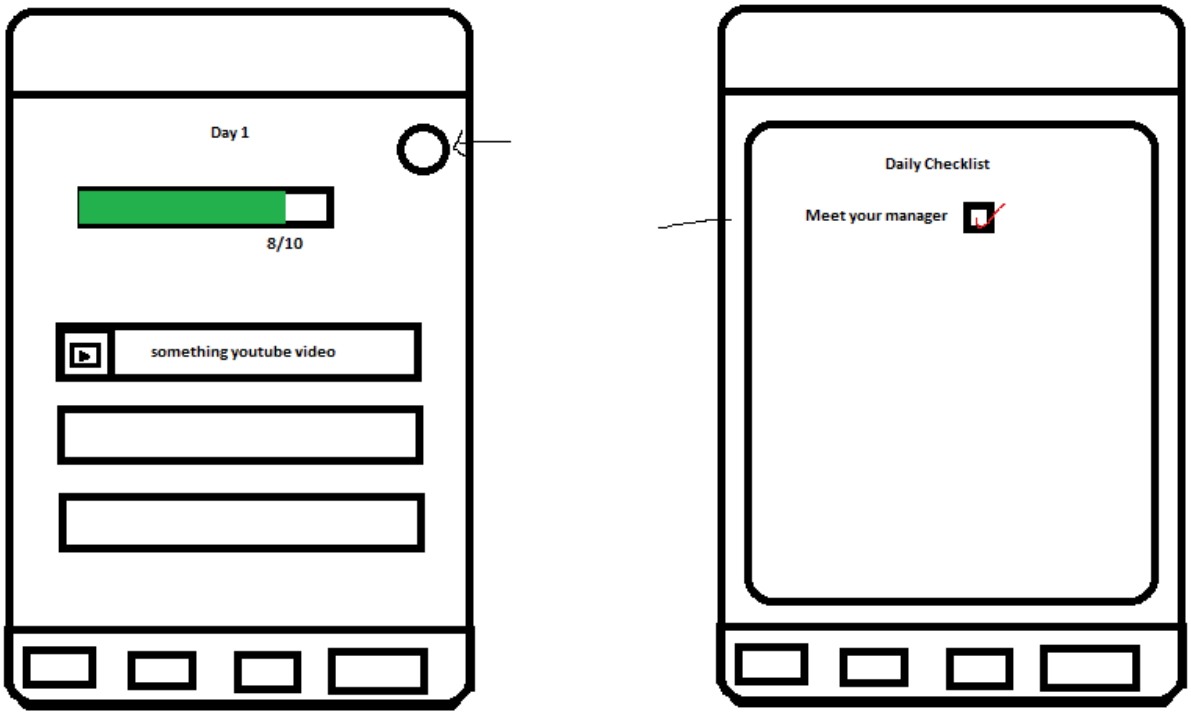


Module





Daily Module



Home page