

## **Artifact Description**

The artifact is an Android weight tracker app that was originally developed for an android app development course, with a local SQLite database and local authentication. I transformed it to use a noSQL Firebase DB as well as Firebase Authentication service, that is encrypted as well as online. Additionally, I created a web interface that allows users to see the top weight losers as well interact with the data by data, and see weight trends.

## **Justification for Inclusion**

I selected this enhanced Android weight tracker app for my ePortfolio because it demonstrates my ability to modernize an application database and make it suitable for scale.

- Cloud Integration: Migrating from a local SQLite database to Firebase Cloud Firestore.
- NoSQL Database Design: changing the data structure for a NoSQL environment as well as setting up the project database for scale, since NoSQL databases tend to be more suitable for that out of the box.
- Security Implementation: Utilizing Firebase's security features to ensure data privacy and that data is encrypted in flight as well as in store.
- real-time database: implemented functionality to improve collaboration among developers.
- Web Interface: Developed a web dashboard that allows users to visualize and interact with weight data across different dates and users

## **Course Outcomes**

This enhanced artifact shows my ability to meet course outcomes that were not met before:

- Creating real-world, user-centered solutions that consider modern industry requirements like scalability, security, and collaboration.
- Illustrating practical problem-solving abilities in managing data structures and database design choices.
- Applying industry best practices to deliver a product that meets user needs effectively and securely.
- Demonstrating the ability to create interfaces for the data, which is always a plus for user experience.

## **Reflection**

I learned several valuable lessons:

- Cloud Integration: I gained practical experience in migrating a local database to a cloud-based solution
- NoSQL Database: I learned how to adapt data structures for a NoSQL environment, which was my first introduction to NoSQL, a completely different paradigm.
- Scalability: I learned how does database design and scalability are related.
- Data Visualization: Creating the web interface taught me how to visualize time-series data and provide interactive elements for data exploration

Challenges faced during the enhancement process:

- Data Migration: Transferring data from SQLite to Firestore while maintaining data integrity, also required me to create a new design for my data.
- Security Implementation: Ensuring proper security rules were in place to protect user data in the cloud environment storage.
- Web Development: Integrating the Firebase database with a web framework and creating interactive data visualization components

This enhancement process has improved my understanding of modern mobile app development practices. Cloud definitely felt like a truly modern way of managing the backend. I also learned about scalability in databases in relation to architecture.

a user signup

The screenshot shows the Firebase Authentication console for a project named "Weight Tracker". The "Users" tab is selected, displaying a table with one user. The user's identifier is "ibra.b9438@gmail.com", created on "Oct 6, 2024", and signed in on "Oct 7, 2024". The User UID is "a0Db1S40BUPadem4tLRIZFW...". The interface includes a search bar, an "Add user" button, and a table with columns for Identifier, Providers, Created, Signed In, and User UID. The bottom of the table shows "Rows per page: 50" and "1 - 1 of 1".

Weight Tracker

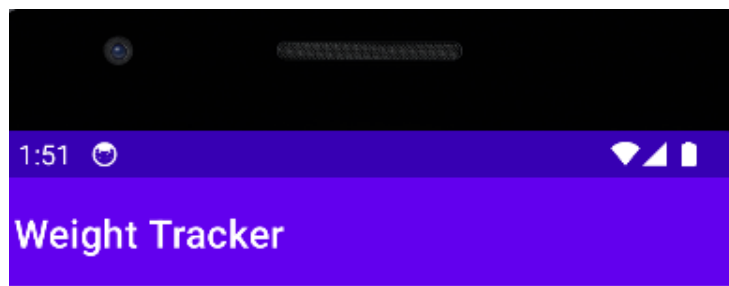
## Authentication

Users Sign-in method Templates Usage Settings Extensions

Search by email address, phone number, or user UID [Add user](#)

Identifier	Providers	Created	Signed In	User UID
ibra.b9438@gmail.com		Oct 6, 2024	Oct 7, 2024	a0Db1S40BUPadem4tLRIZFW...

Rows per page: 50 1 - 1 of 1



## Set Weight Goal

Enter your weight goal

ADD GOAL

## Current Weight Goal

96.0 kg

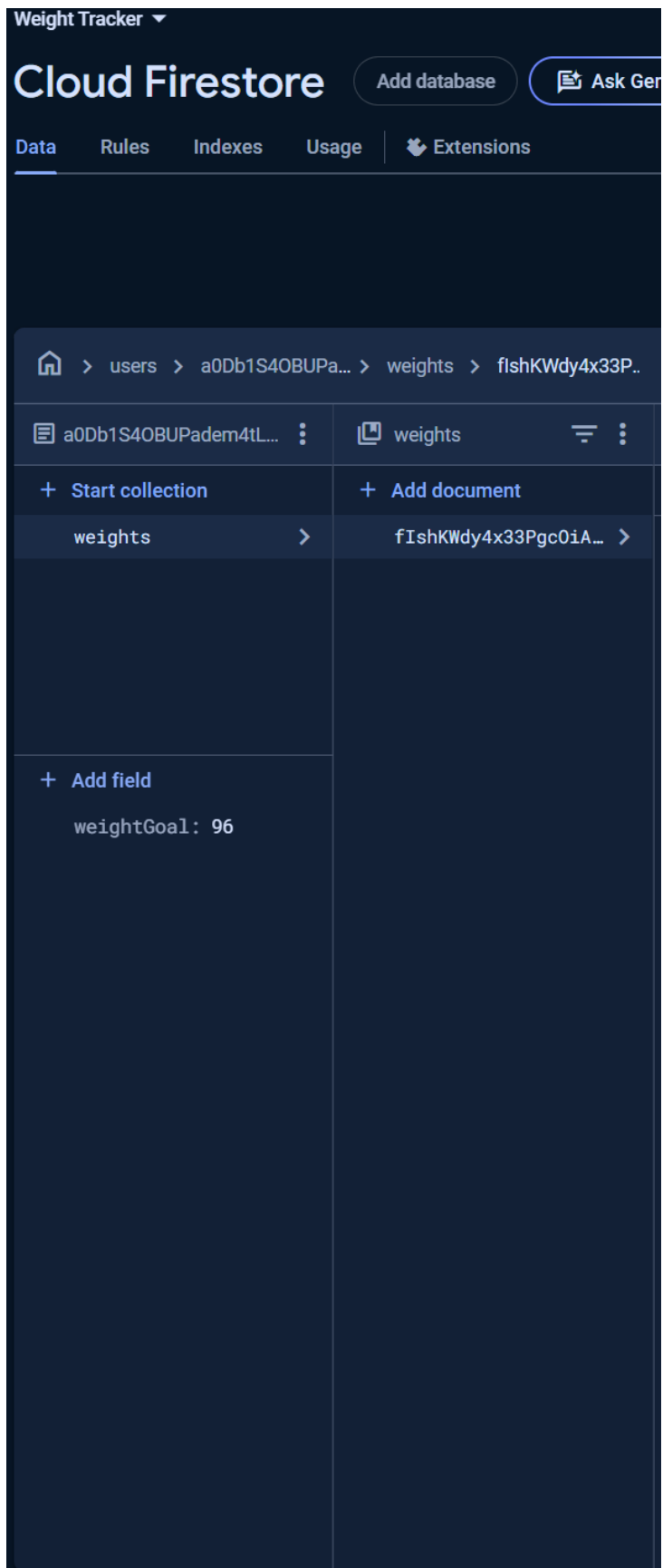
DELETE

TO WEIGHT ENTRY



Login successful

a successful login attempt.



a picture of the database, with an autoID

related to the user account, their current weight goal. The app supports multiple users.