Software Development Documentation

Produced for:
Innovators

Produced by:
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Overview

The Innovators application is designed to read continuous sensor data from a server. To this end an assistive tool, which is Firebase, was used to receive and store data while keeping in sync with the sensor clocks.

The project's main aim is to display the read data to the user in order for the user to keep track of vital information regarding the car and the driver within. Therefore, the application is very crucial when looking from the safety vantage point. Moreover, it is an innovative tool to monitor sensitive information at a range.

Application Scope and Necessity

With emphasis on safety and innovation, the Innovators application was designed so that vital aspects of both the car and the driver could measured and monitored; such aspects include heart rate and degree of focus of the driver and in the case of the car they include measurements of current, battery life, relative distances and speeds of nearby cars, etc.

This application could be applied to a variety of trials concerning different cars and drivers of diverse expertise as it is suited to the general frame of work, which is to relate directly to sensor data and display said data without interfering in neither the driver's nor the car's functions.

Milestones

Milestone 1: At first the realtime database offered by Firebase projects was chosen to upload the sensor data to and the necessary input components were identified and the application structure was built on them in terms of classes and objects created to be later used in order to retrieve the data from the database.

Milestone 2: Implementation began by connecting the application skeleton to Firebase utilities, then constructing the relevant classes for the data.

Milestone 3: Methods to read the data from the database and GUI tools to display were incorporated into the application software.

Testing

The testing procedure was first applied using a toy data set (shown below) entered manually in the realtime database then real sensor data was sent to the database for testing.
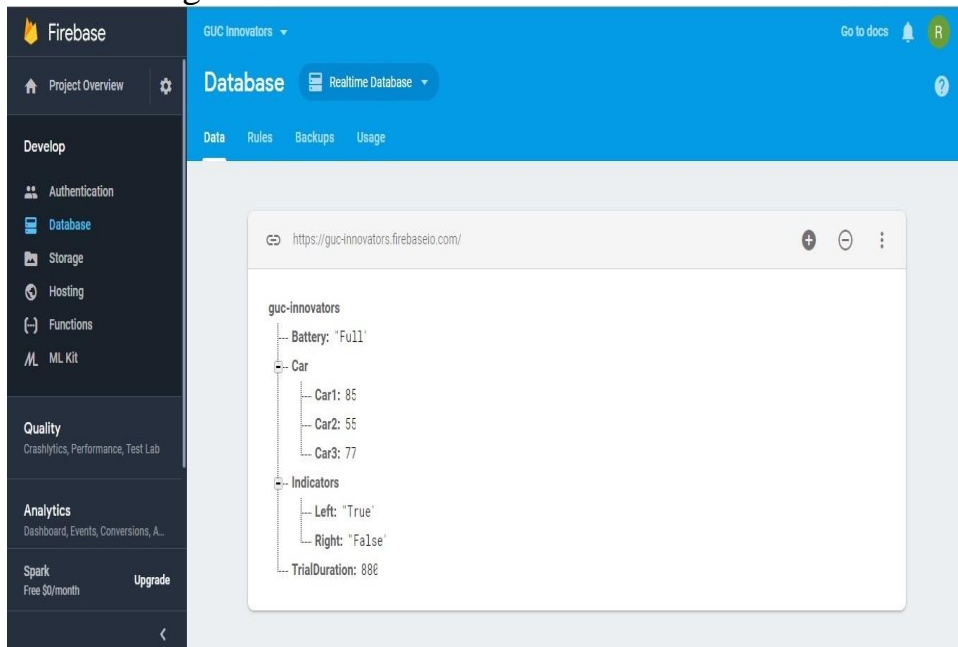
How To

Users of this application are not expected to know any technical information about cars, software or databases. Using the interactive GUI the user will be able to scroll up and down the mobile screen in order to view all the readings while they are automatically updated. Below are two screenshots of the interface shown to the user.

References
https://www.101apps.co.za/index.php/item/182-firebase-realtime-database-tutorial.html
https://firebase.google.com/docs/database/android/start