Mobile Application

For the MedCare mobile application, we used Swift and Xcode to build an IOS application, which the caretaker uses to manage their patients and send them the necessary reminders.

The application is connected to a Firebase Database, and when a user registers with the account, their account is saved in the database. That way, they are able to login at a later time.

When the user adds a new patient, the patient details are also added to the database, under a child database called *Patients*, which is also accessible by the Raspberry Pi.

Raspberry PI

The Raspberry Pi then keeps track of when the pill dispenser is open or closed at the time the patient needs to take their pill. If the patient is supposed to take their pill at 2 PM, the pill dispenser sends an alert to the same Firebase database if the dispenser is still closed at that time. This was all implemented using Python.

However, if the dispenser is open, the pill dispenser sends a notification to the database saying the patient is all set.

The raspberry Pi sends all of this data to a child database in our database, called *Updates.*

In addition to sending data to *Updates*, the raspberry Pi also triggers a sound when it hasn't been opened.

Raspberry Pi & Firebase — setup and documentation

The first step was to configure the Raspberry to be accessed through a MAC (utilizing VNC and SSH by using the same WI-FI connection). Before we could start writing the python code for the Raspberry, we had to make sure that the Raspberry and our database could communicate. In order to do this, the following steps were carried out;

1. **Raspberry Pi python IDLE terminal → sudo apt-get update**
2. **Raspberry Pi python IDLE terminal → sudo apt-get install python-dev**
3. Install the GPIO package by writing the command
   sudo apt-get install rpi.gpio.
4. Install the Firebase package by writing the command
   sudo pip3 install python-firebase.
5. Creating a python script.
6. Before writing the script, we had to make sure the script would send data to the firebase, by writing the two lines:
   from firebase import firebase

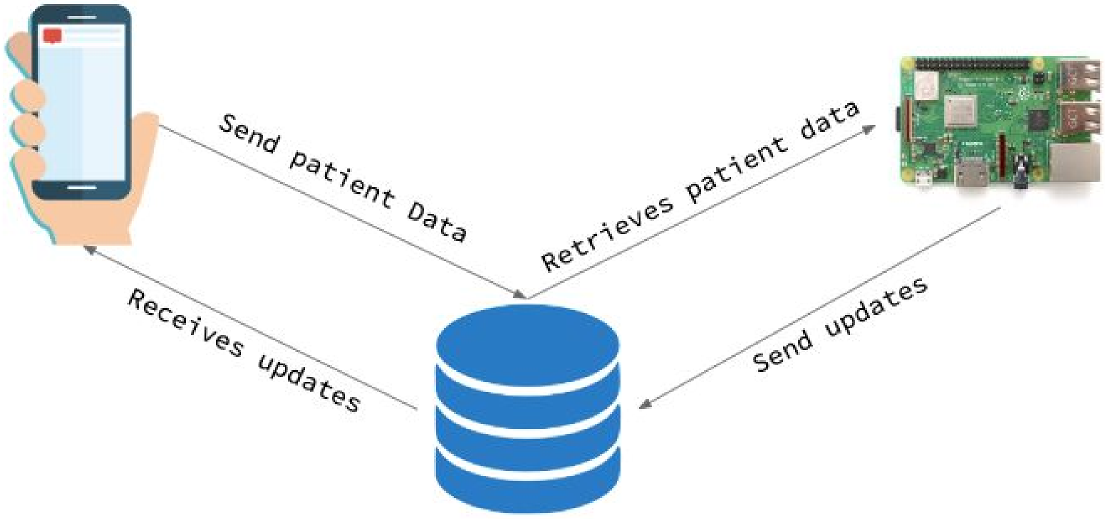
FBConn = firebase.FirebaseApplication('https://medcare-c3184.firebaseio.com/', None) ➞ where the URL is taken from the Firebase database project.

After following through with these steps, we could start writing the python code which can be found in the GitHub repository (script.py).

Mobile Application

The application then grabs data from the child database *Updates*, and alerts the caretaker if the pill dispenser is still closed. The Caretaker receives this alert and then calls the patient from the app. This was all implemented in Swift.

Diagram of How It All Works


Send patient Data
Retrieves patient data
Receives updates
Send updates