Health Monitoring System

SCDC PROB. 3.3

The system consists of three parts :

- Android application
- Server or hub
- Micro controller modules

How it works:

- The modules emit data over Bluetooth which is captured by the app
- The app, on receiving signals, stores them in a database (SQLite) depending on what type of data it is
- The app, displays the data ordered by timestamp of the readings
- The app, can sync its data to an Apache2 server which runs a PHP script and is hosted on a PC
- The hub, on receiving requests stores them in MySql database so that the data can be monitored by the person's relatives
- The value however, is encrypted using an algorithm called RSA
- This means that only the relatives of the individual can only view the readings
- The app also contains Diet Data to be followed in case of abnormal readings
- The app contains map of nearby hospitals and pharmacies

About RSA Encryption

- RSA is an algorithm for public-key cryptography that is based on factoring large integers
- It requires two separate keys, one of which is secret and one of which is public
- One key encrypts the plain text, and the other decrypts the cipher text
- The app generates 1024 bit keys
- The data is encrypted using public key and sent to the server
- Upon request the monitor (patient's relatives) can view the decrypted data by decrypting it in their app
- Thus the data is completely secured during transmission

Signing Up

- Upon Signing Up , the password is hashed, and then a public and private key is generated for the user
- Below image shows that a column is created in the user database in the server

Name:

Walter White

User Name:

heisenberg

Password:

•••••••••

Retype Password:

•••••••••

Phone:

963852741

SIGN UP

+ Options

		unique_id	name	user_name	password	phone	public_key	private_key
☐	🖉 Edit ⧉ Copy ⊖ Delete	33	Walter White	heisenberg	4936ba4cbe27a1b90df25b247315d7	963852741	MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDa6i8iFx2pP7...	MIICdQIBADANBgkqhkiG9w0BAQEFAASCAl8wggJbAg
☐	🖉 Edit ⧉ Copy ⊖ Delete	35	Frank Underwood	thepresident	b47ce8348a3619e6deecfb347cb85c11	147258369	MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQCvENjILlyote...	MIICdwIBADANBgkqhkiG9w0BAQEFAASCAmEwggJdA

↑   ☐ Check all   With selected: 🖉 Edit   ⧉ Copy   ⊖ Delete   🖨 Export

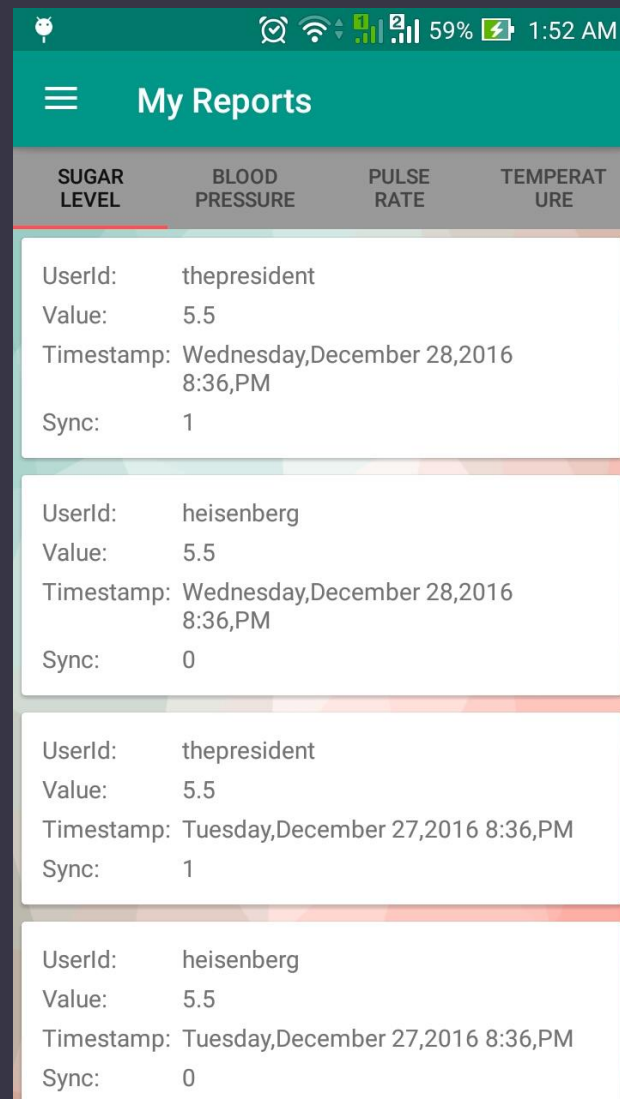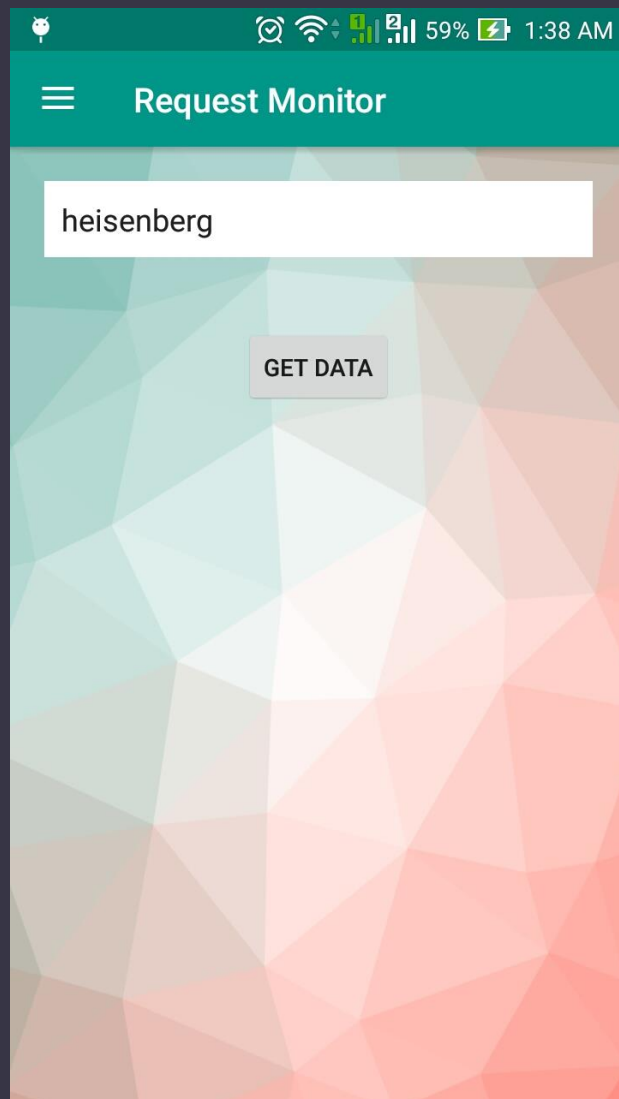☐ Show all   Number of rows: 25   Filter rows: [Search this table]

Interpreting the data (sample data)

- The vital signs readings are displayed which are categorised by type of value and sorted by timestamp
- UserId specifies the user id of the data displayed
- Value depends on the type of data
- Timestamp shows the time of recording of data
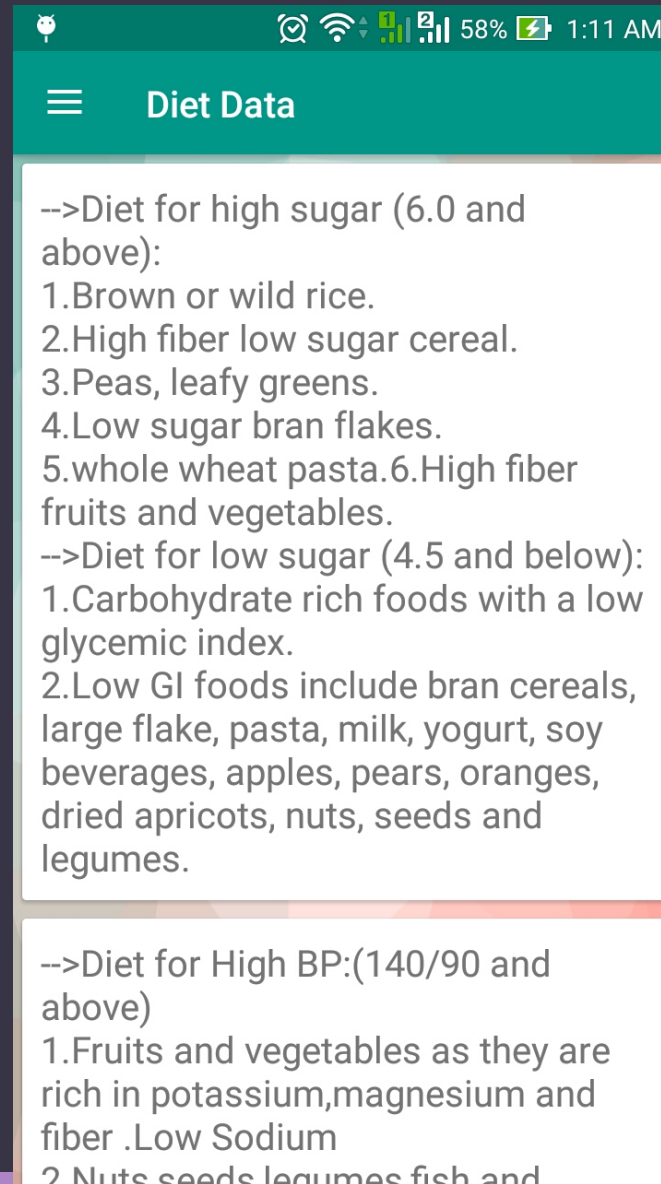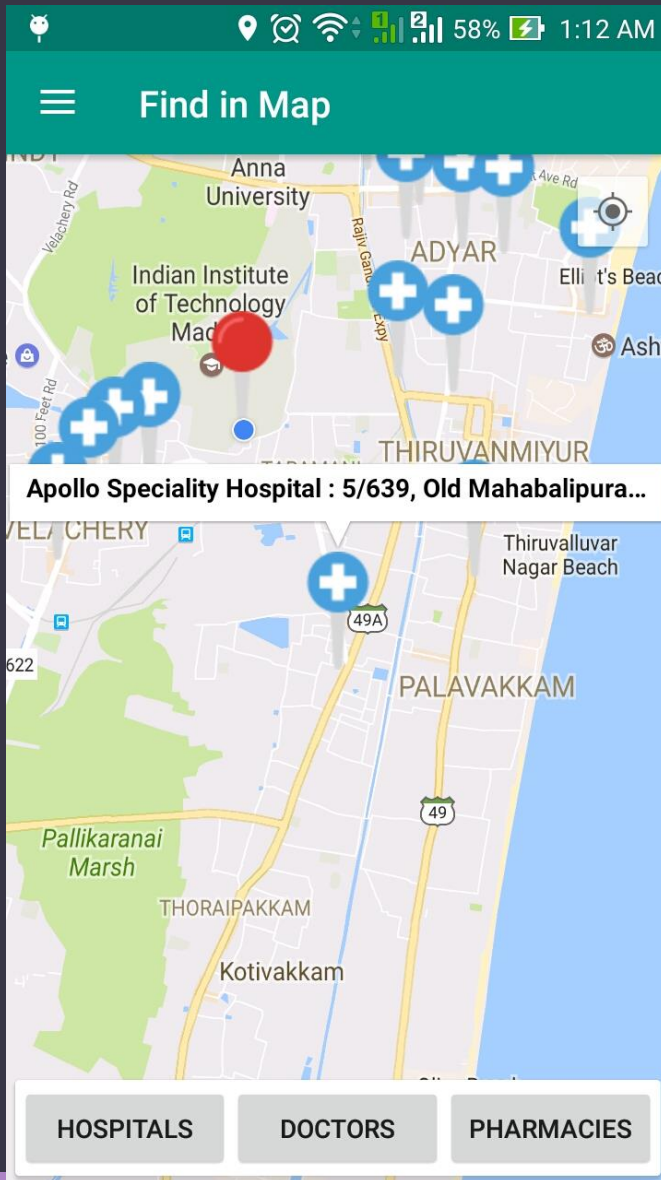- Sync displays if the data has been synced with the server (0-not synced, 1-synced)
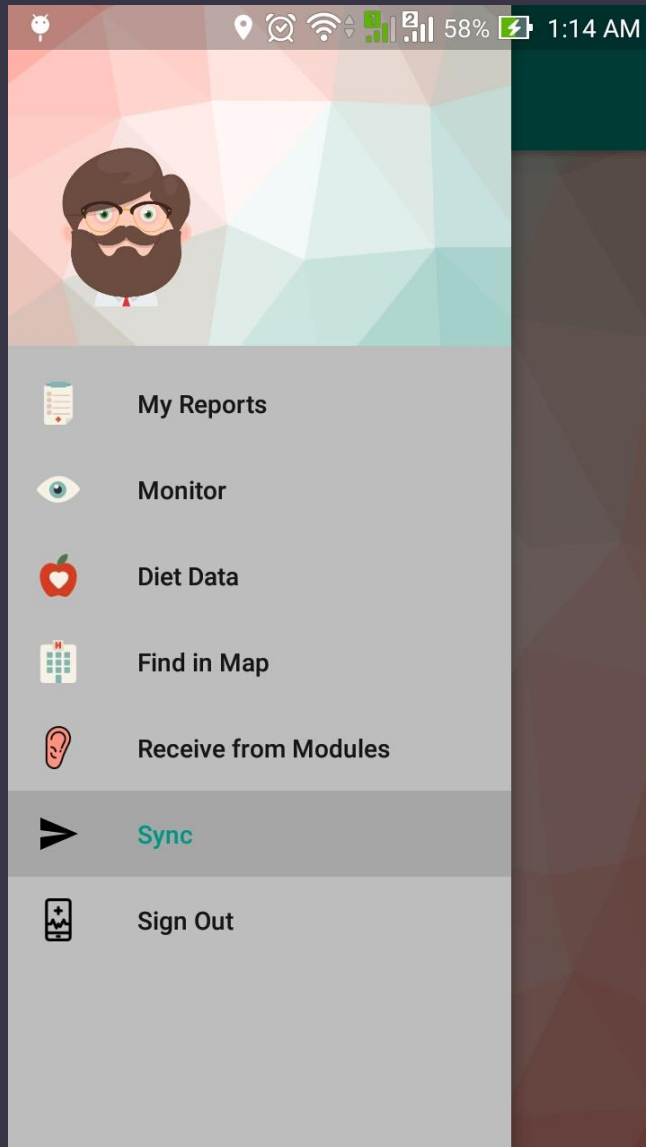
On syncing with server, the data is sent to the hub and stored in encrypted form

Request other person's data to display their data and monitor their vitals

Other features of the app includes diet data and finding nearby hospitals, pharmacies etc...

Thank You