

# Health Monitoring System

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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

Erudite

Name:  
Walter White

User Name:  
heisenberg

Password:  
.....

Retype Password:  
.....

Phone:  
963852741

SIGN UP

# 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

+ Options

	unique_id	name	user_name	password	phone	public_key	private_key
<input type="checkbox"/> Edit Copy Delete	33	Walter White	heisenberg	4936ba4cbe27a1b90df25b247315d7	963852741	MIGfMA0GCSqGSib3DQEBAQUAA4GNADCBiQKBgQDa6i8iFx2pP7...	MIICdQIBADANBgkqhkiG9w0BAQEFAASCAI8wggJbAg
<input type="checkbox"/> Edit Copy Delete	35	Frank Underwood	thepresident	b47ce8348a3619e6deecfb347cb85c11	147258369	MIGfMA0GCSqGSib3DQEBAQUAA4GNADCBiQKBgQCvENjilLyote...	MIICdwIBADANBgkqhkiG9w0BAQEFAASCAMewggJdA

☐ Check all
 With selected:
 ☐ Edit
 ☐ Copy
 ☐ Delete
 ☐ Export

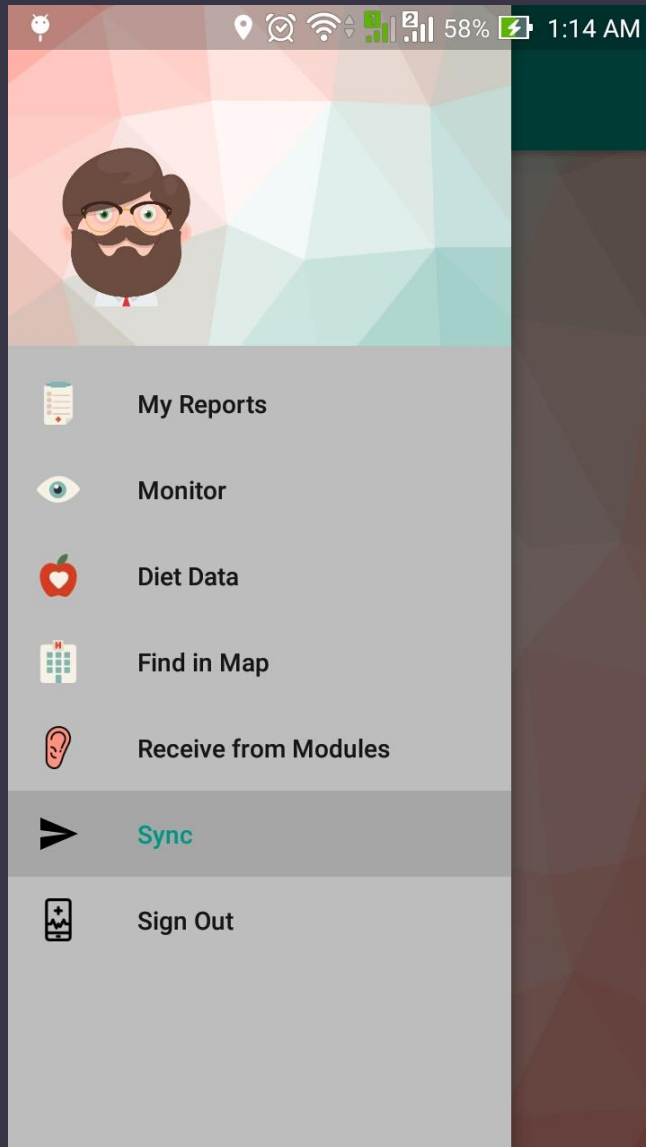
☐ Show all
 Number of rows: 25
 Filter rows: Search this table

The screenshot shows a mobile application interface with a teal header bar containing a hamburger menu icon and the title 'My Reports'. Below the header is a tab bar with four categories: 'SUGAR LEVEL', 'BLOOD PRESSURE', 'PULSE RATE', and 'TEMPERATURE'. The 'SUGAR LEVEL' tab is currently selected. The main content area displays a list of four reports for the user 'thepresident'. Each report entry shows a 'Value' of 5.5, a 'Timestamp' indicating the date and time of recording, and a 'Sync' status of 0.

SUGAR LEVEL	BLOOD PRESSURE	PULSE RATE	TEMPERATURE
UserId: thepresident Value: 5.5 Timestamp: Wednesday, December 28, 2016 8:36, PM Sync: 0			
UserId: thepresident Value: 5.5 Timestamp: Tuesday, December 27, 2016 8:36, PM Sync: 0			
UserId: thepresident Value: 5.5 Timestamp: Monday, December 26, 2016 8:36, PM Sync: 0			
UserId: thepresident Value: 5.5 Timestamp: Sunday, December 25, 2016 8:36, PM Sync: 0			

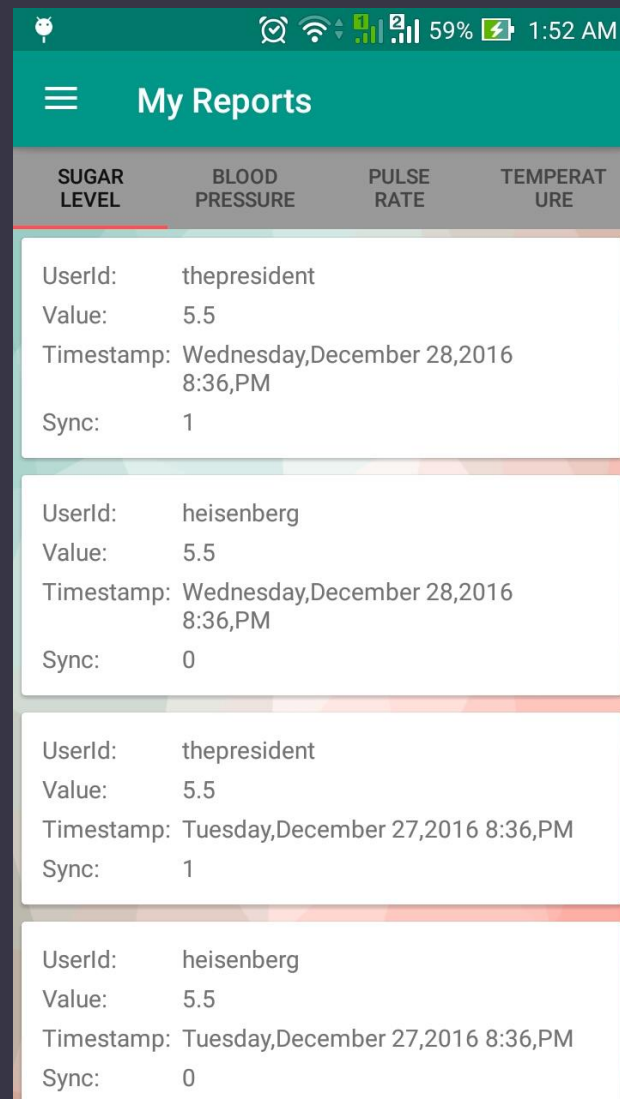
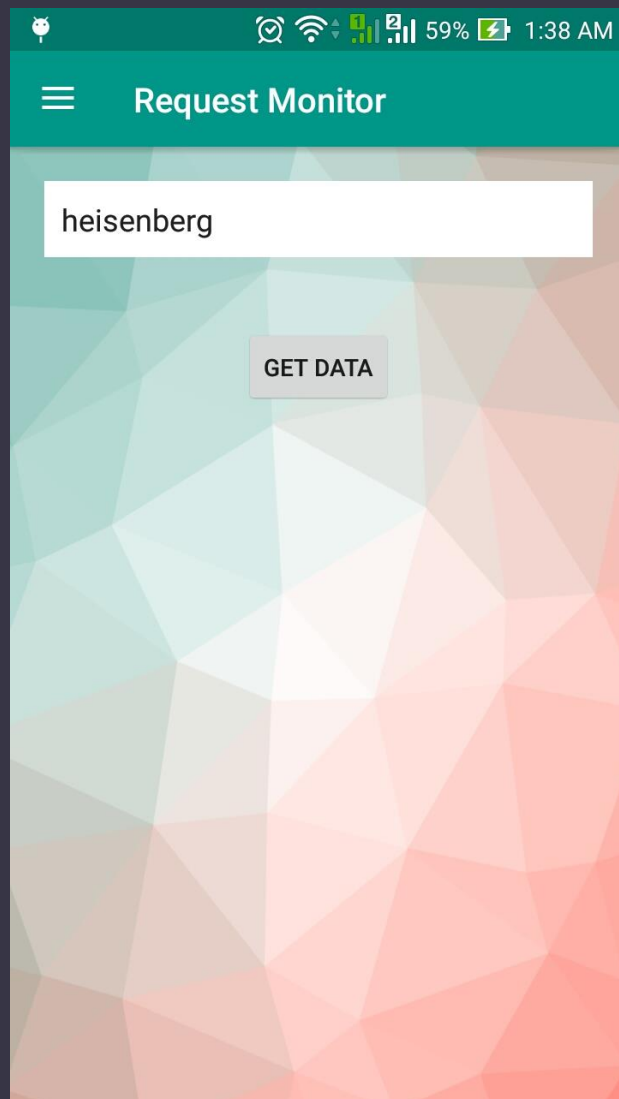
# Interpreting the data (sample data)

- 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)



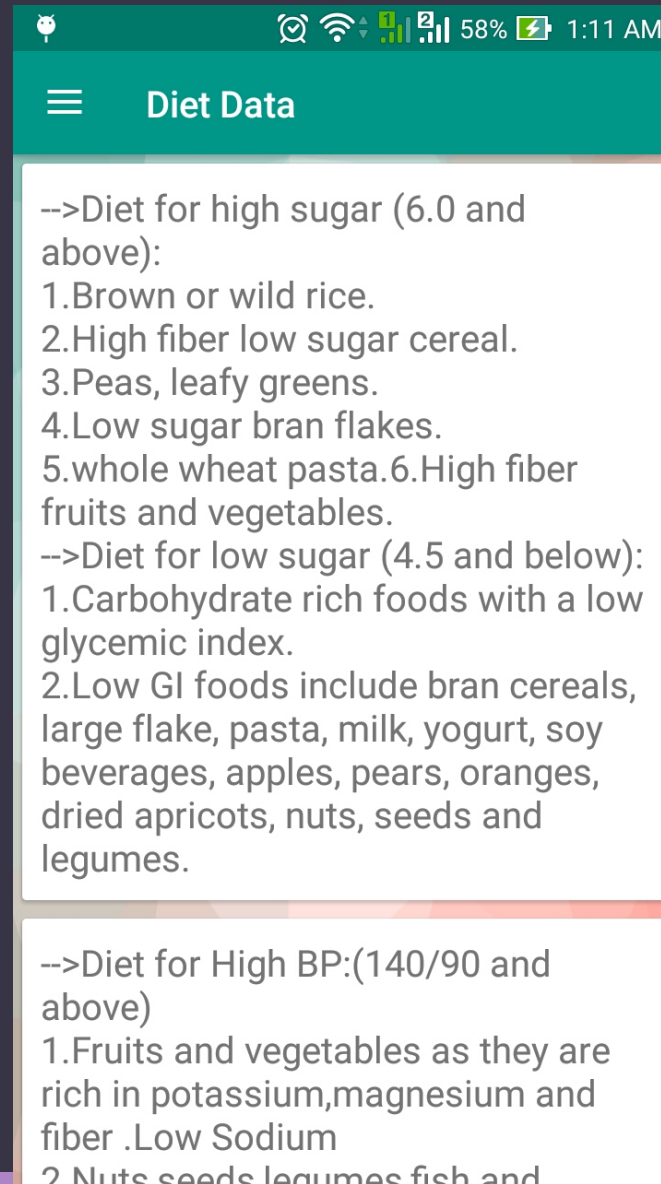
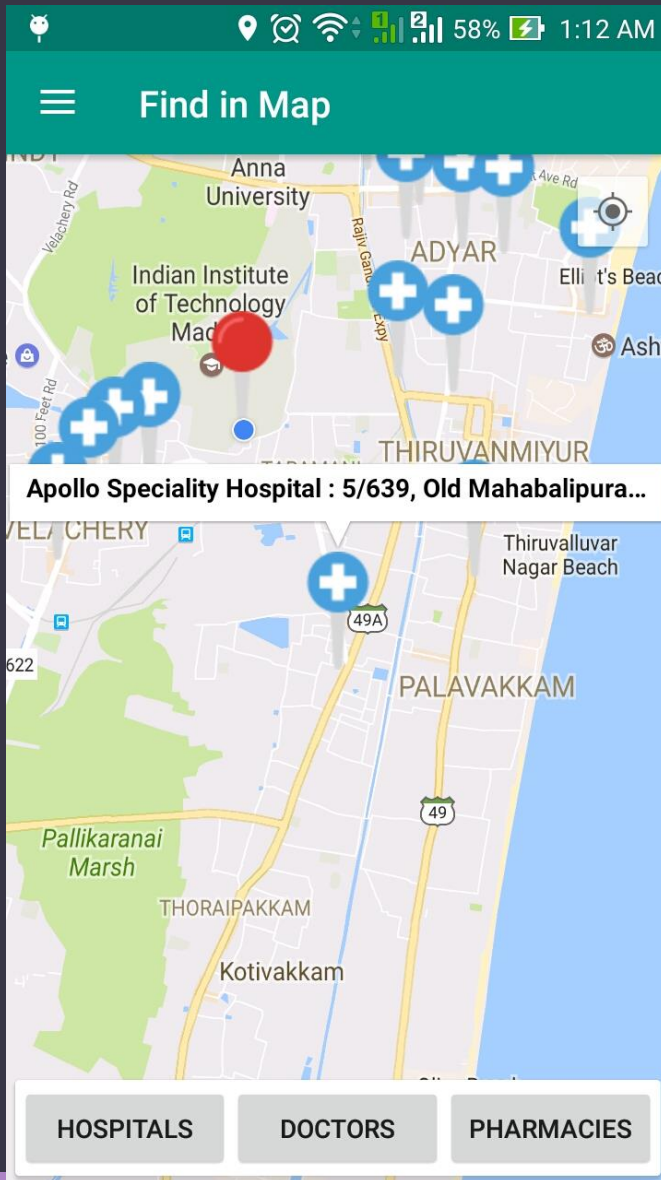
On syncing with server, the data is sent to the hub and stored in encrypted form

		unique_reading_id	user_id	recorded_timestamp	value	type	in_sync	sync_timestamp
<input type="checkbox"/>	Edit Copy Delete	722	heisenberg	1482957386	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	723	heisenberg	1482870986	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	724	heisenberg	1482784586	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	725	heisenberg	1482698186	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	726	heisenberg	1482611786	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	727	heisenberg	1482525386	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	728	heisenberg	1482438986	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	729	heisenberg	1482352586	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	730	heisenberg	1482266186	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	731	heisenberg	1482179786	Oo3/bFMxa0yQ0pnaENeNeDsLMtCiUHaHGkyO2jCEm91/b1cR3H...	4	1	1483213994
<input type="checkbox"/>	Edit Copy Delete	732	thepresident	1482870983	UOyPMY9aUcj9jDcGNJqLR4A61mUjj7nb/4p0w10FnNDD2j+F4K...	1	1	1483214823
<input type="checkbox"/>	Edit Copy Delete	733	thepresident	1482611783	UOyPMY9aUcj9jDcGNJqLR4A61mUjj7nb/4p0w10FnNDD2j+F4K...	1	1	1483214823



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





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

Thank You