IoT HomeCare System
User Manual

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Contents

1 Introduction

1.1 System Overview

The ReVA homecare system is composed of two parts, namely the mobile application and the Raspberry Pi (see description). The mobile application is the App that is on the phone. This App is used for three purposes:

- To register a patient, i.e. to put a patient's details in the system

- To register a subscriber, i.e. to put a non-patient's details in the system and link to a specific patient

- To view a patient's data

The Raspberry Pi connects to the medical devices. It needs to be set up before it can be used.

1.2 Definitions

- Raspberry Pi
  The green, card-sized, electronic-looking thing that was provided. One can plug in wires to this box as well as see lights when it is on.

- Mobile Application
  A program that runs on a phone. Specifically in this context, it will refer to the dowloaded ReVA Application.

- Subscriber
  Any person who is not a patient.

1.3 System Users

There are two intended users for this system. The first is the patient. The patient is the one who will be connected to the medical devices and whose vital information will be monitored.

The other user is a subscriber. This includes:

- The caretaker

- A family member

- A medical professional such as a doctor

The subscriber is the person who views the patient's vital information on the mobile application.

2 Application

2.1 Application Overview

The ReVA application is an android mobile application designed to report vitals information of registered bedridden patients to registered subscribers (this includes the patients themselves). It is a tool meant to bridge the distance gap between caretaker and patient, allowing for real time vitals data to be monitored from any location with access to WiFi as well as trigger notifications when vitals stray from the norm.

ReVA also has the functionality to display statistical and historical vitals information for long term monitoring of patient health. There is also an advice section that may be viewed for additional help. Advice may also be triggered based on notification alerts.

2.2 Visual Guide to Mobile Application

Figure 1: The login screen

Figure 2: The registration screen 1

Figure 3: The registration screen 2

Figure 4: The registration screen 3

Figure 5: The registration screen 4

Figure 6: The notifications screen

2.2.1 Main Login Screen (figure 1)

1. The login button to be clicked once all necessary information has been filled out.
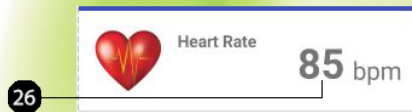
Figure 7: The real-time data screen 4
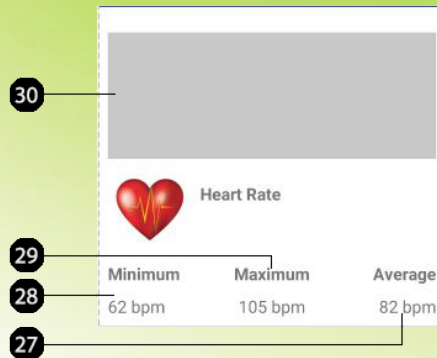
Figure 8: The statistics screen

2. The registration link that may be tapped in case users do not have an existing login.

3. User password input section. (Needed for verification and validation before ReVA login).

4. User email address input section. (Used as a username to identify users).

2.2.2 First Page of Registration (figure 2)

NOTE: used by both subscribers and patients

5. The continue button to proceed with the registration.

6. Yes/No radio button input to decide whether the user is a patient or subscriber.

7. Password confirmation input.

8. Password input for password that will be used for user login.

9. Email input for the email that will be used for user login.

2.2.3 Second Page of Registration (figure 3)

NOTE: meant only for patients

10. The continue button for patients to proceed with the registration process.

11. Confirm password input for subscriber password.

12. Subscriber password input. (Will be used to verify and validate users wishing to subscribe to current patient).

13. Username input. (Will be used to identify patients).

14. Address input. (Stored in case of serious emergencies).

2.2.4 Third Page of Registration (figure 4)

NOTE: meant only for patients

15. Register button. (Registers patient that has filled in all necessary information).

16. Bedridden reason radio input section. (Used to store the reason for patient being bedridden).

17. Weight input. (Used for measuring patient vitals more accurately).

18. Height input. (Used for measuring patient vitals more accurately).

19. Age input. (Used for measuring patient vitals more accurately).

2.2.5 Fourth Page of Registration (figure 5)

NOTE: meant only for subscribers (see description section)

20. Register button for registering a subscriber.

21. Password to subscribe input. (Used to verify and validate subscriber).

22. Patient subscribing input. (Used to determine patient to which user wishes to subscribe).

23. Relation to patient input. (Used to determine the relation the subscriber has to the patient).

2.2.6 Notification Alerts (figure 6)

24. Notification alert with title describing what vital it is reporting on and the description about what has gone wrong.

25. Advice button. (Used when user wishes to get advice about the notification).

2.2.7 Real Time Data Screen (figure 7)

NOTE: Displays real time vitals data represented by an icon, a tag and a value.

26. The current real time value of the vital beig monitored.

2.2.8 Statistics and History Screen (figure 8)

NOTE: . Displays statistical and historical vitals information in the form of a graph as well as minimum, maximum and average values for the vitals.

27. The average value of the vital.

28. The minimum value of the vital.

29. The maximum value of the vital.

30. The graph representing the historical data of the vital.

2.3 Patients

You are the patient. This is all about and for you. Patients will have access to their own vitals information as well as be given the opportunity to pick their own passwords to protect said information. If a patient is unable to set up their own account with ReVA, a caretaker should assist in the process.

1. Logging in
   Patients will be prompted to log in. If a patient has an existing login, skip to step 3.

2. Registering

   If a patient does not have a login, they may follow the registration link to fill in their personal information and register with ReVA. Patients will have to choose their own password to login as well as a subscriber password which will be used to verify subscriber validity. After they have registered, they may repeat step 1.

3. Logged in

   Now that a patient is registered and logged into the system, they may begin using it.

ReVA is designed to be accomodating and easy to use. Once a patient logs in, they are taken to the main screen which is comprised of two tabs: one for real time data, and the other for statistical and historical data. They may switch tabs by either swiping or tapping. See above image illustrations for more details.

2.4 Subscribers

Subscribers follow very similar steps as the patient, but they differ in that they are not required to provide additional personal information but they do have to provide a subscriber password. Since subscribers are normally caretakers (i.e. family, doctor, nurse, lover etc...) of the patient, the patient must provide them with their subscriber password so that the subscribers may subscribe to them.
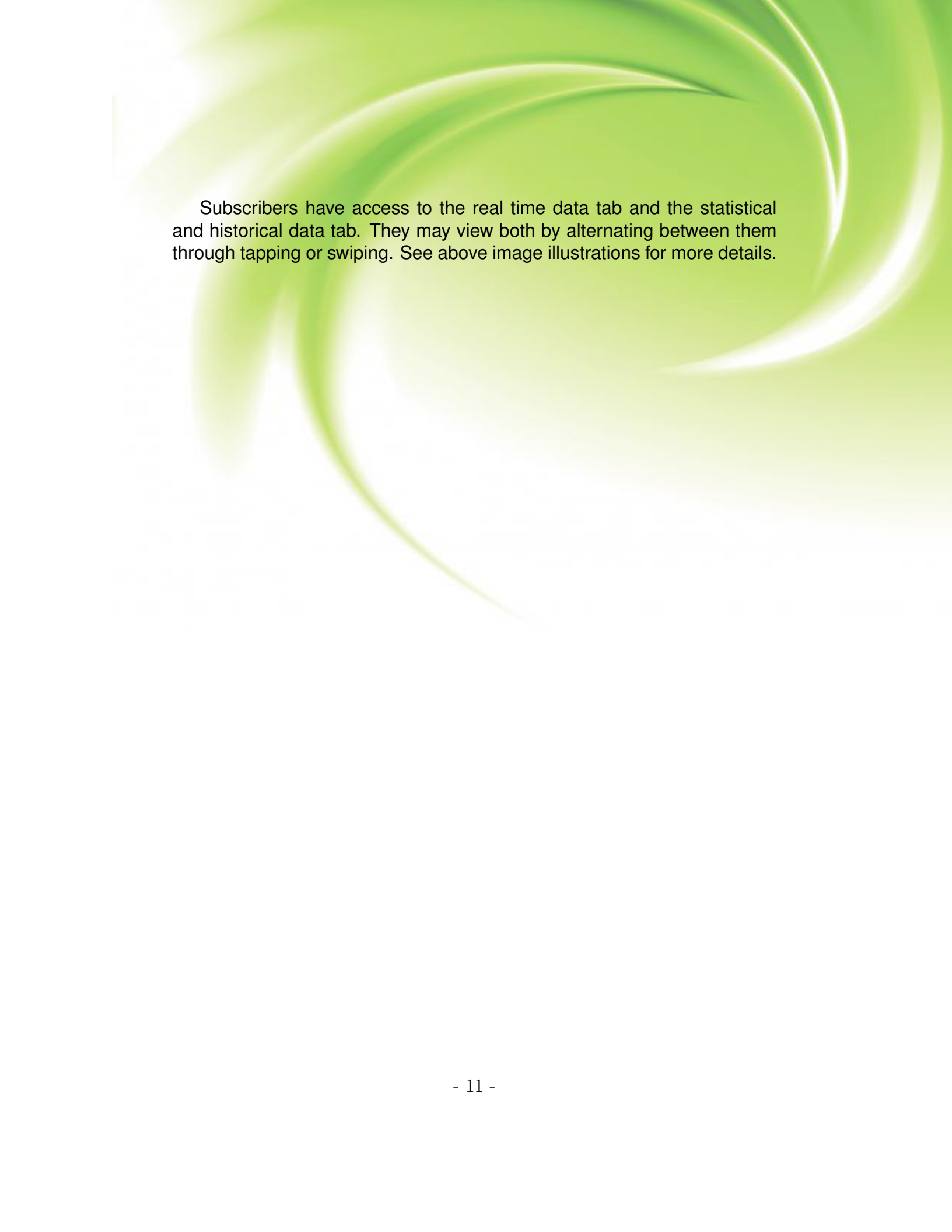
1. Logging in

   Subscribers will be prompted to log in. If a subscriber has an existing login, skip to step 3.

2. Registering

   If no login exists for the subscriber, they may follow the registration link to register with ReVA. Once they have provided the necessary details and input an appropriate subscriber password, they may register. Once registered they may repeat step 1.

3. Logged in

   Now that the subscriber is registered, subscribed to a patient and logged in, they may begin using the system.

Subscribers have access to the real time data tab and the statistical and historical data tab. They may view both by alternating between them through tapping or swiping. See above image illustrations for more details.

3 Raspberry Pi

3.1 Start Up

Required Equipment:

- ReVA Raspberry Pi.

- Rasberry Pi charger.

- Double adapter.

- internet connection.

  For initial set up only:

- Screen.

- Mouse.

- Keyboard.

- VGA to HDMI converter (Depends on screen).

- HDMI to HDMI cable or VGA to VGA cable (Depends on screen).

Steps to set up Raspberry Pi:

- Ensure that there is a WiFi connection in the room that the Pi is to be installed in.

- Set up the screen.
  -Will require a connection to the Raspberry Pi through one of the above mentioned cables.
  -Will be required to be Connected to a power outlet.

- Connect the mouse to the Raspberry Pi.

- Connect the Raspberry Pi charger to a power outlet and then to the Raspberry Pi.

- The Raspberry Pi will power on automatically and start up images should appear on the screen if all steps were followed correctly.

- Select the internet icon on the top right of the screen.

- Ensure that both the internet and WiFi are enabled.

- Select the Wifi connection that you will be using.

- Enter in the correct details.

- You should now be connected to the internet.

- The screen, mouse and keyboard are no longer needed and can be disconnected. DO NOT Disconnect the Raspberry Pi.

In the event that the Raspberry Pi is switched off:

- Turn off the power to the Raspberry Pi.

- Turn the power back on. The device should boot up again and will automatically connect to the internet.

In the event that the internet connection changes:

- You will have to go through the set up process from the start.

Unsure if Raspberry Pi Server is running?

- Connect the screen, keyboard and mouse to the Raspberry Pi.

- Power on the Pi as per the above mentioned steps.

- Hold CTRL + ALT and press T to open a terminal.

- In the terminal type the command top.

- Scroll through the running processes looking for a process that says "node" in the right most column.

- If the process exists, copy its process ID.
  -Press CTRL + C and then enter "kill [Process ID]" and continue following the steps.
  - If it is not there then continue following the steps.

- Open the file explorer.

- navigate to \Home\Reva\Zettalet

- Right click in the folder.

- Select "Open terminal here".

- Type "node zettalet" at the terminal prompt.

- You have successfully started the server.