

Installation and User Guide

Coursework 3

Principles and Design of IoT Systems

School of Informatics

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Chapter 1

Installation Guide

1.1 System Requirements

The app was built using Android SDK Build Tools 30.0.2 and Android Gradle Plugin 7.0.2. The compiler warns that the app is incompatible with Android Gradle Plugin 8.0.

The minimum SDK version required is version 23, the target SDK is version 30. There are no other requirements to install this app.

Chapter 2

User Guide

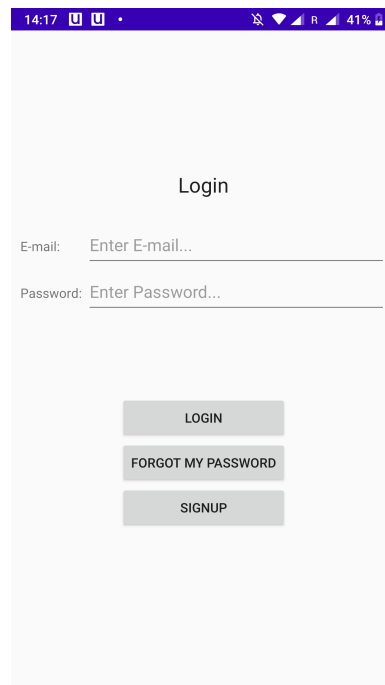
This section presents every part of the app and how each works. Section 2.1 talks about the login system, namely presents the login page and describes how you can create an account or reset your password. Section 2.2 guides you through the app's features how you can use them.

2.1 Login System

When you enter the app, you will be greeted by the login page. If you already have an account, you can just enter the e-mail you have signed up with and the password, press the "login" button and that will get you to the main menu. You can skip to section 2.2 of this user guide if that is the case.

If you do not have an account, you can create one by pressing the "Signup" button. The layout of the signup page is presented in section 2.1.1.

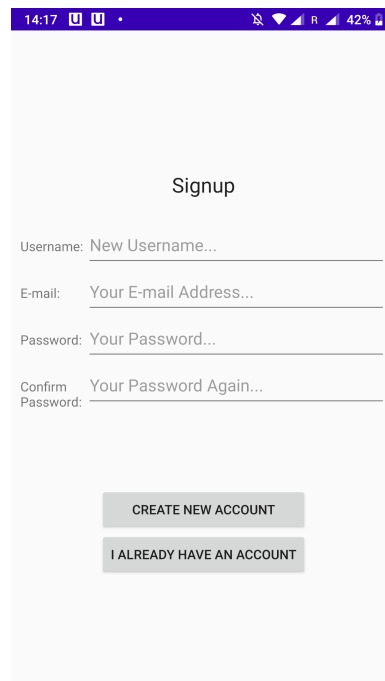
If you have an account but do not remember your password, you may press the "Forgot My Password" button, which will let you reset your password. This page is described in section 2.1.2.



A screenshot of a mobile application's login screen. At the top, a status bar shows the time 14:17, signal strength, Wi-Fi, and 41% battery. The screen has a light gray background. The title 'Login' is centered. Below it are two input fields: 'E-mail: Enter E-mail...' and 'Password: Enter Password...'. At the bottom, there are three buttons: 'LOGIN', 'FORGOT MY PASSWORD', and 'SIGNUP'.

2.1.1 Creating an account

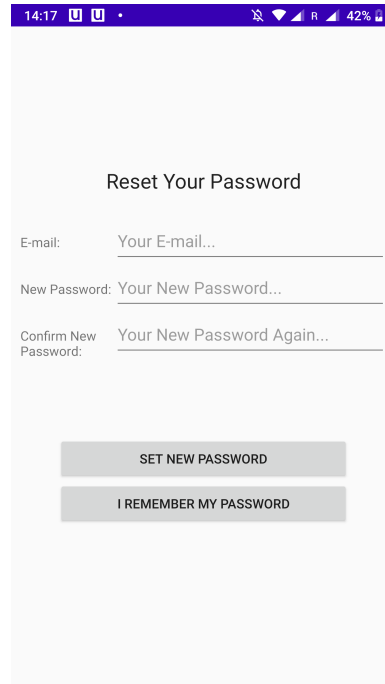
This page contains a form, which asks you to input new username, write down your e-mail address and type in your new password. Once you have filled in all the required information, you may press "Create New Account" button. A message will pop up on the screen to confirm whether the registration is successful or not. If it is successful, you may return to the Login page by pressing the "I already have an account" button.



A screenshot of a mobile application's signup screen. At the top, a status bar shows the time 14:17, signal strength, Wi-Fi, and 42% battery. The screen has a light gray background. The title 'Signup' is centered. Below it are four input fields: 'Username: New Username...', 'E-mail: Your E-mail Address...', 'Password: Your Password...', and 'Confirm Password: Your Password Again...'. At the bottom, there are two buttons: 'CREATE NEW ACCOUNT' and 'I ALREADY HAVE AN ACCOUNT'.

2.1.2 Reset Password

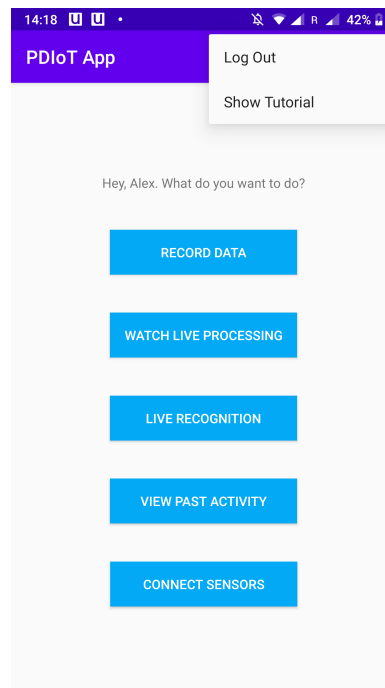
This page contains a form, which asks you to input the e-mail address you have used to create your account, and the new password you want your account to have. Once you completed the form, you may press the "Set New Password" button. A message will pop up on the screen to confirm whether resetting your password is successful or not. If it is successful, you may go back to the login page by pressing the "I remember my password" button.



The screenshot shows a mobile application interface for resetting a password. At the top, there is a status bar with the time 14:17, signal strength, and battery level at 42%. The main heading is "Reset Your Password". Below this, there are three input fields: "E-mail:" with the placeholder "Your E-mail...", "New Password:" with the placeholder "Your New Password...", and "Confirm New Password:" with the placeholder "Your New Password Again...". At the bottom, there are two buttons: "SET NEW PASSWORD" and "I REMEMBER MY PASSWORD".

2.2 Main Menu

The main menu page looks like this:



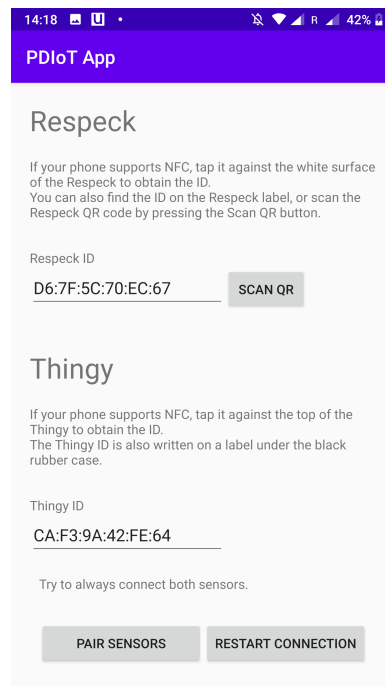
Firstly, you should connect your phone to the sensor(s). How you do this is presented in section 2.2.1. You can then check whether connecting was successful by seeing whether you receive live data from the sensor(s). This action is described in section 2.2.2.

After you have successfully connected the sensor(s), you can either record data (Section 2.2.3) or start an activity recognition AI (Section 2.2.4). If you previously used the activity recognition AI, you can access recordings of your sessions (Section 2.2.5).

If you are done with utilizing the app, you may log out by pressing the log out button. This will get you back to the login page.

2.2.1 Connecting the sensors

To connect the sensor(s), you may press the "Connect Sensors" button. This will get you to a page that looks like:



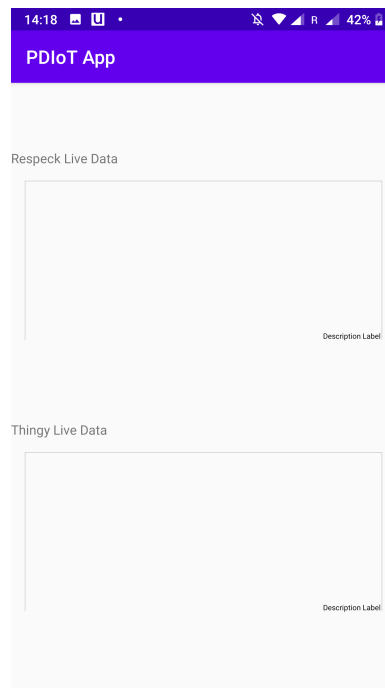
You can connect your Respeck sensor, your Thingy sensor, or both. Make sure your phone's Bluetooth is turned on.

To connect the Respeck, you have to insert Respeck's ID. You will find it on the back of your Respeck sensor. You may use the QR Scanner for convenience. Once the ID is filled in, shake the Respeck sensor to make sure it is awake. Then, press "pair sensors". A blue light should flash on your Respeck if connection is established.

To connect the Thingy, you have to insert Thingy's ID. You will find it under the black case, on the back of the sensor. You may use the QR Scanner for convenience. Make sure to turn on the sensor while you have the cover off. Once the ID is filled in and the sensor is turned on, you may press "pair sensors". A green light should flash on your Thingy if connection is established.

2.2.2 Watching live data from your sensor(s)

To watch live data from sensors, you may press the "Watch Live Processing" button. This will get you to a page that looks like:



If Respeck is connected, then under "Respeck Live Data" you should be able to see a graph that plots the real-time acceleration information retrieved from the Respeck sensor. If it is not connected, you will see an empty box instead, like in the image.

If Thingy is connected, then under "Thingy Live Data" you should be able to see a graph that plots the real-time acceleration information retrieved from the Thingy sensor. If it is not connected, you will see an empty box instead, like in the image.

2.2.3 Recording Data

If you want to collect data, you may press the "Record Data" button. This will get you to a page that looks like this:

14:18 PDIoT App

Record Data

Sensor type: Respeck Activity type: Sitting

Subject ID (UUN): s1234567 Notes: Enter note

START RECORDING CANCEL RECORDING STOP RECORDING

Thingy Live Data

Accel =
Gyro =
Mag =

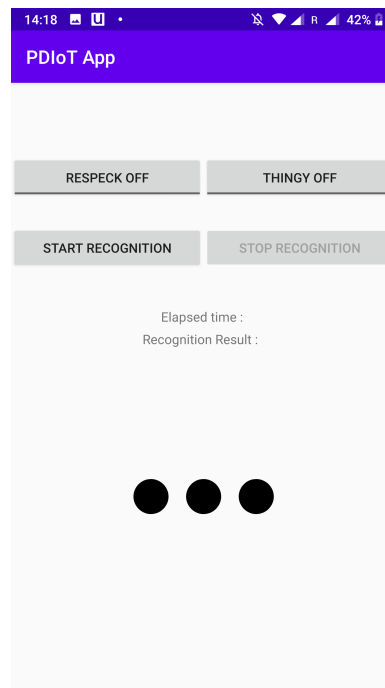
Respeck Live Data

Accel =
Gyro =

You have to select the sensor you want to collect data with, the type of activity you are going to do, input your Edinburgh student number and, optionally, you may write some additional notes. Then, you may press start recording. If you wish to cancel the recording, you may press "Cancel Recording". This will not save any data you collected. If you wish to stop the recording, you may press "Stop Recording". This will save your collected data in a CSV file, accessible from the file system.

2.2.4 Live Recognition

If you want to use the activity recognition AI tool, you may press "Live Recognition" button. This will get you to a page that looks like this:



To start the AI, You have to select which sensor(s) you want to use for recognition. You can select either Respeck or Thingy, or both. Once you selected the sensor(s), you may press "Start Recognition". Below the buttons, you will notice a timer has started, as well as a string telling you the activity you are doing. An image will appear as well, illustrating the guessed activity.

If you want to stop the tool, you may press "Stop recognition". This will save a text file with information about your session. The format of the file name is "Recording_{time at which you stopped the recognition process}". How you can see the file and what it contains is described in the next section.

2.2.5 View Past Activity

If you want to see recordings of your past sessions using the recognition AI tool, you may press "View Past Activity" button. This will get you to a page that looks like this:



What you can see is a list of files. They are ordered by "last modified", with the most recently modified file appearing on top of the list. Long-pressing on a file will prompt a dialogue box on the screen, asking you if you want to delete the file. One short click on a file will lead you to a page that looks like this:



The file contains information about the sensor. It writes your username at the top, then the date at which the recognition session happened, the sensors you used in the recognition process, duration of the whole session, as well as a list of recognised activities and the total duration of time during which you have performed each one of them in that session.