UA-DETI - Mobile Computing

Technical Project Report - Android Module

G04 – Tour Album

Course: Introdução à Computação Móvel

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Authors: **93127:** Diogo Emanuel de Oliveira Moreira

93406: Fábio Alexandre Andrade Carmelino

Motivation

Our application came from trying to think from the perspective of someone who loves to travel a lot and wants an application that lets them save some memories of their travels like, for example, saving photos of the places they visited.

Such an application aims at giving this type of user what they need. A map so they can see where they are and the interesting places close to them while also giving them a gallery where they can see all the pictures they took while travelling.

Although the application is mostly meant for users who like to travel it should be usable whether you want to take photos of a place near you or want to take photos of places in different countries. We want everyone to have an easier time saving photos of places they liked to visit.

Solution

To create our ideal application we implemented a map, a camera and a gallery so you can see your photos with the time and location of when they were taken.

Requirements:

- Show user's current location and places of interest nearby.
- Be able to take photos during their travels and save them in the gallery.
- Have a gallery with photos and their respective location and time.
- Be able to share your gallery with other users through a friends list.

All the requirements were achieved and for this we used some sensors and mobile functionalities.

Sensors & Mobile functionalities

- **GPS:** Get the users current location.
- **Map:** Represent the user's location and nearby places of interest.
- **Firebase Authentication:** Authentication of the user.
- **Firebase Storage:** Saving photos.
- **Realtime Database:** Saving photos and users information.
- **Camera:** Take photos.
- **QR Code:** Add friends to the user's friends list allowing them to see their gallery.

Architecture & technical options

Starting the application, we are met with some permissions needed for the application to run smoothly and the first screen which allows us to choose from logging in or use the application offline, the latter not being implemented. For the **register** and **login**, we are using **Realtime Database** to save the user's information and **Firebase Authentication** to be able to authenticate him.

After completing the register and logging in, we can see the **profile page** that shows the user his **profile picture** (can be opened in full screen by tapping it), **username** and **number of friends**. There are also some other options such as showing his **QR Code** so others can add him as a friend or scanning another person's QR Code to add them to the friends list and, of course, the logout. All the user's information is loaded with the help of a **StreamBuilder** which permits us to load the user's information from firebase in real time.

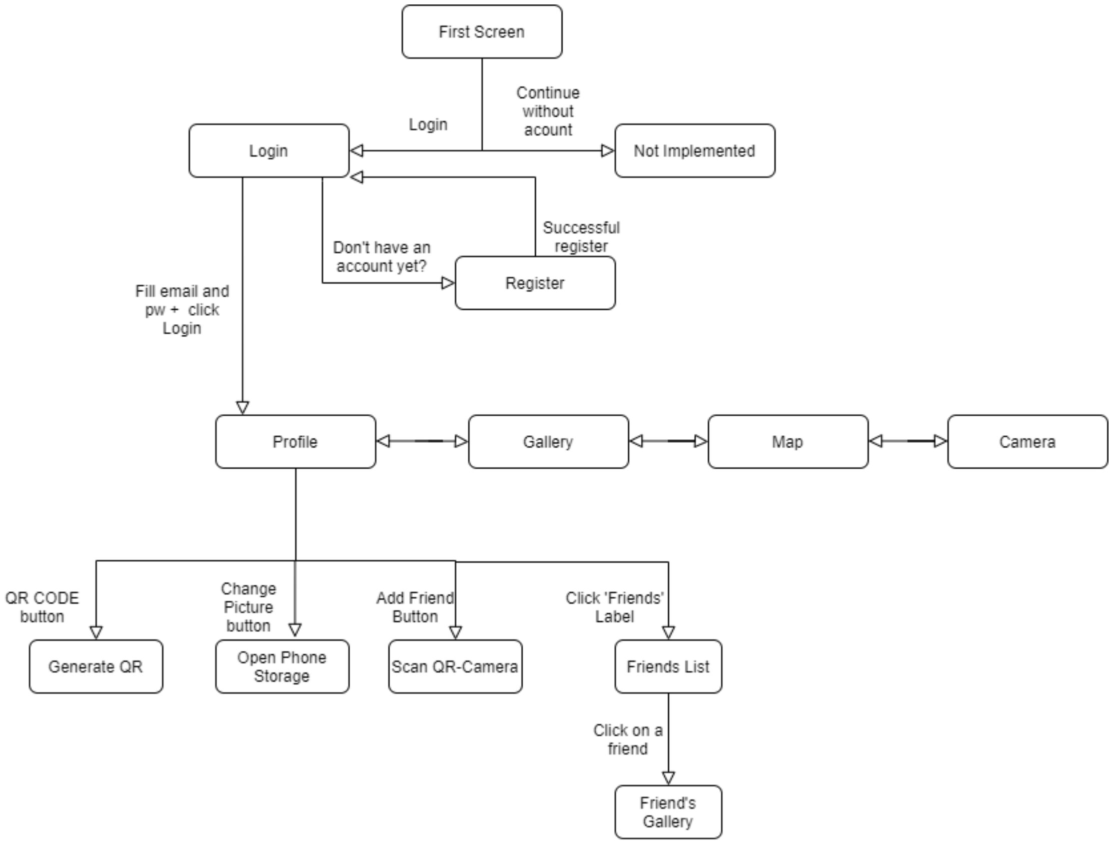
By clicking in the label '*friends*' you open the **friends list** that shows you all your friends. This list is created with a **ListView** permitting the user to scroll through all his friends. Clicking in a friend will open the **friend's gallery**.

The **gallery** uses a **FutureBuilder** to load the user's images and show them in real time. The gallery not only has the user's photos but every photo's **time** and **location** from when they were taken making it easier to remember the tours around the world. By **holding on a photo**, you are given a **menu** with three options: **open**, which opens the photo in full screen, **download**, for downloading the photo (not yet implemented) and lastly **delete**, which deletes the photo from the gallery (**Firebase Storage** and its reference in the **Realtime Database**).

Now, for adding photos to the gallery there is the need for a **camera option.** The camera has two options, **photo** or **video**, the photo option lets the user take a photo and adds it to the gallery and the phone's storage, the video option lets the user record a video but only saves it to the user's phone. This feature was implemented resorting to the use of **ImagePicker**.

And lastly, the **map**. The map gets the user's location and shows it in a map making it easy to navigate. It is using **Google Maps**, listening to the user's location, updating it in real time and showing places nearby the user's location, hence, the user can get an easier time finding places of interest close to him.

Widget Tree



Global Analysis

All the intended functionalities were implemented and even more such as being able to see images in full screen (gallery, user profile and friends list) and recording videos. We wanted to add some more functionalities like downloading images, notifications when friends took new pictures and fix some minor bugs, for instance, when loading images occasionally a temporary red screen shows up on the pictures' place. However, those would require more time.

Contribution

Diogo – 50% Fábio – 50%

We consider the work was equally distributed since during all the development we were working together and helping each other as problems surfaced.

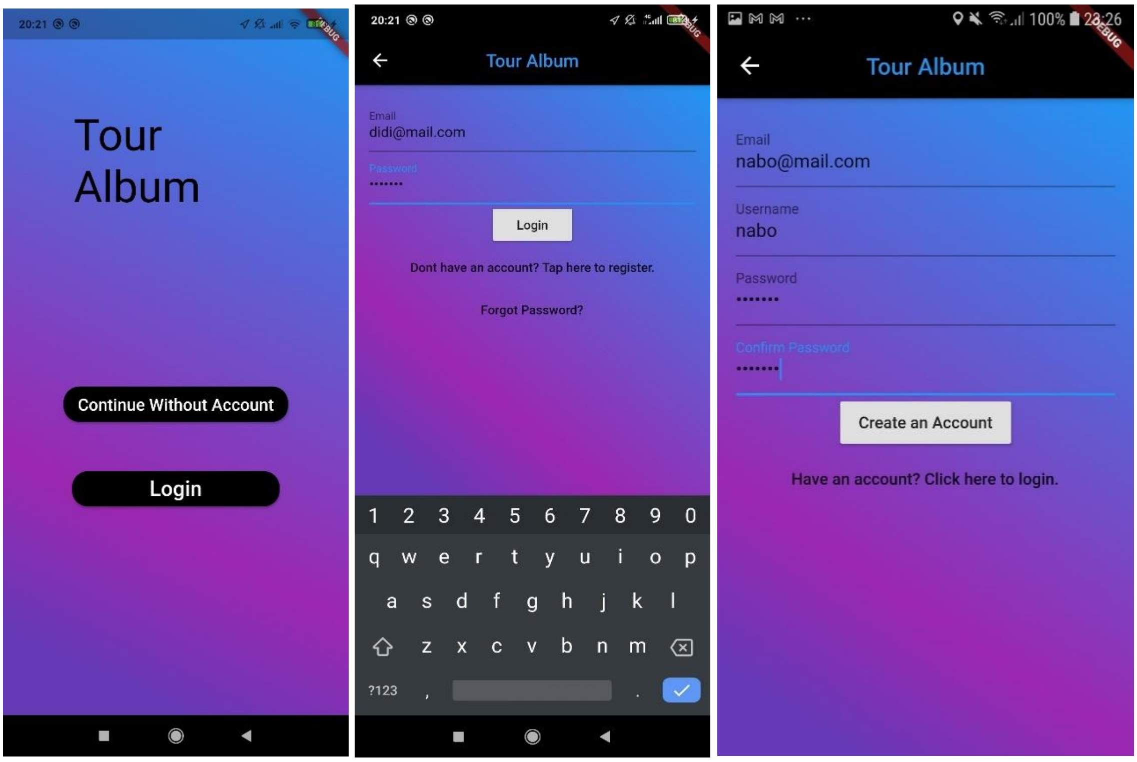
Diogo: Map, Camera and QR Code

Fábio: Register/Login and Profile

Together: Remaining features

Tutorial

First screen and login/register.



Email
didi@mail.com

Password
•••••••

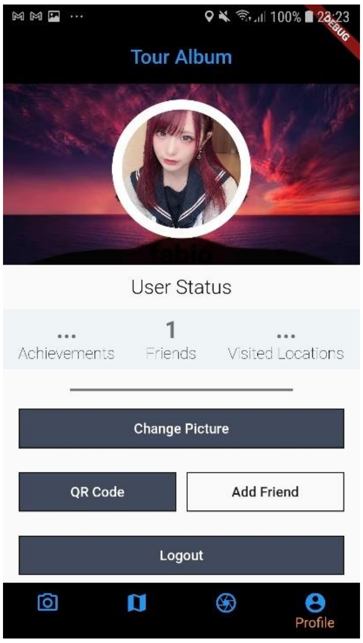
Email
nabo@mail.com

Username
nabo

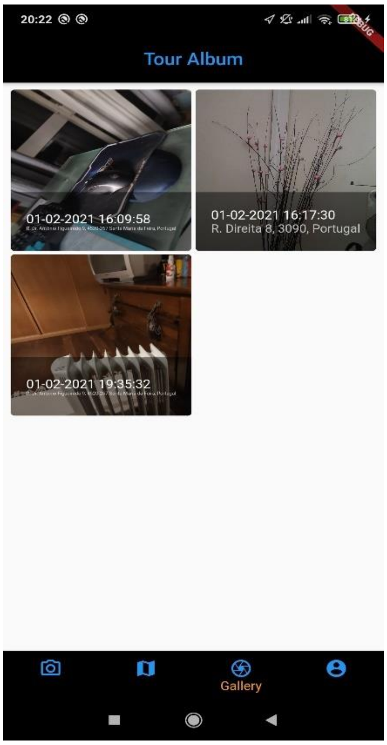
Password
•••••••

Confirm Password
•••••••

The **user's profile**.



This is where the user can see all his photos with their time and place. The **Gallery**.



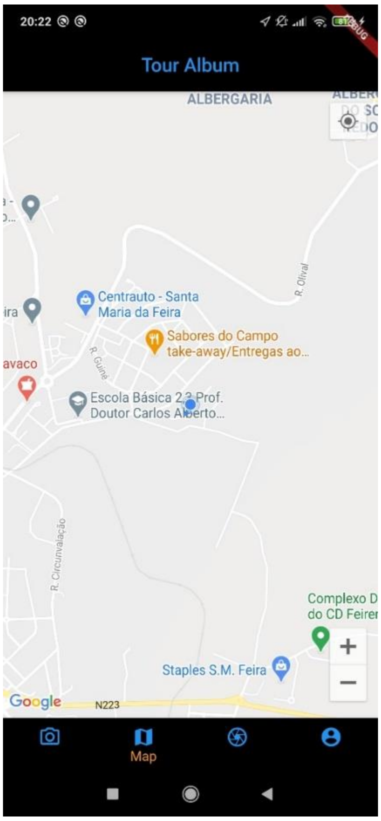
Tour Album

01-02-2021 16:09:58
R. Dr. António Figueiredo 9, 4520-257 Santa Maria da Feira, Portugal

01-02-2021 16:17:30
R. Direita 8, 3090, Portugal

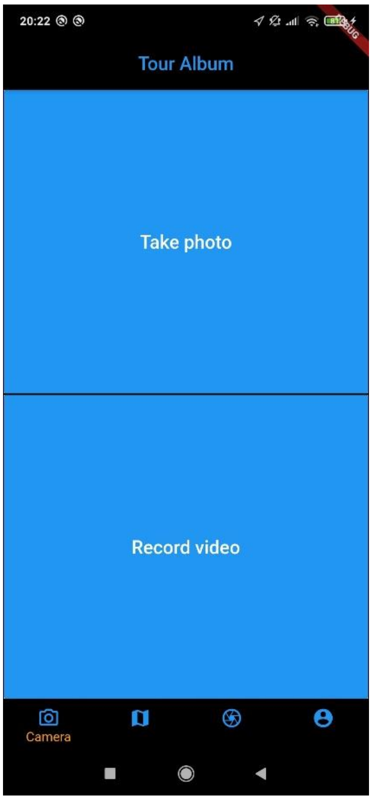
01-02-2021 19:35:32
R. Dr. António Figueiredo 9, 4520-257 Santa Maria da Feira, Portugal

This is what the user uses to explore the world, the **map,** and it updates in real time.



20:22
Tour Album
ALBERGARIA
Centrauto - Santa Maria da Feira
Sabores do Campo take-away/Entregas ao...
Escola Básica 2,3 Prof. Doutor Carlos Alberto...
R. Olival
R. Guiné
R. Circunvalação
Complexo D do CD Feirer
Staples S.M. Feira
Google
N223
Map

Now the user goes to the **camera** to take a photo.



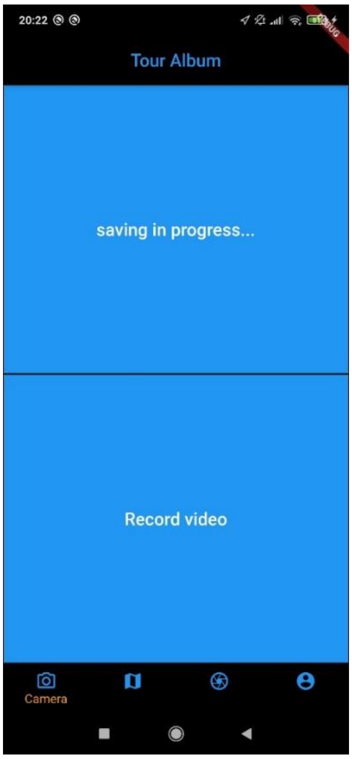
20:22

Tour Album

Take photo

Record video

The user takes the photo and waits for it to save.

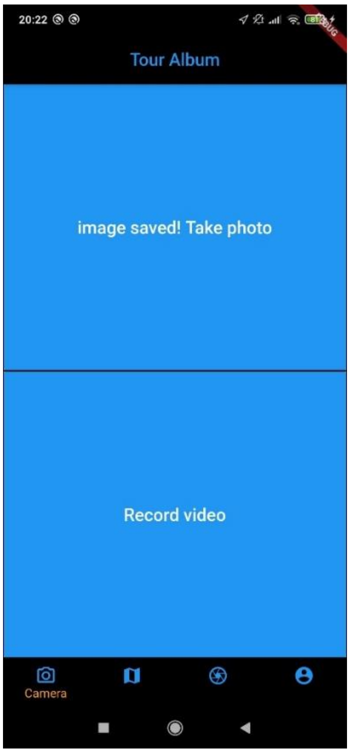


20:22

Tour Album

saving in progress...

Record video



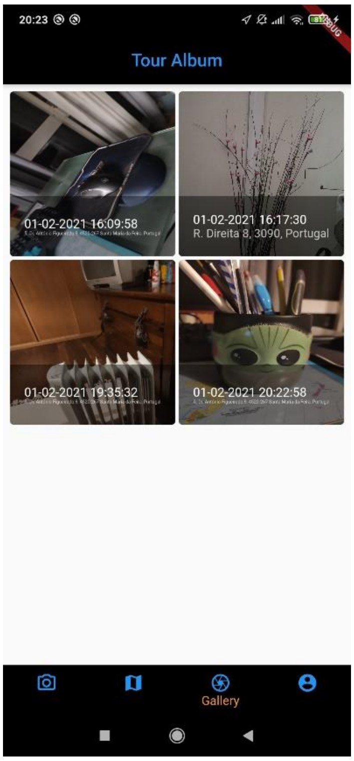
20:22

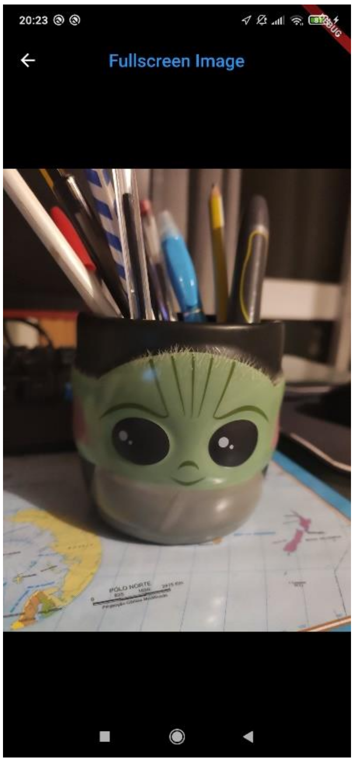
Tour Album

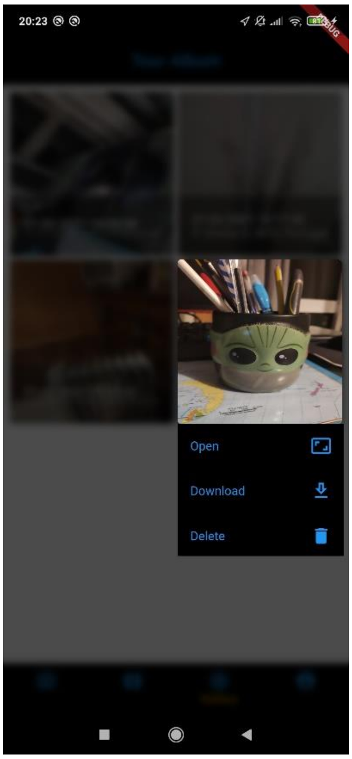
image saved! Take photo

Record video

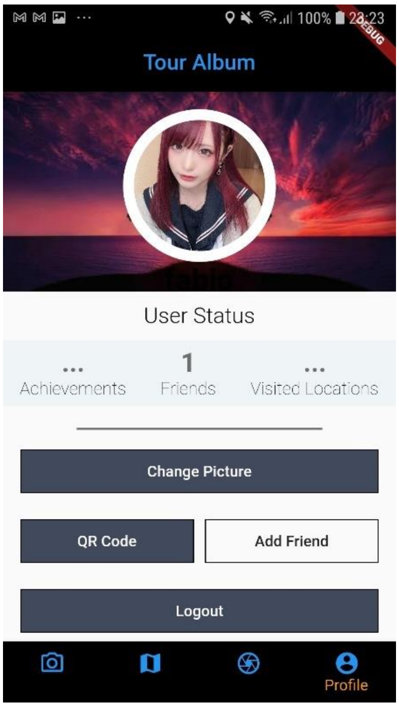
Now the gallery has a new image, the user clicks it to open it in full screen and if he does not like it, he can delete it.



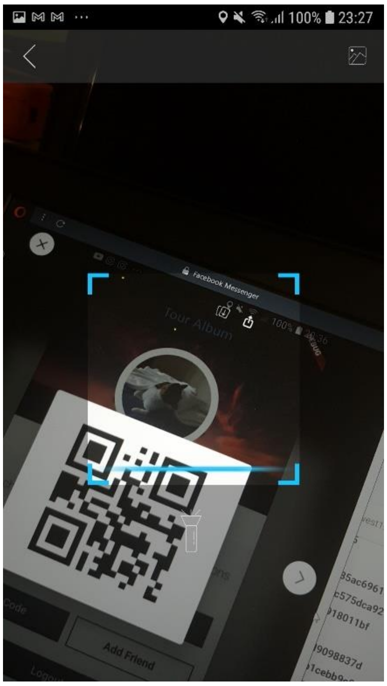




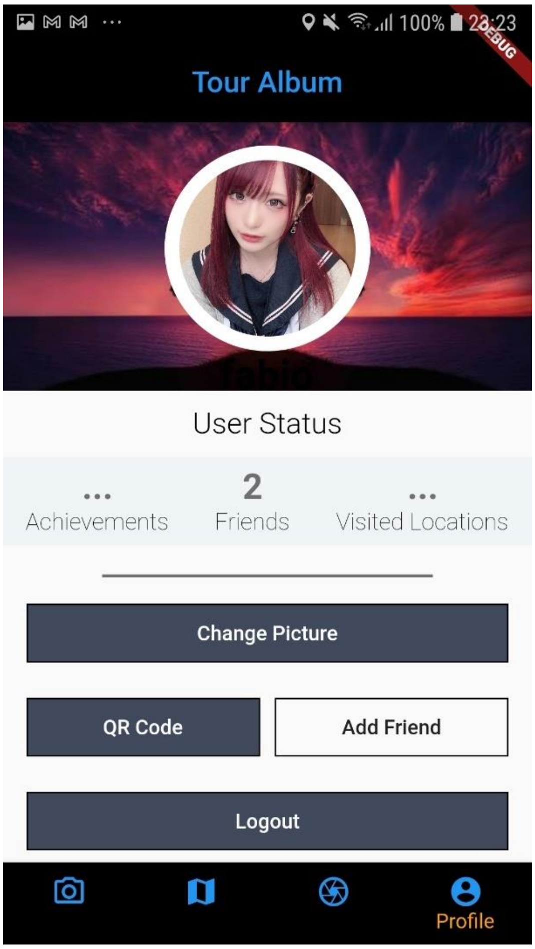
Now let us see how we can add a friend.



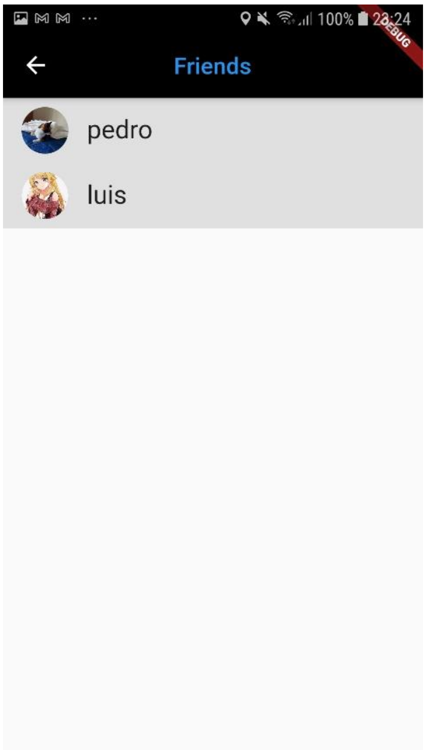
After pressing Add Friend the scanner pops up and by scanning the other user's QR Code (opens by pressing the button QR Code) we can add him as a friend.



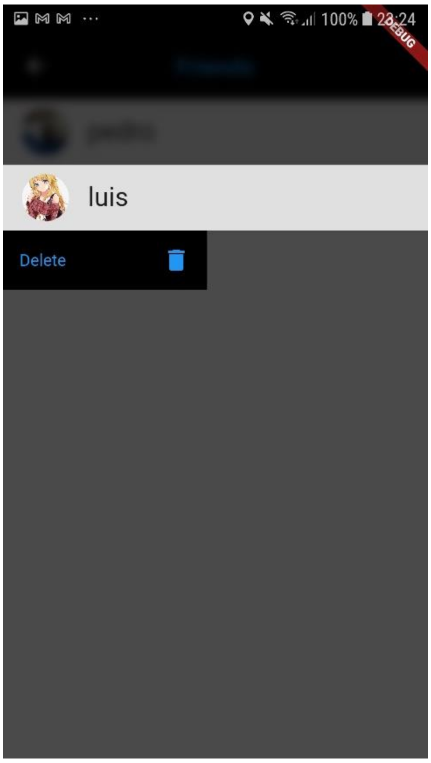
Now by adding a friend, the number of friends increments.



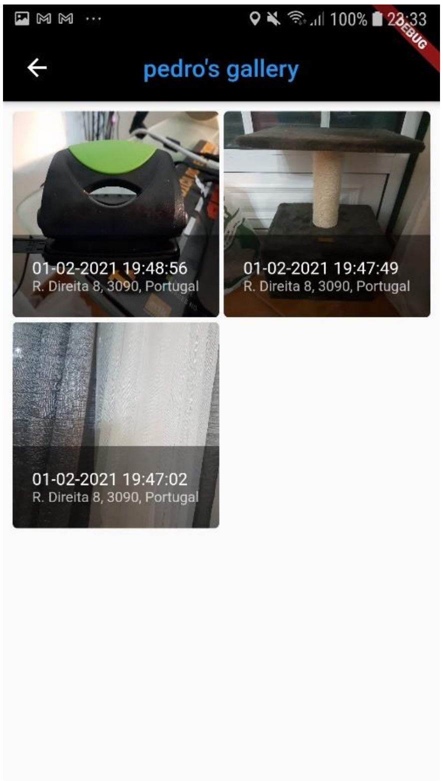
Now let’s see our friend’s list by pressing **Friends**.



We can also delete a friend if we do not like them.



And lastly, we can see our **friend’s gallery**.


100% 23:33
DEBUG
pedro's gallery
01-02-2021 19:48:56
R. Direita 8, 3090, Portugal
01-02-2021 19:47:49
R. Direita 8, 3090, Portugal
01-02-2021 19:47:02
R. Direita 8, 3090, Portugal