

Project Report

Introdução à Computação Móvel

G04 – DUX



Diana Oliveira
nMec 98607



Raquel Ferreira
nMec 98323

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Motivation

We were asked to do a Flutter app for the ICM course of University of Aveiro. As a student, life can be hard. So we wanted to help to make it a little bit easier. To do that, we develop an application that will be a student life guide (*dux*). Its objective is to help students organize and manage their stressful life. They will be able to check the weather and plan their day, week or month. Studying will be easier and more efficient with the Pomodoro timer and the notes saved on the app.

Solution

Features implemented:

- Pomodoro timer
- Calendar
- Classes schedule
- Notes and annotations
- Weather
- Profile
- Home Screen
- Pedometer

Sensors & mobile functionalities:

- Location
- Map
- Camera/Gallery
- External Resources - API
- Accelerometer
- Timer

Pomodoro Timer

This section is dedicated to focus on the study. We have a timer programmed with the Pomodoro technique -- 20 minutes of focus and 5 minutes of break. The user finds 4 buttons in this section: the first is the (re)start button; the second is the pause button; the third is the back button and the last button is to switch between study time and break time (20 minutes and 5 minutes).

Calendar

This section works like a normal mobile calendar, the user can access and view the calendar in the format he prefers: Work Week, Month, Timeline Day, Timeline Week,

Timeline Work Week. Furthermore, the user can add events to the calendar with the details they want..

Classes schedule

This section works like a school timetable. The user can enter the subjects that they will have on a certain day at a certain time, as well as extra information (department, floor, room, etc.). In this way, the user will not be lost and not knowing where and which class to take. This information will be stored in the database, so the data is not lost.

Notes and annotations

In this section, the users can take notes. Labels can be added to these notes making it easy to organize them by theme or discipline, for example. The notes can be just text or can be images uploaded from the **gallery** or taken with the device's **camera**. For the text notes it is also possible to search for title or for its context.

To implement this system we used a **database** (`sqflite`), so that the notes of the user were saved in the device.

Weather

To prepare their day, students can see, as they open the app, in addition to today's events and classes, the weather.

To show the weather we use the **location** of the device and an **external API** ([Weather API - OpenWeatherMap](#)).

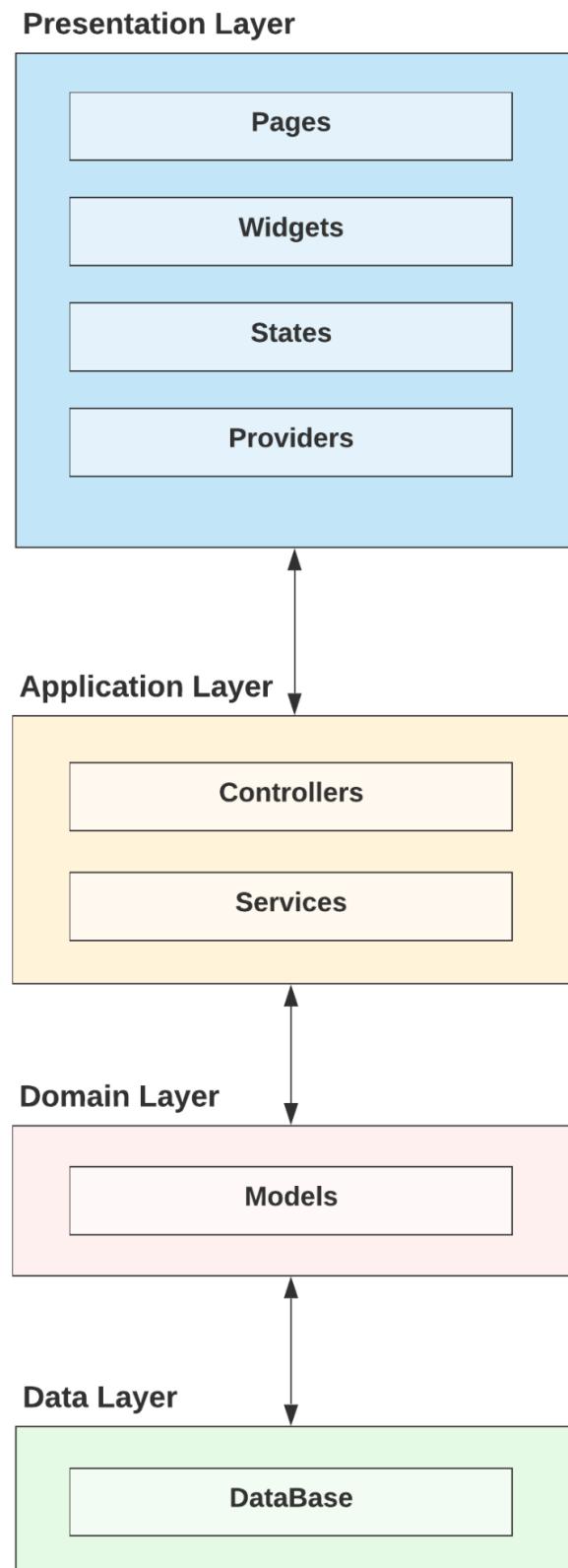
Profile

Finally, the user has access to a section where they can enter personal information about themselves (name, mobile phone, email), as well as a profile picture and a description about them. This information will be stored in the database, so the data is not lost.

Pedometer

The user can keep track of the steps taken during the day and access the data for the last week in the profile screen. To increment the steps, we calculate the distance from origin to the current location with the formula $\sqrt{x * x + y * y + z * z}$. With that same distance, but for the last position, we calculate the distance to the current position. If that value is bigger than 6 (approximately the length of a step), then we increment the steps. The coordinates are obtained from the **accelerometer** sensor.

Architecture



Overall Assessment

Issues Found

Initially, we were implementing a feature to share the notes images via **Bluetooth**. However we could not find a way to put the sharing images via Bluetooth working. The package used (`flutter_bluetooth_serial`) uses a deprecated version of the Android embedding, so when trying to use another package (`flutter_blue`), the devices were not detected because it does not use the classical Bluetooth. The code samples and examples provided by the first package mentioned either did not work or were too complex for the use that we wanted.

The `google_maps_flutter` package did not work well on the web device and when trying to run it on a mobile device, the program got stuck in the following step "running gradle task `"assembleDebug"`", which made it impossible to correctly test the Maps feature and consequently the completion of the calendar.

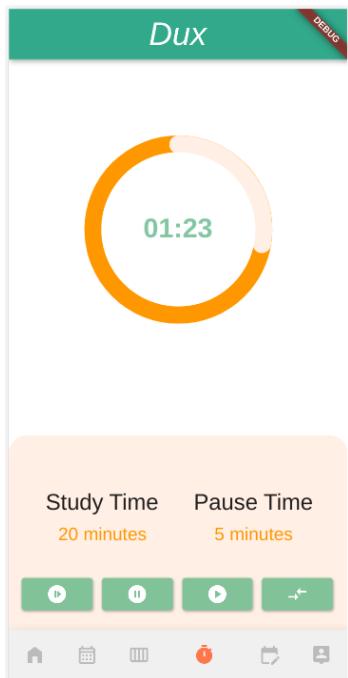
Contribution Assessment

Raquel Ferreira (60%) - Home Screen (API based on Location and Step Counter), Notes (Bluetooth and Camera/Gallery), Statistics on Profile

Diana Oliveira (40%) - Calendar (Location/Maps) , Pomodoro (Timer), Schedule, Profile

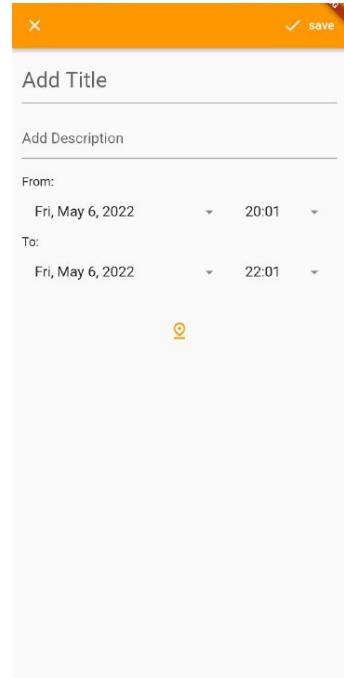
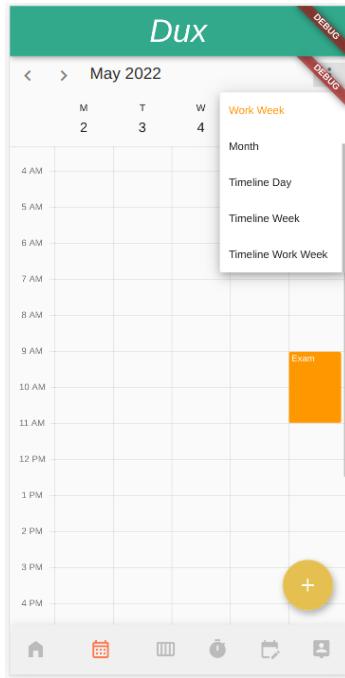
Tutorial

- Pomodoro Timer



As previously mentioned, we have 4 buttons with the previously mentioned features.

- Calendar



By default, we are presented with a calendar organized by month that allows us to navigate to previous or future months. We can change the way this calendar is viewed, as well as add events to it.

- Classes Schedule

The image consists of three screenshots of a mobile application called "Dux".

- Screenshot 1:** Shows the main schedule view for Monday. It lists slots from 8:00h to 18:00h. Each slot has a dropdown arrow icon to its right.
- Screenshot 2:** Shows the same Monday schedule, but the first slot (8:00h-9:00h) now contains the word "Maths" in red text, indicating it is booked.
- Screenshot 3:** A separate screen titled "Subject Name" with a text input field containing "Maths". Below the input is a blue "Update" button. In the top right corner of this screen, there is a small red ribbon-like badge with the word "DEBUG".

As already mentioned, in the above section the user can add information about the subjects that he/she has at a certain time.

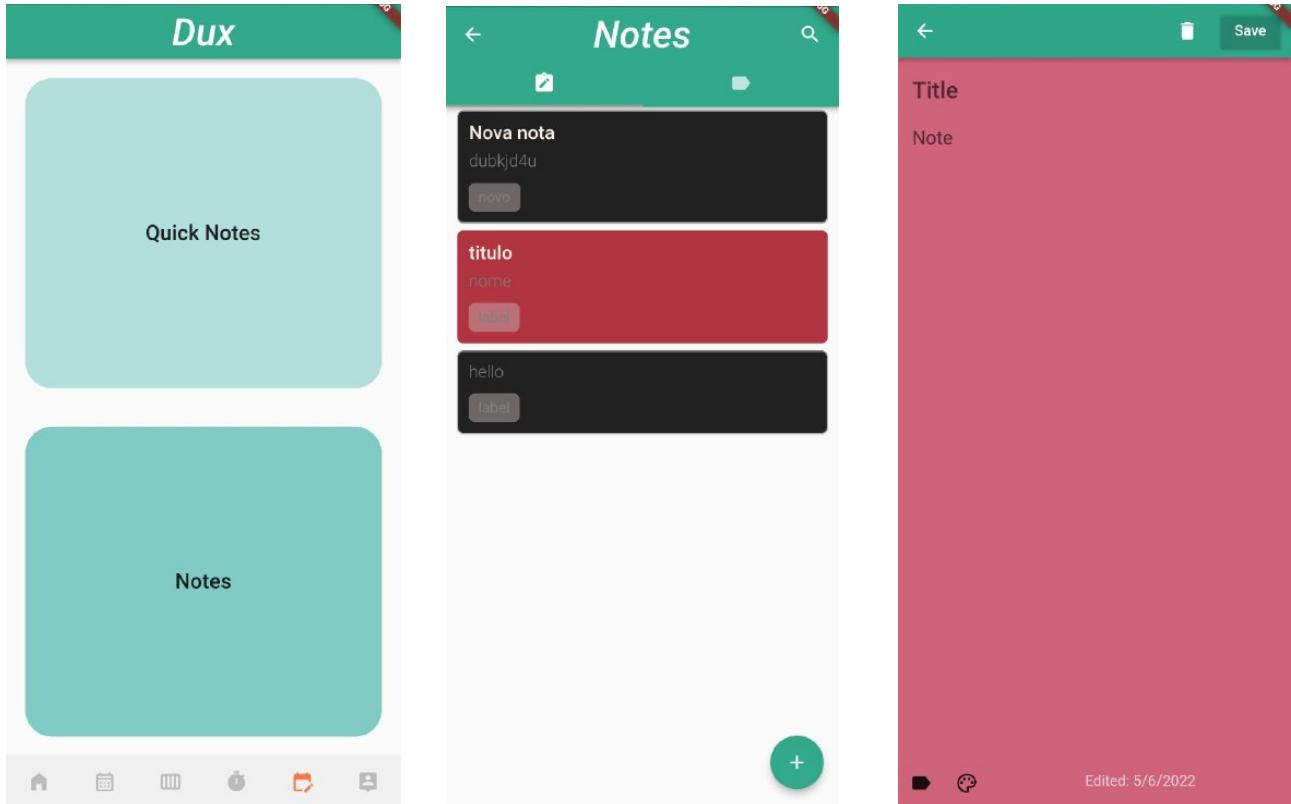
The image consists of two screenshots of the Dux app.

- Screenshot 1:** Shows the Monday schedule with the first slot (8:00h-9:00h) containing the word "Maths" in red, and all other slots empty.
- Screenshot 2:** The same Monday schedule, but the first slot (8:00h-9:00h) is now empty again. To the right of the schedule, there are two blue buttons: "Update" and "Delete".

It is also possible to delete slots already occupied.

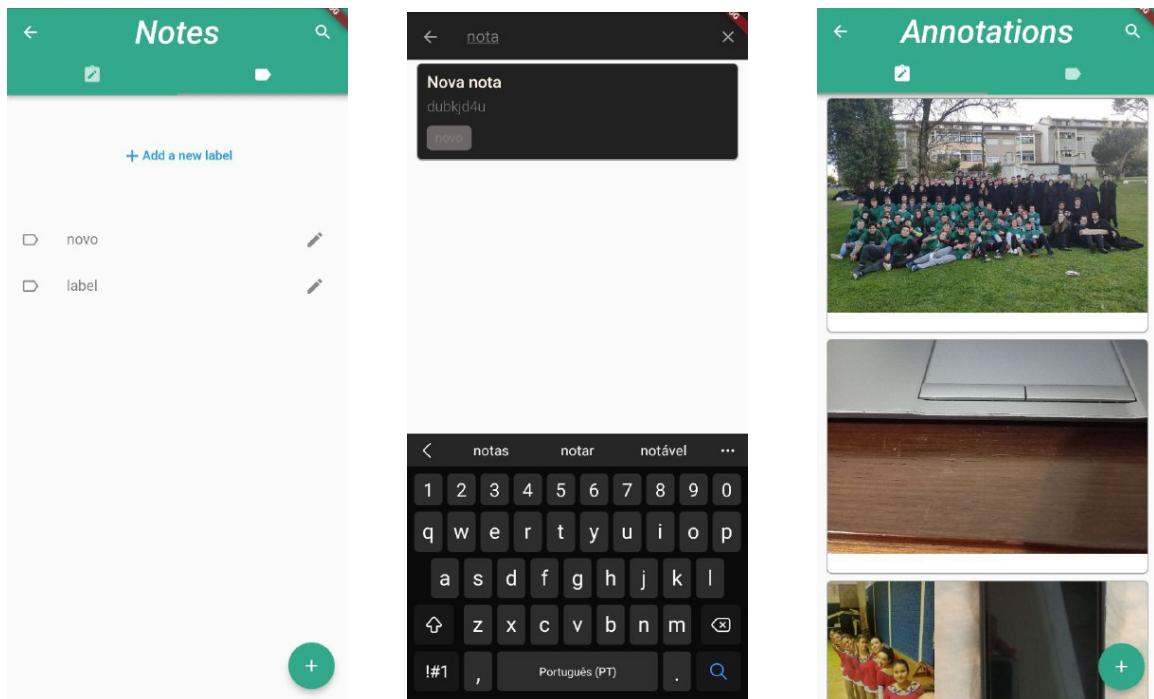
- Notes and Annotations

The user can choose if they want to take a text note or a note with images. Choosing text (Quick Notes), they can see the notes already taken and in the lower button they can add a new note. Only the content is mandatory

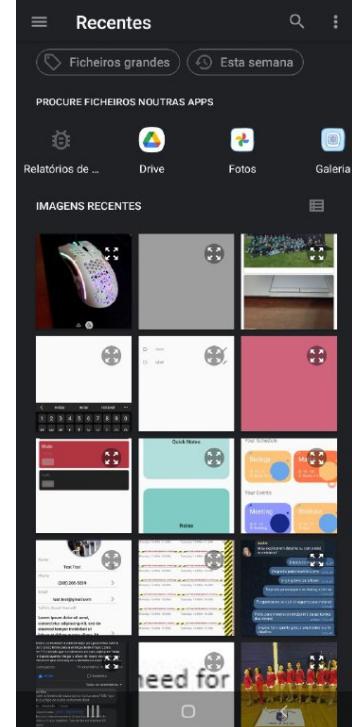
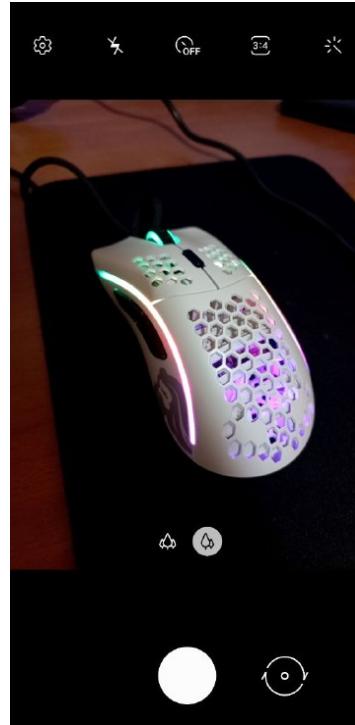
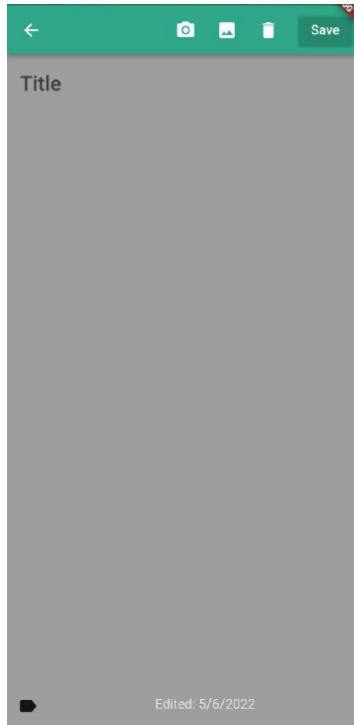


Every note can have a label. Selecting the label will show all the notes with that label. The user can also search by title or context of the note.

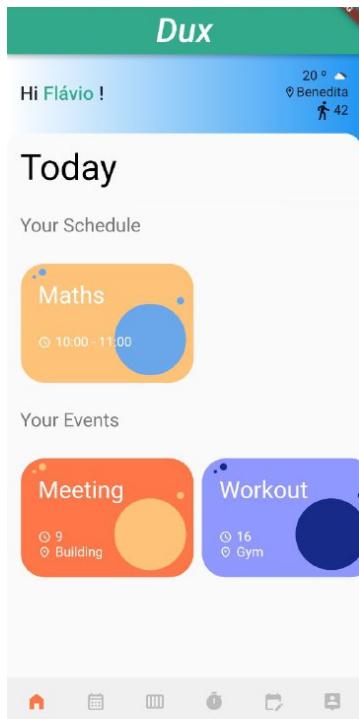
In the last image of the row, we can see the notes with images. Each note can have more than one image and can also have a label. The labels are the same as in the text notes.



The images can be uploaded from the phone gallery or taken with the camera. The title is not mandatory.



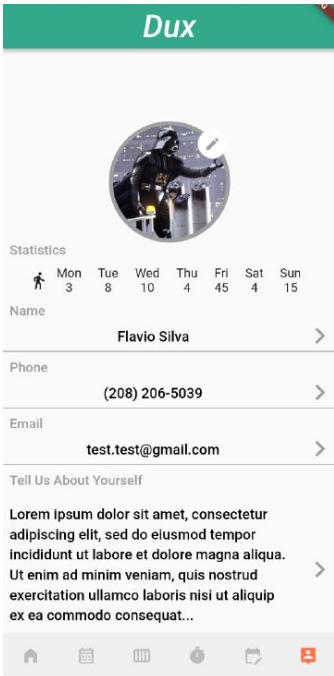
- Home + Weather + Steps



In the Home Screen it is possible to see the classes of the day as well as the events saved in the calendar.

At the right top corner, if the user gave permission to use the location, they can see the weather where they are and also the steps taken.

- Profile



This screenshot shows a modal or overlay titled "What's Your Name?". It has two input fields: "First Name" containing "Octávio" and "Last Name" containing "Rodrigues". A blue "Update" button is centered below the fields. The top right corner of the modal has a "DEBUG" badge.

