**GREENER APP**

Technologies used:

IDE platform: **ANDROID STUDIO – compile Sdk Version 29**

Emulator: **Physical device = Samsung Galaxy S10 plus (android)**

Code language: **JAVA**

Database: **Google Firebase FireStore – cloud-based database**

Deployment: **Google Firebase**

At our first meeting with the supervisor, it was decided that we would make a website and an application for android mobile. After showing it as a possibility to the Supervisor he agreed with our idea. After researching the platforms used to develop an application, we decided to use **Android Studio**.

**Android Studio** is an IDE for development on the Android platform based on the version of the InteliJ community. With the same goal of Eclipse + ADT (Android Developer Tools), it provides a development, debugging, testing and multiplatform profile environment for Android.

As Android studio is a heavy platform with many tools, it was not viable for everyone in the group to download it. My laptop has a better development and a bigger memory, so I decided to be responsible for this part of our project.

Bellow I’ll give more information on how the first part of the project was developed:

**Greener App first part: FRONT-END**

At first, a research was done on what is android studio and how it works. The first part of the project was based on collecting data to create it. To achieve it we made app colours research, diagrams, questionnaires to possible users.

This first part of the project would be based on deciding how the project's FRONT-END would look like and the technologies used to achieve this.

But before starting creating pages on android studio, I created html pages to help on visualize how would be the flow of the app.

A close up of a logo

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After visualizing the flow of the project, I created **my first page** in Android Studio using the emulator of the application itself to view it.

***First page:***

A picture containing green, computer

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**How to create pages in android studio?**

**Simple!!!**

**1**. Create a project:

Click on file -> new -> new project - Choose a name for the project.

A screenshot of a cell phone

Description automatically generated

**2.** Create activities (pages):

Click on app -> new -> new activity -> choose the desired type of activity

A screenshot of a computer

Description automatically generated

**2 files** will be created. **1 xml file** for design and **1 Java file** for development.

A screenshot of a cell phone

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**3.** Design the page using buttons, texts, etc., that the application itself offers.

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**4**. Create emulators so that you can view these pages. The application itself offers options for emulators.

A screenshot of a social media post

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**You ready to start developing!!!**

**Greener APP second part of the project: BACK-END**

The second part of the project would be the development of the application back-end.

**How would it have functionality?**

Android Studio can be developed in 3 different languages: **Java, Kotlin and C +.**

Java was the language we decided to use. Java was the best option for this project because we have been studying java since the first semester so it would be easier to develop.

Android Studio provides a series of tools that facilitate the development of the Back-end. Among them there are Java classes and methods that make it possible to start coding without major problems. As in the following example:

**This part of the java code is provided by the Android Studio when you first create an activity.**

A screenshot of a social media post

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**Following I’ll demonstrate how I developed this part of the project:**

By this time I have created the Main Page Login Page, Register Page, About the project Page, Green Tech professionals Page, Users Testimonials of the project Page.

**Main page:**

To create the Main Page, I chose an image written "#Greener APP- Sustainable Life Habits" that I created in the CANVA application to serve as the background of the page.

I created a **Text view** saying: “Greener the environmentally friendly app”

**2 buttons:** Login and Register

**Menu bar with 3 Items** (Pages) = About - GreenTech – Testimonials (Those pages are visible before logging in or registering).

**Main Page:**

A picture containing table, electronics, sitting, computer

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**About page:**

For the creation of the About Page I chose a green image as a background that was used on all the following pages.

I created **2 TextView** where was included some information about the app.

**1 Button** = This button has a functionality to return to the main page.

**Menu bar** with options to view the GreenTech page and Testimonials page.

**About Page:**

A picture containing electronics

Description automatically generated

**Testimonial page:**

To create the page I used a green image as a background that was used on all the following pages.

**3 TextView** – User testimonials about the application

**1 Button** = This button has a functionality to return to the main page.

**Menu Bar** with options to view the GreenTech and about pages.

**Testimonials Page: This page is still not well formatted - it will be fixed in the next steps**

A screen shot of a computer

Description automatically generated

**Green Tech page**

To create the page, I used a green image as a background that was used on all the following pages.

**I created 4 TextView –** Those textview has a description of the project developers

**4 images** – Our group is made of 4 developers

**1 Button =** This button has a functionality to return to the main page.

**Bar menu** with options to view the About page and Testimonials page.

**Green Tech page:**

A picture containing sitting, green, monitor, computer

Description automatically generated

**Login page**

To create the page I used a green image as a background that was used on all the following pages.

**2 plain text fields** to insert data such as: *Email & Password*

**2 Buttons** = **1- Login to enter the application** - if you have already registered with the application, this button will take you to the **home page**. If you have not registered, the Login page will inform you that the user needs to register.

A picture containing monitor, green, display, sitting

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Description automatically generated

**2-Register button if you don't have a previous registration**. This button will take the user to the registration page.

**Register page:**

To create the page I used a green image as a background that was used on all the following pages.

**3 plain text fields** to insert data such as: *username, Email & Password*

**Email & password** will be used to login to the app and **username** to be identified inside the application.

**2 buttons** = 1-Register to enter the application - if the information is correct, such as: email in correct format and password with a minimum of 6 characters, this button will take you to the Login page so that the user can enter the registered data and be able to access the home page.

**Register Page:**

A close up of a green screen

Description automatically generated

**2-Login Here button** if you already have a previous registration. This button will take the user to the Login page.

**How was the registration data stored?**

The data created in the Register Page were stored using the **FIREBASE database.**

**Firebase** is a mobile (and web) development platform, with a focus on being a complete and easy-to-use back-end, this tool provides several different services that assist in the development and management of applications.

It is integrated with android studio and provides a series of tools that help in the process of registering users and saving them.

To use these tools you need to implement them in Android Manifest (xml file that contains all the information about the project.)

The Firebase Platform provides Java code on how to use the database. I needed to include them in my existing code so that I could use the functions without changing my code.

When the user makes a new registration the information goes to a Firebase database called FireStore that I created using the java code. I’ve used the part of java code to create a table and the columns that I define in the code as: *USERNAME AND EMAIL.* Password is saved together with user id in the firebase authentication session.

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**By the end of the development of the project (17-05-2020) I have changed few things and included others.**

**Changes in the design of the project:**

The image used to design the pages before was not suitable for the cell phone screen, causing the image to become distorted.

Using the CANVA website I developed an image that leaves the site looking clean and professional.

I chose the WHITE, **DARK GREEN** and **LIGHT GREEN** cores.

The same image was used on all other pages.

A vase with a flower on a plant

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**Changes in project development:**

The initial project was based on a game where users could challenge their friends to have more sustainable habits. It turned out that developing the game has become a difficult task for students who are developing the first application.

In this way we chose to change the idea of ​​the application so that it was a social interactivity application where users could challenge themselves. The idea is that users choose the challenge they want to do, provide evidence that the challenge has been carried out and an initial page showing the evidence in a post format where all users could see and interact.

**Inclusions:**

* Profile page where the user can change the profile picture, update password.
* Challenges page where users can view the available challenges.
* Logout page where the user chooses whether to stay or leave the application.
* Page to add evidence that the challenge was made.
* Page to show the challenges made in post format.

**Pages updated with the new format:**

**MAIN Activity page:**

* Page has been updated with new image and font. MenuBar was updated to just show the ABOUT page, GreenTech professionals and a back sign to come back to main activity.

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**ABOUT Activity page:**

* Page has been updated including 2 slides.

A close up of a device

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**GreenTech Activity page:**

* Page has been updated with pictures and name of the students using scroll down page.

A close up of electronics

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**LOGIN Activity page:**

* Page has been updated with new background, font and button flow.

A close up of a device

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**REGISTER Activity page:**

* Page has been updated with new background, font and button flow.

A picture containing cellphone, meter

Description automatically generated

**HOME Activity page:**

* The home activity now contains user posts.
* Photo - Username - Evidence uploaded, Time that it was uploaded - Number of Likes - Like, Comment, Share buttons
* New MenuBar with 4 options
* New NavBar with home and challenges options

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**CHALLENGES Activity page:**

- This page contains a Welcome msg to the user that is signIn.

- Challenges WASTE, WATER, DIET, ENERGY

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Each challenge will contain page that specifies what the challenge is about

* Each of those pages will have slides where the user can see both options of challenges.
* After choosing a challenge, the user will see TIPS to providence evidence.

A close up of a device

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**ADD Evidence page:**

* This page contains option to upload evidence with title and description.
* After uploading this evidence foes to the Home page in a post format.

**A picture containing table, clock

Description automatically generated**

**PROFILE Activity page:**

* This page contains the user information – Username, Email and profile picture.
* User had two options to upload profile – Change Profile picture, Change Password.

**A picture containing cellphone

Description automatically generated**

**LOGOUT Actvity page:**

* This page contains two buttons where the user can choose on staying or leaving the application
* If Yes button is clicked the Login page appears. If the No button is clicked user will see home page.

A picture containing cellphone

Description automatically generated

**Firebase** now contains 1 more collection called POSTS – where every post with all information is included and can be retrieved in home page.

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**Debugging errors:**

This was one of the errors that I encountered while testing the application.

**“RecyclerView: No adapter attached: skipping layout”**

A screenshot of a social media post

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**How did I fixed it ?**

The adapter was returning null, because I defined the collection of the path wrong.

Db.collection should get “Posts” COLLECTION but it was trying to get “TIMESTAMP” collection which didn’t exist in my firebase.

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