Rapport du projet (Anglais)

Projet de Programmation

L3L1

Illustration 1: ***Image de présentation***

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Sommaire

1. Introduction

This third year of the bachelor's degree, an IT project had to be carried out as part of the teaching unit Project. The choice of this project was made by the desire to deepen the discovery of programming languages, but in particular to be able to design by our own means a mobile application which really corresponds to us in terms of criteria and use.

This teaching unit therefore aims to make us discover the challenges as developers by carrying out a complete project in a limited time, while respecting certain constraints and rules.

Thanks to this project, we had the opportunity to put ourselves in the shoes of a developer and to discover in depth the ways of working, learning and putting ourselves into practice (vis-à-vis) the development, at the help from the supervisor and our personal efforts.

The project we have chosen is the L3L which consists in creating a smartphone application allowing the user to obtain a precise and sensitive route of his path (by car, bus, motorbike, etc.).

2. Reading guide

2.1. Subject Mastery

The project manager presents the development team responsible for the proper monitoring of the project report and the needs ordered by the contracting authority.

She represents the development team:

- Youstina Abdel Massih
- Thierno Bah
- Pathé Mbaye Ndéye
- Mehdi Hamiche

This team will ensure the proper follow-up of the project report representing the needs of the supervising teacher.

2.1.1. Responsable

This team will ensure the proper follow-up of the project report representing the needs of the supervising teacher.

2.1.2. Administrative staff

It is advisable for the administrative staff to read the knowledge part, the main functionalities as well as the different phases of the project.

2.1.3. Technical staff

It is advisable for the technical staff to take into account the part on the different phases of the project as well as the languages, software and environments.

2.2. Project management

In our case, the project owner represents the client of the project, that is to say the people whose needs allow the design of the project.

The project management is assisted by the project management team and therefore this role will be provided by the supervising teacher Flavie Tonon.

2.2.1. Responsable

This team will ensure the proper follow-up of the project report representing the needs of the supervising teacher.

2.2.2. Administrative staff

It is advisable for the administrative staff to read the knowledge part, the main functionalities as well as the different phases of the project.

2.2.3. Technical staff

It is advisable for the technical staff to take into account the part on the different phases of the project as well as the languages, software and environments.

3. Knowledge / Development / World of work

- ***Environment***
  - Development environment for developing Android mobile applications : https://developer.android.com/studio?hl=fr&gclid=Cj0KCQjwgYSTBhDKARIsAB8KuktzDN4F0N1KgZu1Tlems1pzjIfU67MhqFr7r6C5SGZH_JMTUi8yok8aAku9EALw_wcB&gclsrc=aw.ds

- ***Data - Extraction / Recovery***

To retrieve the test .apk files, you must go to the forge at this address : https://forge.ens.math-info.univ-paris5.fr/projects/2021-l3l1/repository

- ***Storage***

Here are the different files that can be compatible with our project :

- .apk

- ***Use during the Development / Production / Development of the KOURTE application***
  - Drawing of a sensitive route in real time
  - Download an image of the route to the phone
  - Enter the information of a route and save the route on the database of the application to then find the route in the history

- ***Meeting with the world of mobile application developer***

- ***Openness to the real world in the situation of a computer scientist***

Future improvements envisaged :

We have considered improving our application in the future so that it is more complete and that it can appeal to future customers. For example, improving the route with a "Stop" button or changing the color of the route for a more playful purpose (for children).

4. Languages – Software - Environments

- Understand the usefulness / importance of all these languages during development on KOURTE's Android Studio

Android Studio – JAVA and XML

Android Studio mainly allowed us to edit the Java files and the XML configuration files of the Android application. Among other things, it offers tools to manage the development of multilingual applications and allows rapid visualization of the layout of screens on screens of various resolutions simultaneously.

It also includes an emulator to run a virtual Android system on a computer.

SQLite

SQL language that allowed us to store the information of a plot on the application database to find this information in the history.

5. Different phases of the project

5.1. Documentation phase

The beginning of the project began with the reflection phase, how the project was going to unfold week by week and having an idea on the design of it.

For this, we first designed the specifications to set ourselves objectives and to have a general idea of the structure of our mobile application and the website (the website could not be finished).

Thereafter, comes the recipe book which is used to list the expected functionalities of the application and which will have to carry out the tests. Documents such as the user manual (general design) is there to guide the user on the use of the mobile application.

5.2. Development phase

Arriving at our development phase, we first wanted to leave as we had planned on the specifications. Suddenly, we really started to move forward and so the main problem we had from that point on was the compatibility of our versions of phones with each other from different brands.

However, we had to refer to different solutions to have optimal compatibility with different brands of smartphones.

5.3. Tests phase

We have tested the application each time a feature is added in order to check whether it is compatible with what is already functional.

This allowed us to see what was wrong and to provide the solution.

The tests carried out are :

- the sensitive route
- route recording
- downloading the route

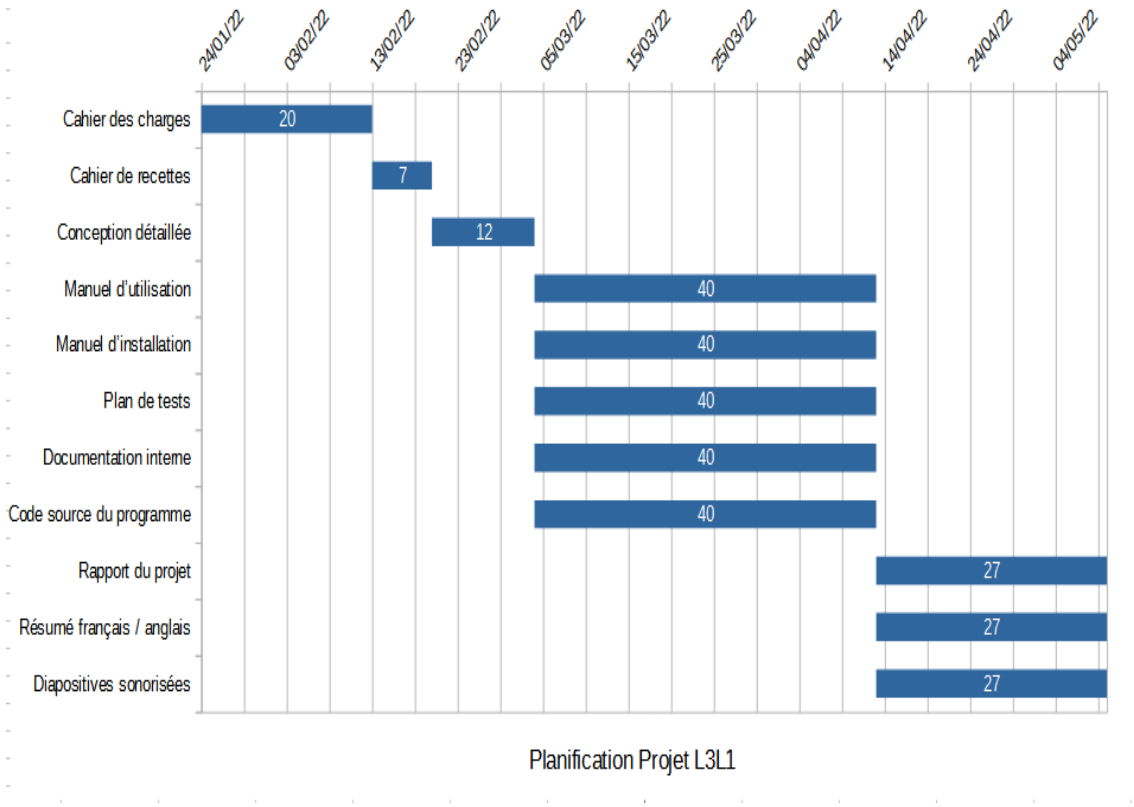

Illustration 2: ***Diagramme de Gantt***

5.4. Encountered difficulties

Among the difficulties encountered during our project :

- Compatibility with smartphones of different brands
  (Solution: check androidmanifest.xml file)
- Downloading the image of a Route
  (Solution: add to androidmanifest.xml: android:requestLegacyExternalStorage="true")

6. Main features

The different strengths of our application:

- **Drawing of a sensitive route in real time**
  - Using phone sensors

    Download an image of the route to the phone
  - Store in gallery (Pictures folder) of phone • Enter the information of a route and save the route on the database of the application to then find the route in the history ◦ Date ◦ Mode of transportation • History menu ◦ Number of points, mode of transport and date ◦ Delete a path ◦ Show full-screen plot
- **Download an image of the route to the phone**
  - Store in gallery (Pictures folder) of phone
- **Enter the information of a route and save the route on the database of the application to then find the route in the history**
  - Date
  - Mode of transportation
- **History menu**
  - **Number of points, mode of transport and date**
  - **Delete a path**
  - **Show full-screen plot**

7. Closing

This project allowed us to realize what an IT project represents and what is important during such a project. We have seen the importance of having a precise direction to move forward effectively.

We have also become aware of the importance of communicating well because this could lead to incompatibilities which could cause delays later. For each member of the group, this is our second "real" IT project and we are happy to have been able to benefit from this experience.

Indeed, this project is a first pseudo-professional experience that allowed us to get a better idea of IT project management in the world of work. This also gives us a basis to be able to continue each on our side to work on this mobile application and to be able to always improve it and develop our skills.

We would like to thank Ms. Flavie Tonon who took charge of supervising our project and who advised us during its entirety.

8. Annex

- **Android Studio java documentation**

- **Specifications**
- **The recipe book**
- **The model**
- **General design**
  - ***Detailed design***
  - ***The user manual***
  - ***The installation manual***
  - ***The test plan***
  - ***Internal documentation***
  - ***The source code of the project***

9. Glossary

★ ***REPORT :*** Document which may contain all the information not included in the other documents requested.

★ ***MOBILE APPLICATION :*** Application software developed for a mobile electronic device, such as a personal assistant, a mobile phone, a smartphone, a digital music player, a touch pad, etc.

★ ***APPLICATION :*** Program or set of programs intended to help the user of a computer for the processing of a specific task

★ ***SOURCE CODE :*** Code written in a programming language and which can be converted to constitute an executable program

★ ***.APK :*** from the acronym Android PacKage, file extension Equivalent to ".exe" on Windows

★ ***ANDROID :*** Giant software for mobile phones, tablets and many other devices that can be smart, such as some cars. It is the most widely used mobile operating system in the world. It allows communication between a user and his device

10. References

https://www.ens.math-info.univ-paris5.fr/projets-informatiques/projets/documentation

https://developer.android.com/docs

https://developer.android.com/studio?hl=fr&gclid=Cj0KCQjwgYSTBhDKARIsAB8KuktzDN4F0N1KgZu1Tlems1pzjIfU67MhqFr7r6C5SGZH_JMTUi8yok8aAku9EALw_wcB&gclsrc=aw.ds

https://forge.ens.math-info.univ-paris5.fr/projects/2021-l311/repository

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