Escuela de Ingeniería Informática

IUT département informatique MAUBEUGE

INTERNSHIP REPORT

Mobile development

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School of computer science engineering

Oviedo - Spain

2017 - 2018

Summary

Thanks

At first, I would like to thank the IUT of Valenciennes which allowed me to do this internship and especially to Mrs. OLIVIERA and Mrs. GUEUDET who made it possible.

I would like to thank too Mr. Fernando Alvarez Garcia and Mr. Daniel Fernandez Lanvin and Mr. Luis Vinuesa, my supervisors.

I would like to thank Mr. Philippe POLET for following me up.

I would like to thank Nord-Pas-De-Calais region for the financial help to do this internship.

Finally, I would like to thank all members of the engineering school for their reception during these three months.

Abstract

My internship took place in the school of computer science engineering of Oviedo. I chose this offer because I want to improve my skills as a developer. I want to do a bachelor degree in development then a Master in Mobile development. This is why this school represented for me the best way to learn and apply theoretical knowledge I have learnt during my DUT at the IUT of Valenciennes. An institution that seeks to revolutionise its approaches.

The aim of my internship is to create a mobile application that will allow to the school's students to display their own timetable, get a follow-up on their courses and synchronize the timetable with a calendar app.

A prestigious computing engineering school, founded in 1982, that provides an integral formation in Computer Science, including all levels designed by the European Space of Higher Education (ESHE): graduate, master and doctorate.

My missions were to find a solution for timetable management problems based on the new technologies, namely mobile development.

To that end, I did go through three parts. The first one is to familiarize with the school operating to understand the methodology. The second part is to have a better approach of mobile and web development to know the different possibilities to solve the problems. The third one is to match between the two previous parts with its aims and constraints.

I had the chance to visit Oviedo and learn more about the Spanish culture.

Introduction

By 2020, 70% of the world's population will own a smartphone ; A very strong figure revealed on the site of Android, and that speaks a lot about the future changes, whether in the technological or industrial field.

Mobile development is therefore very promising ; Providing flexible and revolutionary solutions.

School introduction

Since its foundation in 1982, the School of Computing Engineering of the University of Oviedo has been a national reference in training professionals in computer science.

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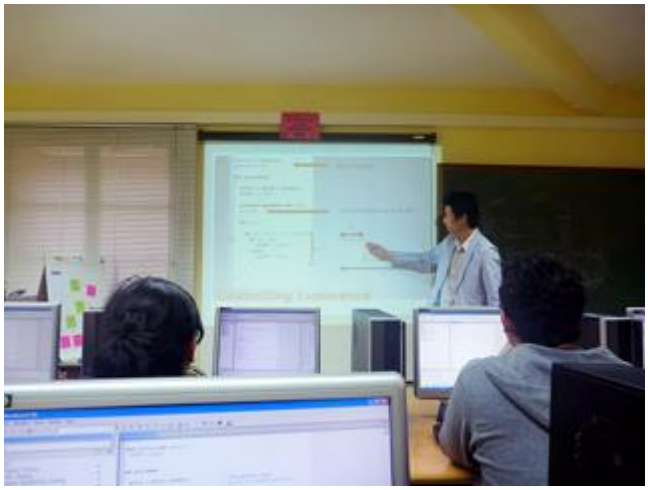
Location

The School of Computing Engineering is located in Oviedo, capital city of thePrincipality of Asturias, an important financial, industrial and technological centre of the North of Spain.
Oviedo is a safe and beautiful city, being the administrative and political centre of the whole region. The city is communicated by plane with the main European and national capital cities : Madrid is just an hour away; Paris, London, Brussels and Barcelona are about hour and a half away while Zurich is only 2 hours from Oviedo.

Specialists on Computer Science

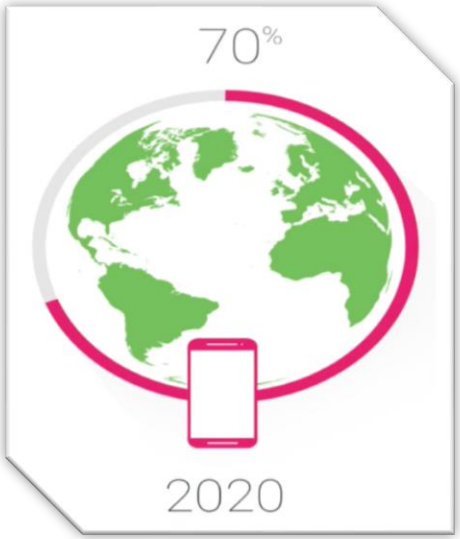


The centre provides an integral formation in Computer Science, including all the levels designed by the European Space of Higher Education (ESHE) : graduate, master and doctorate.

Its facilities are specially designed to teach Computer Science :

- 16 laboratories with over 400 computers.
- 6 classrooms with 691 seats.
- 2 all-purpose rooms that can be used as:
    - Usability laboratories.
    - 3D filming studios.
    - Audiovisual recording and editing labs.
    - Brainstorming.
- Electronics laboratory.
- Wi-Fi Internet connection in all the areas of the building.
- Virtual machines that host an individual virtual server for every student of master courses.
- Auditorium with 112 seats.

Project summary



At the beginning, I had to choose between Web programming (Ionic) and Mobile programming (Android/iOS). My supervisors and I, opted for Mobile development ; On Android.

The subject of the mission is to create an application that gives the students of the school access to their own timetable with a follow-up.

This application allows the user to connect via his ID of University ; Can also store it for an autocomplete next time he tries to log in.

Once connected, the student can display his timetable, get notifications about next courses and the possibility to synchronize the timetable (csv format) with a calendar app.

The problematic

As a student, direct access to the timetable is important ; To be informed of course progress, and possibly any changes.

Therefore, this raises several questions on different fields; Especially in the choice of technology. Different technologies solve this problem, but in different ways. It is therefore essential to choose the solution that best meets our defined criteria. Criteria are based, among others, on cost, accessibility, relevance.

The technology

The possibilities

Ionic :

Ionic is a complete open-source SDK for hybrid mobile app development. Th e original version was released in 2013 and built on top of AngularJS and Apache Cordova. The more recent releases, known as Ionic 3 or simply "Ionic", are built on Angular. Ionic provides tools and services for developing hybrid mobile apps using Web technologies like CSS, HTML5, and Sass. Apps can be built with these Web technologies and then distributed through native app stores to be installed on devices by leveraging Cordova. Ionic was created by Max Lynch, Ben Sperry, and Adam Bradley of Drifty Co. in 2013.

Android :

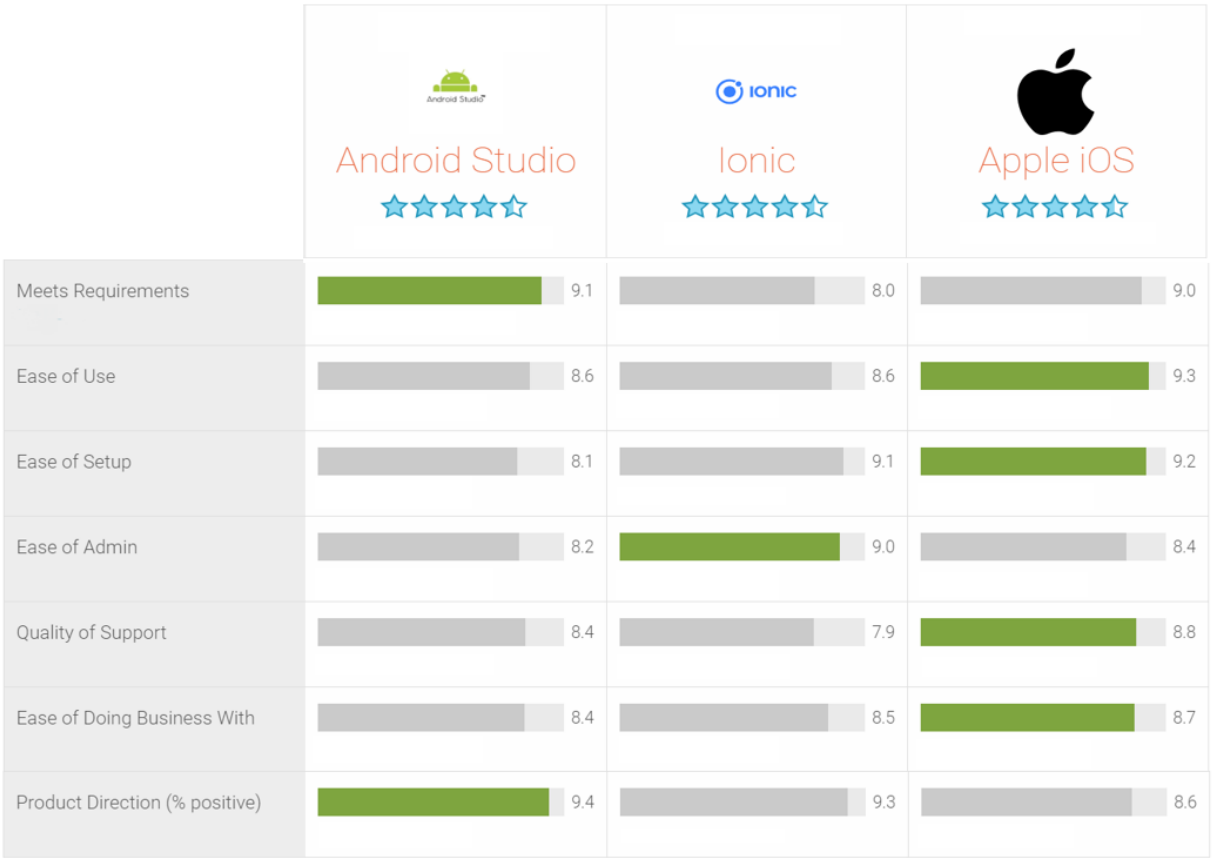
Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is also associated with a suite of proprietary software developed by Google, including core apps for services such as Gmail and Google Search, as well as the application store and digital distribution platform Google Play, and associated development platform.

iOS :

iOS (formerly iPhone OS) is a mobile operating system created and developed by Apple Inc. exclusively for its hardware. It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod Touch. The iOS SDK (Software Development Kit) allows for the development of mobile apps on iOS. Combined with Xcode, the iOS SDK helps developers write iOS apps using officially supported programming languages, including Swift and Objective-C.[130] Other companies have also created tools that allow for the development of native iOS apps using their respective programming languages.

The choice

After studying the different possibilities, my tutors and I decided to choose android.
Following is a table comparing the different possibilities :



Planning

The internship is devided in 3 major parts :

« School » part :

In this part, I got to know the school and its planning system. It represents 10% of the internship period.

« Conception » part :

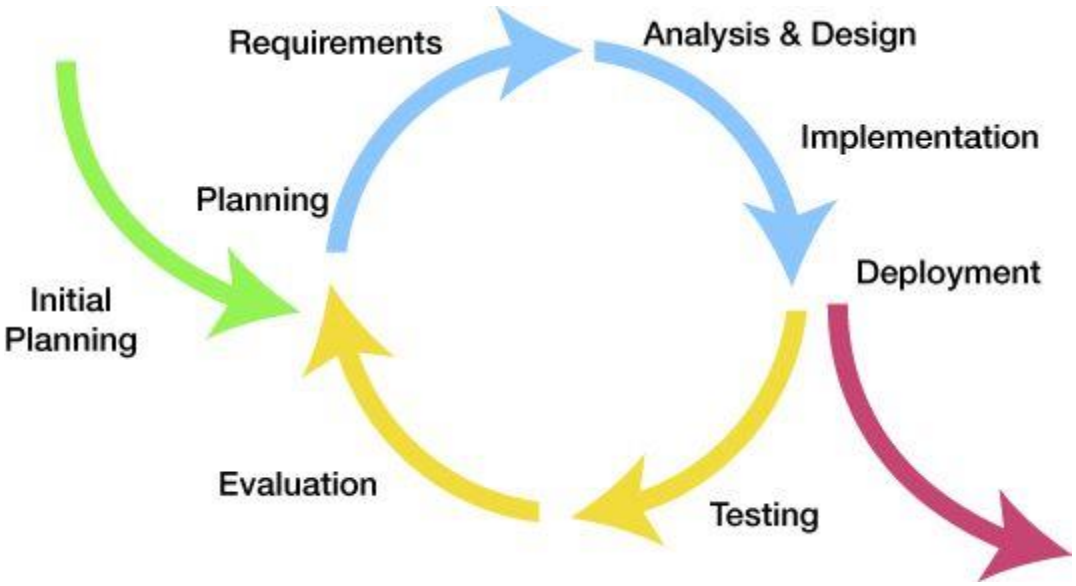
In this part I got to design the application. It represents 45% of the internship period.

« Development » part :

In this part I got to develop the application. It represents 45% of the internship period.

Cycle

I followed an iterative and incremental cycle as the needs were updated periodically. So the second and third parts were sequentially repeated.



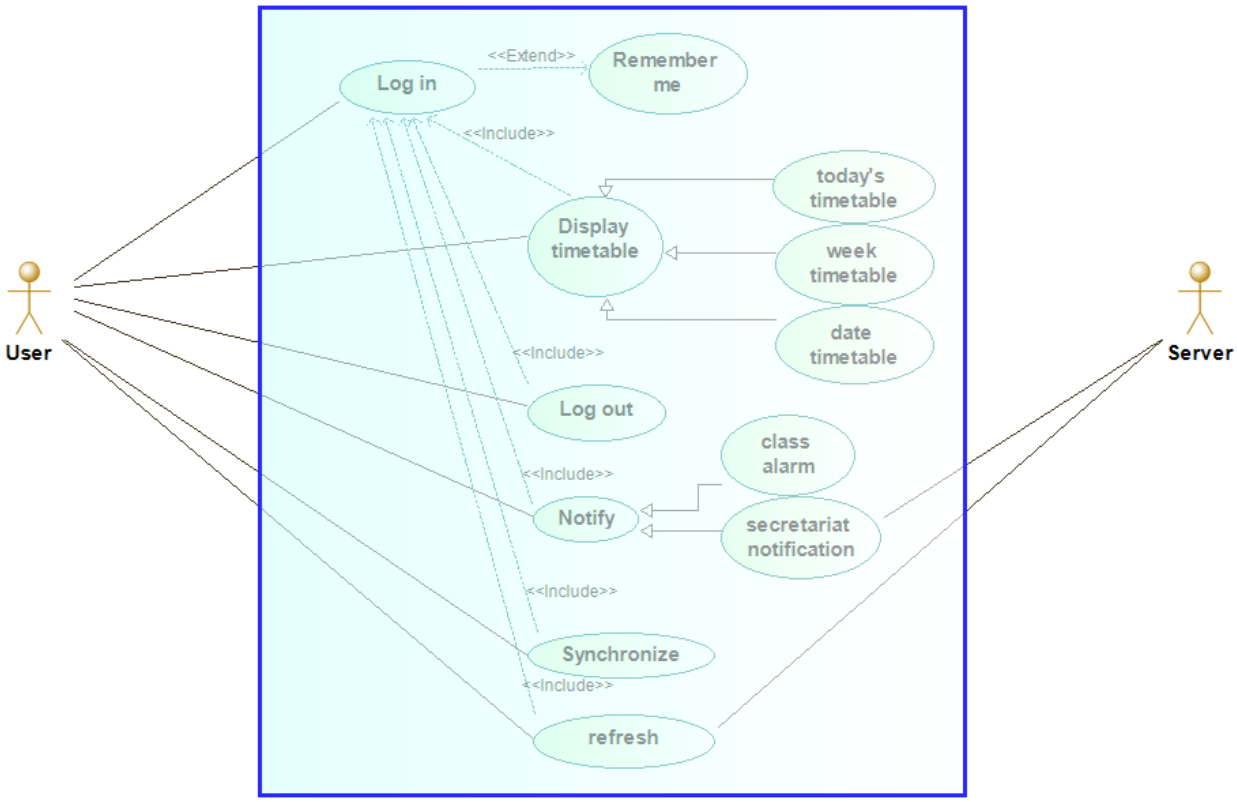
Conception

Requirements

Functions :

The application has several functions :

- Log in
- Remember me
- Display timetable
  - Today's timetable
  - Week timetable
  - Specific date timetable
- Log out
- Notification
  - Classes alarms
  - Secretariat notications
- Refresh
  - On click refresh
  - Automatic refresh
- Synchronization



Design :

Graphical charter

The application design is made to make the application intuitive ; With icons and color palette respecting the colors of the school.
The document entitled "Ovis Design" attached explains the design of the application.

Development

Progress :

The folder entitled "Progress" attached shows progress of functions' implementation.