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# Study and development with the Android platform

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# Abstract

# Acknowledgment

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# 1 Introduction

Mobile phone market currently knows a huge revolution with the emergence of smartphones. This revolution was launched by Apple with its iPhone. Lots of people have been seduced by this one. Google realized the potential of this market and chose to get inside. Therefore it decided to create its own Operating System (OS) for smartphones which could compete with iPhone OS<sup>1</sup> as known as IOS. Its name is Android.

Since Android was created, it knows a very large growth. Indeed, this OS is became the leader in sales of smartphones in the world in just two years after its placing on the market. Due to its free access, lots of manufacturers have adopted it very quickly. Android has a large developer community that contributes to the creation of diverse and varied applications available on Android Market, the online software store developed by Google for Android devices.

The objectives of this project were to begin with study the Android platform, which it is, what it offers to users and developers. And in a second place, the creation of an application using the possibilities of the platform.

A first part will permit to present in details what Android is, the tools used to develop an application and the subject of this project which will present the chosen application. Finally, a second part will describe the implemented application.

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<sup>1</sup>iPhone Operating System

## 2 Context

### 2.1 What is Android ?

### 2.2 Presentation of the subject

With the Android platform, the developer can have many possibilities in the creation of applications. Therefore there are so many applications available on the Android Market.

The final purpose of the project is to use more fonctionnalités as possible in an application to get a view of what is feasible. To save development time, the software (a task manager), realized in the first semester as part of the unit value *Modélisation, Interface utilisateur, Conception Avancée (MICA)*, was chosen.

So that, the project consists to :

- adapt the existing application to an Android smartphone;
- add correctly several useful fonctionnalités to the smartphone;
- have a fonctionnal application.

### 2.3 The task manager

#### 2.3.1 Presentation of existing

The task manager realized as part of the unit part MICA<sup>1</sup> is a software for managing daily tasks that everyone should make. It is a memory aid used by everyone.

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<sup>1</sup>Modélisation, Interface utilisateur, Conception Avancée

## Existing fonctionnalities

This software can realize the following actions :

- manage tags;
- manage tasks;
- sort tasks according to specific criteria;
- assign sub-tasks to tasks;
- change language via a software internationalization in English;
- save the tasks list.

## View of the existing

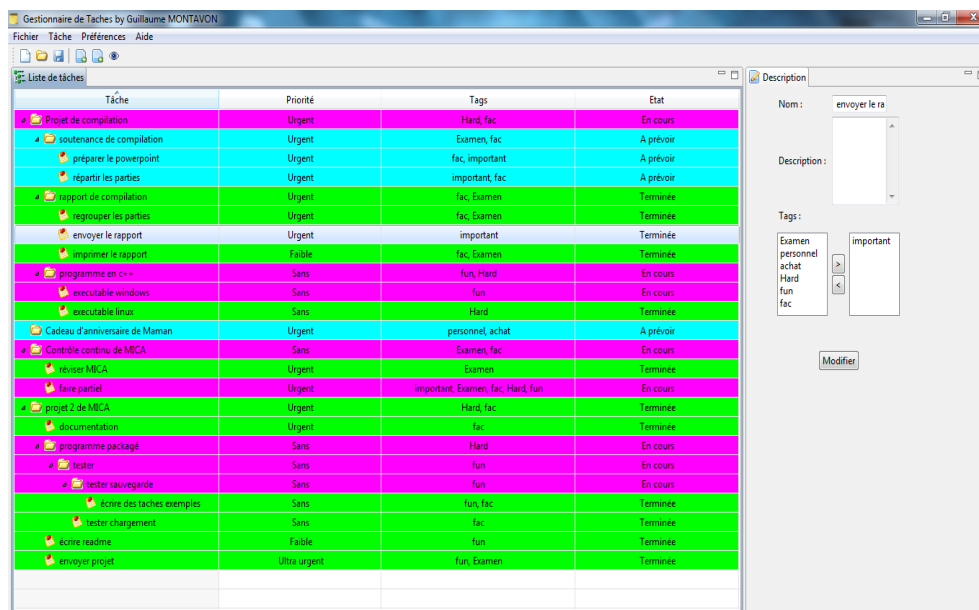


Figure 2.1: Example of screenshot of the existing task manager

### 2.3.2 Presentation of the software for smartphones

The software must be able to adapt to a smartphone while containing the functionalities listed above. That is to say, he must be able to adapt to screen size, have

a simple interface and not over-elaborate, but still full. It must also include new possibilities available with Android.

Omitting the functionalities already listed in the presentation of the existing, the task manager for smartphone must be able to :

- use the SQLite database available on Android smartphones;
- synchronize with a remote server;
- use the various functionalities included with Android;
- manage user accounts on the server.

## 2.4 Specifications

### 2.4.1 Application design

The application can be divided into different main parts. One general part that reflects the objectives of the first software task manager. One part concerning the storage of information on the smartphone. And a last part to manage the remote server.

The general objectives of the application are :

- manage the application with tasks and tags (added, remove, modification, sorting);
- a graphical interface fluid and pleasant to use while still powerfull and complete;
- internationalization of the application in English;
- manage the application preferences.

Concerning the database :

- creation of a coherent basis to manage all the data of the application;
- storing, modifying and deleting data.



Concerning the synchronization with the remote server :

- creation of a database more evolved than the smartphone;
- sending and receiving data with their storage, modification and deleting;
- manage users;
- implementation of various methods of synchronization :
  - overwrite data from the smartphone replaced by those of the server;
  - overwrite data from the server replaced by those of the smartphone;
  - combine data of the server and the smartphone.
- manage a proxy server.

## 2.4.2 Technical constraints

Developing an application with Android imposes some constraints to have a result.

### Development tools

Several tools are available to easily develop with Android :

- Google Android SDK<sup>2</sup> which contains an emulator of smartphone;
- eclipse IDE<sup>3</sup> to develop in Java;
- Android plugin ADT which one can to use the emulator with eclipse.

### Web server

A web server was set up to test remote synchronization. This server is hosted by *OLikeOpen* (web host which offer his services for free) and has a MySQL database and PHP tools for communicating with it.

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<sup>2</sup>Software Development Kit

<sup>3</sup>Integrated Development Environment

## Miscellaneous

There are lot of release of Android and they evolve everyday, so this is why the development was completed and tested on 2.2 release (*FroYo*). However, an emulator is not sufficient to verify the correct running of the application, a smartphone that has the correct release of Android was necessary to validate the tests.

### 2.4.3 Temporal constraints

The first part of the project consists to the study of the Android platform, so the development time of the application depends of time to get one's feet wet with the tools proposed by Android. The rest of the time is a full development of the task manager.

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