

Car Sharing

Project Final Report

version 1.0

17.04.2015

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Contents

Acknowledgments	2
Introduction	3
Project description	3
Goal	3
Defining Problem	4
Development Tools	4
Progress	5
Network-related errors	6
Overall-completeness	6
Learning Outcome	7
Mistakes.....	7
Finally	8

Acknowledgments

I'd like to thank Joseph Kehoe, my project supervisor for helping me in various steps of project development. A special thanks to him for hinting me with database design and also the way he was able to grasp my vision and direct me into more concrete and practical steps. He also was very helpful from a psychological point of view.

Also special thanks to Christophe Meudec and Paul Barry. Chris gave good hints about UML diagrams and without Paul I probably would not know how easy it is to host websites over the internet.

Introduction

Purpose of this document is to give overview of the project, learning experience, different problems encountered, and comments on technologies.

In modern mobile communication era its crucial to keep up with technologies. So I was aiming to develop something that can be useful in term of mobility.

Project description

My project name is Car sharing App which is slightly misleading name as you are not actually sharing the car but rather “car space”. Starting the college 4 year ago I was surprised that there was quite many of us, who were traveling from longer distances to reach college. Since then I thought that would be nice to arrange those things through the app. Later on the idea was forgotten until final year projects were announced. Idea was suggested to and approved by supervisor. So Project Target users were always students in mind, but it could be used by anyone who are lacking the car and are interested to get lift.

Car Driver can be considered as target user as without them App cannot be useful for hitchhikers.

Project is Android application that offers option for car drivers to give a lift for people on the road. Also Hitchhikers can make themselves noticeable by storing their location on the cloud data store. App handles messaging between users.

Version 1 is more simplistic without complex user-rating logic or time calculations. I assumed that project had to have core network functionality and I can ignore some usability - which was mistake.

Goal

Goal of the project was to learn new programming technology (Android SDK), trying to build something meaningful and maybe specialise on this field later on. Project was

chosen to improve understanding about programming in android environment generally. Android is popular device and widely used by people and looks like technological evolution trend continues.

Also I was really keen to learn how network interaction between android and web services can be performed. Project give me a bit of that understanding.

Defining Problem

I had absolutely no idea where to start and had to take try-error approach. The process of creating App System require many different components and often technologies working together to satisfy user needs. And of course user needs can be limitless and could be extremely complicated.

I modelled system to handle requests from different android devices geographically not related.

Original idea was also add some interactivity using google map and chat screen appearing on that map ,where person on google map would be presented as android icon and

Marker Title would be his last message to everybody - but with first networking obstacles I decided to concentrate only on essential and more basic App functions.

Development Tools

Highly recommend to use Eclipse as not only you can learn how to develop android but you would try out other non-android related projects. Try to use Eclipse even if its not your favourite IDE or editor. For Eclipse there are tons of nice utilities in eclipse market that you can test and improve your technological skills.

Progress

Main programming language was Java handy and simple language with lots of readymade samples and tutorials. Website like **stackoverflow.com/** was main source of looking up and fixing my errors.

My main concern was how to get the data and how to store the data from different client devices. Like what way data should be sent, in what format stored and how retrieved.

Most of the android with web traffic solutions were using google API and later I came to conclusion that google offers very nice and elegant push notification service.

Unfortunately I spent too much time trying to find alternative for Google almost ready made solution. But as always if you are looking something - you will find something - so I learn about MQTT solutions (read research manual about it). I was fascinated about this alternative open source product solution. Only limitation was lack of documentation - few of them I found were quite complex to understand from start.

Project progress was not really satisfied - most of the code were written in last month, before the due of the project. Mostly when I become brave enough to deal with different errors.

Approach for development of the project was following: try out as much as possible from some Development tools

Faced a lot of problems - as from Cloud side as well as from client side. Example MySql connection from PHP side - really hard to debug errors.

Luckily client side error were easier to deal with as eclipse provide excellent logging tools (LogCat) for android Debug.

Network-related errors

During project I was facing constantly with network related errors like starting from easiest configuring MAP API key to google account up until getting serious errors where I was attempting to perform a networking operation on its main thread.

I worked out that using **Thread mythread = new Thread (new Runnable()...**

With anonymous Runnable class solves most of my network problems - but I have feeling that this is not very efficiently approach.

Also I had an impression that My App has more network activity than necessary - a especially when application continue onResume activity that are responsible for network service. That way some extra memory leak was possible.

Overall-completeness

Project was not completed. Messaging communication between 2 devices weren't in satisfy level. Also project design should a have differently done originally. It is very confusing when user can change their type in runtime within the same session. Theoretically design should have single type per log in (Where member of the system could specify if he is currently Driver or Hitchhiker at pre-login time).

Learning Outcome

Project gave me a good grasp about how development cycle could look like. A specially research of the different technologies - browsing endless websites, where each site could spread a light for with small hints the direction I should follow.

It was interesting to learn and emulate cloud servicing locally - a specially LAMP installation and configuration phase. Although a bit time consuming, It was still worth it from practical side, but i would not recommend this approach (better find free php+mysql host, if those are technologies you are using and upload code periodically to test out).

Definitely Java programming experience - it was interesting jumping into deep end of the Networking in Android. It was a bit difficult to cope with errors, but it gave a good relief, when error were overwhelmed.

With this “hard way” approach I had to learn basics of android development and various other basic steps.

MQTT gave my application absolutely different perspective - it gave me a bit of understanding, what's the nature of push notifications.

As I was not very comfortable previously working with PHP - this kind of choice of technology refreshed my knowledge with Server side scripting - a specially writing to or retrieving from SQL Database.

Was handy to learn few commands from git version control.

Mistakes

One of my mistakes were starting too late with development - I was slightly over thinking about the system and as mentioned didn't really know where to start. It's the kind of against agile development - where sometimes it's easier to start doing something without seeing full picture. But nevertheless I was following pattern - App should have some minimum usable functionality, easy to use without too many bugs in system (although the last part reminds unanswered due the lack of testing time).

Finally

This project was interesting stepping-stone and hopefully I will have a time to redesigning the program and rebuild version 2 ,which would be more solid from perspective of handling network traffic and messaging as well with more usable UI.

This project was based on practical experiments alongside with research.