DMS assignment 3 Carpooler Android app

Andy Chen, Andrew Drawneek and Anton Vasetenkov

# Introduction

This project is associated with Distributed and Mobile Systems class from AUT and aims to create a useful, user-friendly android app for car-pooling users.

“Carpooler” is a technology platform that connects driver-partners with riders through a smartphone app.

A user can use this app as a passenger or a driver: as a passenger, the user can express their interest of a lift in the app whereas as a driver the user can offer lift the passenger of chosen.

Both driver and passenger indicate their preferred destination by tapping on the map. When the user logs on as a passenger, the app notifies other driver’s on the system of their request for a ride. This helps the two to connect at the pickup location. When a passenger is collected, the passenger “tags on” by scanning the driver's NFC tag or QR code. When they arrive at the destination, the passenger “tags off” in the same fashion.

# Server setup

The following software is needed for the server:

* Glassfish 4.1.1
* MySQL

Follow the steps below to start deploy the server:

1. Navigate to the Glassfish’s administration page, e.g. <http://localhost:4848/common/index.jsf>
2. In the task panel in the right-hand side of the page, click on Application link
3. In the Applications page, click on the Deploy button to select the web application file: CarpoolServer.war
4. Once the application is deployed, one can click on Launch link in the Applications page to make sure the server is running properly.

# Client setup

The Carpooler app is targeted to SDK minimum level 16. To get started using the app, the server’s address need to be set up first.

1. Go to settings of the app by clicking on the settings button in the app’s main screen
2. Three different types of servers are available for choosing (emulator, local or remote)
3. Select the server to remote or local server, make sure the address of the server is typed correctly

When user use the app as a driver, they can setup their own NFC or QR code tag, which then can be scan by a passenger to tag on or off the system.

How to create an NFC tag or QR code?

1. Go to settings of the app by clicking on the settings button in the app’s main screen
2. In the General settings, user can click on “Create my NFC car Tag” button to launch the process
3. While in the write NFC tag screen, user can get the NFC tag ready and click on the “OK” button to write the tag. The tag can then be placed somewhere in the car for the passenger to scan when they are collected and when they complete the trip.
4. For QR code, user can click on “Create my QR code” button the General settings
5. The OR code will be generated on the screen; the passenger then can use their phone to scan this code. Alternatively, user can print out the QR code on paper and stick it in their cars.

# How to use

Base on the user, this app can be used to ask for lifts or offering.

1. To use as driver or passenger, click the “I AM A DRIVER” button or “I AM A PASSENGER” button respectively;
2. After the user indicated their travel option, they can select a destination point on the map using Google map APIs;
3. When the destination is set, the “BEGIN” button becomes active, when use the app for the first time this button will active the login or create new user account screen;
4. User should follow on screen instructions to finish the login process;
5. After logged, a list of available drivers/passengers will be shown on screen;
6. As a driver, the user can choose which passenger to offer the lift;
7. As a passenger, the user will receive a message on screen if the user was chosen a driver and estimate time of picking up the driver.

As a driver, user can earn points for offering lifts, this process needs the passenger to use their phone to act as a bus card for tagging on and off, which gives out points the driver.

How to tag on/off?

1. When the user is picked up by a driver they can scan the NFC tag on the driver’s car, they can also use the QR code scan function of this app if the NFC reader is not available on their phone;
2. After scanning the NFC tag or QR code, the passenger should press the “Tag on” button on the screen to create the record;
3. When arrived at destination, the passenger should press the “Tag off” button on the screen to finish the ride, which will give points the driver according the distance of travel.

# System diagram

The following diagram illustrates the system’s option flow.

