Latch Mycar Installation and User Manual

Diego Alejandro Gamboa Peña

Bogota-Colombia.

Installation

Summary

This hack is intended to control the start of a vehicle from latch. It is divided into two parts; The first is a web application that is responsible for storing in a database the serial of the vehicle (It is understood by serial of the vehicle to the code associated with the raspberry pi) associated with the accountid of the user latch, The second consists of a script designed in Python that controls the boot circuit from the constraints determined by latch for the vehicle serial corresponding to the larch user's accountid.

Web Application

To facilitate the use of the plugin was implemented an application that will provide the pairing service between the device and latch. The application is built in PHP (from template) and allows the registration of users and through a serial associated with the raspberry pi, it performs the synchronization between the device and latch storing the user's accountId.

The built application is in the GitHub CarSec repository, it consists of a registration form, an entry form, and a restAPI used by the client application to obtain the data needed to connect with latch.

Description.

- CarSec: Is a web application in php that allows the pairing of the raspberry with latch and provides the services and information necessary for the status queries of latch services. At this time the application of tests can be seen at http://107.170.113.246/carsec/

- Mycar: Plugin in python for consumption of latch services and state checking.

- Latch: Service of elevenpaths described with amplitude in latch.elevenpaths.com

In the following flow diagram we see the basic sequence to perform the pairing of our mycar System with latch.

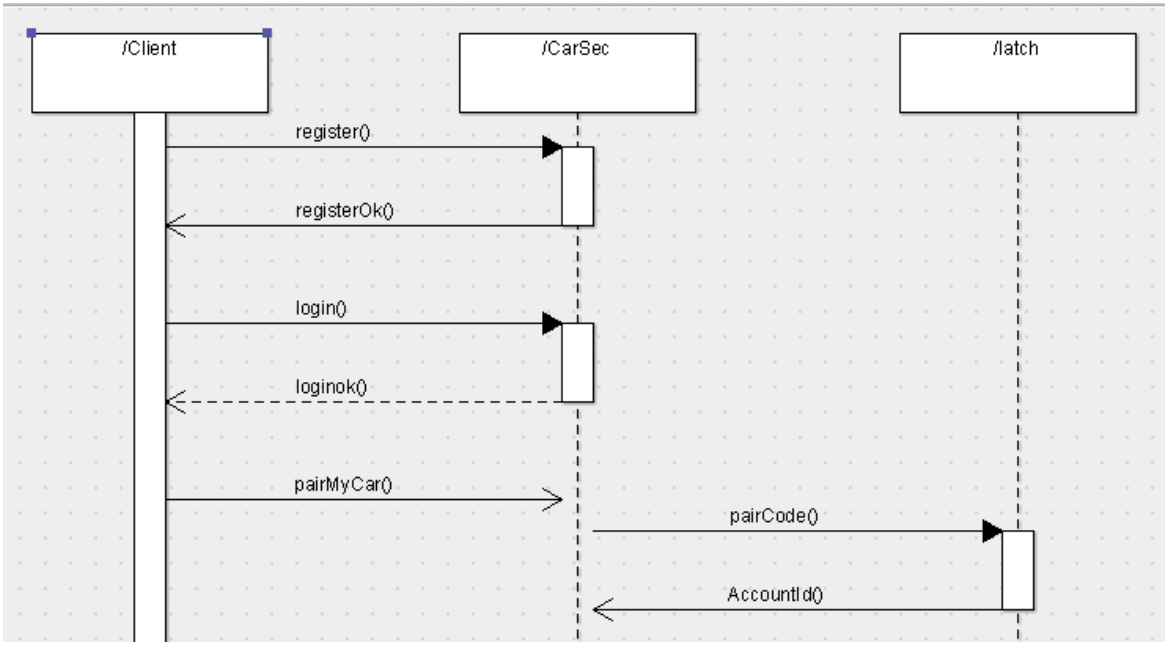

Illustration 1 Pairing Sequence Diagram

1. User registration in the application: in this step the user account is created in CarSec, application that will be in charge of orchestrating the services between latch and the vehicle. In screen 1 we can see the data needed to register.

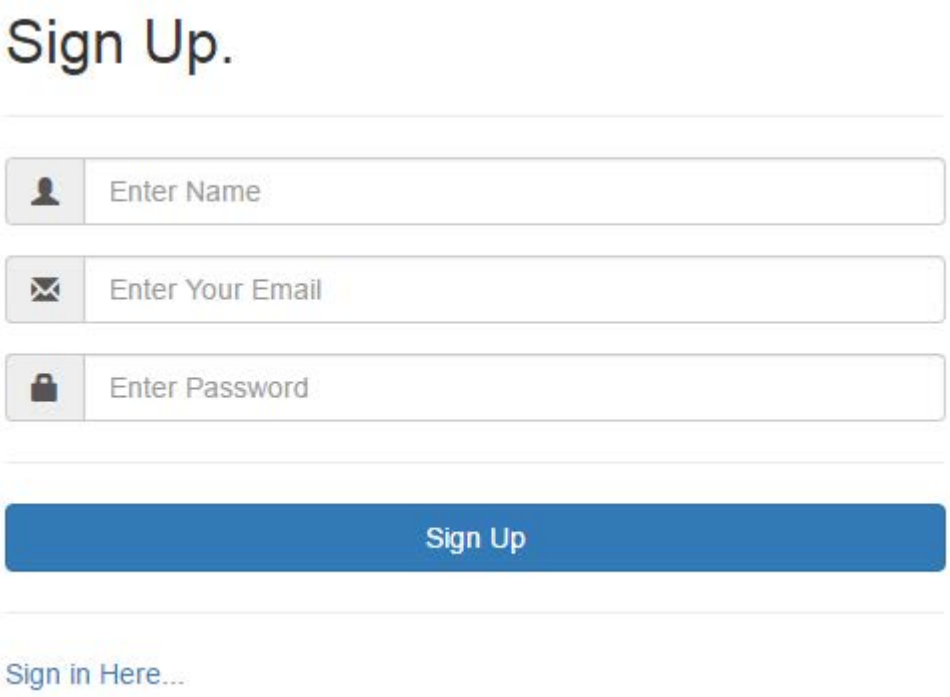

Image 1

1. Login: using a simple login screen the user will be able to access the application.

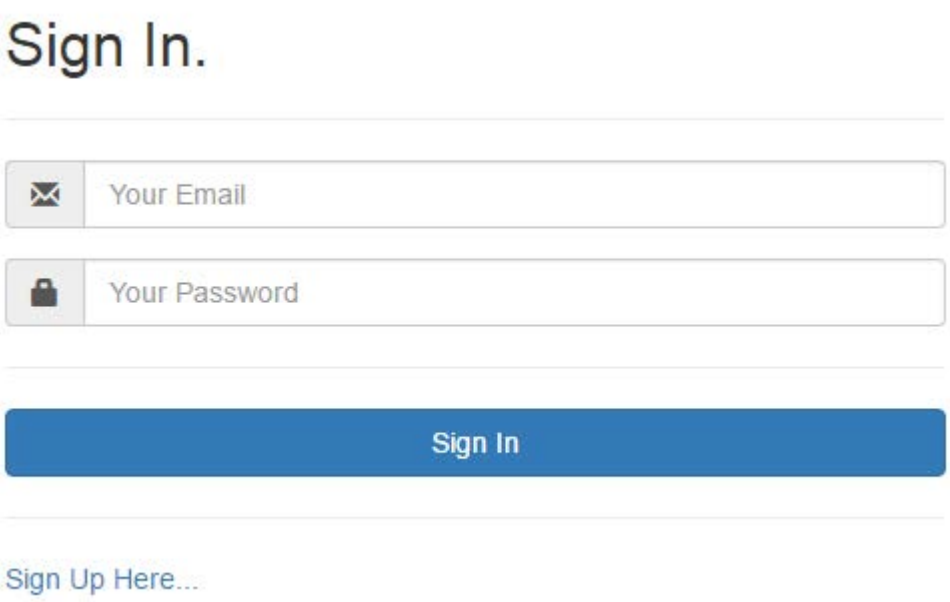

Image 2

2. Initial screen: after login in the application we will see image 3. This screen shows the list of vehicles we have with MyCar devices

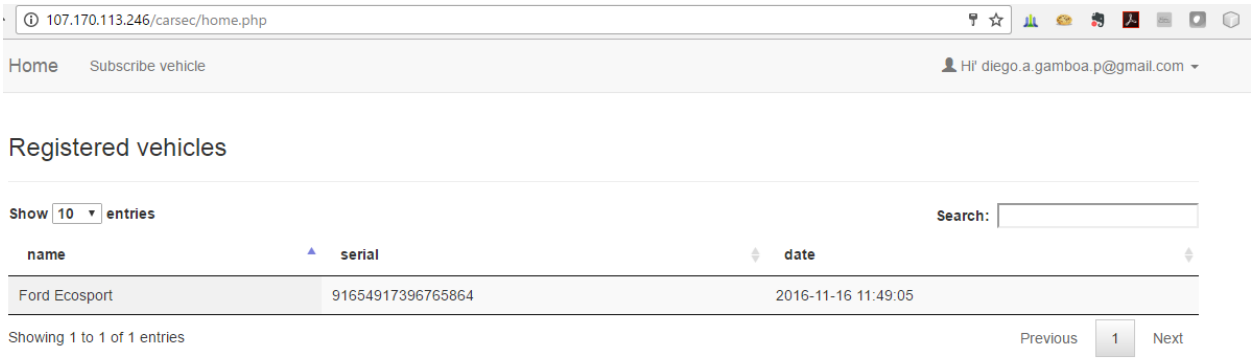

Image 3

3. In the Subscribe Vehicle option is where we will do the pairing of devices, three fields must be completed:

Vehicle: Name you want to give the vehicle in the application.

Device Serial Number: Serial number enrolled in raspberry PI.

Latch Pair Code: Pairing code generated in the latch application.

If the process is successful we will see our vehicle registered in the home page.

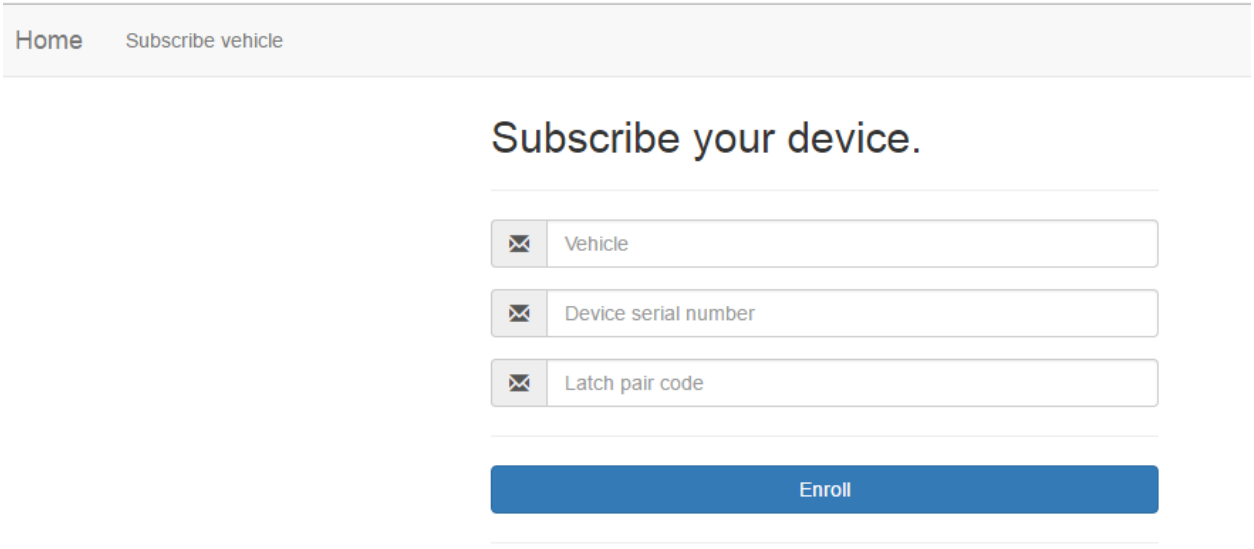

Image 4

In case you want to install the CarSec application on our own server the installation process will be very simple:

Prerequisite software:

1. Linux distribution (Tested on Ubuntu 16.04).
2. Apache web server
3. MySQL
4. php

Installation:

1. Download the source code from GITHUB: https://github.com/skyg4mb/LatchMyCar/tree/master/carsec
2. Placing it in the path that was determined as Apache web server, is regularly /var/www/html
3. Modify the following files with the connection data of your database.
    a. dbconnect.php
    b. include/config.php
    c. server_response.php
4. Create database:
    a. The database must contain for the minimum operation.
        i. Usuarios table:
        ii. Vehicles table:

Client

For the installation of the plugin is necessary both hardware and software, the hardware listing is as follows:

- RaspBerry Pi 3 model B
- 1 Resistence 1.1 kohms
- 1 Resistence 330 ohms
- 1 Rele array for Raspberry

Prerequisite software:

- Raspbian https://www.raspberrypi.org/downloads/raspbian/
- Latch mycar https://github.com/skyg4mb/LatchMyCar/tree/master/mycar

Software installation:

The software does not need additional installation to be downloaded inside the raspberry pi, it is advised to store in the path / opt / LatchMyCar

The following files must be modified:

- Detect.py
    - In the method called latchService ()
        - AppId: App ID given by latch
        - SecretId: Secret code of application, granted by latch
        - url: Serial number of the raspberry-pi, for now it can be any numeric code but must match the one registered in the web page.

Hardware Installation.

In this case the installation test was carried out on a Ford EcoSport 2106, the ignition method of this vehicle is explained in illustration 2.

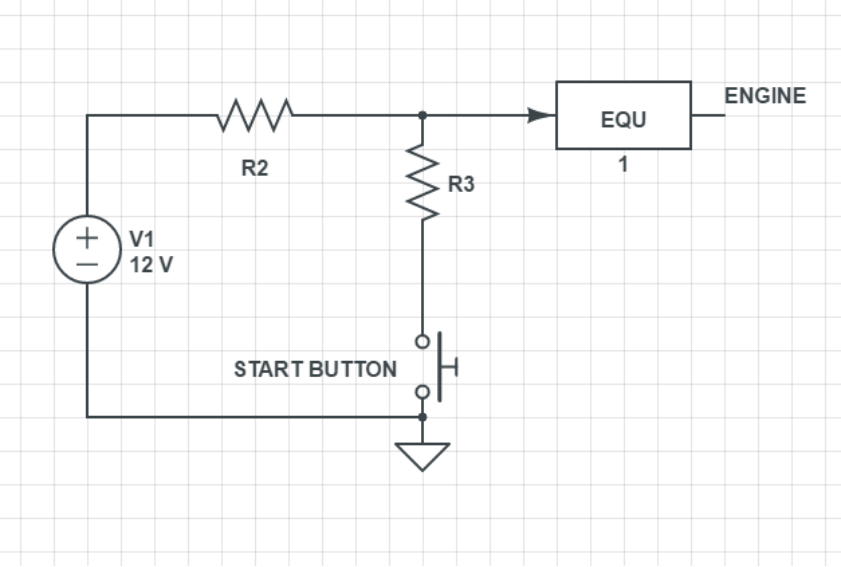

Illustration 2 Ignition Ford EcoSport Original

To implement the Latch Mycar system the circuit will be modified by the one shown in figure 3, the description of each compose is next:

Emergency: This switch serves to disable latch mycar in case of emergency.

R1: 1K

R2: 330

RLY1: A specific ras arrangement is recommended for raspberry pi.

RBPI: Raspberry pi 3 model B

R3: 330

R4: 1k

P4-P22: GPIO ports.

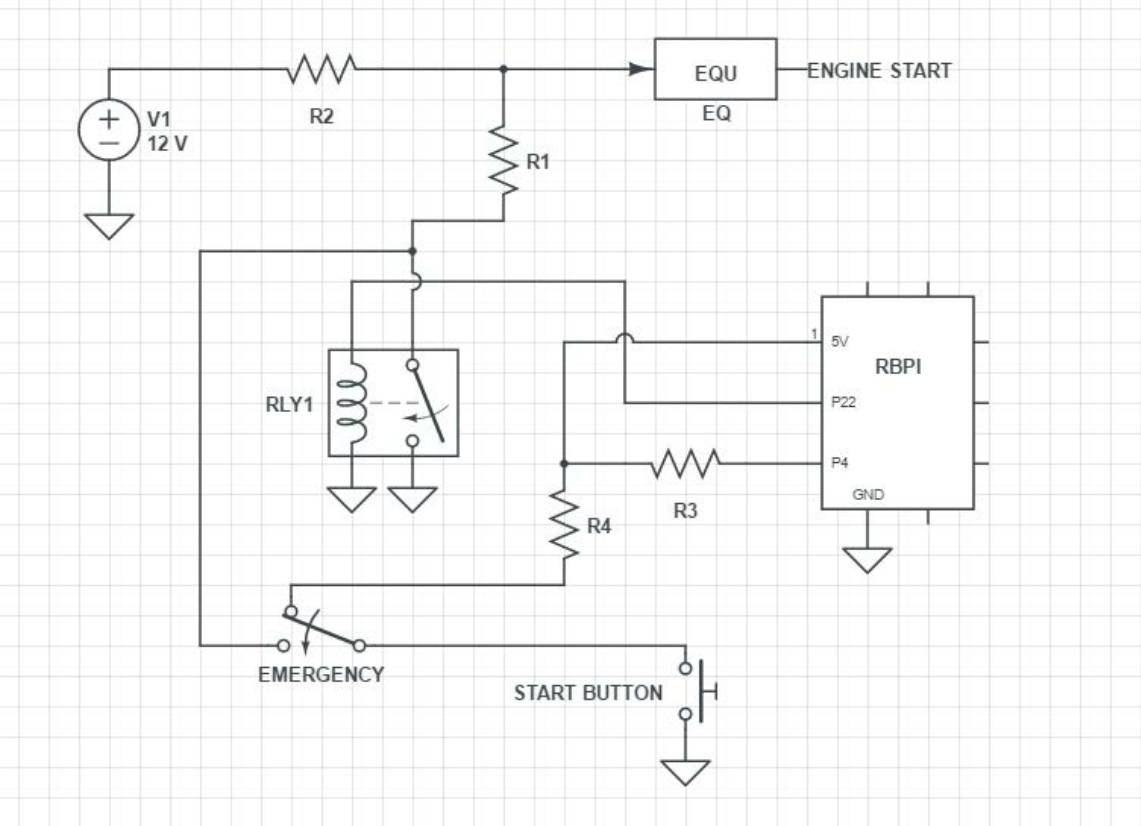

Illustration 3 Ignition circuit modified with LatchMyCar

Here is the sequence diagram used by the client application, in case the service is not blocked:

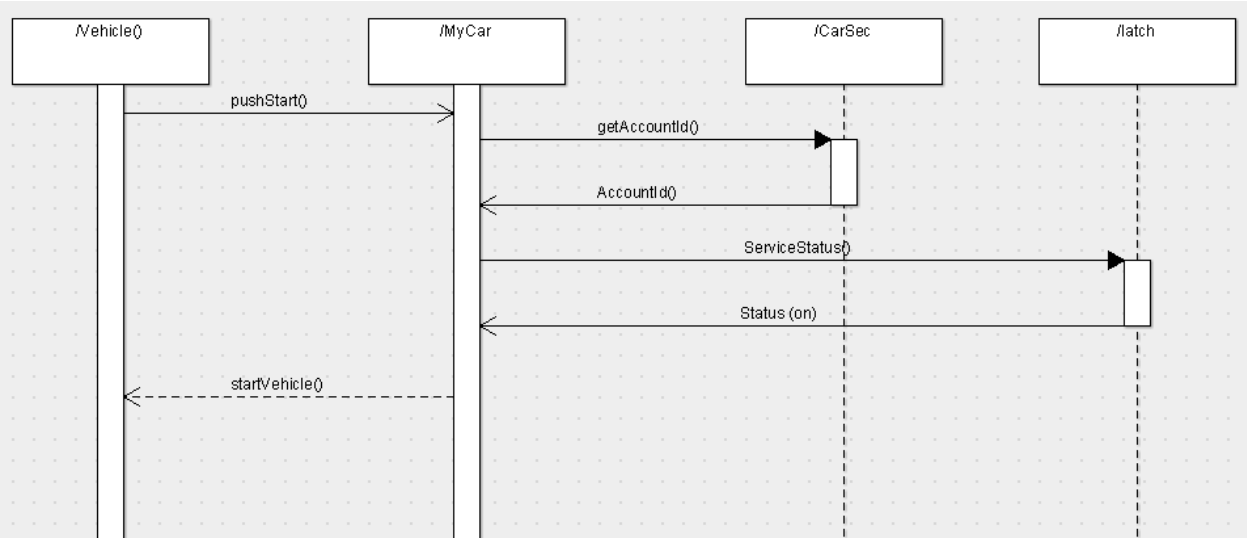

Figure 4 Sequence diagram in case of service available

Use case diagram in case of service blocked:

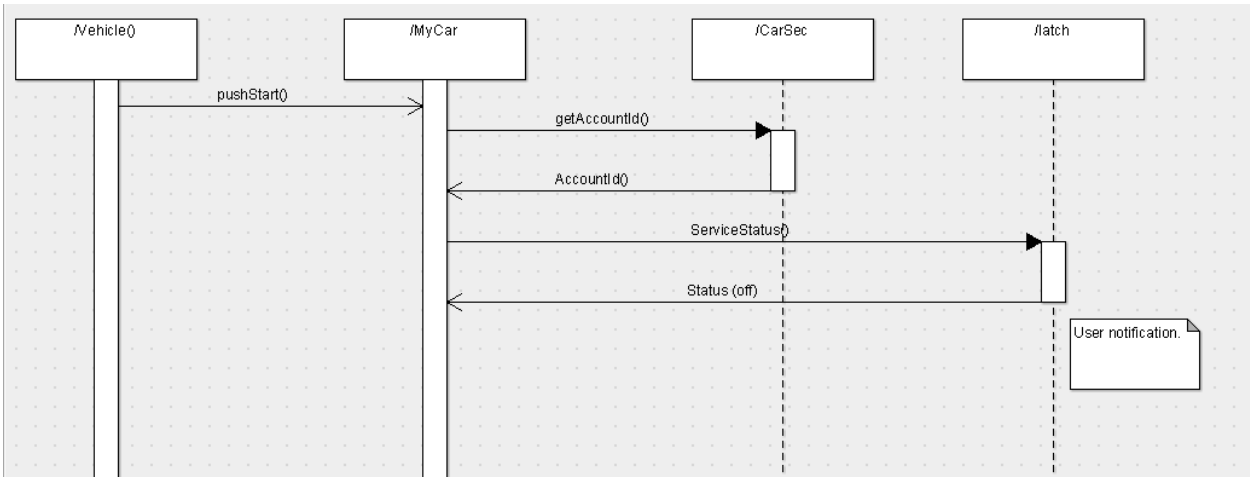

Figure 5 Sequence diagram in case of service blocked