

Notifying system for bad parking and fines setting through GUI interface

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Abstract

The problem with parking in big towns such as Tirana brings different problems like parking in wrong places. There are some extreme cases like different emergencies when it can be dreadful for the person not knowing where the owner of the car might be in that moment in order to leave you pass with your car or that of fire workers. Also when you drive more than one car you may find yourself to have forgot your driver license at home and if the police ask you for it you may take a fine not being able to show it. It is possible to build some systems that may handle these problems by giving the possibility to notify the other person to come and move his car and as well to generate fines automatically if he does not take in consideration the notification arrived by the system after there has been a complain of blocking a passage.

1. Introduction

With the economic growth the number of cars in Albania and especially in Tirana is becoming enormous. It can be count that each family owns more than two cars. And people normally use them to reach their place of work or to accompany their children to school or to the kinder garden. Besides the economic growth and people incomes or environmental problems it brings, we focus our attention in this work in the problems regarding the parking of the cars. In particular we study the cases when people being in a rush park in front of a gate. It is not a rare case to see different notes in front of the gates where they ask people not to block the passage with the car parked over there. To overcome such problem it was thought and then realized the building of a system that might help to notify the owner of the car to come and move

the vehicle because a passage is blocked. Also the fines setting and the notification of the person is another big problem. As sometimes people find that they have to pay for some fines that they did not know when and where those were assigned to them. So another system is built in order to visualize the fine with date, place and reason why the fine was taken. Also this system makes it easier for the police to set the fine and the records may pass automatically and will be registered in the agency of entrances and incomes. Actually such a web application already exist where all the fines and taxes are registered in it and people can search for them by login into this web application. But this other system built by us is not just a digital register where it is required the employment of some operators that have to enter the data manually for their registration in the database. Then the fines are displayed after that people performs a search into the system. The system of fines setting works differently from the one applied by the government, in this new one the registration of the fines start from the police. Instead in the digital register of the ministry of finance the path starts with the police who set the fine to the driver. Then all the fines written in book are registered by entering them manually into the system. The fines setting system is more complex with different tasks and profiles and it is the police who put the fine and notes as well the reason why he put it. After the fine is generated and saved in the system database, our system will communicate and exchange its data with the other system the one of finance ministry. This work is organized in six sections where in the first section we give an overview of the problem, while in the second section we specify more in deep what these two web applications are built for. Then the work proceeds with the third and the fourth section where are described the different users profiles configured in the systems and is explained the interaction between them. Instead in section number five are brought some new ideas for incoming future works. The work is concluded with section number six where are listed the references. In the reference section we have mentioned only the books and web pages visited in order to build the systems.

2. Systems description and functioning

The idea to build these two systems comes as a necessity in different occasions in our everyday life. Everyone might have experienced the situation to be late for a meeting and in that moment you may park even in front of garage or passage. You may think that it will be ok for a couple of hours to park there as you see none having a car parked inside the garage. And then you may forgive that you have to go and displace your car and you continue with your work till the end of your shift. This is quite rare to happen during the day but in the night this situation is more probable to happen. And if you have to accompany with the car somebody to the hospital than the situation become very tense and the only solution will be to call a taxi if the passage is blocked by another car. So it was thought to construct a system which will help people to communicate through a web application with the owner of the car that have blocked the passage. The connection between the owner and his car will be through the car plate. The person will have to log in into the system if he/she has already an account or otherwise he/she might create a new account. Where the account is created for the first time it is required the name, surname, ID number, car plate, email and mobile phone number. All these fields in the form are required because by doing like this you enrich the database by holding more data regarding different persons. So the database will keep the records by using as a primary key the ID number of the person. The records once registered in the database can be used for any query required in the case when this same person may have parked his car in a wrong place. So by login in into this system it gives the possibility to write the car plate and it automatically generates an email to the owner of the car in case you need to contact him for moving his car. The person whose passage is blocked can send again another notification to the owner of the car after he waits for a while. If the person ignores these emails then after a while the system might bring a request to put a fine to owner of the car. This second system is created firstly for the purpose to allow the police to put the fines and secondly to become helpful to the other system in case of really hazard situation when the person is not getting the message or at least he is ignoring it on purpose. The police through his interface set the penalties without the need to write it down in letter. The fine will be generated automatically and the only thing that the police might do is to specify from the list which law infringement the driver has done.

And the element selected from the list will generate automatically the fine amount and also it will subtract the points from the person's digital driving license. This system will help in facilitating the procedure of registering the fines in the police workstation and in the agency of taxes and incomes. This least system will allow any driver to log in and to check for any fines and penalties that the police might have put to them. Also it will help to show in the display of your smart phone your driving license in case you lose or have forgot it back home. You can show it to the police through the application in case you are asked for this document and you do not have the card with you.

3. Systems interaction

Web based systems require the internet connection in your phone and a browser already installed in it [O3B14]. Web applications are easy to access and their response time is short, during the information retrieval from the query in their database. The time it takes for a web application to respond will depend on the internet velocity and on traffic generated toward the application. The person may use it in the moment when he needs to notify another person to come and move his/her car. Or he might want to check the fines he has to pay. So before you can have access to the web applications it is necessary that first you login or create an account in the system. If you have already used before the application you have to remember the username and password or to have it memorized it in your browser. So the next time you want to access it you just open the web page and the authentication will be done automatically from the browser. The form that the person needs to fill in when he is trying to access the system that sends a notification of a wrong car parking for the first time is shown in Fig.1. The system will give you the possibility that through a query in its own database of the cars plates to find and show you the car owner email. So the system will show you such information if the records of car owner exist in the system database. The field that might be filled once that you have been logged in the system is only the car plate as shown in Fig.2. After you have entered the car plate whose owner data you are searching for in the system, if owner records already exist in the database the system will show you his/her email address, Fig.3. To the owner of the car whose car plate is queried

successfully in the system will get notified by an email generated automatically by the system.

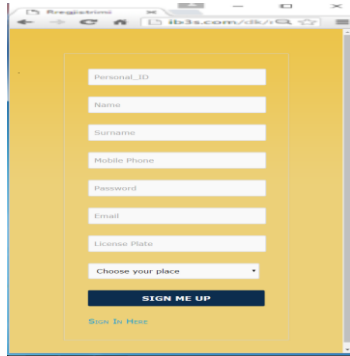


Figure 1: New account creation in the system



Figure 2: Querying the database with the car plate number

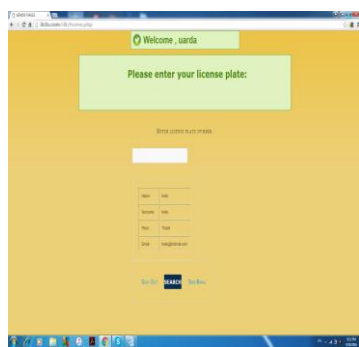


Figure 3: Querying result about the person data like email address

The content of the email is the same all the time asking to go and displace your car from where you have parked it as it has blocked a passage. The notification content and message will be as shown in Fig.4. Such a system alone will be quite a useless tool and people may ignore its notification, but if you employ another system that might generate penalties in case of ignoring the complaints targeted to the same person than it becomes more interesting. So this first notifying system will be interfaced with another one that will be connected with the police central station that handles the problems of traffic and street security. This second system may generate fines if you ignore the notifications done via emails. The fine will be generated after a predefined period of time set in the first system the one that sends the notification emails. The second system of fines helps the police to generate the fines when there are some rule breakers cases in the street [DPSHTRR16].

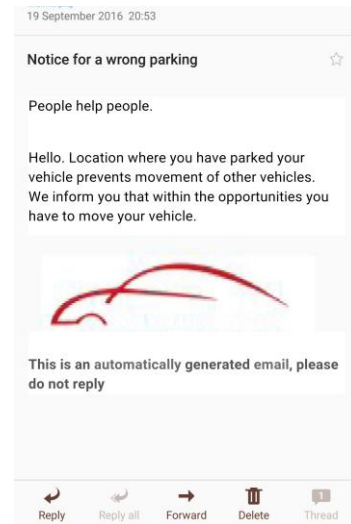


Figure 4: The email generated from the wrong parked system

When the police catches some abnormal behaviors of the drivers in the street like driving too fast passing the velocity limit of the road, or passing with the red light, or incidents that may occur in cross roads, etc. The fines generated from the second web application keeps a lot of details and their registration and display will be

very fast like in real time as it does not require other extra procedures to register them in the digital register of finance ministry. The procedure a police might follow to set a fine to a car driver is like accessing any other web applications. First the police need to log in into the system and then he can put another fine if he sees that there is any law breaking behavior in the streets, his form looks like as in Fig.5. The police will fill the predefined fields of the form through his interface and as well he has to specify the rule of the street code that the driver might have infringed. Then the system will automatically generate the different penalties that it holds. Penalties are connected to the low infringements by including them in a list and it is already set in the system by following our national street code and rules as it is shown in Fig.6. After filling the fields regarding the details on the date and place where the law break have occurred, the police might select and specify from the list of law infringements the respective one of the case. Then he might press the button that subtracts the points from the driving license and then the other button that set the fine. The order of the actions is configured like this in order to prevent any error to subtract twice the points from the driver license for the same case. This least system is designed as well for another functioning that of digital driver license. The digital driving license holds all person's data contained in the driver license card. It holds as well some extra information regarding the points you have lost or won during the years. So the person might not need any more to hold his card with him as if the police ask for it you can show it from the application.

The screenshot shows a web interface with two main sections. The top section is titled "Type the license plate" and contains a search form with a "LICENSE PLATE:" label, a text input field containing "757BW", and a "SEARCH" button. Below this is a table with columns: "First name", "Last name", "License plate", "Brand", "Model", "Color", and "Capacity". The table contains one row: "Atan", "Mehmet", "757BW", "Ford", "Focus", "gr", "5". The bottom section is titled "SET FINE" and contains a form with fields for "Date:" (2016-09-13), "Time:" (18:04:44), "Location:", and "Street:". Below these are fields for "Car type:" (Ford/Focus), "License plate:" (757BW), and "Capacity:" (5). There is also a "Violation:" field with a dropdown menu. At the bottom, there are fields for "Fine:" (20000) and "Deduction of points:" (8), and a "Police officer:" dropdown menu with "Atan Mehmet" selected. Two buttons, "Deduct points" and "Set Fine", are at the bottom right.

Figure 5: Police's interface in the system of fines and penalties setting

The screenshot shows a web interface titled "SET FINE". It contains a form with the following fields: "Date:" (2016-09-13), "Time:" (18:04:44), "Location:" (Tirana), and "Street:" (Mylhem Shyti). Below these are fields for "Car type:" (Ford/Focus), "License plate:" (757BW), and "Capacity:" (5). There is also a "Violation:" field with a dropdown menu. At the bottom, there are fields for "Fine:" (20000) and "Deduction of points:" (8), and a "Police officer:" dropdown menu with "Atan Mehmet" selected. Two buttons, "Deduct points" and "Set Fine", are at the bottom right.

Figure 6: Police setting the fine to the car driver

With the introduction of the digital driving license it may be revoked if he the driver is not careful to follow the rules and obligations of the street code. And the driver loses it when the driver keeps repeating those errors with a high frequency within a predefined period of time. Some similar applications are already in use in different countries where it is already applied now for many years the digital driving license. But the system described in this work is quite different as beside the fine setting and the digital car driving license it is designed as well to interact with the other system of notification in case you have parked and have blocked a passage. Another feature that might be considered and most probably is already set in different systems around the world is its configuration to have established as well the interaction with the velocity street radar. So this time it will be the radar that might read the car plate and ask to the fine setting system to generate automatically the fine. The selection of the law infringement will be from the different rules broken by the driver and those will be set and selected by the radar application. The fines generated will be assigned to the owner of the car and as well if for example he passes when the street lighter is red it brings to his driver license cancellation for a predefined period of time the same with his car license which may be revoked for a period of time. So in such case the owner losses the right to drive and to bring out of garage his car. All this action will be taken automatically by the system without the police to do it.

4. Systems use cases and realizations

The web applications that are brought in this work may seem simple and of small importance than they really

are. These systems represent a tool for helping people by generating notifications to the persons by asking them to move their car. While in the second system it allows the viewing on the screen of your smart phone of your digital driving license and as well it helps into viewing also any fines and the points that you may have lost or gained during a certain period of time. If we go and analyze more in deep the notification system of wrong parking by supposing that the database holds many records regarding different cars plates owners. Then it is possible to appreciate its applicability focused on different fields of the application like those enrolled in the list below: Creation of some standard list or special list for emergency cases. Like in case when the car is parked in front of a hospital entrance and the ambulance can not pass. The disclosure of car plates cloning, where the plate can be used in another car to do any crime with it. In this case the system notifies the real owner of the car plate even that his car is being parked in a different place far from where he is notified to have parked wrongly the car. This is possible to find out because the system gives you the possibility to complain in case you are continuously disturbed by many emails which ask you to go and displace your car. But your car actually is parked in the garage that you may own or you pay the rent of it. Through this system the police may ask the collaboration of the citizen to notify the authorities in case they see a car and plate of a person that is an out of law person. The system that notifies in case of wrong parking is programmed with PHP and for the front end part are used HTML, CSS and JavaScript, for the database is used MySQL. The database is administrated from the browser it is in MySQL, it is saved in phpMyAdmin which is an open source program. It is possible to perform different tasks such as creation, table deletion, table modification, and all these actions can be performed from the SQL or from the administrator. The second system is programmed with Django of Python [Django16], [Sweigart15], [Lutz13], where different views allow to the users to interact and to perform all the allowed actions with it. So for example the police after having being logged in the system can put a fine, the user can log in to control the fines or his driving license points. The administrator can add or delete a profile and an account. As well the administrator of this system can check if a police put quite frequently different fines to the same car plate and

he can generate reports based on what he have found to the police station. The interaction of the two systems will be performed through an API. This interaction means the generation in automatic of the fine in the second system through the first.

5. Conclusions

There can be introduced some modification in the notification system of wrong parking where is needed to set the timing between the different emails sent by the same user. Also there might be necessary to build another feature of the system that gives the possibility to the owner of the car to complain if somebody is abusing with the system and is sending emails in continuous. And to prevent the generation of the requests toward the other system for setting him/her a fine in case of false alarms. Also the profile of the administrator might classify the user into different list like if someone is trying to make a joke with his/her friends by sending very often requests toward this system after that you have verified of them being false alarms he can put him/her in a grey or black list.

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