

Intellectual System for Rendering Transportation Services

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Abstract. The information system "Rendering of motor transport services" is considered. The general description of the system and its relevance is made. Examples of known similar systems are given. Their advantages and disadvantages for consideration in the information system development are analyzed. A detailed description of each of the components of the information system is made, namely: server part, program for ordering services and database. A step-by-step description of the process of creating each of these modules of the system is made. The choice of programming language, web tools, startup devices, operating system, database management system is justified. The principle of information system operation is described, the conceptual model of the system is demonstrated. The example of using this information system in real conditions is given. Instructions for typical use of the information system by the user are provided. The results are analyzed and conclusions are drawn regarding the relevance of the information system creation and its practical application.

Keywords: information systems, driver search, system analysis, database management system, conceptual model, functional model.

1 Introduction

An intelligent information system for the provision of motor transport services is new in our country, but it is already quite useful in some life situations and is developing quite quickly.

This system can be used to improve the lives of people who are unable to drive their car. This work shows the idea of creating a website where a user can find and call a driver.

To use the service, just go to the site, choose a city where you need a driver and contact him. He will take you to your destination and park your car so that you can use your own transport the next day. This service will help you:

1. safe to get home;
2. avoid road accidents in the case of drunk driving;
3. to prevent fines and other penalties.

2 Formulation of the Problem

The development of an intelligent information system for ordering road transport services is very important nowadays, because this system is useful for people who are unable to get behind the wheel of their car.

In order to study the subject area "Ordering motor transport services", I conducted an analysis of such resources in order to improve the operation of the information system for the provision of motor transport services.

3 Analysis of Recent Research and Publications

The information system for the provision of road transport services is quite relevant today. It enables you to call the driver to take you to a designated location on your vehicle. According to statistics, in 2019 alone, over the course of 10 months, 1892 road accidents involving drunk drivers killed 223 people in Ukraine [13].



Fig. 1. Statistics of accidents in Ukraine for 2019

Every year, the number of accidents does not decrease, so information systems for the provision of transport services are needed in our country and are gaining popularity. It is with their help you can significantly reduce the number of accidents.

There are quite a few similar information systems. All of them are customer oriented and have prioritized the provision of a particular service. Yes, Uber is an advanced service that makes it possible to find and call a taxi. This system works only in large

cities of Ukraine and is accessible only by phone. In this case, the plus is that the client can see the movement of the driver on the map.



Fig. 2. Uber taxi ordering service interface Fig. 3. Uklon taxi ordering service interface

Uklon is similar to Uber. It was developed by a Ukrainian programmer and became one of the first and most popular taxi booking services. Its advantage is that it works in most cities. Unlike Uber, Uklon can order taxis from both your phone and computer.

Karshering occupies a niche on the bench of transport services - one minute car rental, the price of which includes fuel, tires, car washing, taxes, maintenance. This service is only gaining popularity in Ukraine and operates only in major cities. To use it, you need to install the application on your phone and register. Karshering works around the clock and all operations are performed over the phone. The map shows free cars as soon as you find the one you need - open it and make it through the app.

Most often, all of these services are used only in large taxis. In addition, they have a number of disadvantages:

- you cannot independently select a driver to provide the service;
- taxpayers charge an additional cost for the order, which automatically increases its cost;
- awkward interface.

Creating an information system for providing motor transport poles, I analyzed all the similar ones and considered their shortcomings in order to improve the developed IP. Advantages of my developed system:

- user friendly and clear interface;
- the ability to independently select a driver from the proposed list;
- customer oriented pricing policy.

The lower cost of this service is achieved due to the fact that users register and use the system for free, that is, no interest is charged for the service. Also, for ease of use of the system, I performed an adaptive layout, so it is convenient to view the site from other devices.

4 Formulating the Purpose of the Article

The purpose of the article is to describe the intelligent information system "Rendering of road transport services", to consider its step-by-step creation and integration (integration of different subsystems into a single system).

To accomplish this task, you must complete the following tasks:

1. Creation of a ready-made database containing all driver information;
2. development of website design;
3. creation of website functionality;
4. Familiarize yourself with similar information systems to identify their disadvantages and advantages.

In the future, the site can be localized to other countries simply by translating it into other languages.

The created information system can be used as a prototype to create similar services.

5 Presenting Main Material

The subject area of this study is the ordering of motor transport services. This area is much needed in today's world, because every day thousands of people face the problem of finding a driver. This topic is relevant, so I decided to develop such an information system.

The search for drivers is as follows. Initially, drivers register on a site that contains all the information about themselves. After that, people who want to find a driver go to the site and search for drivers in the city they need.

This information system contains 2 external entities - the user and the customer. The database of users is the drive in this system.

In modeling the information system, I used the Hein-Sarson methodology and the Chen notation.

The main components of data flow diagrams are:

- external entities;

- subsystems;
- processes;
- data storage;
- data streams.

We use Heine-Sarson notation to construct DFD.



Fig. 4. The context diagram of the information system of ordering motor transport services

After decomposition, we get a flow chart. Let's construct it in the notation of Heine-Sarson.

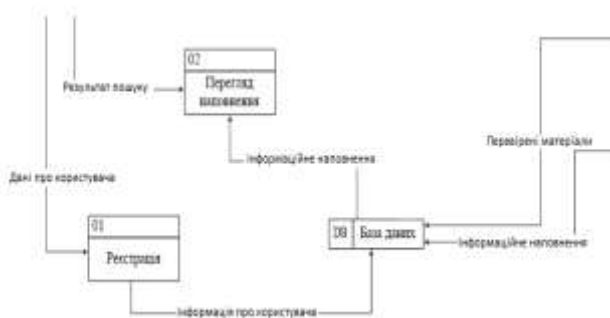


Fig. 5. First-level DFD in the Heine-Sarson Notation of a Road Transport Information System

Creating a database begins with its design. At the end of design, the structure of the base, its composition and connections will be determined. The structure of a relational table is determined by the composition of the columns, the sequence, the type of each column, and the key of the table. There are two approaches to designing a database. The first is to identify the main tasks for which the database is created. The second is to define the subject area, analyze their data and establish typical objects of the domain. But a rational approach is to use both approaches.

For my information system, I used a relational database. In a relational database, a higher level of data abstraction is achieved than in a hierarchical or networked database.



Fig. 6. Database model for information system for ordering motor transport services

6 User Manual

Figure 7 shows the main menu of the site, on the main page are new ones that are flipped automatically. The site navigation is also located at the top.



Fig. 7. The main menu of the site

Java framework security was used to create the registration on the site. To get started, the user must be registered. The user who wants to register must be clicked in the navigation to the "Registration" button.

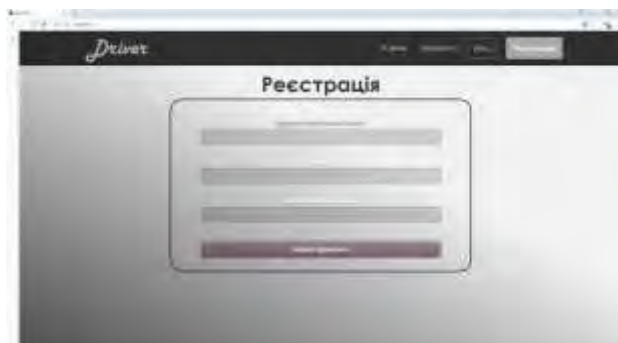


Fig. 8. Registration window

Upon successful registration, you are sent an email confirming your mail. You need to click on the link, then you will open the site.



Fig. 9. Mail confirmation after registration



Fig. 10. User profile

In the user profile we can add and edit information about ourselves, add photos and see a list of all users of the system. To edit or add information, you need to click the Edit User Data button

To find a customer who is not logged in to find the driver, click on the Search button.

After clicking this button, a list of all system drivers will be displayed. You can order a driver by calling the driver's profile on the phone or filling out an order form, which will be made soon. Fig. 11 shows a list of all registered users of the system.



Fig. 11. List of system users

7 Conclusions

The article describes the step-by-step creation of an intelligent information system "Ordering motor vehicles", justifies the use of specific development tools, namely: programming languages, web tools, devices on which the software and operating systems are installed.

An analytical review of literary and other sources was conducted to gather information on analog systems, the most up-to-date methods, approaches, tools and algorithms for solving similar tasks. The already known systems of rendering of motor transport services are analyzed. A comparative analysis of the advantages and disadvantages of systems similar to the one created. The result was that the system planned for development is relevant, important and in demand today. It can reduce the number of road accidents in our country.

So, the stages of information system development are defined, the system is analyzed from the point of view of practical application, the process of its creation and the reasons for choosing software and hardware are described in detail, the functionality of the system is described in the form of a user manual. Taking all this into con-

sideration, we can conclude that the development of the information system "Ordering road transport services" is relevant today for our country.

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