EPHEC

Development Of Car Rental Management System

Rapport de stage

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Abstract

This Car Rental System project is designed to aid my client manage his cars up for rent through an online system. The latter has many features such as users can search for available cars; view profile; book the car for the time period; administrator can keep track of all the customers' information.

This system increases customer retention and maximizes efficiency when it came to automating all car reservation tasks and receiving up-to-date important business statistics.

By using this system, the admin can manage their rental, bookings, profiles, car details etc. It has a user-friendly interface which helps the user to check for cars and rent them for the period specified. Upon a successful reservation the customer receives a confirmation email detailing everything he/she needs to know about their reservation.

The main focus of this project is to help any user easily find a car that available in the system as well as help my client manage rented cars and users in the system efficiently.

To propose the best possible car available to the client a Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS), was used.

1 Chapter 1 : Introduction

1.1 Overview

"*If your business is not on the internet, then your business will be out of business*"

– Bill Gates, Founder of Microsoft (September 2011).

The car rental management system presented in this report is a web-based application for my client his services accessible to the public through the web and furthermore keep and maintain records about reservations.

The main functions of this application is to keep tracks of vehicles, customers and booking. It provides useful information to the admin such as making reports of vehicles to be delivered/picked up and acts as a vehicle management system by monitoring the use and price of the vehicles. From the user point of view, this application is basic to diverse individuals' arrangement to travel or move from one place to another for business or school purposes, tour, and visit occasions. Thus, making this application extremely useful.

1.2 Problem Statement

Personally speaking, I have found myself in a situation trying to get a car over the phone but all lines seemed busy, or maybe I was in a noisy place, where it's difficult to speak, or vice versa, somewhere I had to be quiet. A tricky task at times. Modern life is busy and dynamic. No wonder people lay their hands on anything that can make things quicker and easier. Car rental software development significantly simplifies the entire process of booking a car.

My client has some personal vehicles at disposal for people looking to rent a car for a given period. But for the time being my client runs fully his business on his phone(s) by receiving calls of people who want to rent some of his vehicle, or those that need a car for a certain period, but does not have the desire or opportunity to buy it.

He wants to go digital and to accept online reservations and manage his fleet with ease. In today's digital environment, users would rather book cars online instead of calling the rental company to make reservations. If you are running a car rental business, developing a car rental software becomes a must.

I got in touch with him to implement a well-designed car rental system to help not only him accept online reservations and manage his entire fleet but as well as his potential customers reserve available cars online. This car rental system should allow him to run his business smoothly and effectively.

1.3 Stakeholders

Several types of stakeholders can be noted when it comes to our software. The most obvious are those that requested for this software. In my case it's my Dutch born client that basically hired me to develop this car rental management web based application for his upcoming business.

1.4 Aim and Objectives

Below is the objectives of this project :

- Develop a user-friendly & secure system that protects client information as well as confidential information of the company
- A customer self-service platform to view vehicle availability in real-time,
- 24/7 accepting online reservations,
- Removing the paper-based processes,
- Detailed analytics and statistics, i.e., the software should deliver an up-to-date analytics to see how his business performs,
- Avoiding risks of overbooking and the factor of human error,
- The reservations' timeline to track the status of the vehicle due for maintenance, for delivery or pick-up, or currently on the road,
- Cuts down on administration processes to improve business efficiency,
- Making data-driven decisions based on detailed statistics,
- Feedback system for clients to give reviews and rate the service,
- Provide an estimation of the influx of bookings to prepare for future demands.

1.5 Scope of Proposal

The scope of a system is there to define its boundaries. In other words, what is in scope and what is out of scope.

The scope can be presented from user aspect of view :

- The platform should 24/7 available to customers
- The system does not support online payment at the moment
- This system is for use by only one company (my client).
- Rented cars should be used at the moment in one country Belgium
- No mobile application will be developed for this car rental web application.

2 Chapter 2 : Literature Review

2.1 Overview

This chapter contains a literature review for the application that was developed. The review describes the existing systems that are similar to the car rental management system. References are made to source from the internet.

Furthermore, literature review helps to provide an overview on how the **TOPSIS**[1] technique was used as a method in multiple criteria decision-making to prioritize the best car possible for users of the applications.

2.2 Multi-Criteria Decision Making Method

As the name implies, Multi-Criteria Decision-Making also known as MCDM is about methods for making decisions when multiple criteria need to be considered together, in order to rank or choose/prioritize between the alternatives being evaluated.

2.2.1 Technique for Order of Preference by Similarity to Ideal Solution - TOPSIS

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> The **TOPSIS** is a multi-criteria decision analysis method developed by Hwang and Yoon (1981) with further developments by Yoon (1987) and Hwang, Lai and Liu (1993) (Surendra, 2016).
>
> - Wikipedia

2.3 Related Work

A. Avis

Avis[2] is Belgium a company based in Brussels.

This platform is used to ensure the customers have access car hire services. There are several characteristics for this application. User can find car and pick-up point based on a customer selected location. Customer can easily choose a car, book it after a successful online payement. The customer can select which location to drop off the car upon return date.

[1] TOPSIS
[2] Avis

3 Chapter 3 : Requirements Analysis and Design

3.1 Proposed Methodology

3.2 Requirements Analysis