Bilkent University

Department of Computer Engineering

CS 353 Term Project

Car Rental System

Project Proposal Report

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1. Introduction

As part of our CS 353 course, we are tasked with building a “Car Rental System”. This report outlines the necessary topics for the proposal of the project. Headings like “limitations”, “requirements”, “entity-relation model” convey the necessary information to be able to conceptually understand the scope, abilities, and restrictions of the project.

The aim of this project is to build a database that is efficient, perceptible, and clear to understand with an intuitive front-end. The end product will form a car rental system where entities will be capable of creating profiles, renting and returning cars, leaving comments, and many more.

2. Description

The project will be a web-based application for managing a car rental company with multiple branches. The platform will be used by both the customers of the company and the employees. It will have different features for different types of users. The main purpose of the platform is to allow the customers to reserve cars for a period of time. But apart from its main purpose, it will fulfill all the requirements of a multi-branch car rental company from renting the cars to company management.

The website will be hosted on the internet and the visitors of the website will be able to view the cars that are available, their prices, their locations, and their reviews without logging in. Visitors will be able to create a new customer account with a unique username and a password. If they desire to reserve a car without logging in, the platform will work as if the visitor was logged in, but on

the payment/reservation page the platform will require the user to create a customer account.

Customers of the application will be able to reserve a car for a period and request it to be delivered to a specific branch of the company. While reserving the car, they will have two options: the normal payment option, which will be processed after they return the car to the branch and the pay now option, which will allow the customers to pay for the car at the time of the reservation. The pay now option will give the user a discount. When reserving a car, additional options such as insurance, child seat, or GPS will be displayed with their prices. Customers will be able to add these options to their reservations from the platform. Customers will be able to edit their profile in order to submit personal information such as their address and their driving experience. They will also be able to give feedback to the cars after they return them.

Employees will be able to check reservations, approve or decline reservations and respond to customer requests. They will also be able to view customer profiles. They will submit the car as returned when it is returned to the branch and they will report any damages on the car, which the system will charge additional costs for.

Branch managers will be able to hire new employees and buy new cars for the branch. The general manager will be able to open new branches and appoint new branch managers.

3. Requirements

3.1. Functional Requirements

3.1.1. Customer

- Customers can log in or sign-up.
- Customers can change their passwords.
- Customers can create a profile.
- Customers can provide and verify their driving experience.
- Customers can reserve a car depending on their driving experience.
- Customers can select a branch in a city for the car to be delivered at.
- Customers make payment for a car after the rental period is over.
- Customers must pay a certain penalty if the rental period deadline has passed.
- Customers can give public feedback/comments after returning the car.
- Customers can report a car if it gets stolen.

3.1.2. Employee

- Employees can review reservations and approve/decline them.
- Employees can respond to customer requests.
- Employees can charge customers a penalty fee depending on the damage done to the car through the branch.
- Employees can charge a customer a penalty fee for missing the deadline for returning the car

3.1.3. Manager

- Managers can buy more cars and sell them.
- Managers can hire more employees.
- Managers can fire employees.

3.1.4. General Manager

- The General Manager can create new branches.
- The General Manager can hire/fire managers.

3.2. Non-Functional Requirements

3.2.1. Security

- The passwords must be minimum 8 characters long and contain at least one lower case letter and one upper case letter.
- All personal information must be stored encrypted.
- Data will not be shared with third-party applications.

3.2.2. Performance

- The system will respond to operations by all users within a span of 2000 ms.
- The web application should be able to handle the traffic of 1,000 concurrent users.

3.2.3. Usability

- All text will be larger than or equal to 1rem.

- In case of images not loading, an alt text will appear as a placeholder instead of the images.
- All text will have at least 4.5:1 contrast ratio with the background.

3.2.4. Supportability

- The application should be able to run properly on all modern browsers and their mobile versions.
- The application should be visible with cookies disabled.

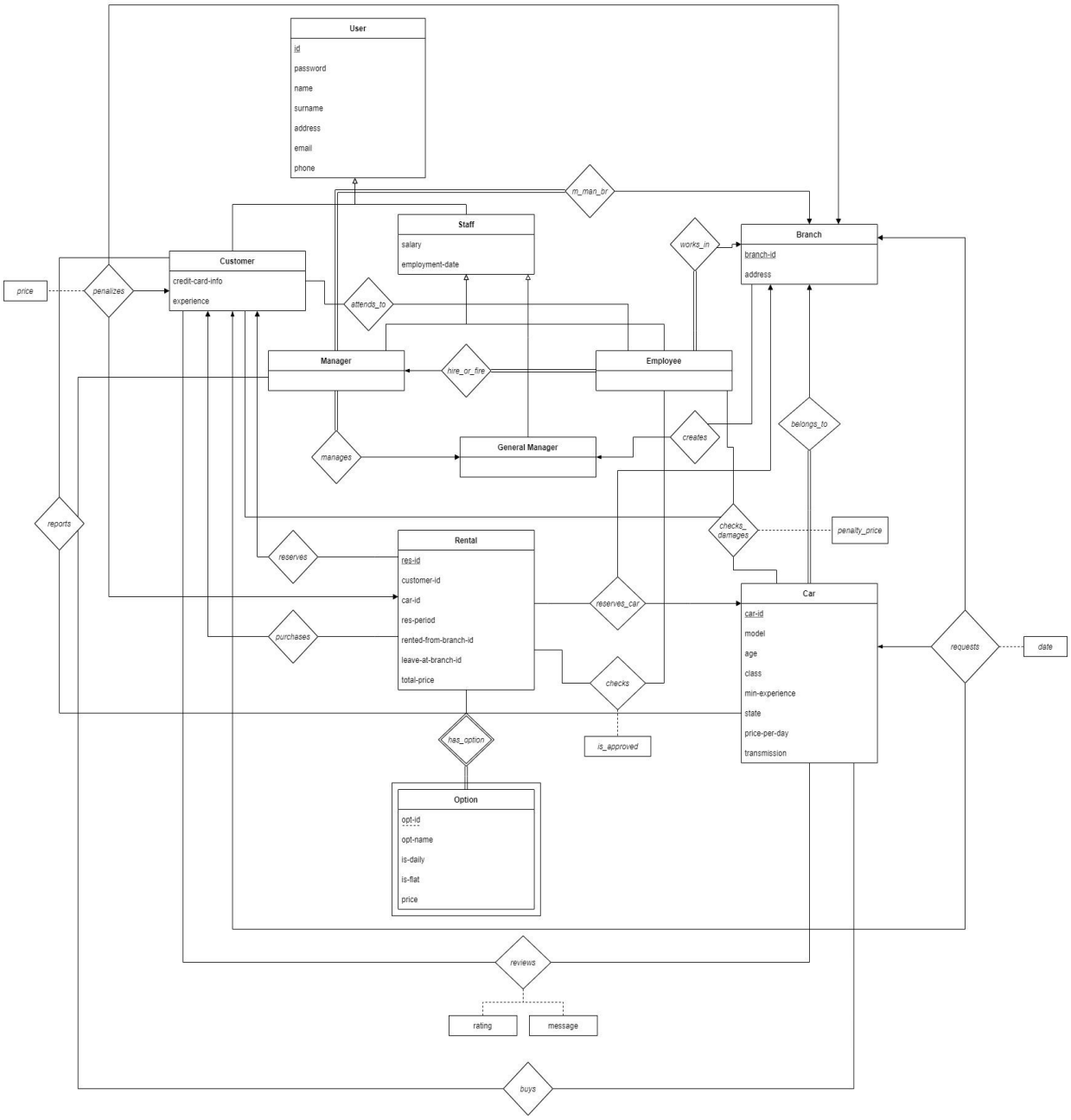
3.3. Constraints

- MySQL will be used to handle the database.
- PHP, JavaScript, HTML, and CSS3 will be used for website development and server communication.

4. Limitations

- Customers that have a short driving experience cannot drive cars with high market values.
- A car can only be rented to a single customer at the same time.
- A customer can only rent a single car for the same time period.
- A user cannot choose an already chosen username.
- A customer cannot rent a car while they have unpaid fees.
- A customer can only give feedback to a car after their rental period is over.
- A branch can only have one manager.
- A manager can only hire or fire employees for their branch.
- There can only be one general manager.

5. Entity-Relationship Model



For a detailed view, please go to:

https://cs353rental.github.io/resources/CS353_group-15_ER.svg

6. Website

Our project website where the reports are hosted can be found at:

https://cs353rental.github.io/