Rakan Maher Joudeh 202010464
Rand Wail Dabbuor 202010428

Design and Architecture Specification

Project Phase 4

TURBO Project

Document Version 1

Printing Date: 15/8/2023

Team

Rakan maher Joudeh

Rand Dabbour

Submitted to:

DR. Mohammed Nassar

Software Engineering

Amman Arab University

Rakan Maher Joudeh 202010464
Rand Wail Dabbuor 202010428

Revision History

Version	Date	Comments
1.0	15/8/2023	Initial version of Design and Architecture Specification documentation

Rakan Maher Joudeh 202010464
Rand Wail Dabbuor 202010428

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Rakan Maher Joudeh 202010464
Rand Wail Dabbuor 202010428

1. Introduction:

1.1 The SPMP in Brief:

A design document is a complete high-level solution to the problem presented. It should be

detailed enough that somebody who already understands the problem could go out and code the project without having to make any significant decisions

1.2 Purpose

The purpose of this Software Design Description is to clearly communicate the design for Our Rental system. The Software Requirements Specification for the Rental system document was utilized in developing this design document. Appendix A provides a traceability matrix from the Software Requirements Specification through this Software Design Description.

This document describes the decisions, rationale, architectural design, mechanistic design, and detailed

design of the Rental system. This Software Design Description shall be

used as the basis for implementing the Rental web application.

During the development of the Rental system, developers keep logs of their individual time spent working

on the Rental system that will be compiled into the final project report. A set of pre-defined process scripts

are followed by the developers, which includes the following artifacts: Development Plan, Requirements

Document, Test Plan, Design Document, Configuration Management Document, Source Code, Test Results, and a User's Manual.

1.3 System Overview

The Rental system mimics the operation of Renting cars in car Stores, providing the ability to rent a car with the same process as in-real car stores. From checking the Available cars with the prices to the

confirmation of order that allow you to verify your identity, age and driving license all online, it allows you to choose whether you want to pick the car in store or to be delivered at your place.

Then it directs you to a safe, secure paying process.

final destination point. The system will meet the specified timing, transition, and motion requirements

provided in the Software Requirements Specification document.

Figure 1 illustrates the physical layout of the system as a set of logical components.

1.4 Scope

The design diagrams, design decisions, and rationale covered in this document describe how the Rental system will be implemented. Design decisions are based on the requirements that have been specified for this system. This document makes no assumptions about the systems

requirements and serves only as a communication tool to describe how to implement the requirements

specified. This document uses accepted design notations (UML, Data Flow, etc.) and does not use any

proprietary notations.

1.5 Definitions, Acronyms and Abbreviations

M1: module one (Home Page).

M2: module two (Price Page).

M3: module Three (sign up/log in form Page).

DFD: : Data Flow Diagram.

1.6 Document Overview

This document follows the document outline specified by the IEEE Std. 1016-1998, “Recommended

Practice for Software Design Descriptions,” with some modifications to tailor the document for the scope

of the Rental system. This document proceeds first with the Architecture of

the Rental system. This is followed by the Architectural Design of the system and then the Detailed Design

as well. Screenshots for the web interface to control the Rental system are provided in this document. A

requirements traceability matrix is also provided, to link design decisions to the corresponding requirements specifications.

2 Architecture:

2.1 System Components

The Rental App consists of 3 Modals (Home, prices, sign up/Log in).

M1 consist of 6 Components (Logo, Nav-bar, Header, CTA, Cars Cards, Footer).

M2 consist of 6 Components (Logo, Nav-bar, Header, CTA, Form, Image).

M3 consist of 3 Components (Logo, Nav-bar, Sign Up form).

See Figure 1 for a component diagram of the Rental system.

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Rand Wail Dabbuor 202010428

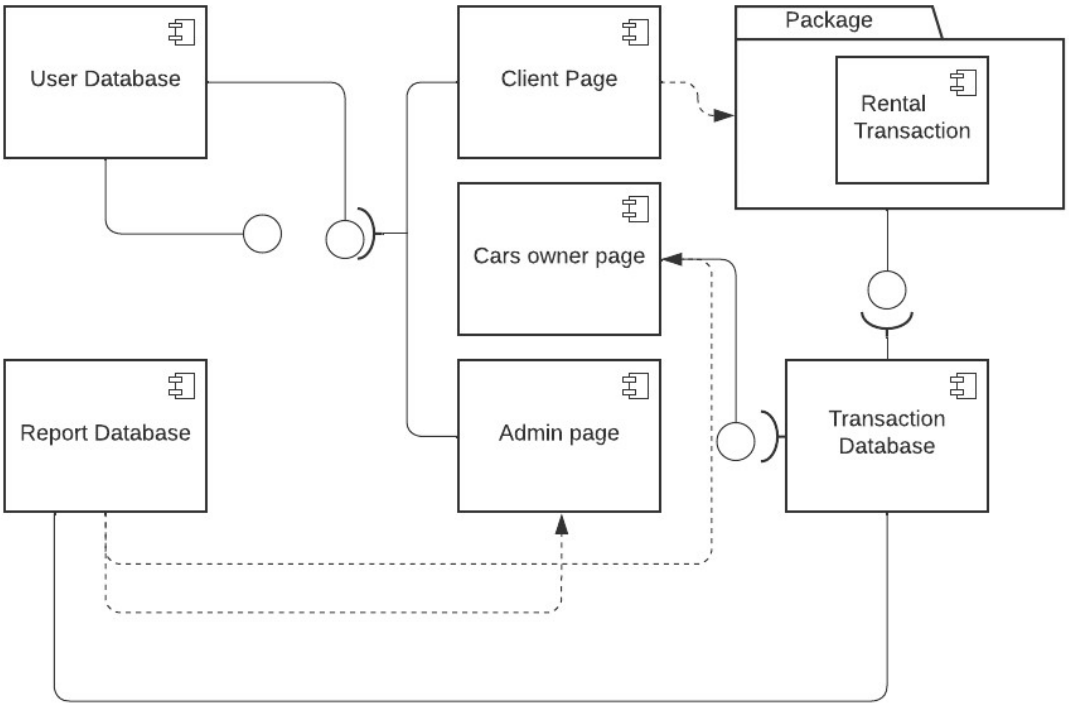

Figure 1: Rental System Component Diagram

3 Mechanistic Design:

3.1 Entity Relationships

To provide more detail extending from the Component Diagram (Figure 1), Figure 2 shows the entities in

the Rental system and how they are related to one another.

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Rand Wail Dabbuor 202010428

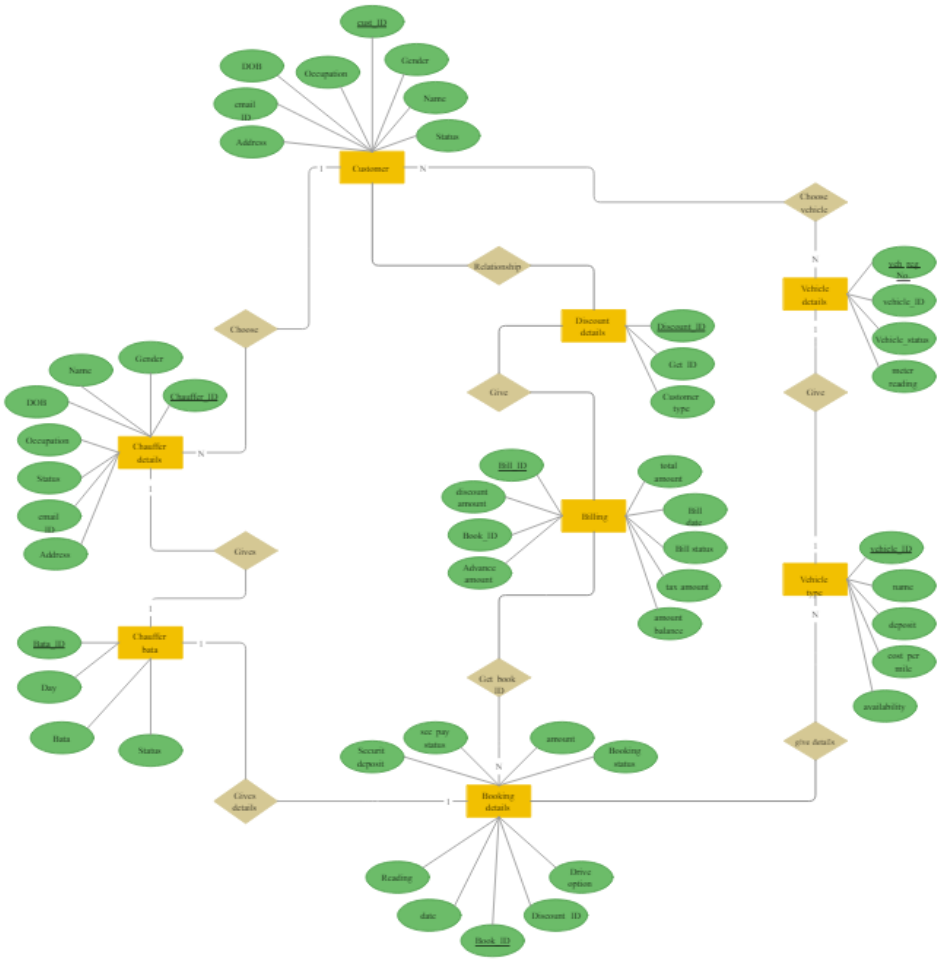

Figure 2: Rental Entity Relationship Diagram

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Rand Wail Dabbuor 202010428

4 Detailed Design

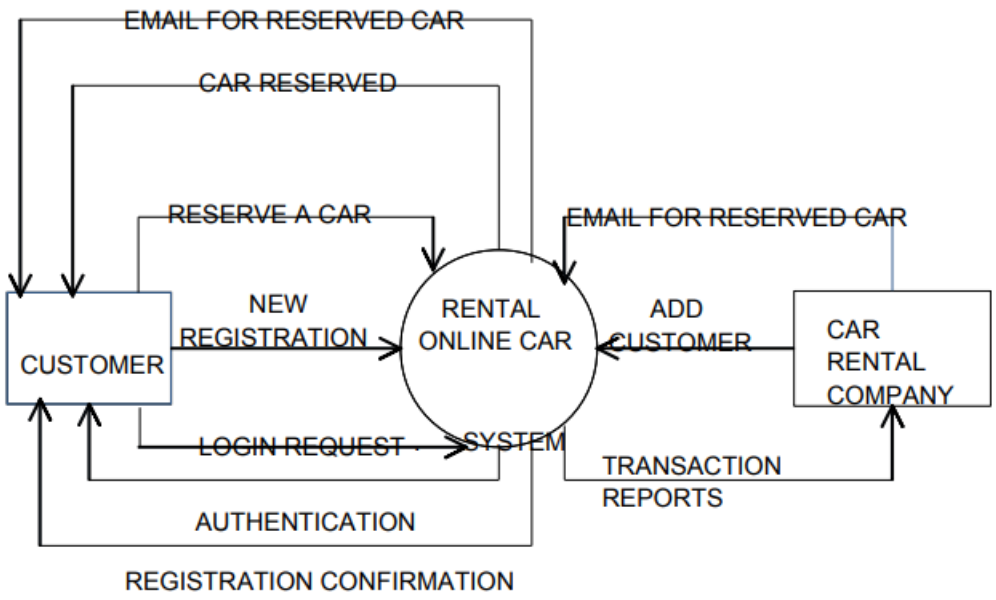

Figure 3: Level 0 DFD of Online Car Rental System

In this diagram, Customer and Car Rental Company are the two entity sets.

Functions of Customer:

- New Registration
- Login Request
- Registration Confirmation by the System
- Reserve Car
- Car Issued by the System
- Email received for Reserved Car

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Functions of Car Rental Company:

- Add Customer
- Send E-Mails for Reserved Car
- View Transaction reports

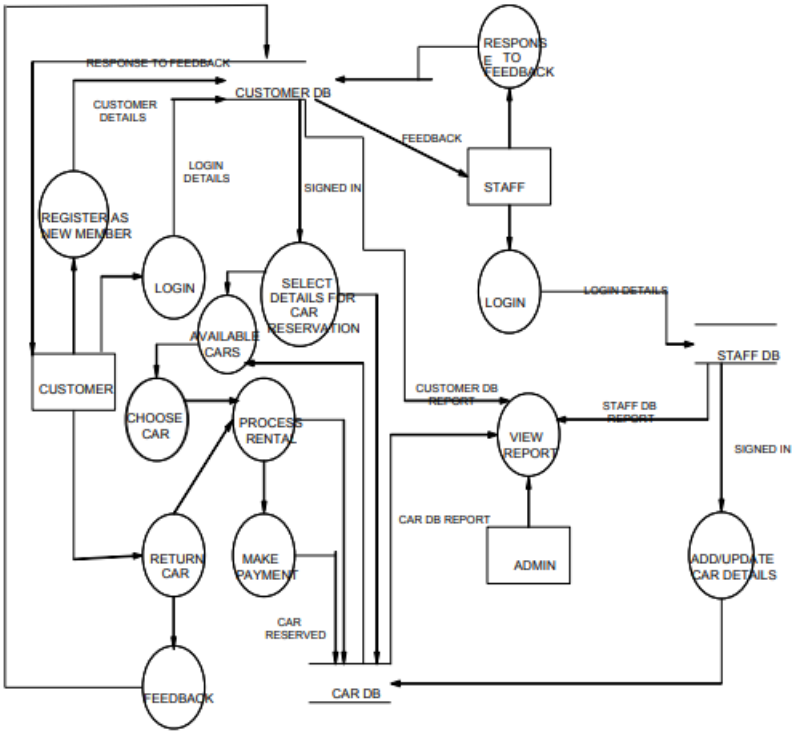

Figure 4: Level 1 DFD of Online Car Rental System