PROJECT PROPOSAL

ON

Car Wash Management system

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PROJECT TITLE:

Car Wash Management System (Terminal-Based)

Using Java, JDBC, MySQL

INTRODUCTION

The proposed system, a car wash management system, is built to simplify the operations involved in running a car wash center. It deals with customer information, information about cars serviced, and records regarding billing, all performed manually at present. This practice invites errors, delays, and overall mismanagement of data. This system replaces manual paperwork with a neat, database-driven approach using MySQL for reliable data storage.

It enables staff to add customers, register cars, manage wash packages, and generate accurate bills instantaneously. This system assures fast service and correct data with customer satisfaction. The menu-driven nature of the program makes it very easy to use, even by non-technical personnel. This project demonstrates how technology has helped in revolutionizing routine business processes by integrating the set of database operations using core Java concepts. Overall, it provides an efficient digital solution for managing all essential car wash activities from a single platform.

OBJECTIVE:

1. To digitalize the car wash process by storing all customer and vehicle details in a structured system.
2. To reduce manual work and avoid errors in managing customer, car, and billing records.
3. To provide quick access to information, such as customer details, car details, wash packages, and bills.
4. To simplify billing by automatically generating bills based on the selected car and package.
5. To improve service efficiency through a well-organized data management system.
6. To maintain accurate and reliable records for future reference and reporting.

PROJECT CATEGORY:

- This project belongs to the Database.
- Management System (DBMS) category.
- It is a terminal-based Java application.
- Uses Core Java and JDBC for database connectivity.
- MySQL is used as the backend database.
- Supports essential CRUD operations.

ANALYSIS

CAR WASH MANAGEMENT SYSTEM: MODULES

- Customer Management
- Car Management
- Package Management
- Billing Management

Module 1: Customer Management

1.1 – Add Customer
1.2 – View All Customers

Module 2: Car Management

2.1 – Add Car
2.2 – View All Cars

Module 3: Package Management

3.1 – Add Wash Package
3.2 – View All Packages

Module 4: Billing Management

4.1 – Generate Bill
4.2 – View All Bills

DATABASE DESIGN

1. Customers Table

Field Name	Data Type	Description
customer_id	INT (PK)	Unique ID for each customer
name	VARCHAR(100)	Customer name
phone	VARCHAR(20)	Contact number
email	VARCHAR(100)	Customer email

2. Cars Table

Field Name	Data Type	Description
car_id	INT (PK)	Unique ID for each car
customer_id	INT (FK)	Links car to a customer
car_number	VARCHAR(50)	Vehicle registration number
car_model	VARCHAR(100)	Model of the car

3. Packages Table

Field Name	Data Type	Description
package_id	INT (PK)	Unique package ID
package_name	VARCHAR(100)	Name of the wash package
price	DOUBLE	Price of the package

4. Bills Table

Field Name	Data Type	Description
bill_id	INT (PK)	Unique bill ID
customer_id	INT (FK)	Customer who received the wash
car_id	INT (FK)	Car linked to the bill
package_id	INT (FK)	Package selected

amount	DOUBLE	Final bill amount (auto-fetched from package)

Relationship:

- Customer ↔ Bills (1:N)
- Car ↔ Bills (1:N)
- Package ↔ Bills (1:N)

5. Customer_Bill table:

Field	Type
cc_id	INT (PK)
customer_id	INT (FK)
car_id	INT (FK)

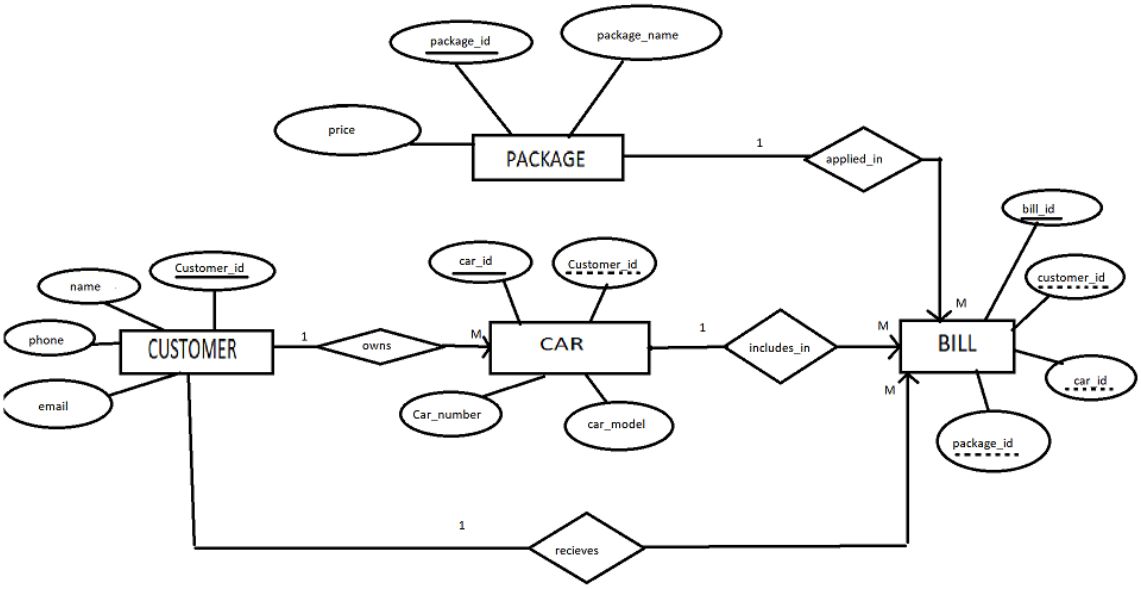
6. Car_Bill table:

Field	Type
car_bill_id	INT (PK)
car_id	INT (FK)
bill_id	INT (FK)

7. Package bill table:

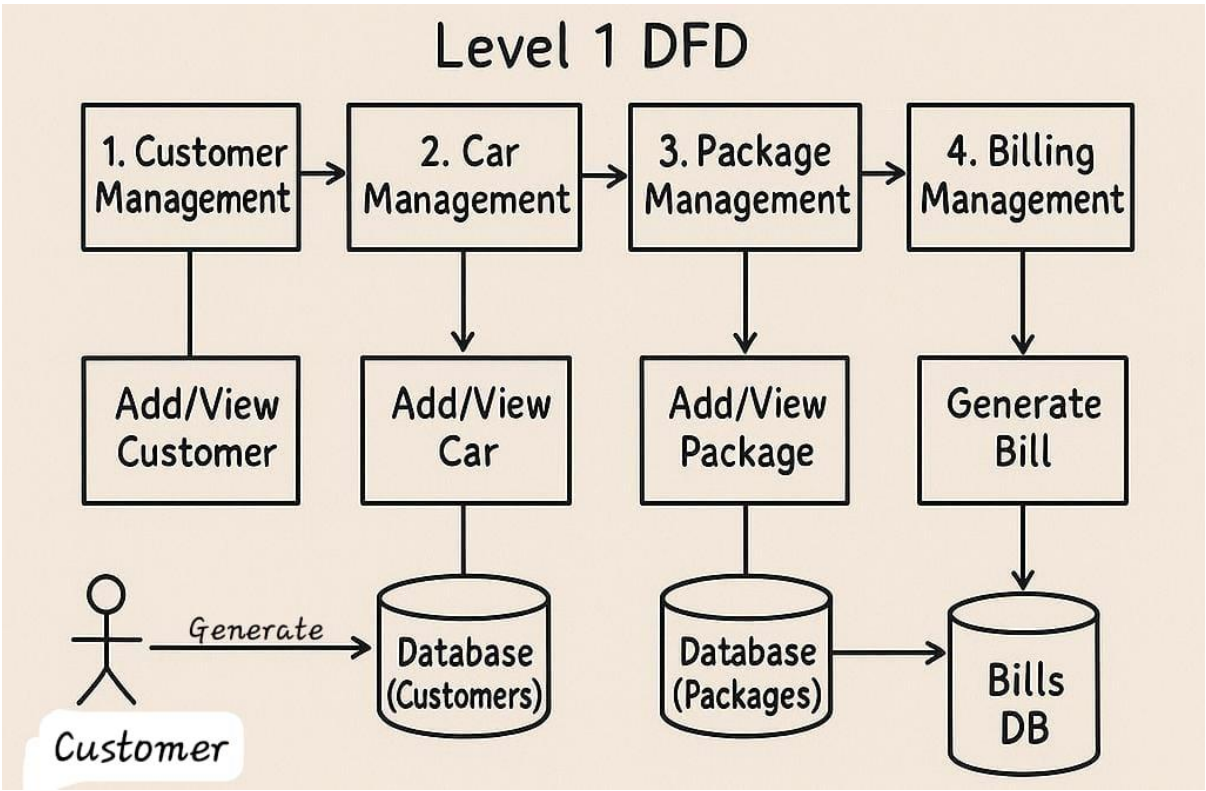
Field	Type
pb_id	INT (PK)
package_id	INT (FK)
bill_id	INT (FK)

ENTITY RELATIONSHIP DIAGRAM



DATA FLOW DIAGRAM


Admin
Request
Response
Car Wash Management System
Request
Response
Customer

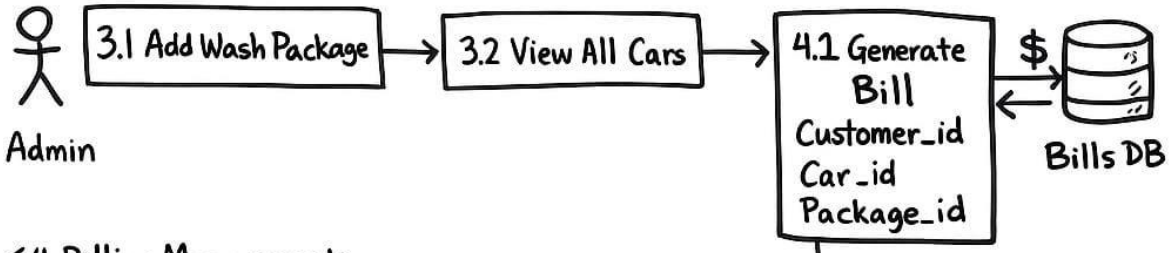


Level 2 DFD

<1 Customer Management>

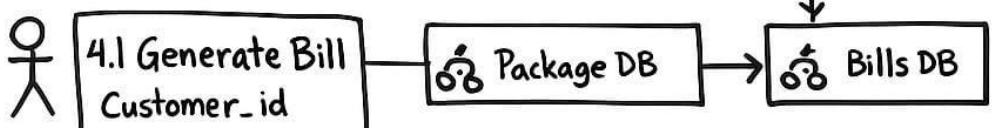
Customer

<3. Package Management>

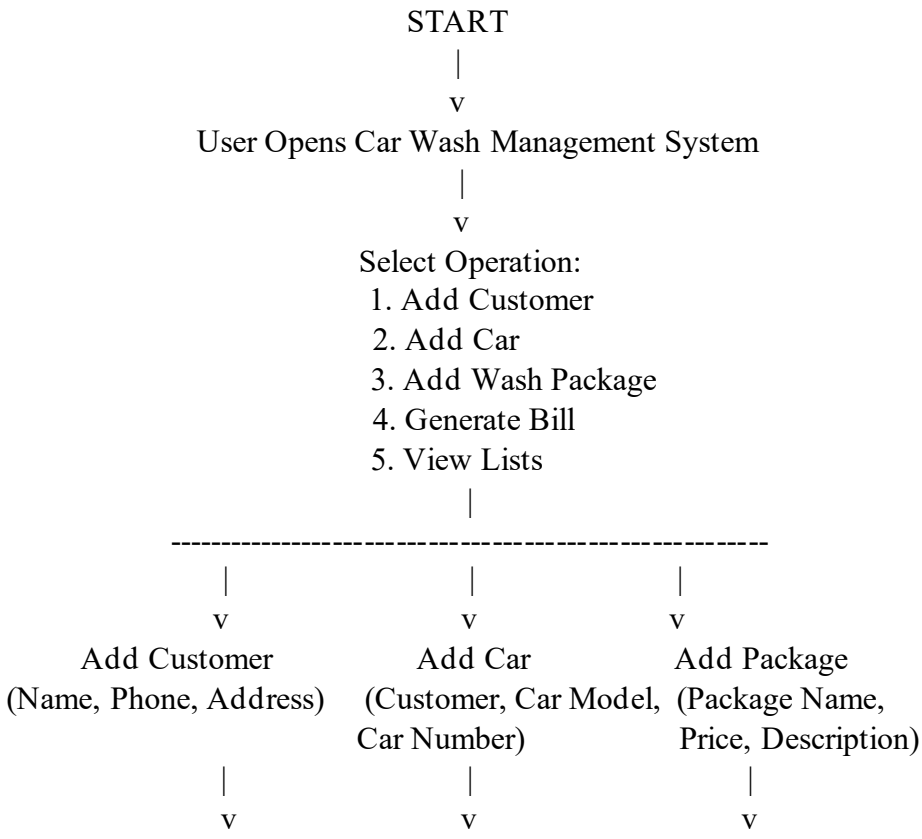


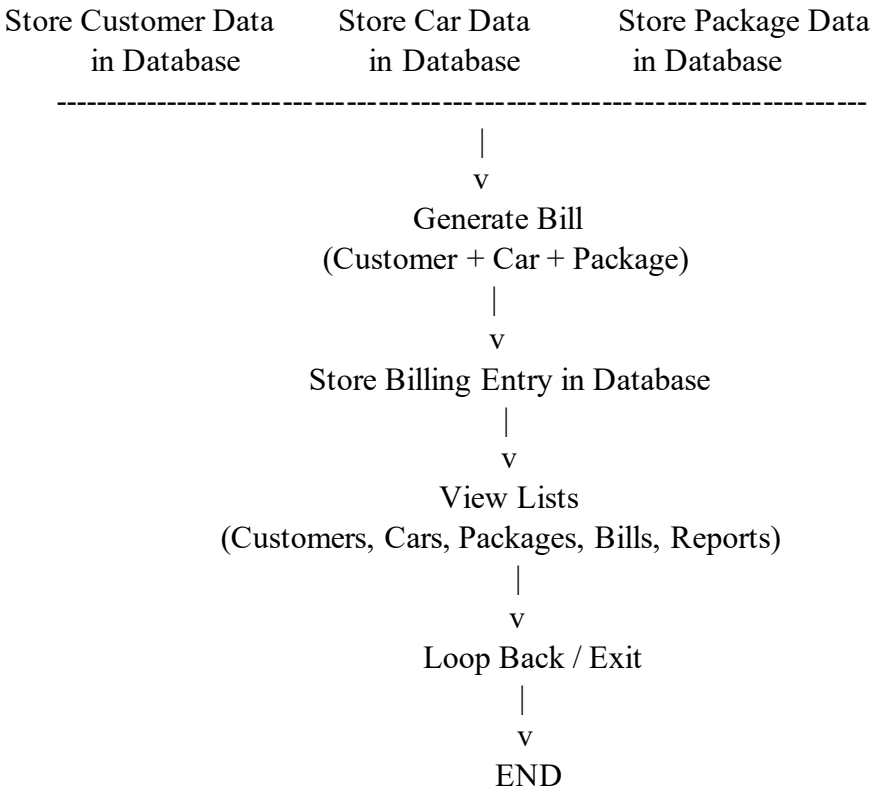
Admin

<4. Billing Management>



PROCESS LOGICAL DIAGRAM





PLATFORM USED

a) Hardware Requirements

- Processor: Intel i3 or higher
- RAM: Minimum 4GB
- Hard Disk: 500MB free space
- Operating System: Windows/Linux/Mac

b) Software Requirements

- JDK 8 or above
- MySQL Server
- IDE: Eclipse / IntelliJ IDEA / NetBeans
- JDBC Driver

- OS: Windows 10/11

FUTURE SCOPE

- **Online Booking & Scheduling System**
  Customers can book wash slots online, reducing waiting time and improving workflow efficiency.
- **Automated Notification System**
  SMS / Email alerts for booking confirmation, bill generation, offers, and service reminders.
- **Integration with Digital Payments**
  Support for UPI, Wallets, Credit/Debit Cards, and QR-based payments.
- **Loyalty & Membership Program**
  Reward points, subscription-based wash plans, and discount coupons for regular customers.

- **Integration with Vehicle Service History**
  Maintaining complete car service history for future analysis and customer benefit.
- **Advanced Reporting & Analytics**
  Monthly revenue reports, customer trends, and package performance analysis with data visualizations.
- **Mobile App Development**
  Android/iOS application for easy booking, customer account management, and bill tracking.

BIBLIOGRAPHY

- Oracle Java Documentation
- MySQL Official Documentation
- JDBC API Guide
- Reference books on DBMS and Java Programming
- Online educational resources (GeeksforGeeks, TutorialsPoint, JavaTPoint)