

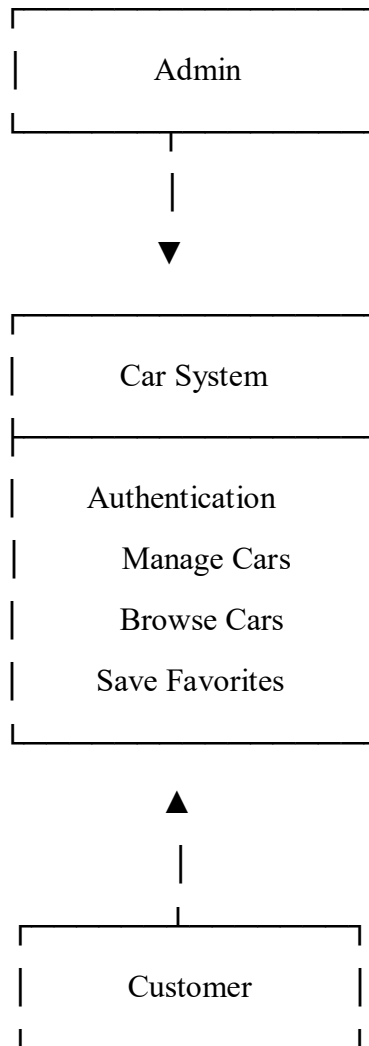
# Car Catalogue Management System

## DFD Level 0 - Context Diagram

**Overview:** This shows the entire system as a single process interacting with two users.

**Entities:**

- **Admin** → Manages cars and users.
- **Customer** → Browses, filters and saves favorite cars.



## DFD Level 1 - Core Modules Breakdown

### Key System Components:

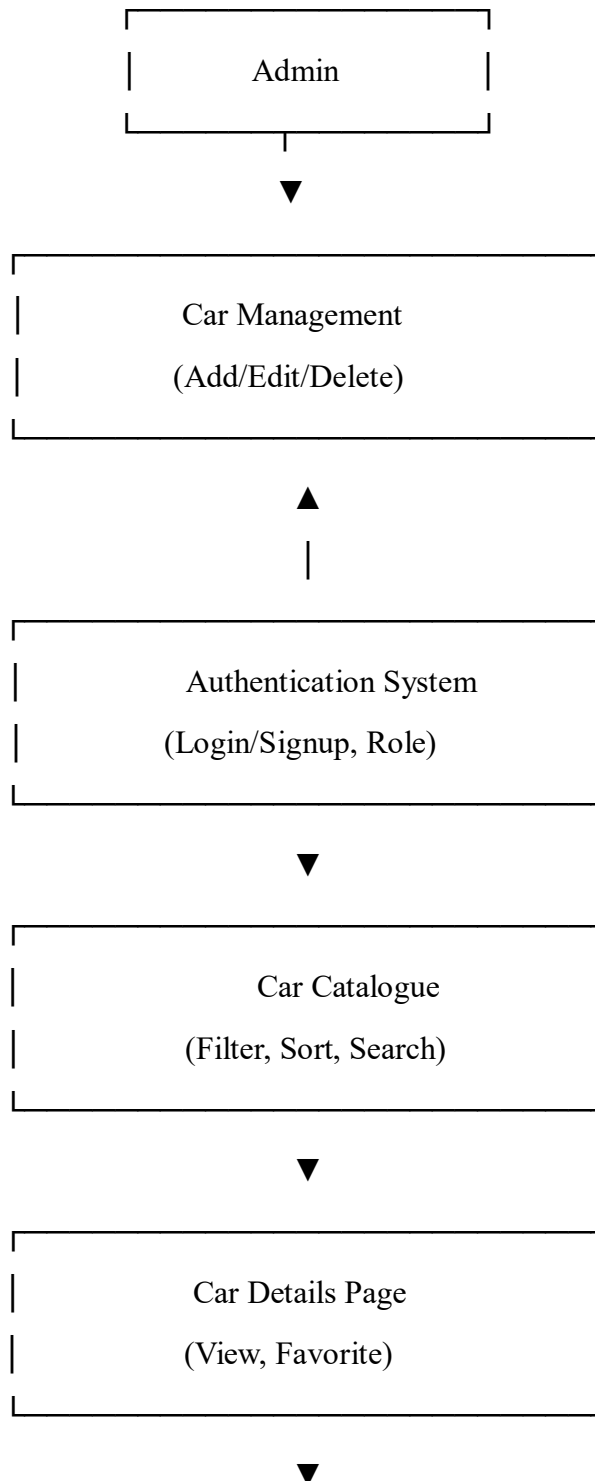
**User Authentication** (Signup/Login, Role-Based Access)

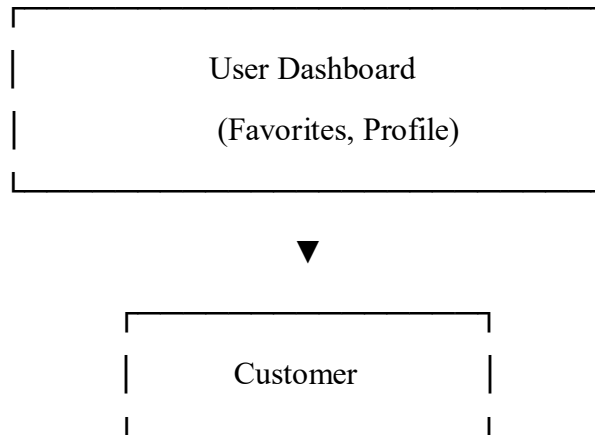
**Car Catalogue** (View, Filter, Sort, Search)

**Car Details Page** (View Full Car Info, Add to Favorites)

**Admin Panel** (Add, Edit, Delete Cars, Manage Users)

**User Dashboard** (View Saved Cars, Manage Profile)





## DFD Level 2 - Data Flow Between Components

### Breakdown of Data Movement & Local Storage Usage

#### User Authentication

- **Input:** Email, Password, Role Selection
- **Process:** Verify user, assign role (Admin/Customer)
- **Output:** Login success, redirect to dashboard
- **Storage Interaction:** Users Database (Local Storage)

#### Car Catalogue

- **Input:** Search term, filters
- **Process:** Fetch, apply filters/sorting
- **Output:** Display list of cars
- **Storage Interaction:** Cars Database (Local Storage)

#### Car Details Page

- **Input:** Selected car
- **Process:** Retrieve full details
- **Output:** Display specifications, option to favorite
- **Storage Interaction:** Cars Database (Local Storage)

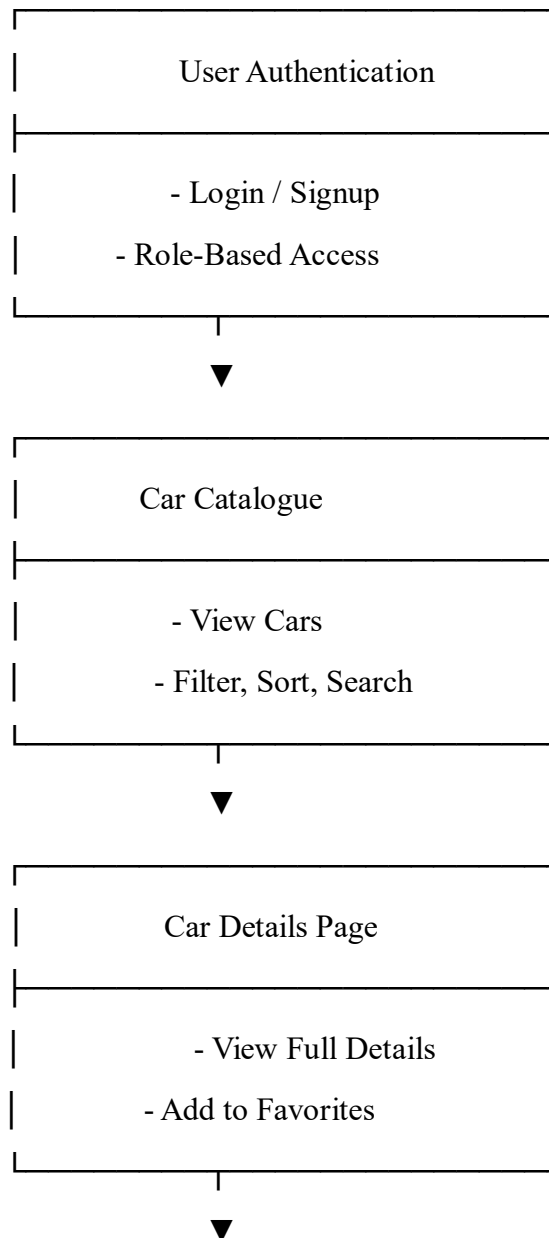
#### Admin Panel

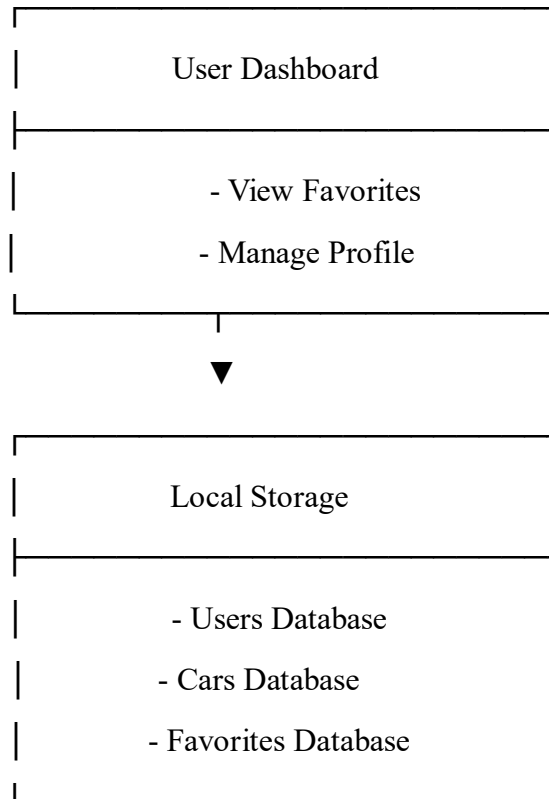
- **Input:** Car details (brand, model, price, year, fuel type, image, etc.)
- **Process:** Save, update, delete car data
- **Output:** Updated catalogue displayed

- **Storage Interaction:** Cars Database & Users Database (Local Storage)

## User Dashboard

- **Input:** Profile updates, favorite selections
- **Process:** Retrieve user-specific data
- **Output:** Updated profile, saved favorites
- **Storage Interaction:** Favorites Database and Users Database (Local Storage)





### Summary of DFD Explanation

- **DFD Level 0:** Shows overall system interactions (Admin, Customer, Car System).
- **DFD Level 1:** Breaks down into five major modules (Auth, Catalogue, Details, Admin, Dashboard).
- **DFD Level 2:** Explains how data moves between modules and Local Storage
- **Fully Structured & Modular Design** (Easier to build, scale & maintain).
- **Uses Local Storage Efficiently** (No need for an external database).
- **Optimized for Performance** (Debounced search, lazy loading).
- **Best UI & UX** (Dark mode, animations, mobile-friendly design).