Vehicle Tracking System

Release Notes and ERD

Version: 1.0.0
Release Date: 11 July 2025

Project Overview

Title: Vehicle Tracking System
Framework: ASP.NET MVC (.NET Framework)
Language: C#
Database: LocalDB using Entity Framework (Code First)
Authentication: Individual User Accounts (built-in with ASP.NET Identity)

Features Implemented

- Core Entities:
  - Vehicle
  - Supplier
  - Branch
  - Client
  - Driver
- Full CRUD (Create, Read, Update, Delete) for each entity
- Navigation properties define clear relationships
- LocalDB database with Code First migrations
- User registration and login supported
- Reporting dashboard on homepage with:
  - Vehicle count per Supplier
  - Vehicle count per Branch
  - Vehicle count per Client
  - Total number of Vehicles per Manufacturer
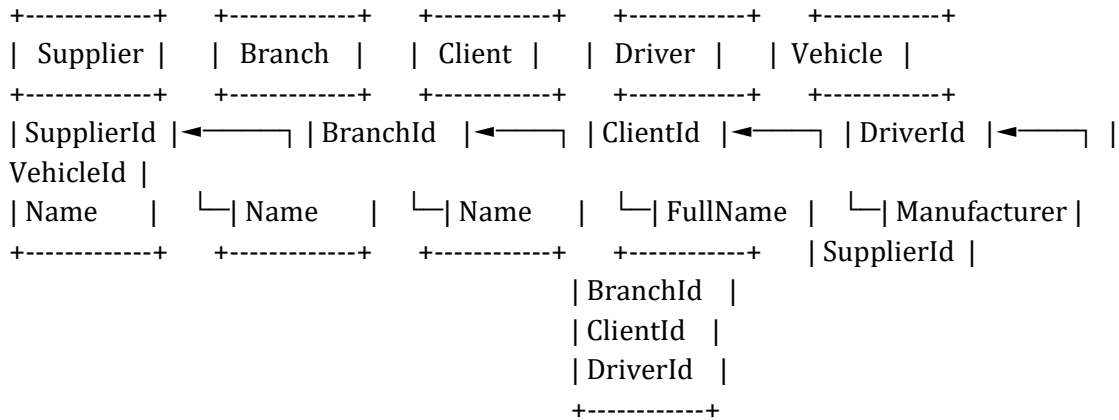
Technical Notes

- Built with Visual Studio 2022 targeting .NET Framework 4.x
- Uses Entity Framework 6 (Code First approach)
- Data access via ApplicationDbContext
- Reports implemented using LINQ GroupBy and sent to View via ViewBag
- Uses Bootstrap for responsive views and layout

Setup Instructions

1. Clone or download the source code
2. Open the solution in Visual Studio 2022
3. Ensure DefaultConnection points to DESKTOP-GSC53NF

4. Open Package Manager Console
   - Run: Enable-Migrations
   - Run: Add-Migration InitialCreate
   - Run: Update-Database
5. Run the app and register a user
6. Start entering data and view live reports on the homepage

Entity Relationship Diagram (ERD)

```
+-------------+   +-------------+   +-----------+   +-----------+   +-----------+
|  Supplier   |   |  Branch     |   |  Client   |   |  Driver   |   |  Vehicle  |
+-------------+   +-------------+   +-----------+   +-----------+   +-----------+
| SupplierId  |◄──────┐ | BranchId   |◄──────┐ | ClientId  |◄──────┐ | DriverId  |◄──────┐ |
VehicleId  |
| Name      |     └─| Name     |     └─| Name     |     └─| FullName  |     └─| Manufacturer |
+-------------+   +-------------+   +-----------+   +-----------+   | SupplierId  |
                                                                  | BranchId    |
                                                                  | ClientId    |
                                                                  | DriverId    |
                                                                  +-----------+
```

Relationships Summary
- Each Vehicle is linked to:
  - One Supplier
  - One Branch
  - One Client
  - One Driver
- Each entity can have many associated Vehicles (1-to-many)