



# CODE PROJECT

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## Overview

In order to provide an opportunity to demonstrate basic knowledge of the technologies in use at the City of Miami Beach, we have created this code project. We would like you to build a simple database-driven, single-page application that demonstrates usage of the following core technologies:

1. C#
2. ASP.NET Core MVC / ASP.NET Core API
3. Blazor, Angular or ASP.NET Core MVC (preferred) Front-End Technology
4. SQL Server<sup>1</sup>
5. Entity Framework core (prefer) or Entity Framework
6. LINQ

The basic architectural structure of the application should utilize the following components:

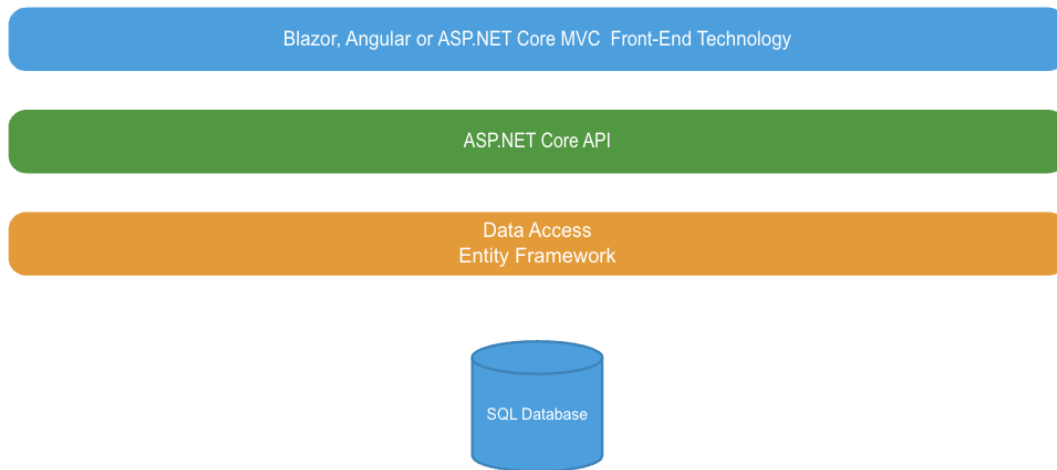
**Data Access** should be performed using Entity Framework. Data queries should use LINQ (feel free to use either Query or Method syntax).

**Web API** – data should be exposed to the client layer as JSON.

**UI/Client** – the UI can be either Blazor, Angular or ASP.NET Core MVC (preferred) technology. Either approach is fine.

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<sup>1</sup> Create a database and run the SQL script provided with sample data.

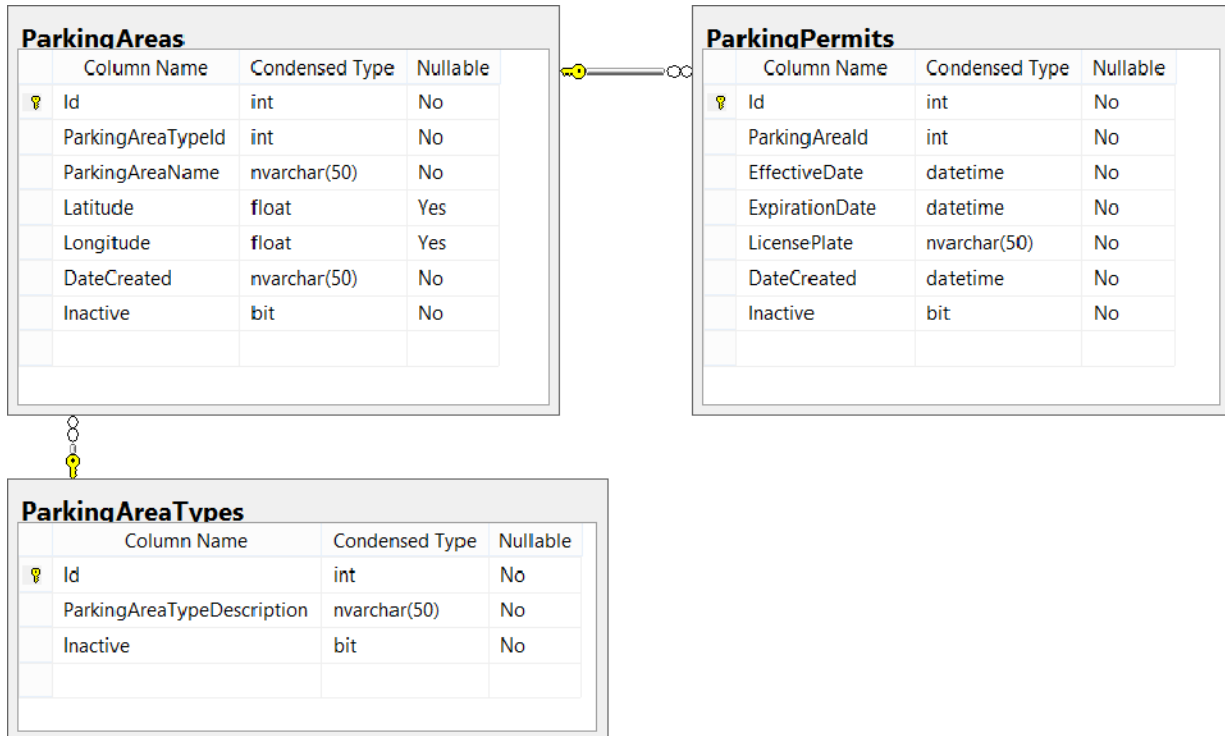


Please do not feel that this is a test – there are no specific “right” answers to this project, nor are we looking for specific functionality. Consider it an opportunity to build a small application that demonstrates your ability to implement the technologies we have listed above. Feel free to be creative. Please look at the database schema and the contents of the database listed below. Later on, we will give you some ideas for functionality that you could build.

Demonstrating best practices knowledge using unit testing, source control and SOLID principles is a plus.

## Database Schema

The database consists of three tables, as shown below. The basic data model consists of Parking Permits, which are located in Parking Areas that in turn are of specific types. For example, a Parking Permit for the license plate ABC123 might be located in the Art Deco area and be in effect from June 1 until June 30. The Art Deco area is a Residential type of parking area.



## Database Contents

**Parking Areas** table – contains information regarding the areas in which a Parking Permit is located. Each Parking Permit will have a Parking Area property that specifies where in the City it is located.

Id	ParkingAreaId	EffectiveDate	ExpirationDate	LicensePlate	DateCreated	Inactive
1	1	2024-06-01	2024-12-31	ABC123	2024-05-01	0
2	1	2024-05-01	2024-12-31	ABC345	2024-05-01	0
4	1	2024-05-01	2024-12-31	ABC567	2024-05-01	0
6	2	2024-06-01	2024-12-31	ABC789	2024-05-01	1
8	3	2024-06-01	2025-06-30	EFG123	2024-05-01	0
9	3	2024-06-01	2025-06-30	EFG345	2024-05-01	0
10	4	2024-05-01	2025-05-31	EFG567	2024-05-01	0
11	5	2024-06-01	2025-06-30	EFG789	2024-05-01	0
12	5	2024-06-01	2025-06-30	HIJ123	2024-05-01	1
13	5	2024-06-01	2025-06-30	HIJ345	2024-05-01	0
14	6	2024-06-01	2025-06-30	HIJ567	2024-05-01	0
15	6	2024-07-01	2025-07-31	HIJ789	2024-05-01	0
16	6	2024-06-01	2025-06-30	KLM123	2024-05-01	0
17	7	2024-06-01	2025-06-30	KLM345	2024-05-01	0
18	7	2024-07-01	2025-07-31	KJM567	2024-05-01	0
19	8	2024-06-01	2025-06-30	KLM789	2024-05-01	0
20	8	2024-07-01	2025-07-31	NOP123	2024-05-01	1

**Parking Area Types** table – A Parking Area can be either a residential area or a garage.

Id	ParkingAreaTypeDescription	Inactive
1	Residential	0
2	Garage	0

**Parking Permits** table – A Parking Permit consists of the area it is located in, the effective dates, and the license plate of the vehicle. This table also stores the date the record was created and whether or not the permit is active.

Id	ParkingAreaTypeId	ParkingAreaName	Latitude	Longitude	DateCreated	Inactive
1	1	Flamingo	25.779575	-80.135651	2024-05-31	0
2	1	Belle Isle	25.790820	-80.148139	2024-05-31	0
3	1	South Pointe	25.768097	-80.135565	2024-05-31	0
4	1	Art Deco	25.769016	-80.13226	2024-05-31	0
5	1	West Avenue	25.779266	-80.140972	2024-05-31	0
6	2	17th Street Garage	25.791915	-80.135436	2024-05-31	0
7	2	42nd Street Garage	25.814085	-80.127872	2024-05-31	0
8	2	Fifth and Alton Garage	25.775011	-80.140114	2024-05-31	0

There are also two views: one for Parking Areas by Type and another for Parking Permits by Area.

## Sample User Stories

The user for your application might be a Customer Service Rep in the City of Miami Beach Parking Department. Some user stories you might implement are:

1. As a Customer Service Rep, I would like to see a master/detail view of the Parking Permits so that I can see the details of a particular permit
2. As a Customer Service Rep, I would like to search for a Permit by License Plate
3. As a Customer Service Rep, I would like to see a list of (a) expired Permits and (b) active permits so that I can de-active expired permits
4. As a Customer Service Rep, I would like to view Parking Areas by Parking Type so I can see, for example, all the Residential Parking Areas