

## Entity Framework

EF Core is an object-relational mapper (ORM). Object-relational mapping is a technique that enables developers to work with data. It supports LINQ queries, change tracking, updates, and schema migrations. EF Core works with many databases, including SQL Server, MySQL, PostgreSQL, and SQLite. Entity Framework Core (EF Core) is the latest version of the Entity Framework from Microsoft. It has been designed to be lightweight and easy to use.

### DbContext

The DbContext class is an integral part of Entity Framework. An instance of DbContext represents a session with the database. To use DbContext in our application, we need to create the class that derives from DbContext, also known as context class. This class is used to interact with the database.

### DbSet

The DbSet class represents an entity set that can be used for create, read, update, and delete operations.

The context class (derived from DbContext) must include the DbSet type properties for the entities which map to database tables.

## LINQ

LINQ (Language Integrated Query) is uniform query syntax in C# and VB.NET to retrieve data from different sources and formats.

LINQ is a structured query syntax built in C# and VB.NET to retrieve data from different types of data sources such as collections, databases, and web services.

## Lambda expression

You use a lambda expression to create an anonymous function. Use the lambda declaration operator `=>` to separate the lambda's parameters from its body.

Expression lambda that has an expression as its body:

`(input-parameters) => expression`

Statement lambda that has a statement block as its body:

`(input-parameters) => { <sequence-of-statements> }`

To create a lambda expression, you specify input parameters (if any) on the left side of the lambda operator and an expression or statement block on the right side.

Any lambda expression can be converted to a delegate type. The delegate type to which a lambda expression can be converted is determined by the parameters and the return type of the expression.

## Web API

API stands for Application Programming Interface. It is an intermediate software agent that allows two or more applications to interact.

ASP.NET Core supports creating RESTful services, also known as web APIs, using C#. To handle requests, a web API uses controllers.

A web API consists of one or more controller classes that derive from ControllerBase. The web API project template provides a starter controller class.

```
[ApiController]
```

```
[Route("[controller]")]
```

```
public class WeatherForecastController : ControllerBase
```

Why is Web API required?

The user wants to access the application from different devices like mobile, browser, Google devices, etc. In this case, Web API is required.

Different devices request to Web API and Web API will respond in JSON format. Most of the devices are able to understand JSON format.

Web Api Architecture diagram,

This diagram explains the architecture of Web API.

A client called api/controller - In the above diagram Browsers, Phones, and Google Devices are called Web API Controllers.

api/Controller interact with business layer and get Data from DB.

The output will be returned in JSON format.