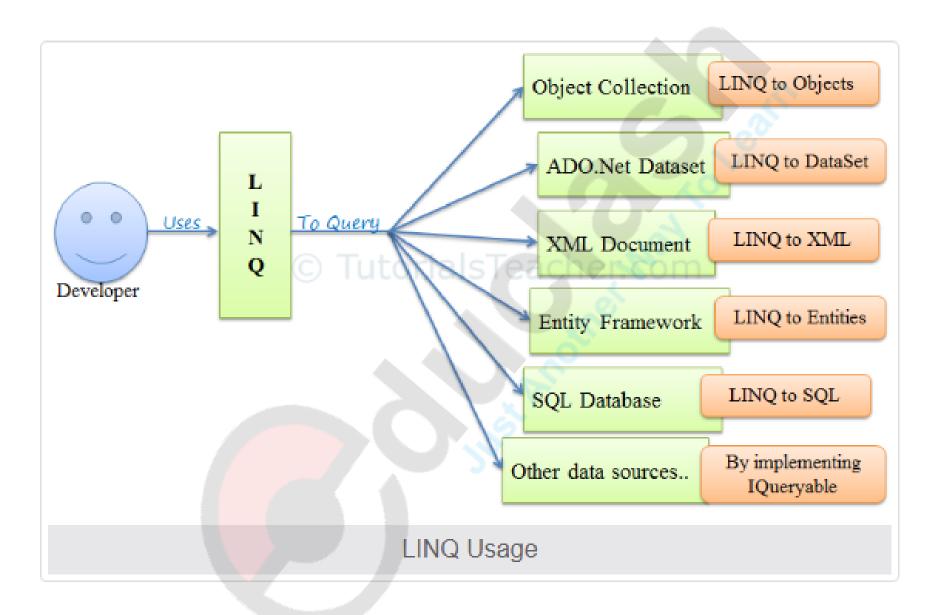
Entity Framework & LINQ

- Language Integrated Query
- A query is an expression that retrieves data from a data source.
- The Language Integrated part means that LINQ is part of programming language syntax.
- It is integrated in C# or VB, thereby eliminating the mismatch between programming languages and databases, as well as providing a single querying interface for different types of data sources.

 LINQ is a structured query syntax built in C# and VB.NET used to save and retrieve data from different types of data sources like an Object Collection, SQL server database, XML, web service etc.



- Use System.Linq namespace to use LINQ.
- LINQ api includes two main static class Enumerable & Queryable.
- The static Enumerable class includes extension methods for classes that implements IEnumerable<T> interface.
- IEnumerable<T> type of collections are in-memory collection like List, Dictionary, SortedList, Queue, HashSet, LinkedList
- The static Queryable class includes extension methods for classes that implements IQueryable<T> interface
- Remote query provider implements IQueryable<T>. eg. Linq-to-SQL, LINQ-to-Amazon etc.

- Two ways to write LINQ queries:
 - Lambda expression
 - SQL like query expression

Eg. Lambda Expression DataClasses1DataContext dc = new DataClasses1DataContext(); dataGridView2.DataSource = dc.Persons.Where(p => p.Age < 30);

```
Eg. SQL like query Expression
DataClasses1DataContext dc = new DataClasses1DataContext();
dataGridView1.DataSource = from p in dc.Persons where p.Age>30 select p;
```

Advantages

- Familiar language: Developers don't have to learn a new query language for each type of data source or data format.
- Less coding: It reduces the amount of code to be written as compared with a more traditional approach.
- Readable code: LINQ makes the code more readable so other developers can easily understand and maintain it.
- Standardized way of querying multiple data sources: The same LINQ syntax can be used to query multiple data sources.
- Compile time safety of queries: It provides type checking of objects at compile time.
- IntelliSense Support: LINQ provides IntelliSense for generic collections.
- Shaping data: You can retrieve data in different shapes.

Entity Framework

- ORM (Object Relational Mapping)
- available as part of the .NET development (version 3.5 SP1 and later)
- Its purpose is to abstract the ties to a relational database, in such a way that the developer can relate to the database entity as to a set of objects and then to classes in addition to their properties.
- Two approaches Database First and Code First.

EF vs LINQ to SQL

- EF supports multiple database whereas LINQ to SQL is mainly SQL Server.
- EF is more adaptable to database changes whereas LINQ to SQL is poor in adapting to changes in the database structure.
- EF lets you choose between Code First, Model First and Database First approach whereas LINQ to SQL is DB First always.
- For EF a .edmx file gets created whereas for LINQ to SQL a .dbml file gets created.