

LINQ

- Language Integrated Query
- Designed by Microsoft Corporation
- Developer Microsoft Corporation
- Typing discipline Strongly typed
- Major implementations
- .NET languages (C#, F#, VB.NET)
- Influenced by
- SQL, Haskell

Type of LINQ

- LINQ to Objects
- LINQ to XML(XLINQ)
- LINQ to DataSet
- LINQ to SQL (DLINQ)
- LINQ to Entities

Example of a LINQ to Object

```
1  using System;
2  using System.Linq;
3
4  namespace _0100_Linq
5  {
6      class Program
7      {
8          static void Main()
9          {
10             string[] words = { "hello", "wonderful", "LINQ", "beautiful", "world" };
11             //Get only short words
12             var shortWords = from word in words where word.Length <= 5 select word;
13             //Print each word out
14             foreach (var word in shortWords)
15             {
16                 Console.WriteLine(word);
17             }
18             Console.ReadLine();
19         }
20     }
21 }
```

LINQ to DataSet

```
1  using System;
2  using System.IO;
3  using System.Data;
4  using System.Linq;
5
6  namespace test
7  {
8      class Program
9      {
10         static string fullPath = "d:\\temp\\person100a.csv";
11         static DataTable myTable;
12
13         static void Main(string[] args) ...
23         static void SetColumn(DataTable table) ...
31         static void ReadCsv() ...
54     }
55 }
```

```
static void Main(string[] args)
{
    ReadCsv();
    // find person who age > 30
    var q = (from v in myTable.AsEnumerable()
            where v.Field<int>("Age") > 30
            select v);
    foreach(DataRow r in q)
        Console.WriteLine(r["Name"]);
}

static void SetColumn(DataTable table)
{
    table.Columns[0].ColumnName = "Name";
    table.Columns[1].ColumnName = "Age";
    table.Columns[1].DataType = System.Type.GetType("System.Int32");
    table.Columns[2].ColumnName = "Gender";
    table.Columns[3].ColumnName = "Country";
}
```

```
static void ReadCsv()
{
    using (StreamReader sr = new StreamReader(fullPath))
    {
        myTable = new DataTable();
        string[] headers = sr.ReadLine().Split(',');
        for (int i = 0; i < headers.Count(); i++)
        {
            myTable.Columns.Add();
        }
        SetColumn(myTable); // set column attribute
        while (!sr.EndOfStream)
        {
            string[] rows = sr.ReadLine().Split(',');
            DataRow dr = myTable.NewRow();
            for (int i = 0; i < rows.Count(); i++)
            {
                dr[i] = rows[i];
            }
            myTable.Rows.Add(dr);
        }
    }
}
```

Exercise

Gender = Male / Female

Age > 30 and Female

