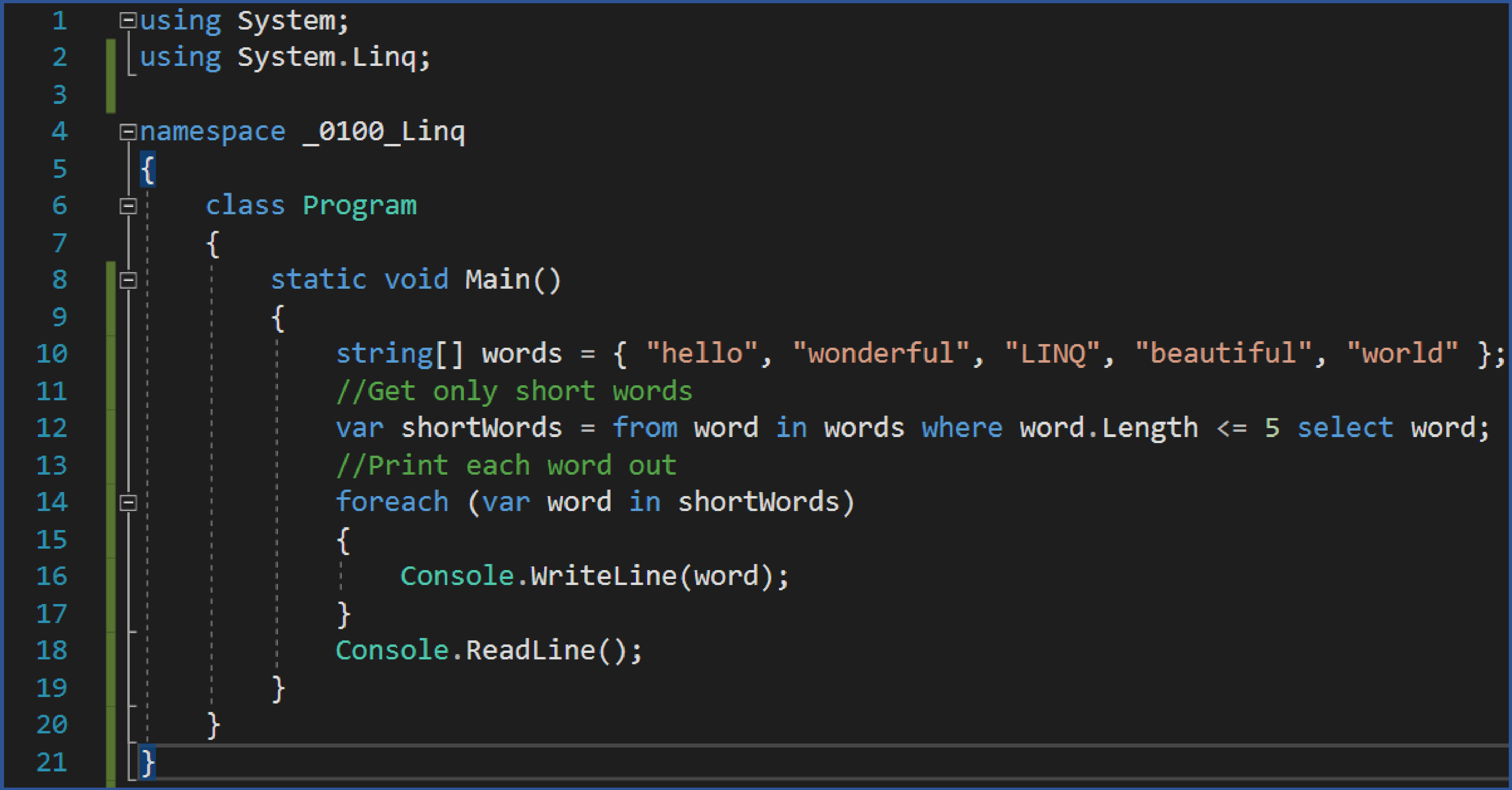
LINQ

- Language Integrated Query
- Designed by   Microsoft Corporation
- Developer   Microsoft Corporation
- Typing disciplineStrongly 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

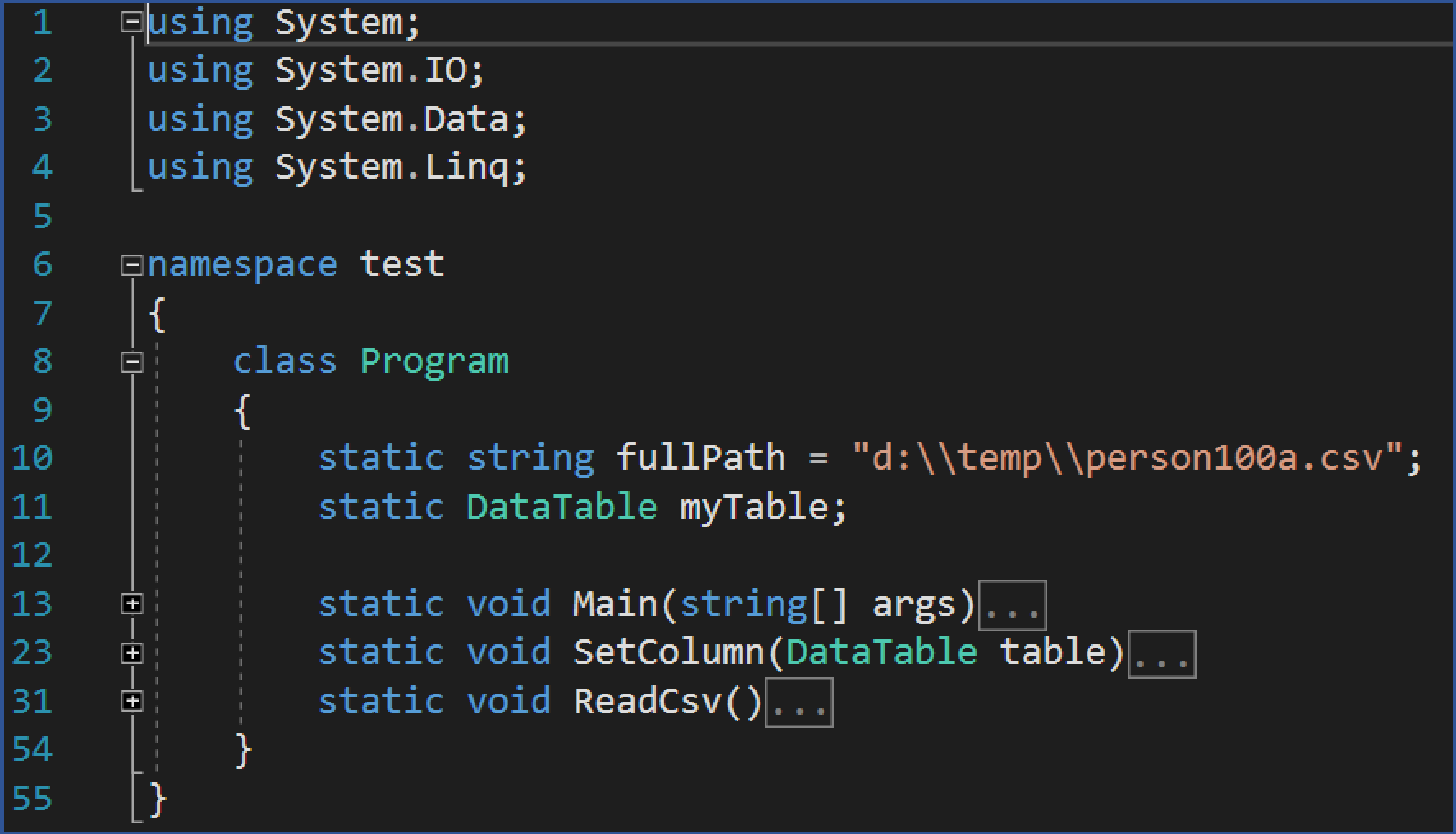
Example of a LINQ to Object



```
using System;
using System.Linq;

namespace _0100_Linq
{
    class Program
    {
        static void Main()
        {
            string[] words = { "hello", "wonderful", "LINQ", "beautiful", "world" };
            //Get only short words
            var shortWords = from word in words where word.Length <= 5 select word;
            //Print each word out
            foreach (var word in shortWords)
            {
                Console.WriteLine(word);
            }
            Console.ReadLine();
        }
    }
}
```

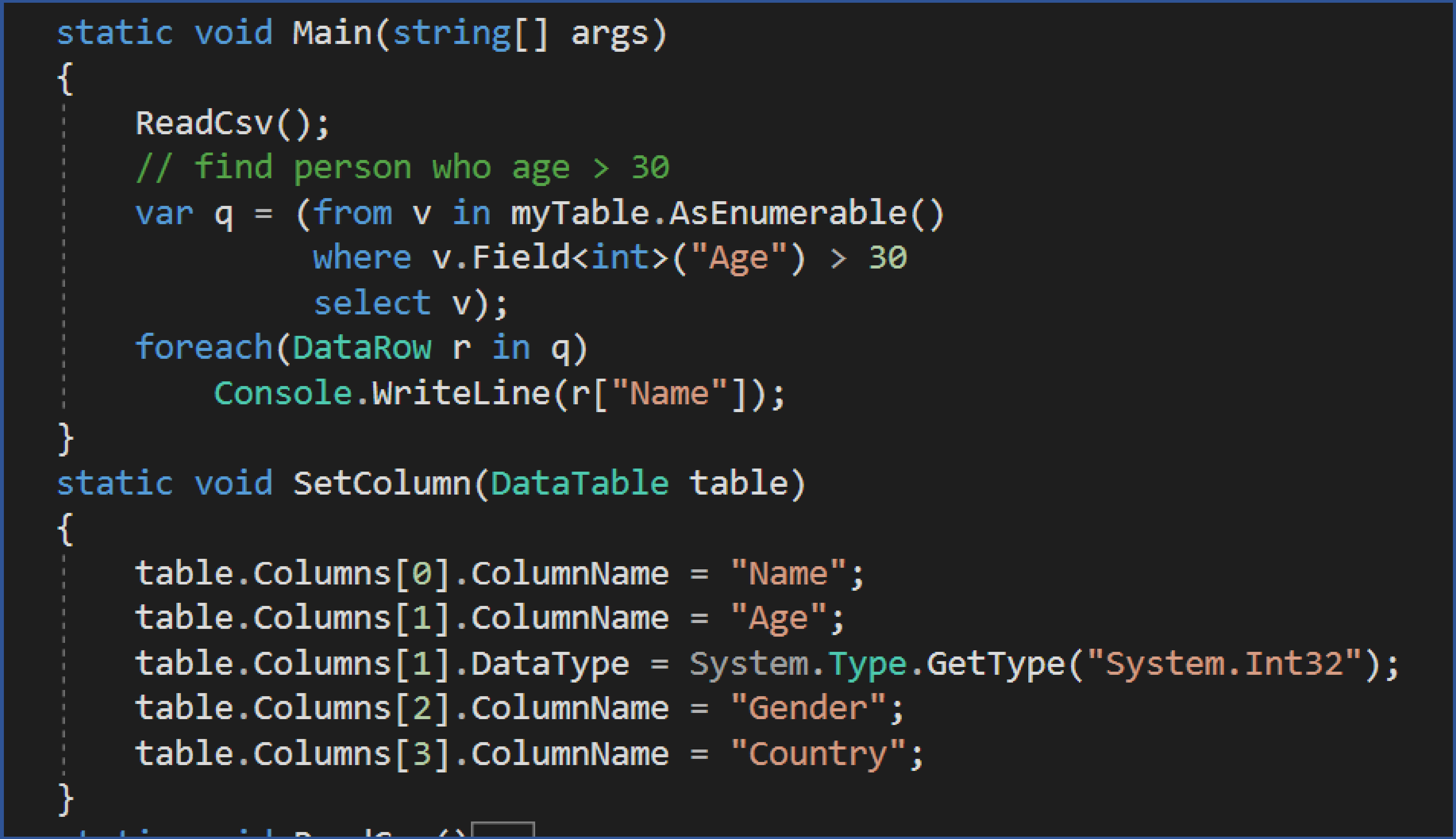
LINQ to DataSet



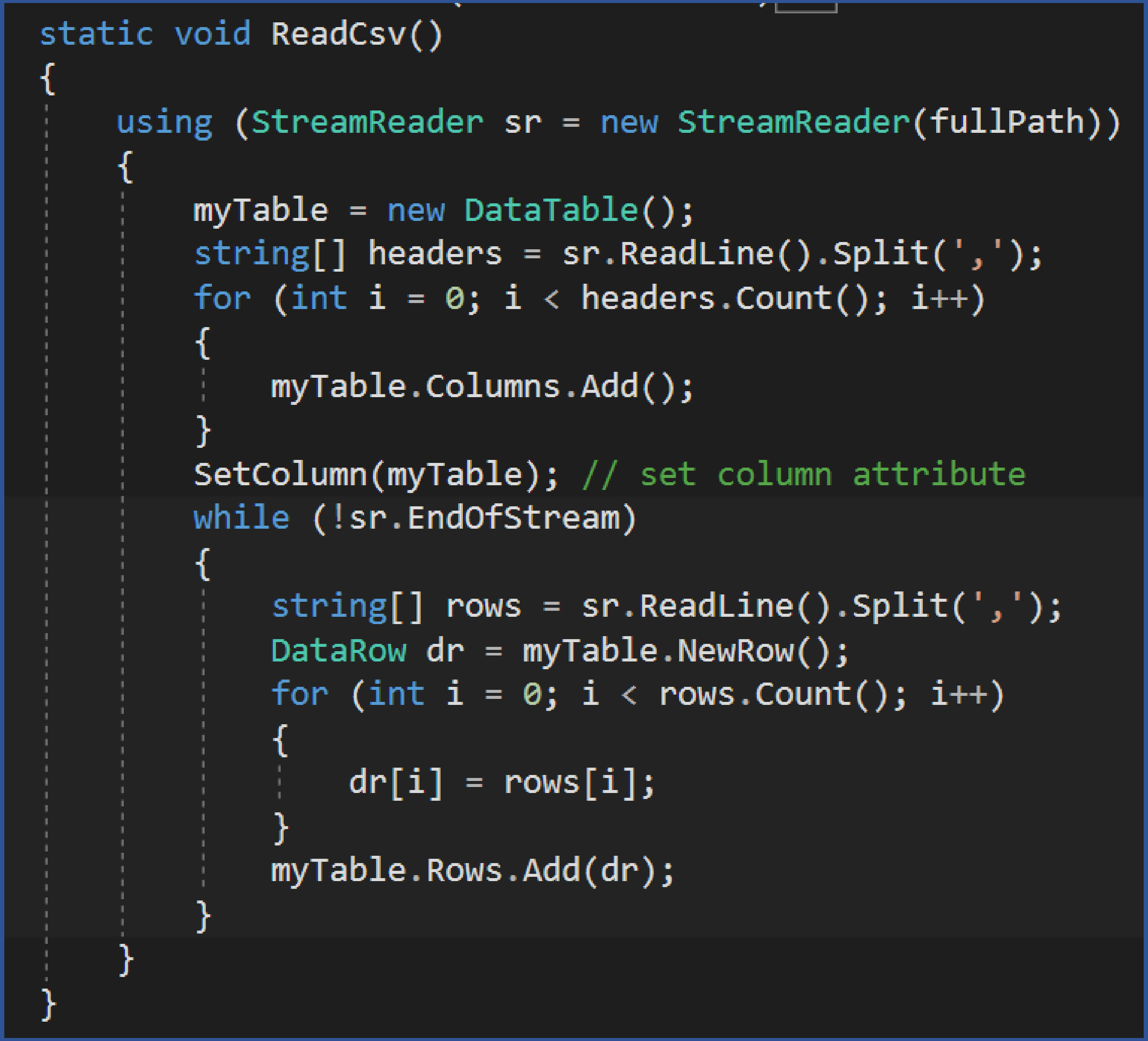
```
using System;
using System.IO;
using System.Data;
using System.Linq;

namespace test
{
    class Program
    {
        static string fullPath = "d:\\temp\\person100a.csv";
        static DataTable myTable;

        static void Main(string[] args)...
        static void SetColumn(DataTable table)...
        static void ReadCsv()...
    }
}
```



```
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()
```



```
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);
        }
    }
}
```