(T7)比較 LinqToObject 的 Skip、TakeWhile、SkipWhile。實作 Paging 資料分頁
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0. Summary

1.
Enumerable.Take<TSource>
(IEnumerable<TSource> source, Int32 count)
Reference:
https://msdn.microsoft.com/en-us/library/bb503062(v=vs.110).aspx
Returns a specified number of contiguous 鄰近的 elements
from the start of a sequence.

2.
Enumerable.Skip<TSource>
(IEnumerable<TSource> source, Int32 count)
Reference:
https://msdn.microsoft.com/en-us/library/bb358985(v=vs.110).aspx
Bypasses a specified number of elements in a sequence
and then returns the remaining elements.
For the same argument value,
the Skip method returns all of the items
that the Take method would not return.

3.
Enumerable.TakeWhile<TSource>
(IEnumerable<TSource> source, Func<TSource, Int32, Boolean> predicate)
Reference:
https://msdn.microsoft.com/en-us/library/bb534804(v=vs.110).aspx
Returns elements from a sequence as long as a specified condition is true.
3.1. Parameter
3.1.1.
source
Type: System.Collections.Generic.IEnumerable<TSource>
The sequence to return elements from.
3.1.2.
predicate
Type: System.Func<TSource, Int32, Boolean>
A function to test each source element for a condition;
the second parameter of the function represents

the **index** of the source element.

4.
Enumerable.SkipWhile<TSource>
(IEnumerable<TSource> source, Func<TSource, Boolean> predicate)
Reference:
https://msdn.microsoft.com/en-us/library/bb549075(v=vs.110).aspx
Bypasses elements in a sequence as long as a specified condition is true and then returns the remaining elements.

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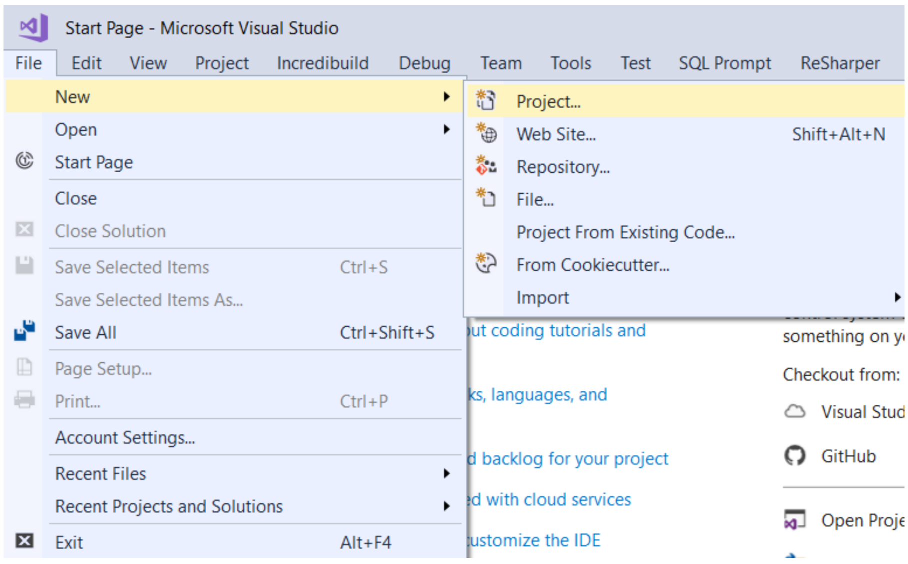
1. New Project

1.1. Create New Project : Sample

File --> New --> Project... -->

Visual C# --> **Console App (.Net Framework)** -->

Name: **Sample**


Start Page - Microsoft Visual Studio
File Edit View Project Incredibuild Debug Team Tools Test SQL Prompt ReSharper
New
Open
Start Page
Close
Close Solution
Save Selected Items Ctrl+S
Save Selected Items As...
Save All Ctrl+Shift+S
Page Setup...
Print... Ctrl+P
Account Settings...
Recent Files
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Project...
Web Site... Shift+Alt+N
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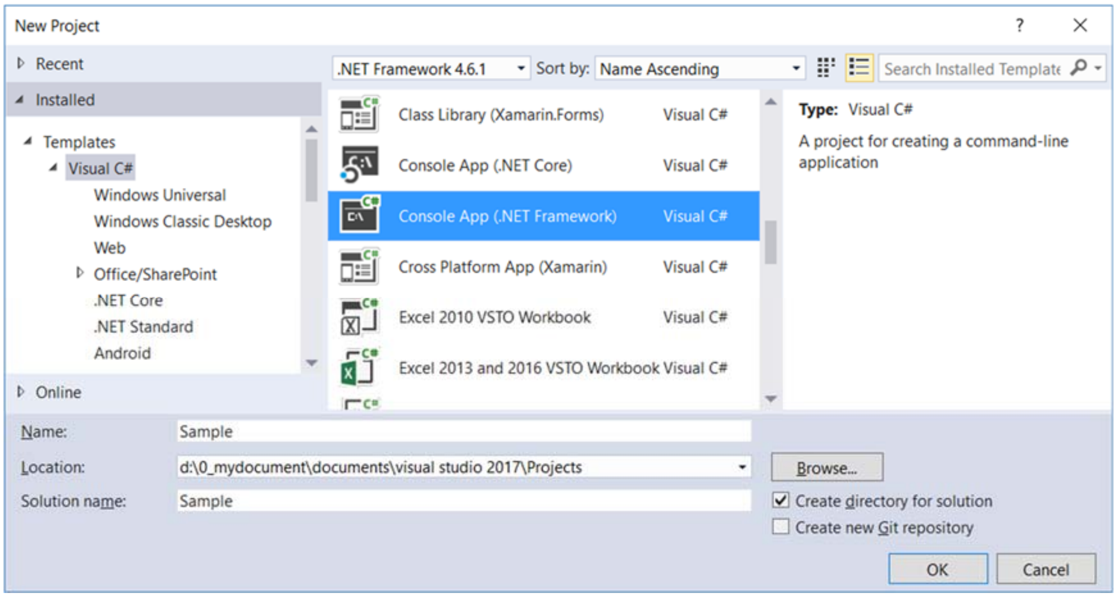
Project From Existing Code...
From Cookiecutter...
Import


New Project

Class Library (Xamarin.Forms)	Visual C#
Console App (.NET Core)	Visual C#
Console App (.NET Framework)	Visual C#
Cross Platform App (Xamarin)	Visual C#
Excel 2010 VSTO Workbook	Visual C#
Excel 2013 and 2016 VSTO Workbook	Visual C#

Type: Visual C#

A project for creating a command-line application

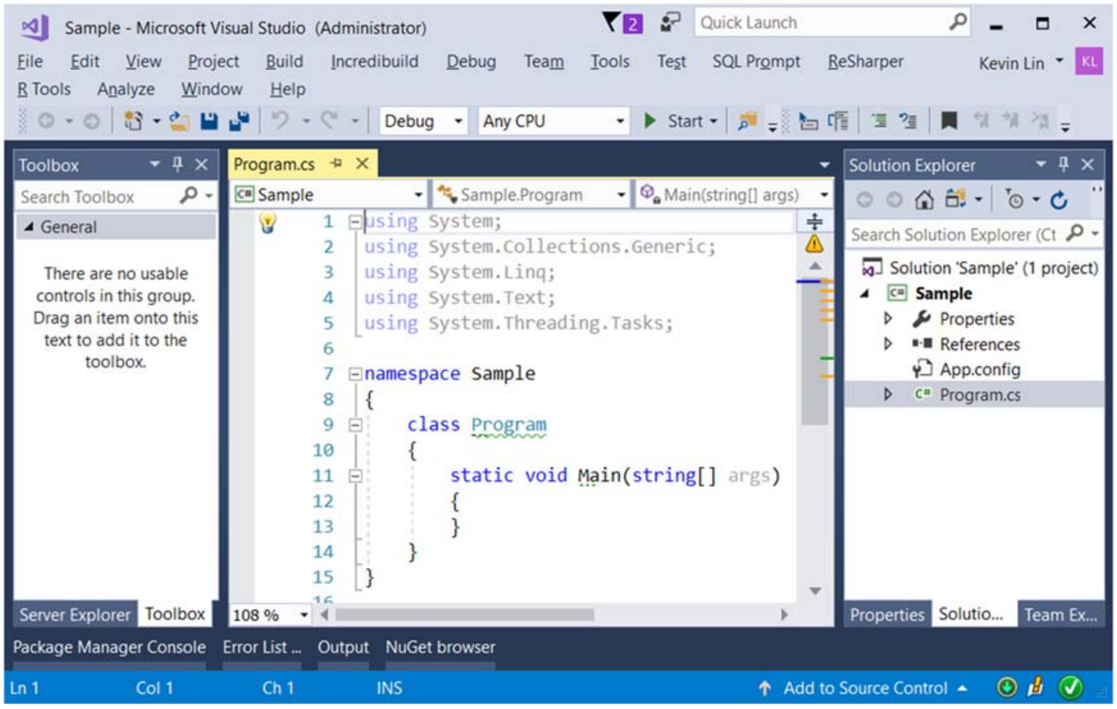
Name: Sample

Location: d:\0_mydocument\documents\visual studio 2017\Projects

Solution name: Sample

[✓] Create directory for solution

[ ] Create new Git repository


Sample - Microsoft Visual Studio (Administrator)

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Sample
{
    class Program
    {
        static void Main(string[] args)
        {
        }
    }
}
```

==

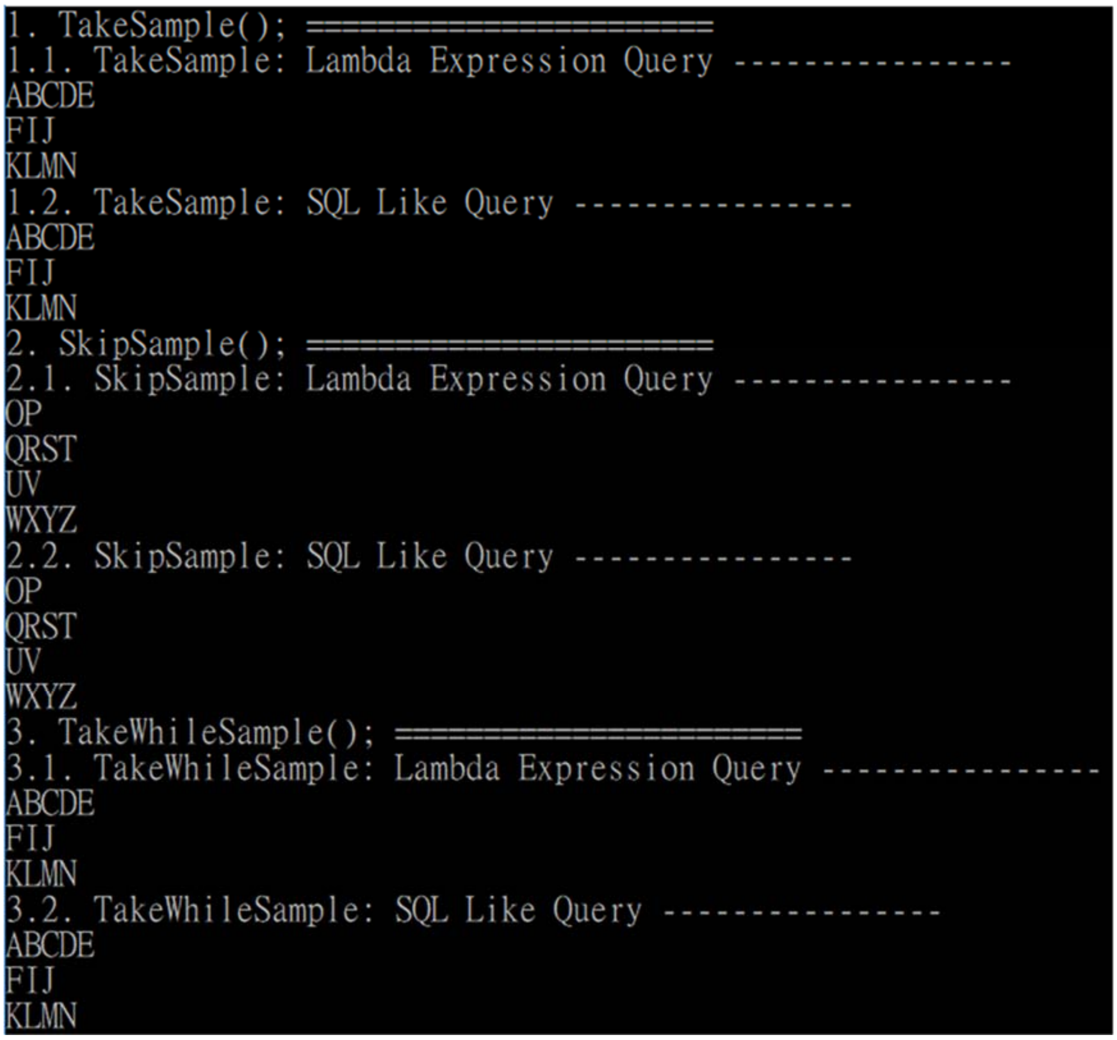
2. Sample : Program.cs

```
using System;
using System.Collections.Generic;
using System.Linq;
using OnLineGame;
namespace ConsoleApp1
{
    class Program
    {
        static void Main(string[] args)
        {
            // 1. ========================================
            // TakeSample
            Console.WriteLine("1. TakeSample(); ======================= ");
             TakeSample();
            // 2. =============================================
            // SkipSample
            Console.WriteLine("2. SkipSample(); ======================= ");
             SkipSample();
            // 3. =============================================
            // TakeWhileSample
            Console.WriteLine("3. TakeWhileSample(); ======================= ");
             TakeWhileSample();
            // 4. =============================================
            // SkipWhileSample
            Console.WriteLine("4. SkipWhileSample(); ======================= ");
             SkipWhileSample();
            // 5. =============================================
            // GamerPaggingSample
            Console.WriteLine("5. GamerPaggingSample(); ======================= ");
             GamerPaggingSample();
            Console.ReadLine();
        }


       // 1. =============================================
        // TakeSample
        //Retrieves only the first 3 string values.
        static void TakeSample()
        {
            // 1.1. TakeSample: Lambda Expression Query ----------------
            Console.WriteLine("1.1. TakeSample: Lambda Expression Query ---------------- ");
            string[] strArr = { "ABCDE", "FIJ", "KLMN", "OP", "QRST", "UV", "WXYZ" };
            IEnumerable<string> strTakeArr = strArr.Take(3);
            foreach (string strTakeArrItem in strTakeArr)
            {
                Console.WriteLine(strTakeArrItem);
            }
            //1.2. TakeSample: SQL Like Query ----------------
            Console.WriteLine("1.2. TakeSample: SQL Like Query ---------------- ");
            IEnumerable<string> strTakeArr2 = (from strArrItem in strArr
                                               select strArrItem).Take(3);
            foreach (string strTakeArr2Item in strTakeArr2)
            {
                Console.WriteLine(strTakeArr2Item);
            }
        }
        // 1.1. TakeSample: Lambda Expression Query ----------------
        // ABCDE
        // FIJ
        // KLMN
        // 1.2. TakeSample: SQL Like Query ----------------
        // ABCDE
        // FIJ
        // KLMN
        // 2. =============================================
        // SkipSample
        //Skip the first 3 string values and take the rest
```

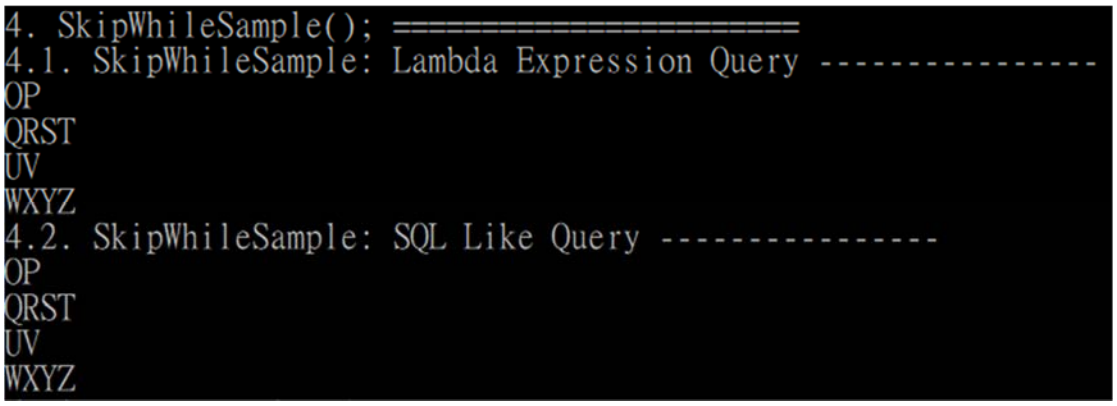
```
static void SkipSample()
{
    // 2.1. SkipSample: Lambda Expression Query ----------------
    Console.WriteLine("2.1. SkipSample: Lambda Expression Query ----------------");
    string[] strArr = { "ABCDE", "FIJ", "KLMN", "OP", "QRST", "UV", "WXYZ" };
    IEnumerable<string> strSkipArr = strArr.Skip(3);
    foreach (string strSkipArrItem in strSkipArr)
    {
        Console.WriteLine(strSkipArrItem);
    }
    //2.2. SkipSample: SQL Like Query ----------------
    Console.WriteLine("2.2. SkipSample: SQL Like Query ---------------- ");
    IEnumerable<string> strSkipArr2 = (from strArrItem in strArr
                                       select strArrItem).Skip(3);
    foreach (string strSkipArr2Item in strSkipArr2)
    {
        Console.WriteLine(strSkipArr2Item);
    }
}
// 2.1. SkipSample: Lambda Expression Query ----------------
// OP
// QRST
// UV
// WXYZ
// 2.2. SkipSample: SQL Like Query ----------------
// OP
// QRST
// UV
// WXYZ


// 3. =============================================
// TakeWhileSample
// As long as the condition is still true, then take it.
private static void TakeWhileSample()
{
    // 3.1. TakeWhileSample: Lambda Expression Query ----------------
    Console.WriteLine("3.1. TakeWhileSample: Lambda Expression Query ----------------");
    string[] strArr = { "ABCDE", "FIJ", "KLMN", "OP", "QRST", "UV", "WXYZ" };
    IEnumerable<string> strArrTakeWhileArr = strArr.TakeWhile(s => s.Length > 2);
    foreach (string strArrTakeWhileArrItem in strArrTakeWhileArr)
    {
        Console.WriteLine(strArrTakeWhileArrItem);
    }
    //3.2. TakeWhileSample: SQL Like Query ----------------
    Console.WriteLine("3.2. TakeWhileSample: SQL Like Query ---------------- ");
    IEnumerable<string> strArrTakeWhileArr2 = (from strArrItem in strArr
                                               select strArrItem).TakeWhile(s => s.Length > 2);
    foreach (string strArrTakeWhileArr2Item in strArrTakeWhileArr2)
    {
        Console.WriteLine(strArrTakeWhileArr2Item);
    }
}
// 3.1. TakeWhileSample: Lambda Expression Query ----------------
// ABCDE
// FIJ
// KLMN
// 3.2. TakeWhileSample: SQL Like Query ----------------
// ABCDE
// FIJ
// KLMN
// 4. =============================================
// SkipWhileSample
// As long as the condition is still true, then skip it.
static void SkipWhileSample()
{
    // 4.1. SkipWhileSample: Lambda Expression Query ----------------
    Console.WriteLine("4.1. SkipWhileSample: Lambda Expression Query ----------------");
    string[] strArr = { "ABCDE", "FIJ", "KLMN", "OP", "QRST", "UV", "WXYZ" };
    IEnumerable<string> strArrSkipWhileArr = strArr.SkipWhile(s => s.Length > 2);
    foreach (string strArrSkipWhileArrItem in strArrSkipWhileArr)
    {
        Console.WriteLine(strArrSkipWhileArrItem);
    }
    //4.2. SkipWhileSample: SQL Like Query ----------------
    Console.WriteLine("4.2. SkipWhileSample: SQL Like Query ---------------- ");
    IEnumerable<string> strArrSkipWhileArr2 = (from strArrItem in strArr
                                               select strArrItem).SkipWhile(s => s.Length > 2);
    foreach (string strArrSkipWhileArr2Item in strArrSkipWhileArr2)
    {
        Console.WriteLine(strArrSkipWhileArr2Item);
    }
}
// 4.1. SkipWhileSample: Lambda Expression Query ----------------
// OP
// QRST
// UV
// WXYZ
// 4.2. SkipWhileSample: SQL Like Query ----------------
// OP
// QRST
// UV
// WXYZ
// 5. =============================================
// GamerPagging
static void GamerPaggingSample()
{
    int numberOfGamers = 27;
    int pageSize = 10;
    int pageNumber = 0;
    GamerPagging(numberOfGamers, pageSize, pageNumber);
    pageNumber = 1;
    GamerPagging(numberOfGamers, pageSize, pageNumber);
    pageNumber = 2;
    GamerPagging(numberOfGamers, pageSize, pageNumber);
    pageNumber = 3;
    GamerPagging(numberOfGamers, pageSize, pageNumber);
    pageNumber = 4;
    GamerPagging(numberOfGamers, pageSize, pageNumber);
}
//Create {numberOfGamers} Gamers List
//Then Create Pagging
```

```
        //Each page have {pageSize} Gamers.
        //Set to {pageNumber} Page.
        //E.g.
        //Create 43 Gamers List
        //Then Create Pagging
        //Each page have 10 Gamers,
        //this will create 5 pages
        //Set to Page 3.
        //This will show Gamers21 to Gamers30
        static void GamerPagging(int numberOfGamers, int pageSize, int pageNumber)
        {
            List<Gamer> gamerList = GamerHelper.GetSampleGamers(numberOfGamers);
            //int pageNumber = 1;
            //int pageSize = 10;
            int numberOfPages =
                Convert.ToInt32(
                    Math.Ceiling((double)gamerList.Count / pageSize));
            if (pageNumber >= 1 && pageNumber <= numberOfPages)
            {
                IEnumerable<Gamer> gamersInPage =
                     gamerList.Skip((pageNumber - 1) * pageSize)
                     .Take(pageSize);
                Console.WriteLine($"Page Number:{pageNumber}");
                foreach (Gamer gamersInPageItem in gamersInPage)
                {
                    Console.WriteLine(gamersInPageItem);
                }
                Console.WriteLine();
            }
            else
            {
                Console.WriteLine($"Invalid Page Number. Page number must be an integer between 1 
and {numberOfPages}\r\n");
            }
        }
        // Invalid Page Number. Page number must be an integer between 1 and 3
        // Page Number:1
        // Id==1,Name==Name1
        // Id==2,Name==Name2
        // Id==3,Name==Name3
        // Id==4,Name==Name4
        // Id==5,Name==Name5
        // Id==6,Name==Name6
        // Id==7,Name==Name7
        // Id==8,Name==Name8
        // Id==9,Name==Name9
        // Id==10,Name==Name10
        // Page Number:2
        // Id==11,Name==Name11
        // Id==12,Name==Name12
        // Id==13,Name==Name13
        // Id==14,Name==Name14
        // Id==15,Name==Name15
        // Id==16,Name==Name16
        // Id==17,Name==Name17
```

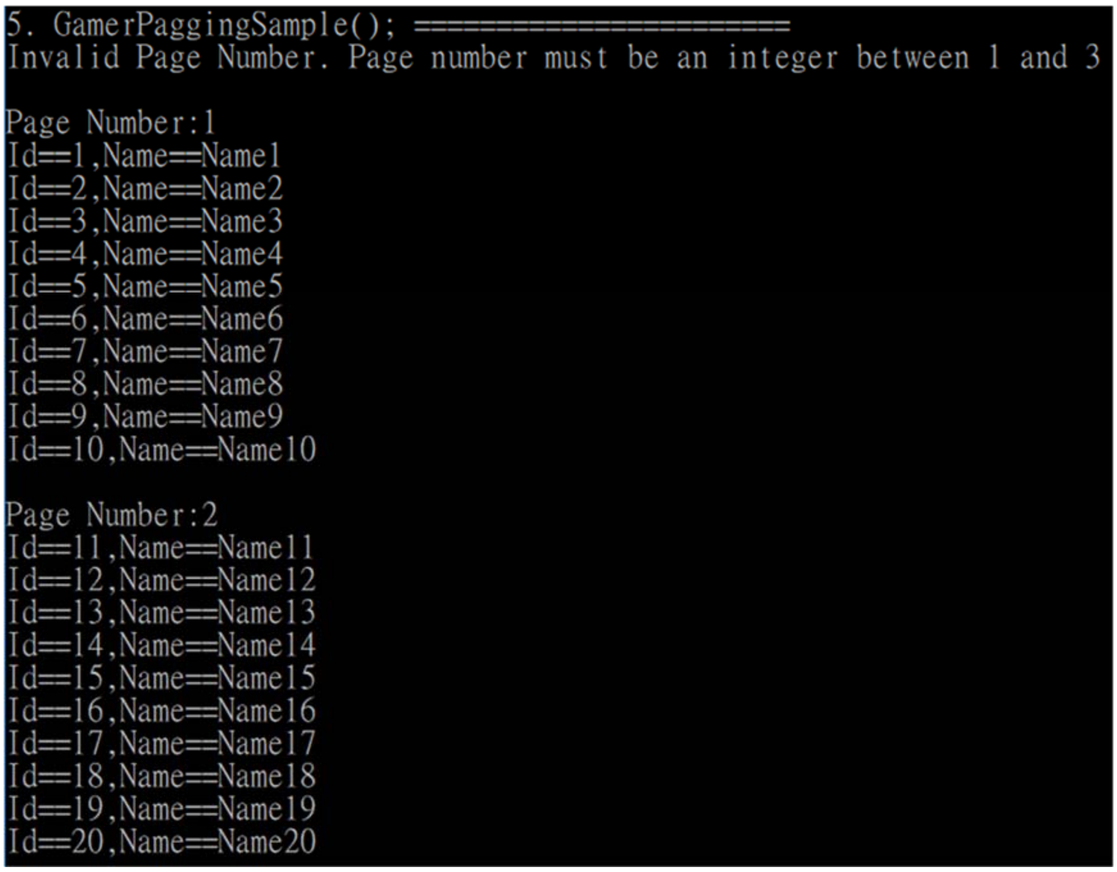
```
            // Id==18,Name==Name18
            // Id==19,Name==Name19
            // Id==20,Name==Name20
            // Page Number:3
            // Id==21,Name==Name21
            // Id==22,Name==Name22
            // Id==23,Name==Name23
            // Id==24,Name==Name24
            // Id==25,Name==Name25
            // Id==26,Name==Name26
            // Id==27,Name==Name27
            // Invalid Page Number. Page number must be an integer between 1 and 3

        }
    }
namespace OnLineGame
{
    public class Gamer
    {
        public int Id { get; set; }
        public string Name { get; set; }
        public override string ToString()
        {
            return $"Id=={Id},Name=={Name}";
        }
    }
    public class GamerHelper
    {
        // Create a List<Gamer> which contains numberOfGamers gamers.
        public static List<Gamer> GetSampleGamers(int numberOfGamers)
        {
            //int numberOfGamers = 43;
            List<Gamer> gamerList = new List<Gamer>();
            for (int i = 1; i <= numberOfGamers; i++)
            {
                gamerList.Add(new Gamer { Id = i, Name = $"Name{i}" });
            }
            return gamerList;
        }
    }
}
```



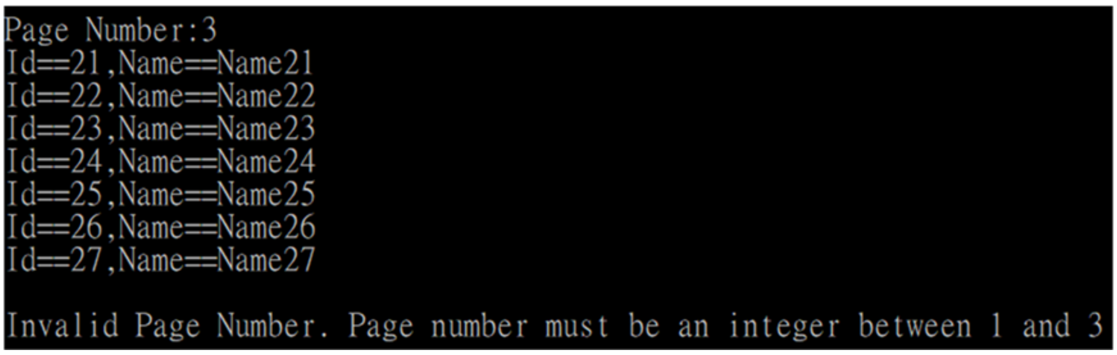
```
1. TakeSample(); =======================
1.1. TakeSample: Lambda Expression Query ----------------
ABCDE
FIJ
KLMN
1.2. TakeSample: SQL Like Query ----------------
ABCDE
FIJ
KLMN
2. SkipSample(); =======================
2.1. SkipSample: Lambda Expression Query ----------------
OP
QRST
UV
WXYZ
2.2. SkipSample: SQL Like Query ----------------
OP
QRST
UV
WXYZ
3. TakeWhileSample(); =======================
3.1. TakeWhileSample: Lambda Expression Query ----------------
ABCDE
FIJ
KLMN
3.2. TakeWhileSample: SQL Like Query ----------------
ABCDE
FIJ
KLMN
```



```
4. SkipWhileSample(); =======================
4.1. SkipWhileSample: Lambda Expression Query ----------------
OP
QRST
UV
WXYZ
4.2. SkipWhileSample: SQL Like Query ----------------
OP
QRST
UV
WXYZ
```



```
5. GamerPaggingSample(); =======================
Invalid Page Number. Page number must be an integer between 1 and 3

Page Number:1
Id==1,Name==Name1
Id==2,Name==Name2
Id==3,Name==Name3
Id==4,Name==Name4
Id==5,Name==Name5
Id==6,Name==Name6
Id==7,Name==Name7
Id==8,Name==Name8
Id==9,Name==Name9
Id==10,Name==Name10

Page Number:2
Id==11,Name==Name11
Id==12,Name==Name12
Id==13,Name==Name13
Id==14,Name==Name14
Id==15,Name==Name15
Id==16,Name==Name16
Id==17,Name==Name17
Id==18,Name==Name18
Id==19,Name==Name19
Id==20,Name==Name20
```



```
Page Number:3
Id==21,Name==Name21
Id==22,Name==Name22
Id==23,Name==Name23
Id==24,Name==Name24
Id==25,Name==Name25
Id==26,Name==Name26
Id==27,Name==Name27

Invalid Page Number. Page number must be an integer between 1 and 3
```