(T5)比較 LinqToObject 的 Select、SelectMany
CourseGUID: 5ba9a6fe-7475-4b0c-8b99-bbcf7f5e2e1c
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(T5)比較 LinqToObject 的 Select、SelectMany
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0. Summary

1.
Select() and SelectMany() are projection operators
which can specify what properties to retrieve,
just like TSQL Select clause can specify what columns to retrieve.

1.0.
Select() V.S. SelectMany()
1.0.1.
If T1 has List<T2> as its property,
I assume there is a List<T1>.
When we use Select() method,
then it will return List of List<T2>.
Thus, we have to use 2 nested foreach loops to get all List of List<T2>
1.0.2.
SelectMany() flattens queries that return lists of lists into a single list.
Thus, we just need 1 foreach loops to get all List<T2>

1.1.
//Enumerable.Select<TSource, TResult>
//(this IEnumerable<TSource> source, Func<TSource, TResult> selector)
Reference:
https://msdn.microsoft.com/en-us/library/bb548891(v=vs.110).aspx
Projects each element of a sequence into a new form.

1.2.
//Enumerable.SelectMany<TSource, TResult>
//(this IEnumerable<TSource> source, Func<TSource, IEnumerable<TResult>> selector)
Reference:
https://msdn.microsoft.com/en-us/library/bb534336(v=vs.110).aspx
Projects each element of a sequence to an IEnumerable<T>
and flattens the resulting sequences into one sequence.

1.3.
//Enumerable.SelectMany<TSource, TCollection, TResult>

```
//(this IEnumerable<TSource> source ,
//Func<TSource,  IEnumerable<TCollection>> collectionSelector,
//Func<TSource,  TCollection,  TResult> resultSelector)
```
Reference:
https://msdn.microsoft.com/en-us/library/bb534631(v=vs.110).aspx
Projects each element of a sequence to an IEnumerable<T>,
flattens the resulting sequences into one sequence,
and invokes a result selector function on each element therein.
TSource
The type of the elements of source.
TCollection
The type of the intermediate elements collected by collectionSelector.
TResult
The type of the elements of the resulting sequence.

1.3.1.
E.g.
```
////Error!!
//var gamerNameAlongWithSkills2 = GamerHelper.GetSampleGamers()
//    .SelectMany(
//        (gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
```

1.3.2.
```
//var gamerNameAlongWithSkills = GamerHelper.GetSampleGamers()
//    .SelectMany(
//        g => g.Skills,
//        (gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
//Console.WriteLine($"gamerNameAlongWithSkills.Count()=={gamerNameAlongWithSkills.Count()}");
//foreach (var gamerNameAlongWithSkillsItem in gamerNameAlongWithSkills)
//{
//    Console.WriteLine($"GamerName=={gamerNameAlongWithSkillsItem.GamerName}, " +
//                      $"Skill=={gamerNameAlongWithSkillsItem.Skill}");
//}
```
If SelectMany want to project to anonymous type,
then it need the second parameter,
Func<TSource, IEnumerable<TCollection>> collectionSelector.
//g => g.Skills,
Firstly, invoke the one-to-many transform function collectionSelector on each source element.
//(gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
The first parameter of (gamer, skill) represents each element from List<T>,
In this case, "gamer" means each gamer from List<Gamer> which is from GamerHelper.GetSampleGamers().
The second parameter of (gamer, skill) is from collectionSelector
which is the second parameter of SelectMany.
In this case, "skill" means each skill of "g.Skills".
And then mapping each of those to anonymous type properties.

2.
When using Sql like query which has 2 from clause,
the second from clause will use the result set
from the first from clause as its source.

==========

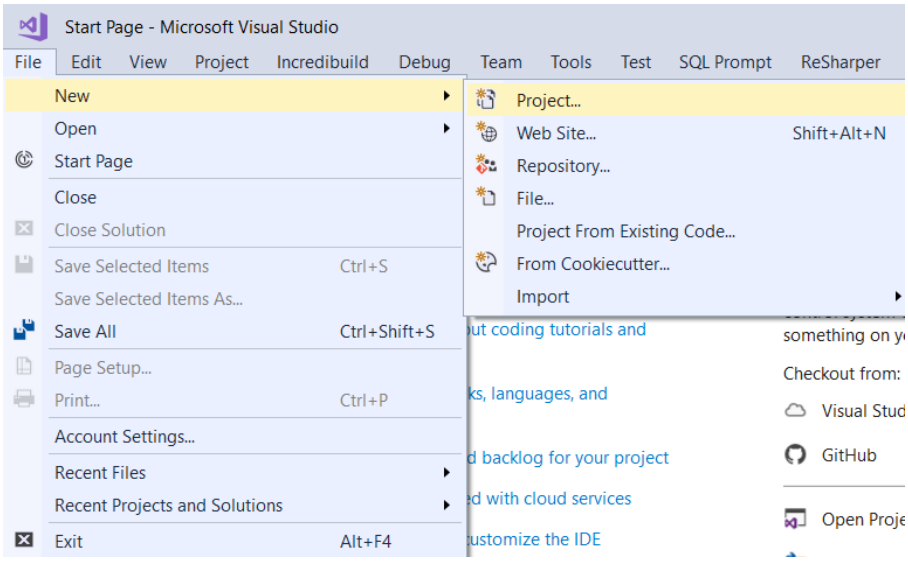
1. New Project

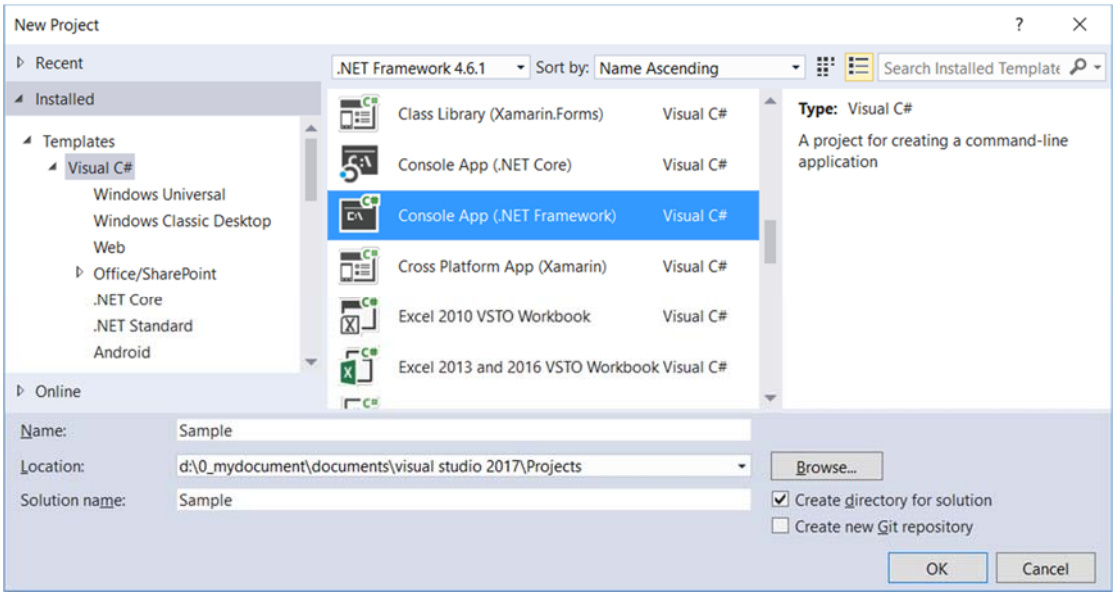
1.1. Create New Project : Sample

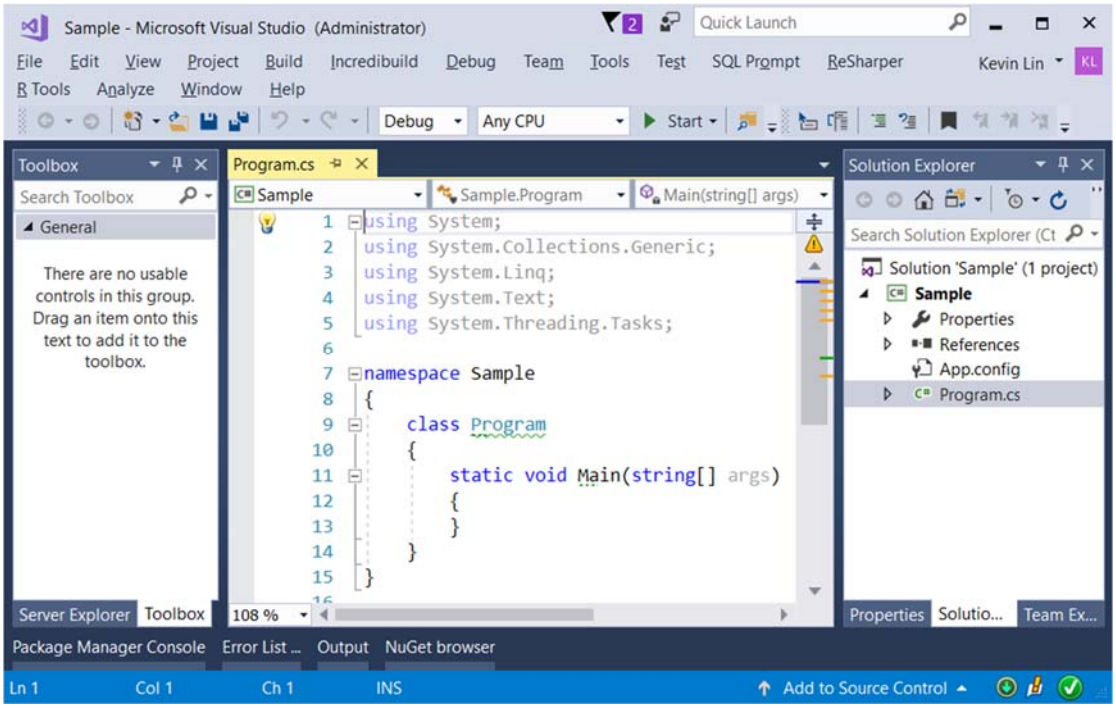
File --> New --> Project... -->

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

Name: **Sample**







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2. Sample : Program.cs

```
using System;
using System.Collections.Generic;
using System.Linq;
using OnlineGame;
namespace Sample
{
    class Program
    {
        static void Main(string[] args)
        {
            //1. ======================================
            //Select()
            Console.WriteLine("1. GetGamersId(); ========================== ");
            GetGamersId();
            //2. ======================================
            //Select()
            Console.WriteLine("2. GetGamersIdNameGender(); ========================== ");
            GetGamersIdNameGender();
            //3. ======================================
            //Select()
            Console.WriteLine("3. GetGamerScoreGreaterThan5k(); ========================== ");
            GetGamerScoreGreaterThan5k();
            //4. ======================================
            //SelectMany()
            Console.WriteLine("4. GetAllSkills(); ========================== ");
            GetAllSkills();
            //5. ======================================
            //SelectMany()
            Console.WriteLine("5. GetAllSkillsSqlLikeQuery(); ========================== ");
            GetAllSkillsSqlLikeQuery();
```

```
    //6. ======================================
    //SelectMany()
    Console.WriteLine("6. StrToCharEnumerable(); ========================== ");
     StrToCharEnumerable();
    //7. ======================================
    //SelectMany()
    Console.WriteLine("7. StrToCharEnumerableSqlLikeQuery(); ========================== ");
     StrToCharEnumerableSqlLikeQuery();
    //8. ======================================
    //SelectMany()
    Console.WriteLine("8. GetDistinctSkills(); ========================== ");
     GetDistinctSkills();
    //9. ======================================
    //SelectMany()
    Console.WriteLine("9. GetDistinctSkillsSqlLikeQuery(); ========================== ");
     GetDistinctSkillsSqlLikeQuery();
    //10. ======================================
    //Selects gamer name along with skils
    Console.WriteLine("10. GetGamerNameAndSkills(); ========================== ");
     GetGamerNameAndSkills();
    //11. ======================================
    //Selects gamer name along with skils
    Console.WriteLine("11. GetGamerNameAndSkillsSqlLikeQuery(); ========================== ");
     GetGamerNameAndSkillsSqlLikeQuery();
    //12. ======================================
    //Select() V.S. SelectMany()
    Console.WriteLine("12. GetGamerAndSkillsBySelect(); ========================== ");
     GetGamerAndSkillsBySelect();
    //13. ======================================
    //Select() V.S. SelectMany()
    Console.WriteLine("13. GetGamerAndSkillsBySelectMany(); ========================== ");
     GetGamerAndSkillsBySelectMany();
    Console.ReadLine();
}



//1. ======================================
//Select()
static void GetGamersId()
{
    ////Error
    //var gamerIds2 =
    //    GamerHelper.GetSampleGamers().SelectMany(g => g.Id);
    IEnumerable<int> gamerIds =
        GamerHelper.GetSampleGamers().Select(g => g.Id);
    foreach (int id in gamerIds)
    {
        Console.WriteLine(id);
    }
}
//1
//2
//3
//4
```

```
//2. ======================================
//Select()
static void GetGamersIdNameGender()
{
    ////Error
    //var anonymousTypes2 = GamerHelper.GetSampleGamers()
    //    .SelectMany(g => new
    //    {
    //        Id = g.Id,
    //        Name = g.Name,
    //        Gender = g.Gender
    //    });
    var anonymousTypes = GamerHelper.GetSampleGamers()
        .Select(g => new
        {
            Id = g.Id,
            Name = g.Name,
            Gender = g.Gender
        });
    foreach (var anonymousTypesItem in anonymousTypes)
    {
        Console.WriteLine($"Id=={anonymousTypesItem.Id}, " +
                          $"Name=={anonymousTypesItem.Name}, " +
                          $"Gender=={anonymousTypesItem.Gender}");
    }
}
//Id==1, Name==Name01, Gender==Male
//Id==2, Name==Name02, Gender==Male
//Id==3, Name==Name03, Gender==Female
//Id==4, Name==Name04, Gender==Male



//3. ======================================
//Select()
static void GetGamerScoreGreaterThan5k()
{
    ////Error
    //var anonymousTypes2 = GamerHelper.GetSampleGamers()
    //    .Where(g => g.Score >= 5000)
    //    .SelectMany(g => new
    //    {
    //        NameAndGender = $"{g.Name}, {g.Gender}",
    //        Score = g.Score
    //    });
    var anonymousTypes = GamerHelper.GetSampleGamers()
        .Where(g => g.Score >= 5000)
        .Select(g => new
        {
            NameAndGender = $"{g.Name}, {g.Gender}",
            Score = g.Score
        });
    foreach (var anonymousTypesItem in anonymousTypes)
    {
        Console.WriteLine($"NameAndGender=={anonymousTypesItem.NameAndGender}, \n\r" +
                          $"Score=={anonymousTypesItem.Score}");
```

```
    }
}
//NameAndGender==Name01, Male,
//Score==6000
//NameAndGender==Name04, Male,
//Score==8000
//4. ======================================
//SelectMany()
static void GetAllSkills()
{
    //1.2.
    ////Enumerable.SelectMany<TSource, TResult>
    ////(this IEnumerable<TSource> source, Func<TSource, IEnumerable<TResult>> selector)
    //Reference:
    //https://msdn.microsoft.com/en-us/library/bb534336(v=vs.110).aspx
    //Projects each element of a sequence to an IEnumerable<T>
    //and flattens the resulting sequences into one sequence.
    IEnumerable<string> allSkills = GamerHelper.GetSampleGamers()
        .SelectMany(g => g.Skills);
    foreach (string allSkillsItem in allSkills)
    {
        Console.WriteLine($"allSkillsItem=={allSkillsItem}");
    }
}
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
//allSkillsItem==SkilA
//allSkillsItem==SkillD
//allSkillsItem==SkilC
//allSkillsItem==SkillE
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
//allSkillsItem==SkillD

//5. ======================================
//SelectMany()
static void GetAllSkillsSqlLikeQuery()
{
    //2.
    //When using Sql like query which has 2 from clause,
    //the second from clause will use the result set
    //from the first from clause as its source.
    IEnumerable<string> allSkills = from gamer in GamerHelper.GetSampleGamers()
                                    from skills in gamer.Skills
                                    select skills;
    foreach (string allSkillsItem in allSkills)
    {
        Console.WriteLine($"allSkillsItem=={allSkillsItem}");
    }
}
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
```

```
//allSkillsItem==SkilA
//allSkillsItem==SkillD
//allSkillsItem==SkilC
//allSkillsItem==SkillE
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
//allSkillsItem==SkillD
//6. ======================================
//SelectMany()
private static void StrToCharEnumerable()
{
    //1.2.
    ////Enumerable.SelectMany<TSource, TResult>
    ////(this IEnumerable<TSource> source, Func<TSource, IEnumerable<TResult>> selector)
    //Reference:
    //https://msdn.microsoft.com/en-us/library/bb534336(v=vs.110).aspx
    //Projects each element of a sequence to an IEnumerable<T>
    //and flattens the resulting sequences into one sequence.
    string[] strArr =
    {
        "123",
        "456",
        "7890"
    };
    IEnumerable<char> charEnumerable = strArr.SelectMany(s => s);
    foreach (char charEnumerableItem in charEnumerable)
    {
        Console.Write($"[ {charEnumerableItem} ]  ");
    }
    Console.WriteLine($"\r\ncharEnumerable.Count()=={charEnumerable.Count()}");
}
//[ 1 ]  [ 2 ]  [ 3 ]  [ 4 ]  [ 5 ]  [ 6 ]  [ 7 ]  [ 8 ]  [ 9 ]  [ 0 ]
//charEnumerable.Count()==10


//7. ======================================
//SelectMany()
static void StrToCharEnumerableSqlLikeQuery()
{
    //2.
    //When using Sql like query which has 2 from clause,
    //the second from clause will use the result set
    //from the first from clause as its source.
    string[] strArr =
    {
        "123",
        "456",
        "7890"
    };
    //IEnumerable<char> charEnumerable = strArr.SelectMany(s => s);
    IEnumerable<char> charEnumerable =
        from strArrItem in strArr
        from charItem in strArrItem
        select charItem;
```

```
    foreach (char charEnumerableItem in charEnumerable)
    {
        Console.Write($"[ {charEnumerableItem} ]  ");
    }
    Console.WriteLine($"\r\ncharEnumerable.Count()=={charEnumerable.Count()}");
}
//[ 1 ]  [ 2 ]  [ 3 ]  [ 4 ]  [ 5 ]  [ 6 ]  [ 7 ]  [ 8 ]  [ 9 ]  [ 0 ]
//charEnumerable.Count()==10
//8. ====================================
//SelectMany()
static void GetDistinctSkills()
{
    //1.2.
    ////Enumerable.SelectMany<TSource, TResult>
    ////(this IEnumerable<TSource> source, Func<TSource, IEnumerable<TResult>> selector)
    //Reference:
    //https://msdn.microsoft.com/en-us/library/bb534336(v=vs.110).aspx
    //Projects each element of a sequence to an IEnumerable<T>
    //and flattens the resulting sequences into one sequence.
    IEnumerable<string> allSkills =
        GamerHelper.GetSampleGamers()
        .SelectMany(s => s.Skills).Distinct();
    foreach (string allSkillsItem in allSkills)
    {
        Console.WriteLine($"allSkillsItem=={allSkillsItem}");
    }
}
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
//allSkillsItem==SkillD
//allSkillsItem==SkilC
//allSkillsItem==SkillE


//9. ====================================
//SelectMany()
static void GetDistinctSkillsSqlLikeQuery()
{
    //2.
    //When using Sql like query which has 2 from clause,
    //the second from clause will use the result set
    //from the first from clause as its source.
    IEnumerable<string> allSkills =
         (from gamer in GamerHelper.GetSampleGamers()
          from skills in gamer.Skills
          select skills).Distinct();
    foreach (string allSkillsItem in allSkills)
    {
        Console.WriteLine($"allSkillsItem=={allSkillsItem}");
    }
}
//allSkillsItem==SkilA
//allSkillsItem==SkillB
//allSkillsItem==SkillC
```

```
        //allSkillsItem==SkillD
        //allSkillsItem==SkilC
        //allSkillsItem==SkillE
        //10. ====================================
        //Selects gamer name along with skils
        private static void GetGamerNameAndSkills()
        {
            //1.3.
            ////Enumerable.SelectMany<TSource, TCollection, TResult>
            /////(this IEnumerable<TSource> source ,
            ////Func<TSource, IEnumerable<TCollection>> collectionSelector,
            ////Func<TSource, TCollection, TResult> resultSelector)
            //Reference:
            //https://msdn.microsoft.com/en-us/library/bb534631(v=vs.110).aspx
            //Projects each element of a sequence to an IEnumerable<T>,
            //flattens the resulting sequences into one sequence,
            //and invokes a result selector function on each element therein.
            //TSource
            //The type of the elements of source.
            //TCollection
            //The type of the intermediate elements collected by collectionSelector.
            //TResult
            //The type of the elements of the resulting sequence.
            //10.1. ------------------------------------------
            ////Error!!
            //var gamerNameAlongWithSkills2 = GamerHelper.GetSampleGamers()
            //    .SelectMany(
            //        (gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
            //10.2. ------------------------------------------
            //If SelectMany want to project to anonymous type,
            //then it need the second parameter,
            //Func<TSource, IEnumerable<TCollection>> collectionSelector.
            ////g => g.Skills,
            //Firstly, invoke the one-to-many transform function collectionSelector on each source
element.
            ////(gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
            //The first parameter of (gamer, skill) represents each element from List<T>,
            //In this case, it means each gamer from List<Gamer> which is from
GamerHelper.GetSampleGamers().
            //The second parameter of (gamer, skill) is from collectionSelector
            //which is the second parameter of SelectMany.
            //And then mapping each of those to anonymous type properties.
            var gamerNameAlongWithSkills = GamerHelper.GetSampleGamers()
                .SelectMany(
                    g => g.Skills,
                    (gamer, skill) => new { GamerName = gamer.Name, Skill = skill });
            Console.WriteLine($"gamerNameAlongWithSkills.Count()=={gamerNameAlongWithSkills.Count()}");
            foreach (var gamerNameAlongWithSkillsItem in gamerNameAlongWithSkills)
            {
                Console.WriteLine($"GamerName=={gamerNameAlongWithSkillsItem.GamerName}, " +
                                  $"Skill=={gamerNameAlongWithSkillsItem.Skill}");
            }
        }
        //gamerNameAlongWithSkills.Count()==11
```

```
//GamerName==Name01, Skill==SkilA
//GamerName==Name01, Skill==SkillB
//GamerName==Name01, Skill==SkillC
//GamerName==Name02, Skill==SkilA
//GamerName==Name02, Skill==SkillD
//GamerName==Name03, Skill==SkilC
//GamerName==Name03, Skill==SkillE
//GamerName==Name04, Skill==SkilA
//GamerName==Name04, Skill==SkillB
//GamerName==Name04, Skill==SkillC
//GamerName==Name04, Skill==SkillD

//11. ======================================
//Selects gamer name along with skils
static void GetGamerNameAndSkillsSqlLikeQuery()
{
    var gamerNameAlongWithSkills = from gamer in GamerHelper.GetSampleGamers()
                                   from skill in gamer.Skills
                                   select new { GamerName = gamer.Name, Skill = skill };
    foreach (var gamerNameAlongWithSkillsItem in gamerNameAlongWithSkills)
    {
        Console.WriteLine($"GamerName=={gamerNameAlongWithSkillsItem.GamerName}, " +
                          $"Skill=={gamerNameAlongWithSkillsItem.Skill}");
    }
}
//GamerName==Name01, Skill==SkilA
//GamerName==Name01, Skill==SkillB
//GamerName==Name01, Skill==SkillC
//GamerName==Name02, Skill==SkilA
//GamerName==Name02, Skill==SkillD
//GamerName==Name03, Skill==SkilC
//GamerName==Name03, Skill==SkillE
//GamerName==Name04, Skill==SkilA
//GamerName==Name04, Skill==SkillB
//GamerName==Name04, Skill==SkillC
//GamerName==Name04, Skill==SkillD


//12. ======================================
//Select() V.S. SelectMany()
static void GetGamerAndSkillsBySelect()
{
    IEnumerable<List<string>> allGamers = GamerHelper.GetSampleGamers().Select(g => g.Skills);
    Console.WriteLine($"allGamers.Count():{allGamers.Count()}");
    foreach (List<string> skills in allGamers)
    {
        Console.WriteLine($"skills.Count():{skills.Count}");
        foreach (string skillsItem in skills)
        {
            Console.WriteLine(skillsItem);
        }
    }
}
//allGamers.Count():4
//skills.Count():3
```

```
        //SkilA
        //SkillB
        //SkillC
        //skills.Count():2
        //SkilA
        //SkillD
        //skills.Count():2
        //SkilC
        //SkillE
        //skills.Count():4
        //SkilA
        //SkillB
        //SkillC
        //SkillD
        //13. ====================================
        //Select() V.S. SelectMany()
        private static void GetGamerAndSkillsBySelectMany()
        {
            IEnumerable<string> skills = GamerHelper.GetSampleGamers().SelectMany(g => g.Skills);
            Console.WriteLine($"skills.Count()=={skills.Count()}");
            foreach (string skillsItem in skills)
            {
                Console.WriteLine(skillsItem);
            }
        }
        //skills.Count()==11
        //SkilA
        //SkillB
        //SkillC
        //SkilA
        //SkillD
        //SkilC
        //SkillE
        //SkilA
        //SkillB
        //SkillC
        //SkillD
    }
}


namespace OnlineGame
{
    public class Gamer
    {
        public int Id { get; set; }
        public string Name { get; set; }
        public string Gender { get; set; }
        public int Score { get; set; }
        public List<string> Skills { get; set; }
    }
    public class GamerHelper
    {
        public static List<Gamer> GetSampleGamers()
        {
```

```
            return new List<Gamer>
            {
                new Gamer{Id=1,Name="Name01",Gender="Male", Score =6000,
                    Skills = new List<string>{"SkilA", "SkillB", "SkillC"}},
                new Gamer{Id=2,Name="Name02",Gender="Male", Score =3000,
                    Skills = new List<string>{"SkilA", "SkillD"}},
                new Gamer{Id=3,Name="Name03",Gender="Female", Score =4500,
                    Skills = new List<string>{"SkilC", "SkillE"}},
                new Gamer{Id=4,Name="Name04",Gender="Male", Score =8000,
                    Skills = new List<string>{"SkilA", "SkillB", "SkillC", "SkillD"}},
            };
        }
    }
}



/*
1.
Select() and SelectMany() are projection operators
which can specify what properties to retrieve,
just like TSQL Select clause can specify what columns to retrieve.
-----------------
1.0.
Select() V.S. SelectMany()
1.0.1.
If T1 has List<T2> as its property,
I assume there is a List<T1>.
When we use Select() method,
then it will return List of List<T2>.
Thus, we have to use 2 nested foreach loops to get all List of List<T2>
1.0.2.
SelectMany() flattens queries that return lists of lists into a single list.
Thus, we just need 1 foreach loops to get all List<T2>
-----------------
1.1.
//Enumerable.Select<TSource, TResult>
//(this IEnumerable<TSource> source, Func<TSource, TResult> selector)
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https://msdn.microsoft.com/en-us/library/bb548891(v=vs.110).aspx
Projects each element of a sequence into a new form.
-----------------
1.2.
//Enumerable.SelectMany<TSource, TResult>
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Reference:
https://msdn.microsoft.com/en-us/library/bb534336(v=vs.110).aspx
Projects each element of a sequence to an IEnumerable<T>
and flattens the resulting sequences into one sequence.
-----------------
1.3.
//Enumerable.SelectMany<TSource, TCollection, TResult>
//(this IEnumerable<TSource> source ,
//Func<TSource, IEnumerable<TCollection>> collectionSelector,
//Func<TSource, TCollection, TResult> resultSelector)
Reference:
https://msdn.microsoft.com/en-us/library/bb534631(v=vs.110).aspx
Projects each element of a sequence to an IEnumerable<T>,
flattens the resulting sequences into one sequence,
and invokes a result selector function on each element therein.
TSource
The type of the elements of source.
TCollection
The type of the intermediate elements collected by collectionSelector.
TResult
```

```
The type of the elements of the resulting sequence.
------------------------------
2.
When using Sql like query which has 2 from clause,
the second from clause will use the result set
from the first from  clause as its source.
*/
```

```
1. GetGamersId(); ============================
1
2
3
4
2. GetGamersIdNameGender(); ============================
Id==1, Name==Name01, Gender==Male
Id==2, Name==Name02, Gender==Male
Id==3, Name==Name03, Gender==Female
Id==4, Name==Name04, Gender==Male
3. GetGamerScoreGreaterThan5k(); ============================
NameAndGender==Name01, Male,
Score==6000
NameAndGender==Name04, Male,
Score==8000
4. GetAllSkills(); ============================
allSkillsItem==SkilA
allSkillsItem==SkillB
allSkillsItem==SkillC
allSkillsItem==SkilA
allSkillsItem==SkillD
allSkillsItem==SkilC
allSkillsItem==SkillE
allSkillsItem==SkilA
allSkillsItem==SkillB
allSkillsItem==SkillC
allSkillsItem==SkillD
```

```
5. GetAllSkillsSqlLikeQuery(); ==========================
allSkillsItem==Skil A
allSkillsItem==Skill B
allSkillsItem==Skill C
allSkillsItem==Skil A
allSkillsItem==Skill D
allSkillsItem==Skil C
allSkillsItem==Skill E
allSkillsItem==Skil A
allSkillsItem==Skill B
allSkillsItem==Skill C
allSkillsItem==Skill D
6. StrToCharEnumerable(); ==========================
[ 1 ] [ 2 ] [ 3 ] [ 4 ] [ 5 ] [ 6 ] [ 7 ] [ 8 ] [ 9 ] [ 0 ]
charEnumerable.Count()==10
7. StrToCharEnumerableSqlLikeQuery(); ==========================
[ 1 ] [ 2 ] [ 3 ] [ 4 ] [ 5 ] [ 6 ] [ 7 ] [ 8 ] [ 9 ] [ 0 ]
charEnumerable.Count()==10
8. GetDistinctSkills(); ==========================
allSkillsItem==Skil A
allSkillsItem==Skill B
allSkillsItem==Skill C
allSkillsItem==Skill D
allSkillsItem==Skil C
allSkillsItem==Skill E
9. GetDistinctSkillsSqlLikeQuery(); ==========================
allSkillsItem==Skil A
allSkillsItem==Skill B
allSkillsItem==Skill C
allSkillsItem==Skill D
allSkillsItem==Skil C
allSkillsItem==Skill E
```

```
10. GetGamerNameAndSkills(); ==========================
gamerNameAlongWithSkills.Count()==11
GamerName==Name01, Skill==Skil A
GamerName==Name01, Skill==Skill B
GamerName==Name01, Skill==Skill C
GamerName==Name02, Skill==Skil A
GamerName==Name02, Skill==Skill D
GamerName==Name03, Skill==Skil C
GamerName==Name03, Skill==Skill E
GamerName==Name04, Skill==Skil A
GamerName==Name04, Skill==Skill B
GamerName==Name04, Skill==Skill C
GamerName==Name04, Skill==Skill D
11. GetGamerNameAndSkillsSqlLikeQuery(); ==========================
GamerName==Name01, Skill==Skil A
GamerName==Name01, Skill==Skill B
GamerName==Name01, Skill==Skill C
GamerName==Name02, Skill==Skil A
GamerName==Name02, Skill==Skill D
GamerName==Name03, Skill==Skil C
GamerName==Name03, Skill==Skill E
GamerName==Name04, Skill==Skil A
GamerName==Name04, Skill==Skill B
GamerName==Name04, Skill==Skill C
GamerName==Name04, Skill==Skill D
```

```
12. GetGamerAndSkillsBySelect(); ==========================
allGamers.Count():4
skills.Count():3
SkilA
SkillB
SkillC
skills.Count():2
SkilA
SkillD
skills.Count():2
SkilC
SkillE
skills.Count():4
SkilA
SkillB
SkillC
SkillD
13. GetGamerAndSkillsBySelectMany(); ==========================
skills.Count()==11
SkilA
SkillB
SkillC
SkilA
SkillD
SkilC
SkillE
SkilA
SkillB
SkillC
SkillD
```