Entity Framework - Eager Loading

Eager loading is the process whereby a query for one type of entity also loads related entities as part of the query. Eager loading is achieved by the use of the **Include method**.

It means that requesting related data be returned along with query results from the database. There is only one connection made to the data source, a larger amount of data is returned in the initial query.

For example, when querying students, eager-load their enrollments. The students and their enrollments will be retrieved in a single query.

Let's take a look at the following example in which all the students with their respective enrollments are retrieved from the database by using eager loading.

```
class Program {

   static void Main(string[] args) {

      using (var context = new UniContextEntities()) {
         // Load all students and related enrollments
         var students = context.Students
            .Include(s ⇒ s.Enrollments).ToList();

         foreach (var student in students) {
            string name = student.FirstMidName + " " + student.LastName;
            Console.WriteLine("ID: {0}, Name: {1}", student.ID, name);

            foreach (var enrollment in student.Enrollments) {
               Console.WriteLine("Enrollment ID: {0}, Course ID: {1}",
                  enrollment.EnrollmentID, enrollment.CourseID);
            }
         }

         Console.ReadKey();
      }
```

```
        }
}
```

When the above code is compiled and executed you will receive the following output.

```
ID: 1, Name: Ali Alexander
        Enrollment ID: 1, Course ID: 1050
        Enrollment ID: 2, Course ID: 4022
        Enrollment ID: 3, Course ID: 4041
ID: 2, Name: Meredith Alonso
        Enrollment ID: 4, Course ID: 1045
        Enrollment ID: 5, Course ID: 3141
        Enrollment ID: 6, Course ID: 2021
ID: 3, Name: Arturo Anand
        Enrollment ID: 7, Course ID: 1050
ID: 4, Name: Gytis Barzdukas
        Enrollment ID: 8, Course ID: 1050
        Enrollment ID: 9, Course ID: 4022
```

Below are some of the other forms of eager loading queries which can be used.

```
// Load one Student and its related enrollments

var student1 = context.Students
    .Where(s ⇒ s.FirstMidName == "Ali")
    .Include(s ⇒ s.Enrollments).FirstOrDefault();

// Load all Students and related enrollments
// using a string to specify the relationship

var studentList = context.Students
    .Include("Enrollments").ToList();

// Load one Student and its related enrollments
// using a string to specify the relationship

var student = context.Students
```

```
      .Where(s ⇒ s.FirstMidName == "Salman")
      .Include("Enrollments").FirstOrDefault();
```

Multiple Levels

It is also possible to eagerly load multiple levels of related entities. The following queries show examples of Student, Enrollments and Course.

```
// Load all Students, all related enrollments, and all related courses

var studentList = context.Students
    .Include(s ⇒ s.Enrollments.Select(c ⇒ c.Course)).ToList();

// Load all Students, all related enrollments, and all related courses
// using a string to specify the relationships

var students = context.Students
    .Include("Enrollments.Course").ToList();
```

We recommend that you execute the above example in a step-by-step manner for better understanding.