Previous Next

Configure One-to-Many Relationships using Fluent API in Entity Framework Core

You learned about the Conventions for One-to-Many Relationship. Generally, you don't need to configure one-to-many relationships because EF Core includes enough conventions which will automatically configure them. However, you can use Fluent API to configure the one-to-many relationship if you decide to have all the EF configurations in Fluent API for easy maintenance.

Entity Framework Core made it easy to configure relationships using Fluent API. Consider the following `Student` and `Grade` classes where the `Grade` entity includes many `Student` entities.

```
public class Student
{
    public int Id { get; set; }
    public string Name { get; set; }

    public int CurrentGradeId { get; set; }
    public Grade Grade { get; set; }
}

public class Grade
{
    public int GradeId { get; set; }
    public string GradeName { get; set; }
    public string Section { get; set; }

    public ICollection<Student> Students { get; set; }
}
```

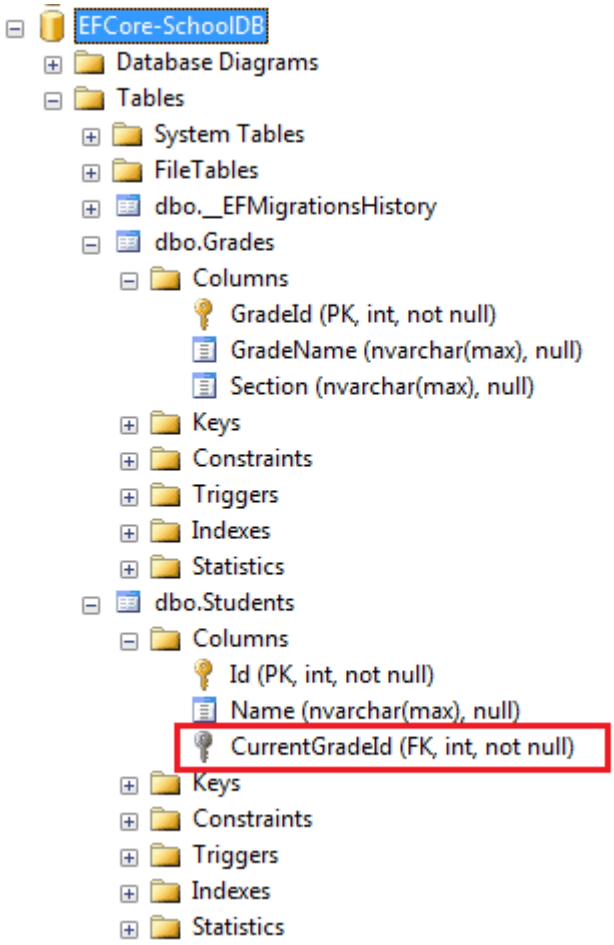
Configure the one-to-many relationship for the above entities using Fluent API by overriding the `OnModelCreating` method in the context class, as shown below.

```
public class SchoolContext : DbContext
{
    protected override void OnConfiguring(DbContextOptionsBuilder optionsBuilder)
    {
                    optionsBuilder.UseSqlServer("Server=.\\SQLEXPRESS;Database=EFCore-
SchoolDB;Trusted_Connection=True");
    }

    protected override void OnModelCreating(ModelBuilder modelBuilder)
    {
        modelBuilder.Entity<Student>()
            .HasOne<Grade>(s => s.Grade)
            .WithMany(g => g.Students)
            .HasForeignKey(s => s.CurrentGradeId);
    }

    public DbSet<Grade> Grades { get; set; }
    public DbSet<Student> Students { get; set; }
}
```

In the example above, the following code snippet configures the one-to-many relationship:

```
modelBuilder.Entity<Student>()
    .HasOne<Grade>(s => s.Grade)
    .WithMany(g => g.Students)
    .HasForeignKey(s => s.CurrentGradeId);
```

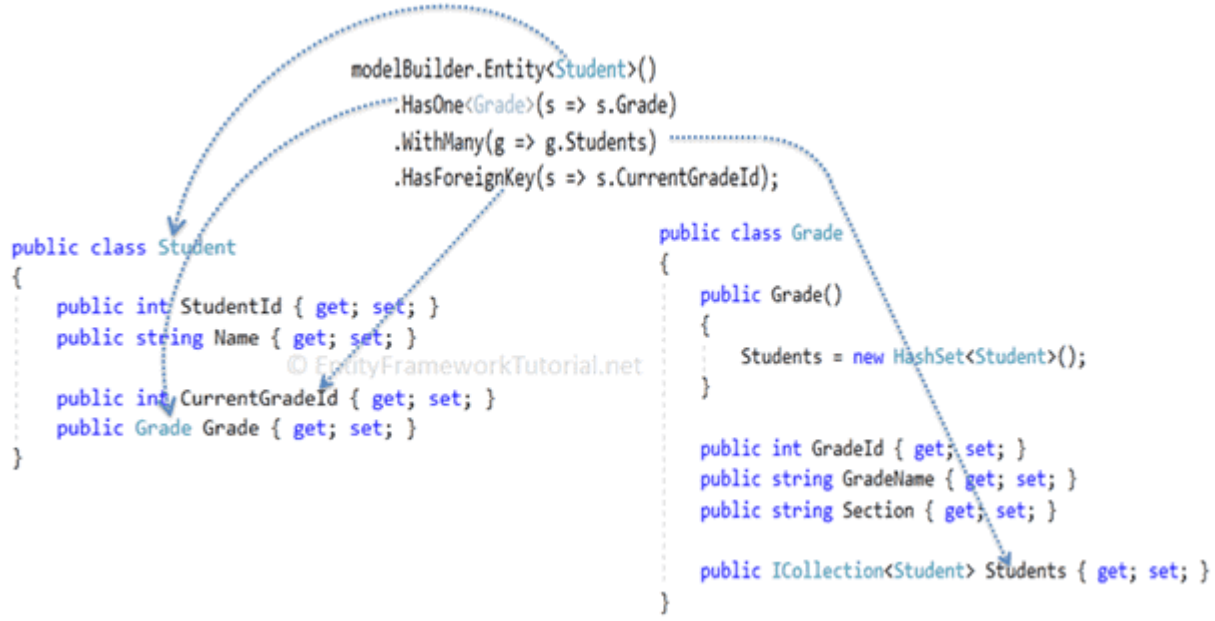
Now, to reflect this in the database, execute migration commands, `add-migration <name>` and `update-database`. The database will include two tables with One-to-Many relationship as shown below.



Let's understand the above code step by step.

- First, we need to start configuring with one entity class, either `Student` or `Grade`. So, `modelBuilder.Entity<student>()` starts with the `Student` entity.
- Then, `.HasOne<Grade>(s => s.Grade)` specifies that the `Student` entity includes a `Grade` type property named `Grade`.
- Now, we need to configure the other end of the relationship, the `Grade` entity. The `.WithMany(g => g.Students)` specifies that the `Grade` entity class includes many `Student` entities. Here, `WithMany` infers collection navigation property.
- The `.HasForeignKey<int>(s => s.CurrentGradeId);` specifies the name of the foreign key property `CurrentGradeId`. This is optional. Use it only when you have the foreign key `Id` property in the dependent class.

The following figure illustrates the above steps:



Alternatively, you can start configuring the relationship with the `Grade` entity instead of the `Student` entity, as shown below.

```
modelBuilder.Entity<Grade>()
    .HasMany<Student>(g => g.Students)
    .WithOne(s => s.Grade)
    .HasForeignKey(s => s.CurrentGradeId);
```

Configure Cascade Delete using Fluent API

Cascade delete automatically deletes the child row when the related parent row is deleted. For example, if a `Grade` is deleted, then all the `Students` in that grade should also be deleted from the database automatically.

Use the `OnDelete` method to configure the cascade delete between `Student` and `Grade` entities, as shown below.

```
modelBuilder.Entity<Grade>()
    .HasMany<Student>(g => g.Students)
    .WithOne(s => s.Grade)
    .HasForeignKey(s => s.CurrentGradeId)
    .OnDelete(DeleteBehavior.Cascade);
```

The `OnDelete()` method cascade delete behaviour uses the `DeleteBehavior` parameter. You can specify any of the following `DeleteBehavior` values, based on your requirement.

- Cascade : Dependent entities will be deleted when the principal entity is deleted.
- ClientSetNull: The values of foreign key properties in the dependent entities will be set to null.
- Restrict: Prevents Cascade delete.
- SetNull: The values of foreign key properties in the dependent entities will be set to null.

Previous Next