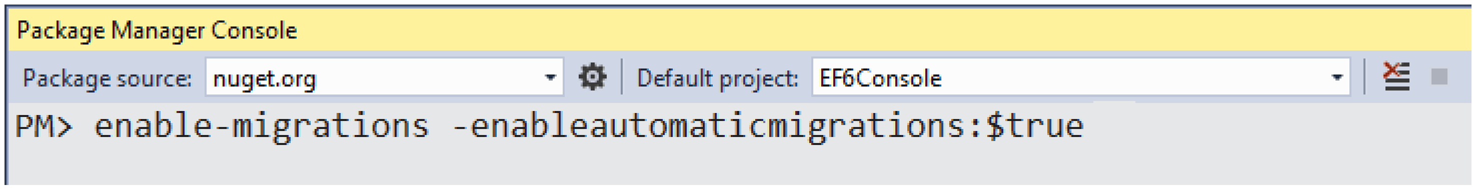
< Previous Next >

Automated Migration in Entity Framework 6

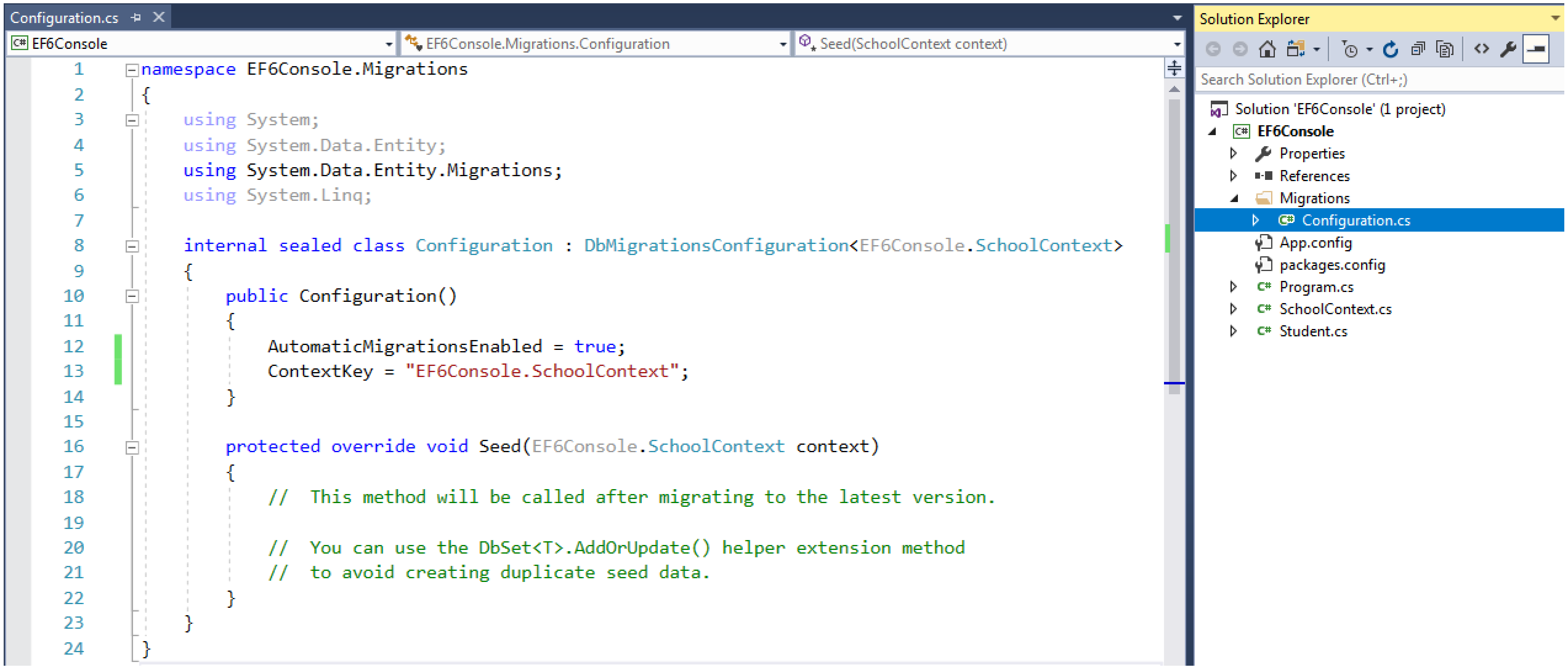
Entity Framework introduced automated migration so that you don't have to process database migration manually for each change you make in your domain classes.

The automated migrations can be implemented by executing the `enable-migrations` command in the Package Manager Console. Open the Package Manager Console from Tools → Library Package Manager → Package Manager Console and then run the `enable-migrations –EnableAutomaticMigration:$true` command (make sure that the default project is the project where your context class is).



```
PM> enable-migrations -enableautomaticmigrations:$true
```

Once the command runs successfully, it creates an internal sealed `Configuration` class derived from `DbMigrationConfiguration` in the Migration folder in your project:



```
namespace EF6Console.Migrations
{
    using System;
    using System.Data.Entity;
    using System.Data.Entity.Migrations;
    using System.Linq;

    internal sealed class Configuration : DbMigrationsConfiguration<EF6Console.SchoolContext>
    {
        public Configuration()
        {
            AutomaticMigrationsEnabled = true;
            ContextKey = "EF6Console.SchoolContext";
        }

        protected override void Seed(EF6Console.SchoolContext context)
        {
            //  This method will be called after migrating to the latest version.

            //  You can use the DbSet<T>.AddOrUpdate() helper extension method
            //  to avoid creating duplicate seed data.
        }
    }
}
```

As you can see in the constructor of the `Configuration` class, `AutomaticMigrationsEnabled` is set to true.

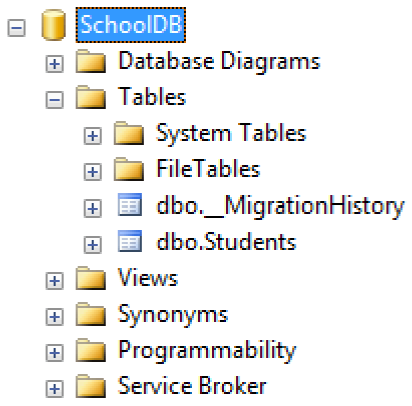
The next step is to set the database initializer in the context class to `MigrateDatabaseToLatestVersion`, as shown below.

```
public class SchoolContext: DbContext
{
    public SchoolDBContext(): base("SchoolDB")
    {
                                    Database.SetInitializer(new    MigrateDatabaseToLatestVersion<SchoolDBContext,
EF6Console.Migrations.Configuration>());
    }

    public DbSet<Student> Students { get; set; }

    protected override void OnModelCreating(DbModelBuilder modelBuilder)
    {
        base.OnModelCreating(modelBuilder);
    }
}
```

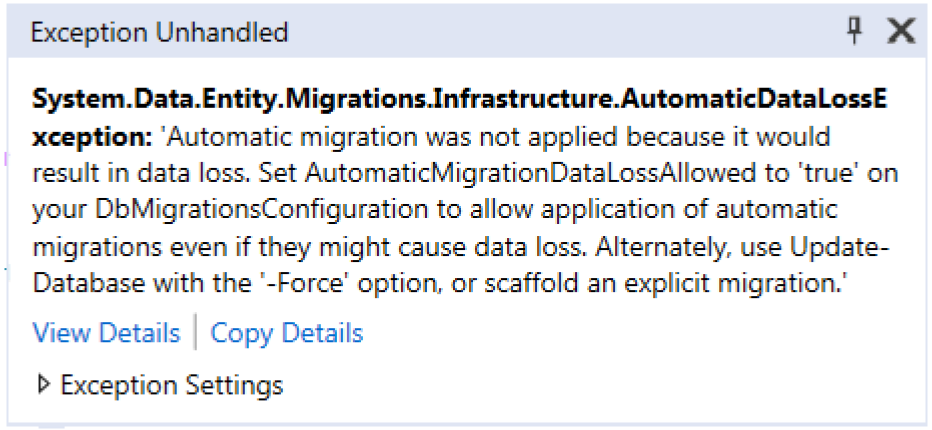
Now, you are all set for automated migration. EF will automatically take care of the migration when you change the domain classes. As of now, we only have the `Student` entity as per the `SchoolContext` class above. Run the application and look at the created database:



You will find that EF API created a system table `__MigrationHistory` along with the `Students` table. The `__MigrationHistory` table contains the history of database changes for all the migrations.

Now, you can add new domain classes and when you run the application again and you will see that the database contains tables for all entities automatically. You don't need to run any command.

However, this works only if you add new domain classes or remove classes, but it won't work when you add, modify or remove properties in the domain classes. To do this, remove any property from any domain class and run the application. You will get the following exception.


Exception Unhandled

System.Data.Entity.Migrations.Infrastructure.AutomaticDataLossException: 'Automatic migration was not applied because it would result in data loss. Set AutomaticMigrationDataLossAllowed to 'true' on your DbMigrationsConfiguration to allow application of automatic migrations even if they might cause data loss. Alternately, use Update-Database with the '-Force' option, or scaffold an explicit migration.'

This is because you will lose data in the corresponding column of a property. So, to handle this kind of scenario, you have to set `AutomaticMigrationDataLossAllowed` to *true* in the `Configuration` class constructor, along with `AutomaticMigrationsEnabled = true;`.

To know more about the `enable-migrations` command parameters, execute the `get-help enable-migrations` and `get-help enable-migrations -detailed` commands in PMC, as shown below.

```
PM> get-help enable-migrations

NAME
    Enable-Migrations

SYNOPSIS
    Enables Code First Migrations in a project.


SYNTAX
    Enable-Migrations [-ContextTypeName <String>] [-EnableAutomaticMigrations]
    [-MigrationsDirectory <String>] [-ProjectName <String>] [-StartUpProjectName
    <String>] [-ContextProjectName <String>] [-ConnectionStringName <String>]
    [-Force] [-ContextAssemblyName <String>] [-AppDomainBaseDirectory <String>]
    [<CommonParameters>]

    Enable-Migrations [-ContextTypeName <String>] [-EnableAutomaticMigrations]
    [-MigrationsDirectory <String>] [-ProjectName <String>] [-StartUpProjectName
    <String>] [-ContextProjectName <String>] -ConnectionString <String>
    -ConnectionProviderName <String> [-Force] [-ContextAssemblyName <String>]
    [-AppDomainBaseDirectory <String>] [<CommonParameters>]


DESCRIPTION
    Enables Migrations by scaffolding a migrations configuration class in the project. If the
    target database was created by an initializer, an initial migration will be created (unless
    automatic migrations are enabled via the EnableAutomaticMigrations parameter).


RELATED LINKS

REMARKS
    To see the examples, type: "get-help Enable-Migrations -examples".
    For more information, type: "get-help Enable-Migrations -detailed".
    For technical information, type: "get-help Enable-Migrations -full".
```

< Previous

Next >

Useful Resources

Fastest Way to Insert using EF Extensions

Learn C#, ASP.NET MVC, LINQ, TypeScript, Angular, Node.js and More..

Entity Framework Resources

Entity Framework Courses on Pluralsight

ENTITYFRAMEWORKTUTORIAL

Learn Entity Framework using simple yet practical examples on EntityFrameworkTutorial.net for free. Learn Entity Framework DB-First, Code-First and EF Core step by step. While using this site, you agree to have read and accepted our terms of use and privacy policy.

feedback@entityframeworktutorial.net

TUTORIALS

- EF Basics
- EF 6 DB-First
- EF Core
- EF 6 Code-First

E-MAIL LIST

Subscribe to EntityFrameworkTutorial email list and get EF 6 and EF Core Cheat Sheets, latest updates, tips & tricks about Entity Framework to your inbox.

Email address GO

We respect your privacy.

HOME PRIVACY POLICY ADVERTISE WITH US