شركة تحالف الإمارات للحلول التقنية ذ.م.م.
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Web Application Programming Interface (API)

Tahaluf Training Center 2021

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Chapter 04

1. Overview of Repository Pattern
2. Build a Database using Microsoft SQL
3. Create a Stored Procedure
4. Set up a Db Context Connection
5. Create a Repository Pattern

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What is Repository Pattern?

Repository Pattern is an abstraction of the Data Access Layer. It hides the details of how exactly the data is saved or retrieved from the underlying data source. The details of how the data is stored and retrieved is in the respective repository.

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Repository Pattern Interface

- What operations (i.e methods) are supported by the repository.
- The data required for each of the operations i.e the parameters that need to be passed to the method and the data the method returns.
- The repository interface contains what it can do, but not, how it does, what it can do.
- The implementation details are in the respective repository class that implements the repository Interface.

Benefits of Repository Pattern

- The code is cleaner, and easier to reuse and maintain.
- Enables us to create loosely coupled systems. For example, if we want our application to work with oracle instead of sql server, implement an OracleRepository that knows how to read and write to Oracle database and register OracleRepository with the dependency injection system.
- In an unit testing project, it is easy to replace a real repository with a fake implementation for testing.

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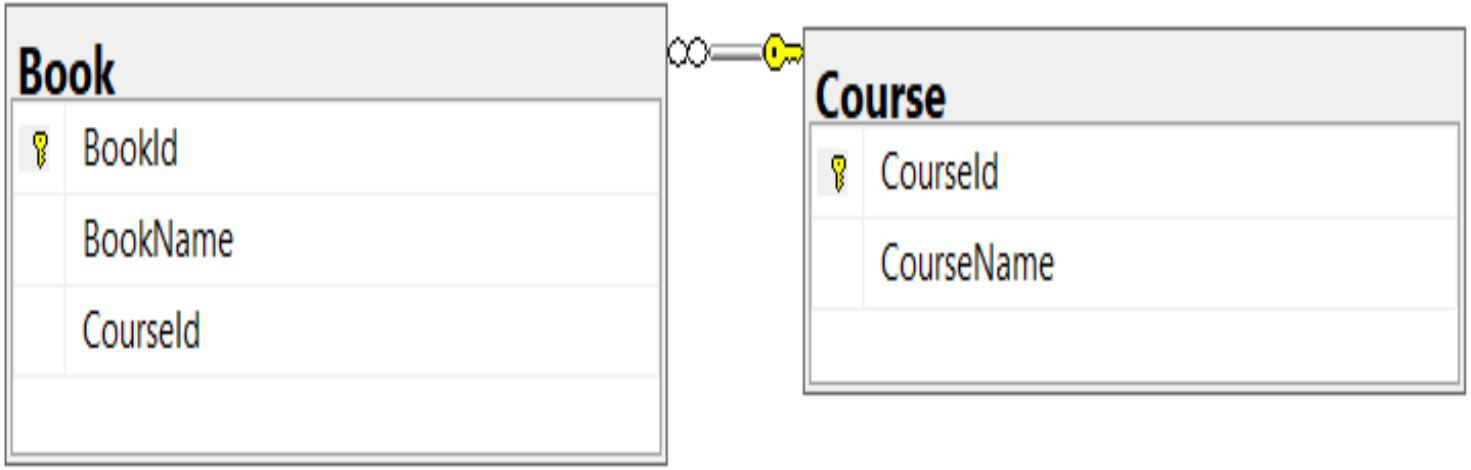
Build a Database using Microsoft SQL

Create a Database using Microsoft SQL => Course teach by Many Books.



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What is a Stored Procedure?

A stored procedure is a prepared SQL code that you can save, so the code can be reused over and over again.

So if you have an SQL query that you write over and over again, save it as a stored procedure, and then just call it to execute it.

You can also pass parameters to a stored procedure, so that the stored procedure can act based on the parameter value(s) that is passed.

Create a Stored Procedure

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Insert Procedure:

```sql
CREATE PROCEDURE InsertCourse
@Id int,
@Name varchar(50)
AS
INSERT INTO Course(CourseId,CourseName)
VALUES (@Id, @Name)

CREATE PROCEDURE InsertBook
@Id int,
@Name varchar(50),
@CourseId int
AS
INSERT INTO Book(BookId,BookName, CourseId)
VALUES (@Id, @Name, @CourseId)
```

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Update Procedure:

```
CREATE PROCEDURE UpdateCourse
@Id int,@Name varchar(50)
AS
BEGIN
UPDATE Course
SET  CourseName =@Name
WHERE CourseId =@Id
END
CREATE PROCEDURE UpdateBook
@Id int,@Name varchar(50)
AS
BEGIN
UPDATE Book
SET  BookName =@Name
WHERE BookId =@Id
END
```

Create a Stored Procedure

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Delete Procedure:

```
CREATE PROCEDURE DeleteCourse
@Id int
AS
DELETE Course
WHERE CourseId=@Id;
CREATE PROCEDURE DeleteBook
@Id int
AS
DELETE Book
WHERE BookId=@Id;
```

Create a Stored Procedure

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Get Procedure:

```
CREATE PROCEDURE GetAllCourse
AS
BEGIN
SELECT * FROM Course
END
CREATE PROCEDURE GetAllBook
AS
BEGIN
SELECT * FROM Book
END
```

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Set up a Db Context Connection

Right Click on Tahaluf.LMS.Infra => Add => New Folder => Name: Common

Right Click on Tahaluf.LMS.Core => Add => New Folder => Name: Common

Set up a Db Context Connection

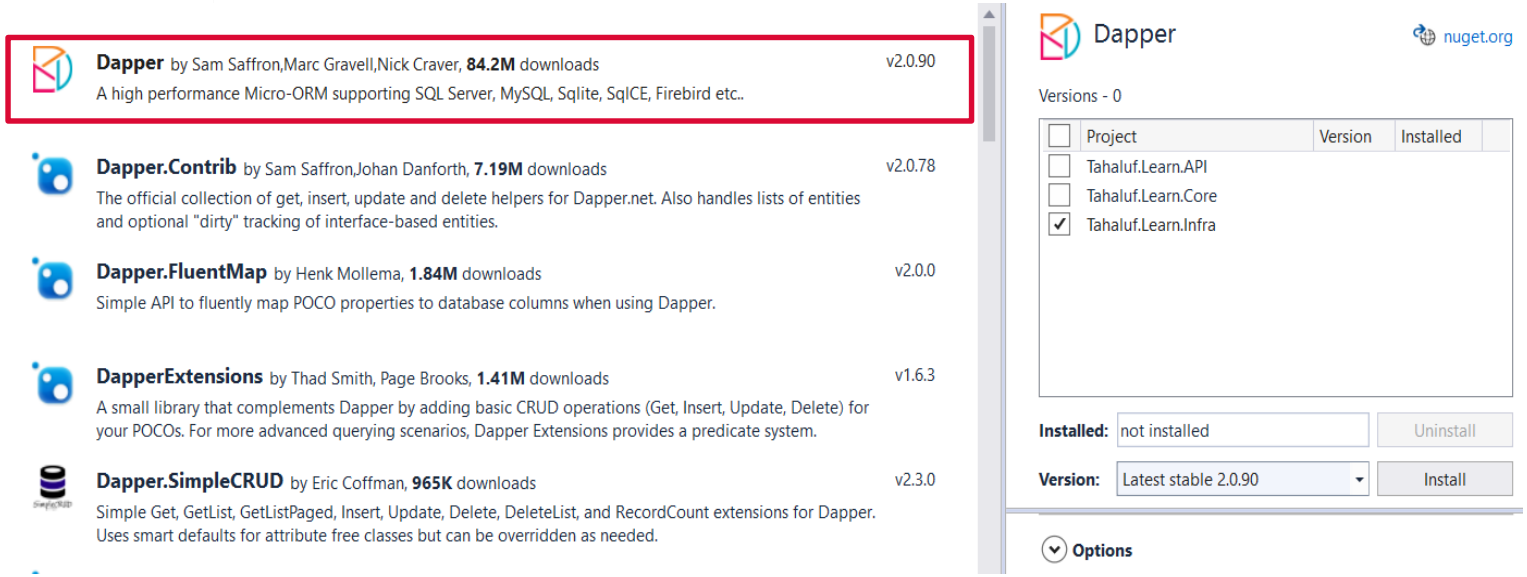
Right Click on Common in Tahaluf.LMS.Infra => Add => Class => Name: DBContext

Right Click on Common in Tahaluf.LMS.Core => Add => Class => Name: IDBContext

Set up a Db Context Connection

Install Dapper Package:

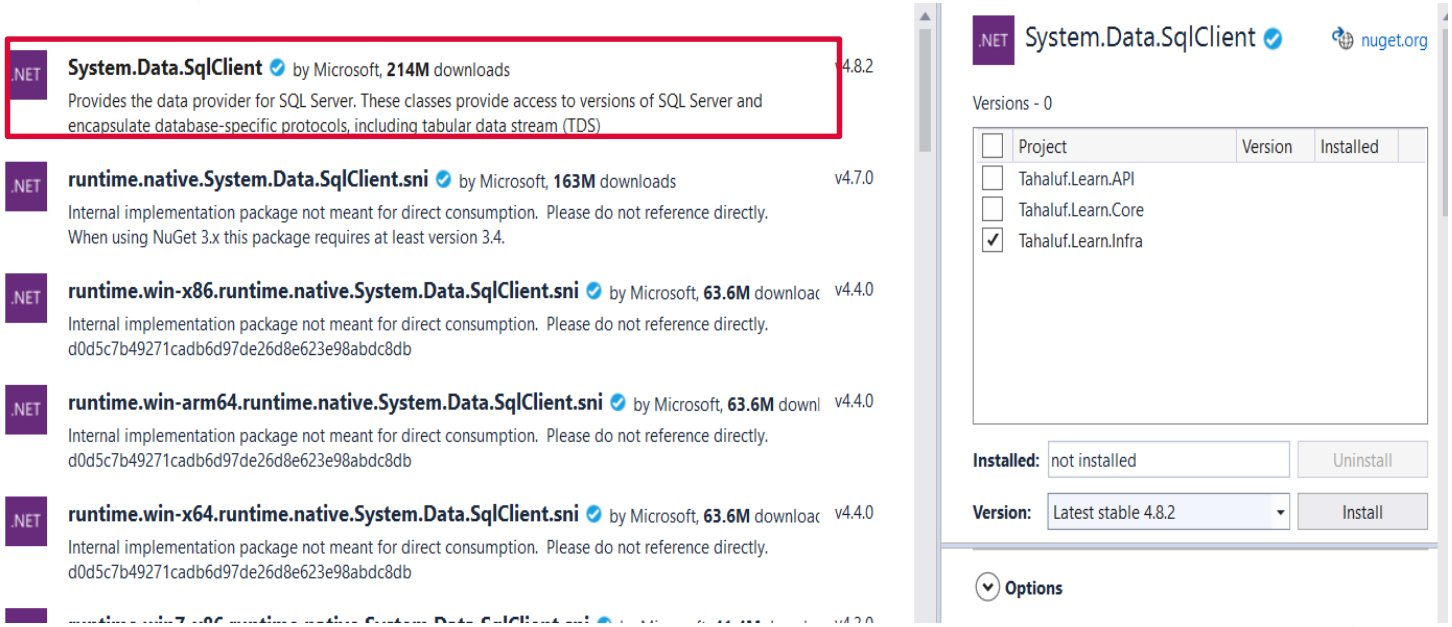
Tools => NuGet Package Manager => Manage NuGet Packages for Solution => Install Dapper.



Set up a Db Context Connection

Install SQL Client Package:

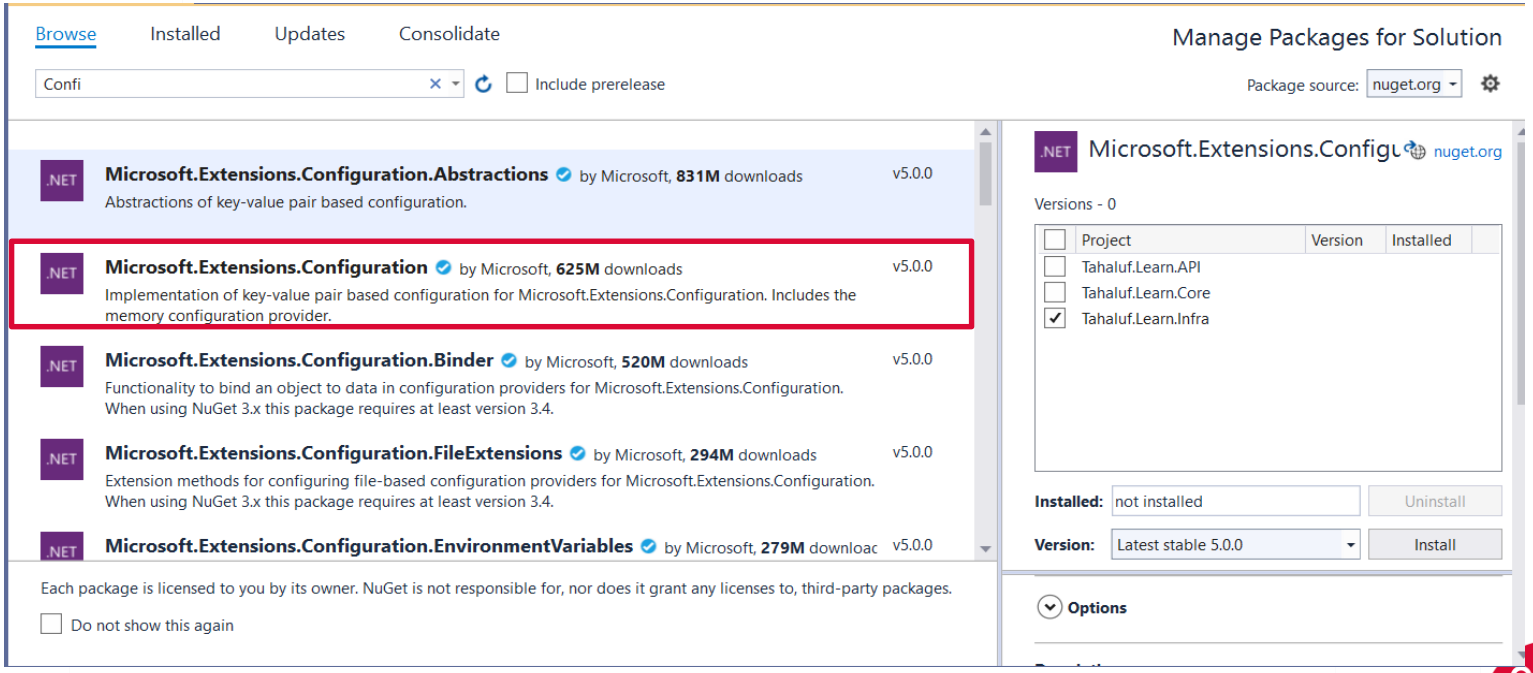
Tools => NuGet Package Manager => Manage NuGet Packages for Solution => Install Sql.Data.SqlClient.



Set up a Db Context Connection

Install Microsoft.Extensions.Configuration Package:

Tools => NuGet Package Manager => Manage NuGet Packages for Solution => Install Microsoft.Extensions.Configuration.



Set up a Db Context Connection

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In DBContext:

```
public class DBContext: IDBContext
{
public DbConnection Connection
{
get
{
if (_connection == null)
{
_connection = new
SqlConnection(Configuration["ConnectionStrings:DBConnectionStr
ing"]);
_connection.Open();
```

Set up a Db Context Connection

```
 }
else
if (_connection.State != ConnectionState.Open)
{
_connection.Open();
}
return _connection;
}
}

private DbConnection _connection;
private readonly IConfiguration Configuration;
public DBContext(IConfiguration configuration)
{
Configuration = configuration;
}
```

Set up a Db Context Connection

In IDBContext:

```
public DbConnection Connection { get; }
```

Set up a Db Context Connection

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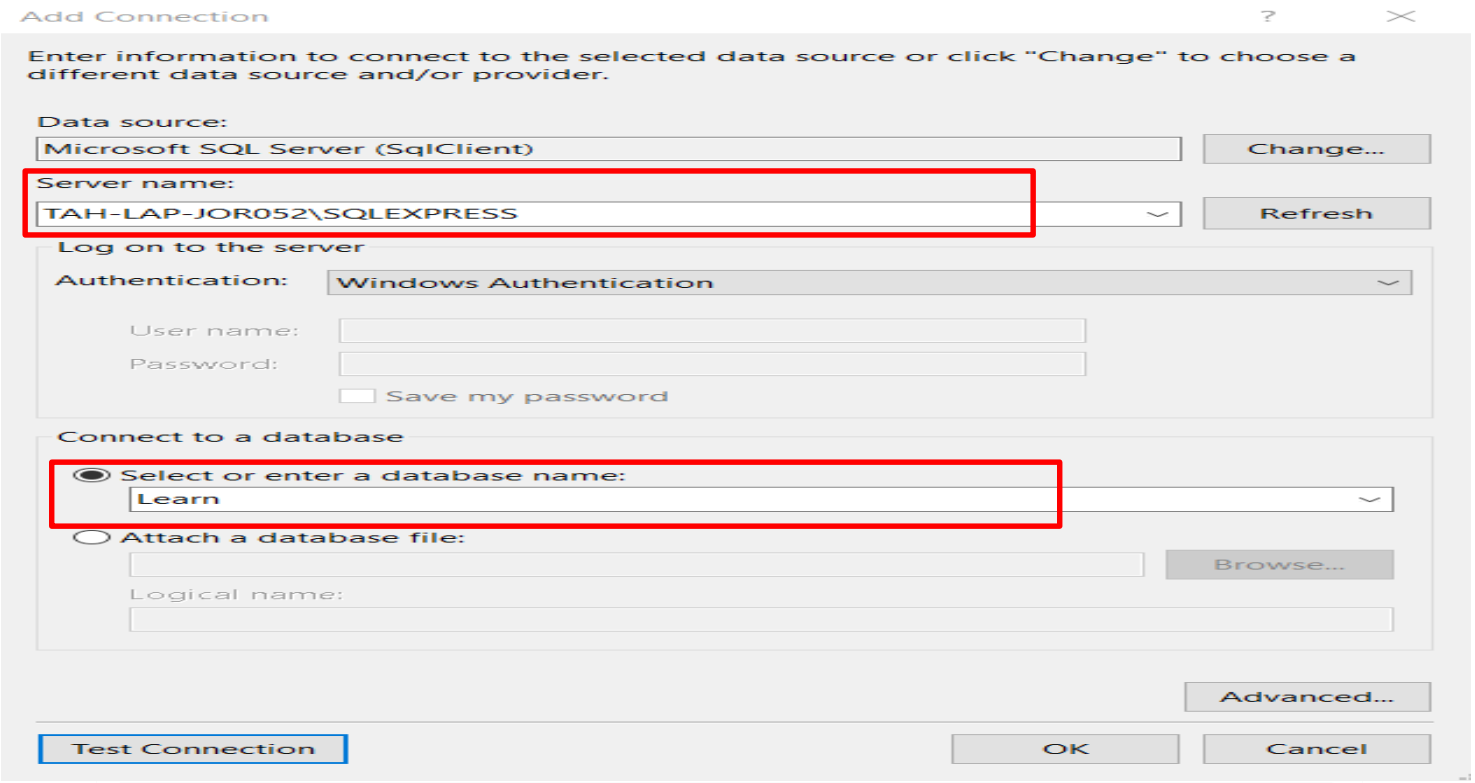
View => Server Explorer => Right Click on Data Connection => Add Connection => Set up Server name and Database



Set up a Db Context Connection

Right Click on Server => Properties => Copy Connection String => In app Setting :

```
"ConnectionStrings": {
"DBConnectionString": "Data Source=TAH-LAP-JOR052\\SQLEXPRESS;Initial Catalog=Learn;Integrated Security=True"
},
```

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Create a Repository Pattern

Right Click on Tahaluf.LMS.Infra => Add => New Folder => Name: Repository.

Right Click on Tahaluf.LMS.Core => Add => New Folder => Name: Repository

Create a Repository Pattern

Right Click on Repository in Tahaluf.LMS.Infra => Add => Class =>
Name: CourseRepository

Right Click on Repository in Tahaluf.LMS.Core => Add => Class =>
Name: ICourseRepository

Create a Repository Pattern

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In Course Repository:

```
public class CourseRepository: ICourseRepository
{
private readonly IDBContext DBContext;
public CourseRepository(IDBContext dbContext)
{
DBContext = dbContext;
}
```

Create a Repository Pattern

```
public int Create(Course data)
{
var p = new DynamicParameters();
p.Add("@Id", data.Id, dbType: DbType.Int32, direction:
ParameterDirection.Input);
p.Add("@Name", data.Name, dbType: DbType.String, direction:
ParameterDirection.Input);
var result = DBContext.Connection.ExecuteAsync("InsertCourse",
p, commandType: CommandType.StoredProcedure);
return 1;
}
```

Create a Repository Pattern

```
public int GetAll()
{
IENumarable<Course> result =
DBContext.Connection.Query<Course>("GetAllCourse",
commandType: CommandType.StoredProcedure);
return 1;
}
```

Create a Repository Pattern

```
public int Update(Course data)
{
var p = new DynamicParameters();
p.Add("@Id", data.CourseId, dbType: DbType.Int32,
direction: ParameterDirection.Input);
p.Add("@Name", data.CourseName, dbType: DbType.String,
direction: ParameterDirection.Input);
var result =
DBContext.Connection.ExecuteAsync("UpdateCourse", p,
commandType: CommandType.StoredProcedure);
return 1;
}
```

Create a Repository Pattern

```
public int Delete(int id)
{
var p = new DynamicParameters();
p.Add("@Id", id, dbType: DbType.Int32, direction:
ParameterDirection.Input);
var result =
DBContext.Connection.ExecuteAsync("DeleteCourse", p,
commandType: CommandType.StoredProcedure);
return 1;
}
```

Create a Repository Pattern

In ICourse Repository:

```
public interface ICourseRepository
{
int GetAll();
int Create(Course data);
int Update(Course data);
int Delete(int id);
}
```

Create a Repository Pattern

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In Course Service:

```
private readonly ICourseRepository CourseRepository;
public CourseService(ICourseRepository courseRepository)
{
CourseRepository = courseRepository;
}
```

Create a Repository Pattern

```
public Course Create(Course course)
{
CourseRepository.Create(course);
}
public Course GetAll()
{
CourseRepository.GetAll();
}
```

Create a Repository Pattern

```
public Course Create(Course course)
{
CourseRepository.Create(course);
 return new Course();
}
public List<Course> GetAll()
{
Return CourseRepository.GetAll();
}
public Course Update(Course course)
{
CourseRepository.Update(course);
return new Course();
}
public Course Delete(int id)
{
CourseRepository.Delete(id);
return new Course();
}
```

Create a Repository Pattern

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In Course Controller:

```
public class CourseController : Controller
{
    private readonly ICourseService CourseService;
    public CourseController(ICourseService courseService)
    {
        CourseService = courseService;
    }
    [HttpGet]
    [ProducesResponseType(typeof(List<Course>),
    StatusCodes.Status200OK)]
    public List<Course> GetAll()
    {
        return CourseService.GetAll();
    }
```

Create a Repository Pattern

```
[HttpPost]
[ProducesResponseType(typeof(Course), StatusCodes.Status200OK)]
[ProducesResponseType(typeof(Course),
StatusCodes.Status400BadRequest)]
public Course Create([FromBody] Course course)
{
    return CourseService.Create(course);
}
```

Create a Repository Pattern

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```
[HttpPut]
[ProducesResponseType(typeof(Course), StatusCodes.Status200OK)]
[ProducesResponseType(typeof(Course),
StatusCodes.Status400BadRequest)]
public Course Update([FromBody] Course course)
{
    return CourseService.Update(course);
}
[HttpDelete("{id}")]
public Course Delete(int id)
{
    return CourseService.Delete(id);
}
```

Create a Repository Pattern

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In Startup:

```
public void ConfigureServices(IServiceCollection services)
{
services.AddScoped<ICourseRepository, CourseRepository>();
services.AddScoped<ICourseService, CourseService>();
services.AddScoped<IDBContext, DBContext>();
services.AddControllers();
}
```