

TJ MODUL 9
API Design dan Construction
Using Swagger



Nama :

Dhiemas Tulus Ikhsan (2311104046)

Dosen :

Yudha Islami Sulistya, S.Kom., M.Cs

PROGRAM STUDI S1 REKAYASA PERANGKAT LUNAK
TELKOM UNIVERSITY PURWOKERTO
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1. Deskripsi Singkat

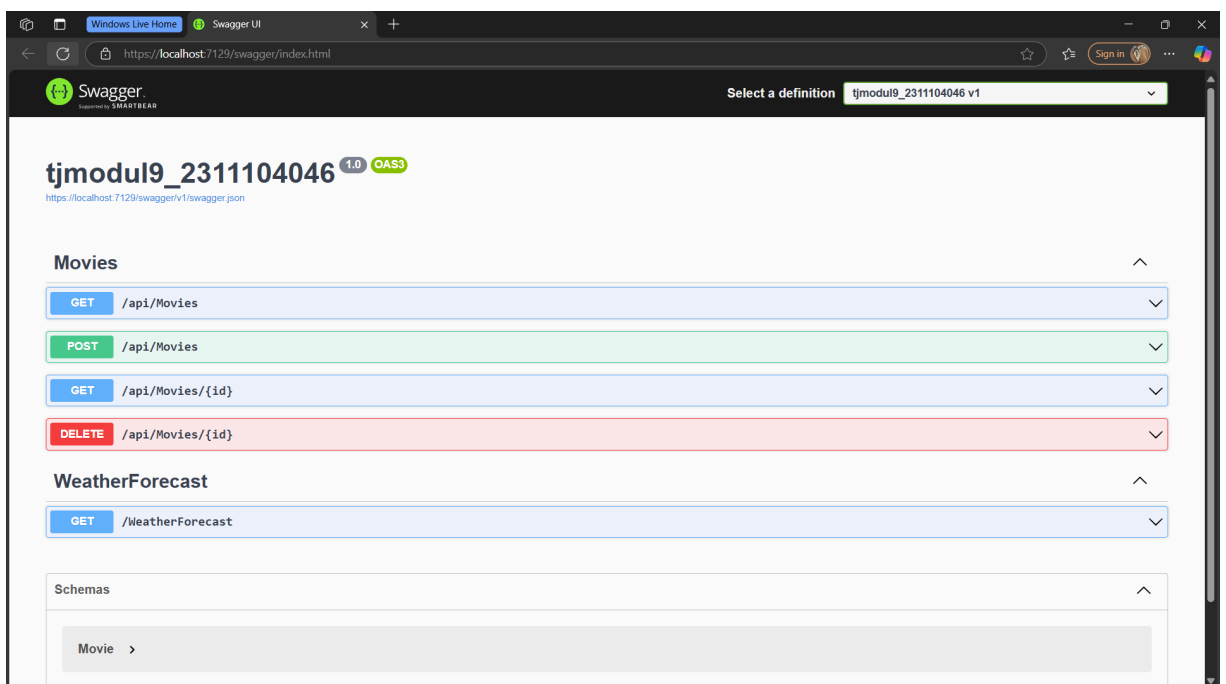
Pada jurnal modul ini, praktikan diminta untuk membuat sebuah Web API sederhana menggunakan ASP.NET Core yang berisi daftar film. API yang dibuat dapat melakukan operasi dasar seperti melihat seluruh daftar film (GET), menambahkan film baru (POST), melihat detail film berdasarkan index (GET by ID), dan menghapus film dari daftar (DELETE). Data disimpan secara sementara menggunakan list statis di dalam aplikasi, tanpa menggunakan database.

2. Melakukan first commit

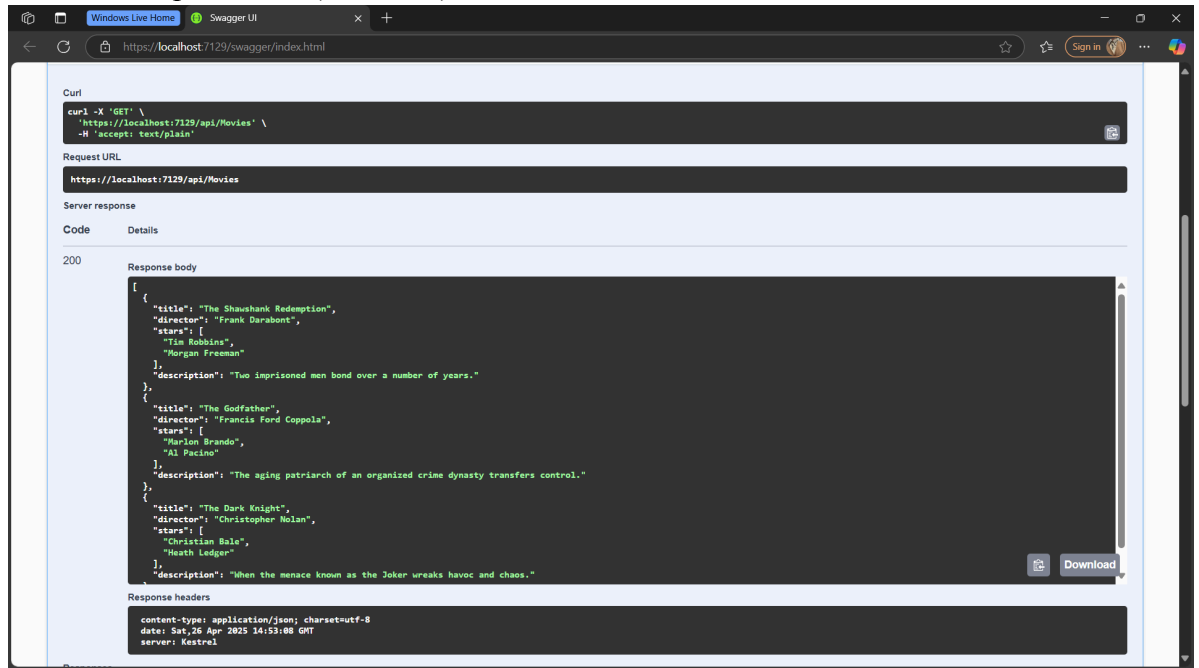
```
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git add .
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git commit -m "commit pertama"
[main 5ab6cee] commit pertama
8 files changed, 168 insertions(+)
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046.sln
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\Controllers\WeatherForecastController.cs
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\Program.cs
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\Properties\launchSettings.json
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\WeatherForecast.cs
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\appsettings.Development.json
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\appsettings.json
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046.csproj
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git push origin main
Enumerating objects: 17, done.
Counting objects: 100% (17/17), done.
Delta compression using up to 4 threads
Compressing objects: 100% (14/14), done.
Writing objects: 100% (15/15), 2.89 KiB | 128.00 KiB/s, done.
Total 15 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (3/3), completed with 2 local objects.
To https://github.com/zclimaxsp/KPL_DHIEMAS-TULUS-IKHSAN_2311104046_SE-07-02.git
3b26f0b..5ab6cee main -> main
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>
```

3. Implementasi WEB API

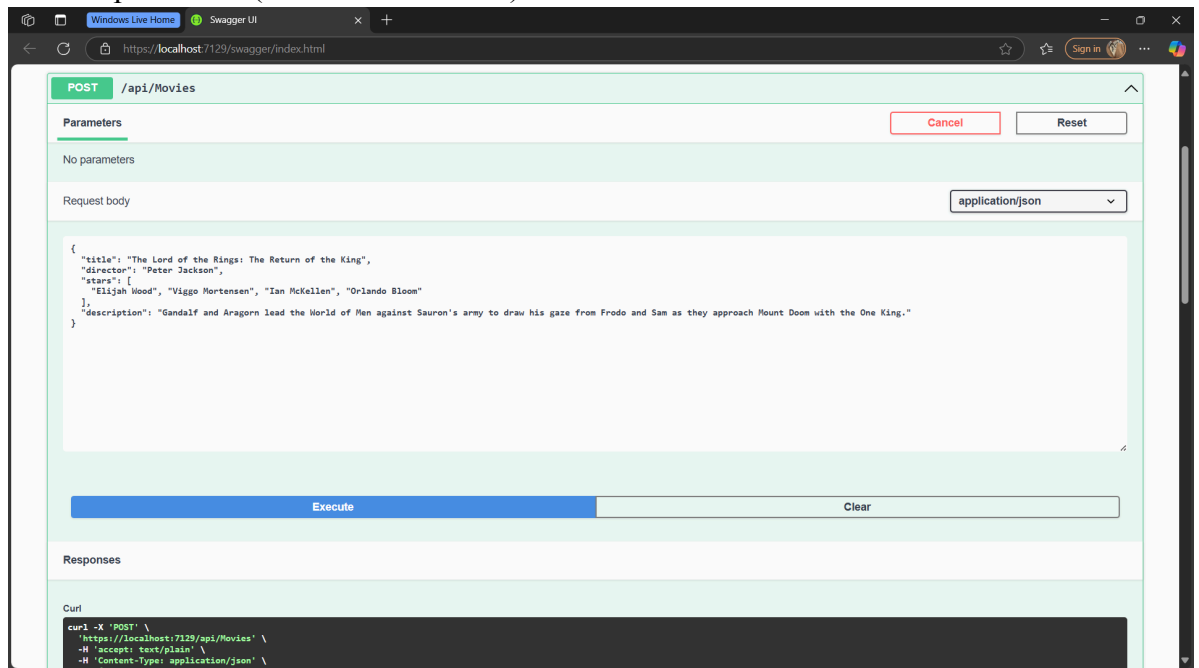
Implementasi dilakukan dengan membuat sebuah controller bernama MoviesController yang menyediakan layanan pengelolaan data film. Data film disimpan dalam sebuah list static di dalam controller tanpa menggunakan database. API ini mendukung operasi dasar seperti mengambil seluruh data film (GET), mengambil data berdasarkan indeks (GET by ID), menambahkan film baru (POST), dan menghapus film berdasarkan indeks (DELETE). Setiap endpoint diakses dan diuji menggunakan Swagger untuk memastikan fungsi berjalan sesuai spesifikasi.



a. Hasil GET /api/Movies (saat awal)



b. POST /api/Movies (tambah movie baru)



c. GET /api/Movies (cek list setelah POST)

The screenshot shows the Swagger UI for a REST API. The endpoint `GET /api/Movies` is selected. The response status is 200. The response body is a JSON array of movie objects. The response headers are `content-type: application/json; charset=utf-8`, `date: Sat, 26 Apr 2025 14:58:33 GMT`, and `server: Kestrel`.

```
curl -X 'GET' \
  'https://localhost:7129/api/Movies' \
  -H 'accept: text/plain'
```

Request URL
`https://localhost:7129/api/Movies`

Server response

Code Details

200

Response body

```
{
  "stars": [
    "Marlon Brando",
    "Al Pacino"
  ],
  "description": "The aging patriarch of an organized crime dynasty transfers control."
},
{
  "title": "The Dark Knight",
  "director": "Christopher Nolan",
  "stars": [
    "Christian Bale",
    "Heath Ledger"
  ],
  "description": "When the menace known as the Joker wreaks havoc and chaos."
},
{
  "title": "The Lord of the Rings: The Return of the King",
  "director": "Peter Jackson",
  "stars": [
    "Elijah Wood",
    "Viggo Mortensen",
    "Ian McKellen",
    "Orlando Bloom"
  ],
  "description": "Gandalf and Aragorn lead the World of Men against Sauron's army to draw his gaze from Frodo and Sam as they approach Mount Doom with the One King."
}
]
```

Response headers

```
content-type: application/json; charset=utf-8
date: Sat, 26 Apr 2025 14:58:33 GMT
server: Kestrel
```

Responses

d. GET /api/Movies/3 (cek movie baru di index 3)

The screenshot shows the Swagger UI for a REST API. The endpoint `GET /api/Movies/3` is selected. The response status is 200. The response body is a JSON object representing a movie. The response headers are `content-type: application/json; charset=utf-8`, `date: Sat, 26 Apr 2025 14:58:33 GMT`, and `server: Kestrel`.

Parameters

Name	Description
<code>id</code> * required	integer(\$int32)

Execute Clear

Responses

200

Response body

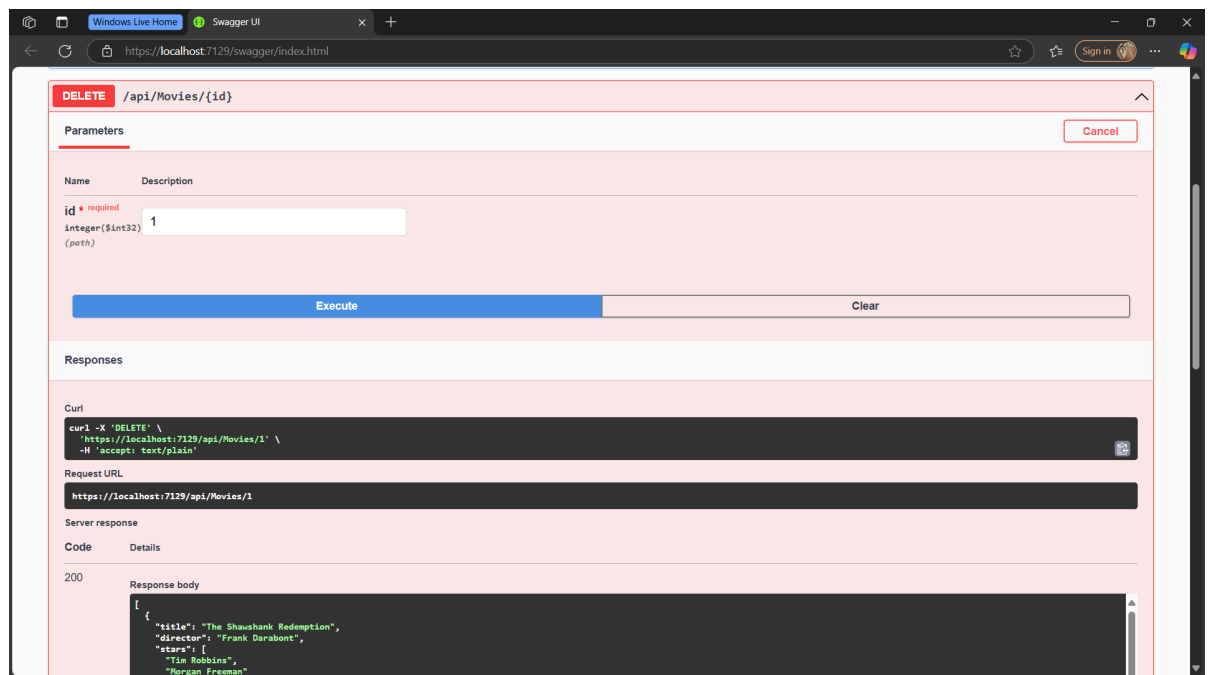
```
{
  "title": "The Lord of the Rings: The Return of the King",
  "director": "Peter Jackson",
  "stars": [
    "Elijah Wood",
    "Viggo Mortensen",
    "Ian McKellen",
    "Orlando Bloom"
  ],
  "description": "Gandalf and Aragorn lead the World of Men against Sauron's army to draw his gaze from Frodo and Sam as they approach Mount Doom with the One King."
}
```

Response headers

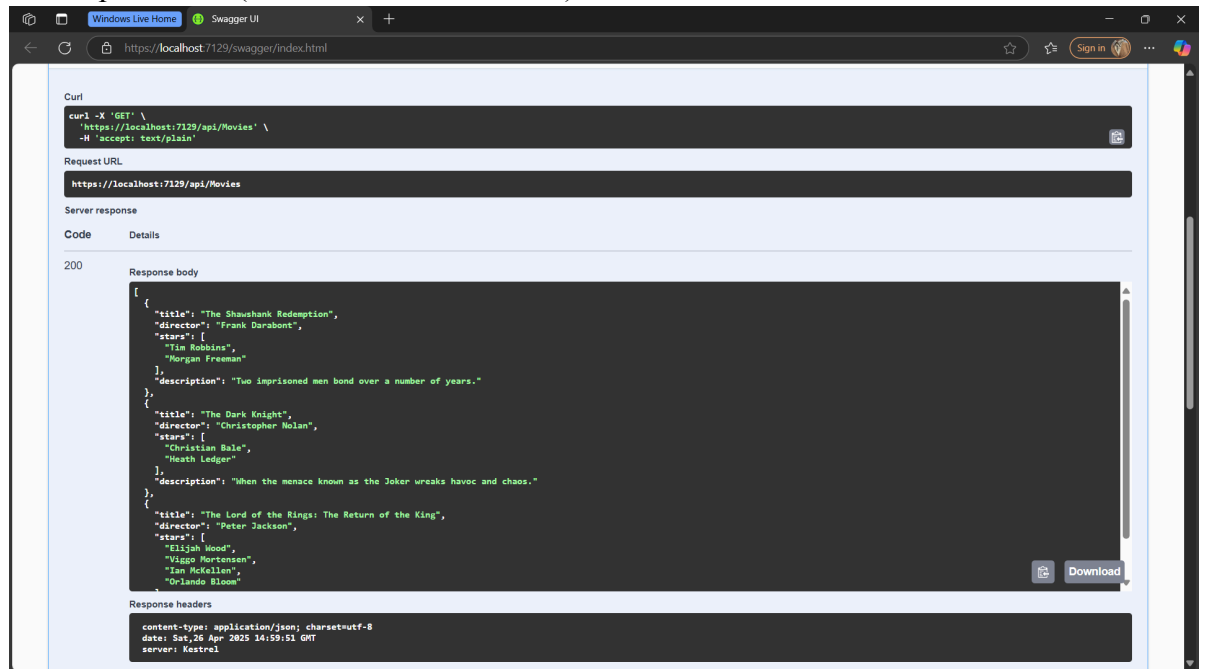
```
content-type: application/json; charset=utf-8
date: Sat, 26 Apr 2025 14:58:33 GMT
server: Kestrel
```

Responses

e. DELETE /api/Movies/1 (hapus Godfather)



f. GET /api/Movies (cek list setelah DELETE)



Sintaks yang digunakan:

- Movie.cs

```
// Membuat class Movie yang punya 4 properti: Title, Director, Stars, Description
public class Movie
{
    public string Title { get; set; }
    public string Director { get; set; }
    public List<string> Stars { get; set; }
    public string Description { get; set; }

    public Movie()
    {
        Stars = new List<string>();
    }
}
```

Ket: Class ini mendefinisikan struktur data untuk 1 film. Property Stars bertipe list untuk menyimpan lebih dari satu pemeran.

- MovieController.cs

```
// Membuat API controller untuk route /api/Movies
[ApiController]
[Route("api/[controller]")]
public class MoviesController : ControllerBase
{
    private static List<Movie> movies = new List<Movie> { /* 3 film top
IMDB */ };

    [HttpGet]
    public ActionResult<List<Movie>> Get() => movies;

    [HttpGet("{id}")]
    public ActionResult<Movie> Get(int id) { /* ambil 1 film berdasarkan
index */ }

    [HttpPost]
    public ActionResult<List<Movie>> Post(Movie movie) { /* tambah film
baru */ }

    [HttpDelete("{id}")]
    public ActionResult<List<Movie>> Delete(int id) { /* hapus film
berdasarkan index */ }
}
```

Keterangan:

- GET /api/Movies → ambil semua data film.
- GET /api/Movies/{id} → ambil film berdasarkan urutan index.
- POST /api/Movies → tambah film baru ke list.
- DELETE /api/Movies/{id} → hapus film berdasarkan index.

Data film disimpan sementara di dalam List<Movie> yang static, tanpa database.

4. Melakukan commit terakhir

Melakukan git add, commit dan push ke github

```
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git add .
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git commit -m "menambahkan API Movies"
[main f635d1a] menambahkan API Movies
3 files changed, 86 insertions(+), 1 deletion(-)
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\Controllers\MoviesController.cs
create mode 100644 09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046\tjmodul9_2311104046\Models\Models.cs
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>git push origin main
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 4 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (10/10), 1.70 KiB | 1.71 MiB/s, done.
Total 10 (delta 4), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (4/4), completed with 4 local objects.
To https://github.com/zclimaxsp/KPL_DHIEMAS-TULUS-IMHSAN_2311104046_SE-07-02.git
5ab6cee..f635d1a main -> main
D:\College\Semester 4\Konstruksi Perangkat Lunak\KPL\09_API_Design_dan_Construction_Using_Swagger\tjmodul9_2311104046>
```

KESIMPULAN:

Pada modul jurnal ini telah dibuat sebuah Web API sederhana untuk mengelola data film menggunakan ASP.NET Core. Web API dapat digunakan untuk menampilkan semua film, menambahkan film baru, melihat detail film berdasarkan indeks, dan menghapus film. Semua fungsi berjalan sesuai dengan yang diharapkan dan telah diuji melalui Swagger. Data film disimpan dalam sebuah list static tanpa menggunakan database, sehingga lebih mudah untuk pengembangan awal.