POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

Calauan, Laguna Campus

Bachelor of Science in Information Technology

INTEGRATIVE PROGRAMMING AND TECHNOLOGIES 1

Final Project

"Pokémon: The Pokédex – A CRUD-Based Web Application"

An Academic Project Submitted to

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Project Team

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Summary

The Pokédex API is a CRUD-based web API developed using ASP.NET Core MVC and Entity Framework Core. The primary goal of this project is to simulate a digital Pokédex that allows users to Create, Read, Update, and Delete Pokémon entries. Each Pokémon record includes essential details such as Name, Type, HP, Attack, Defense, and a Description. The application uses SQL Server as its database system, with data managed through Entity Framework Core using proper migrations and seed data for initial content. The API follows the MVC architectural pattern, promoting a clean and organized codebase by separating logic into Models, DTO and Controllers. For project documentation, we are using Razor Pages, which serves as an in-app documentation interface, and for API documentation, we are using Swagger for testing and developer access.

Programming Languages and Software

The final project for Integrative Programming and Technologies 1 utilizes a combination of programming languages, frameworks, and software tools to build a functional and structured web application — a Pokédex API system that performs CRUD operations and stores data in a SQL Server database.

HyperText Markup Language (HTML)

HTML is the foundation of the website's structure. It is used to build the layout and content of Razor Pages, forming the skeleton of how data — such as Pokémon information — is presented to users. It ensures that text, tables, and forms are properly structured within the web pages.

Cascading Style Sheets (CSS)

CSS brings visual life to the web interface. It is used to style the Razor Pages, giving the Pokédex a polished and organized look. From coloring Pokémon type badges to arranging forms and buttons, CSS plays a crucial role in making the user experience both visually appealing and user-friendly.

C# (C-Sharp)

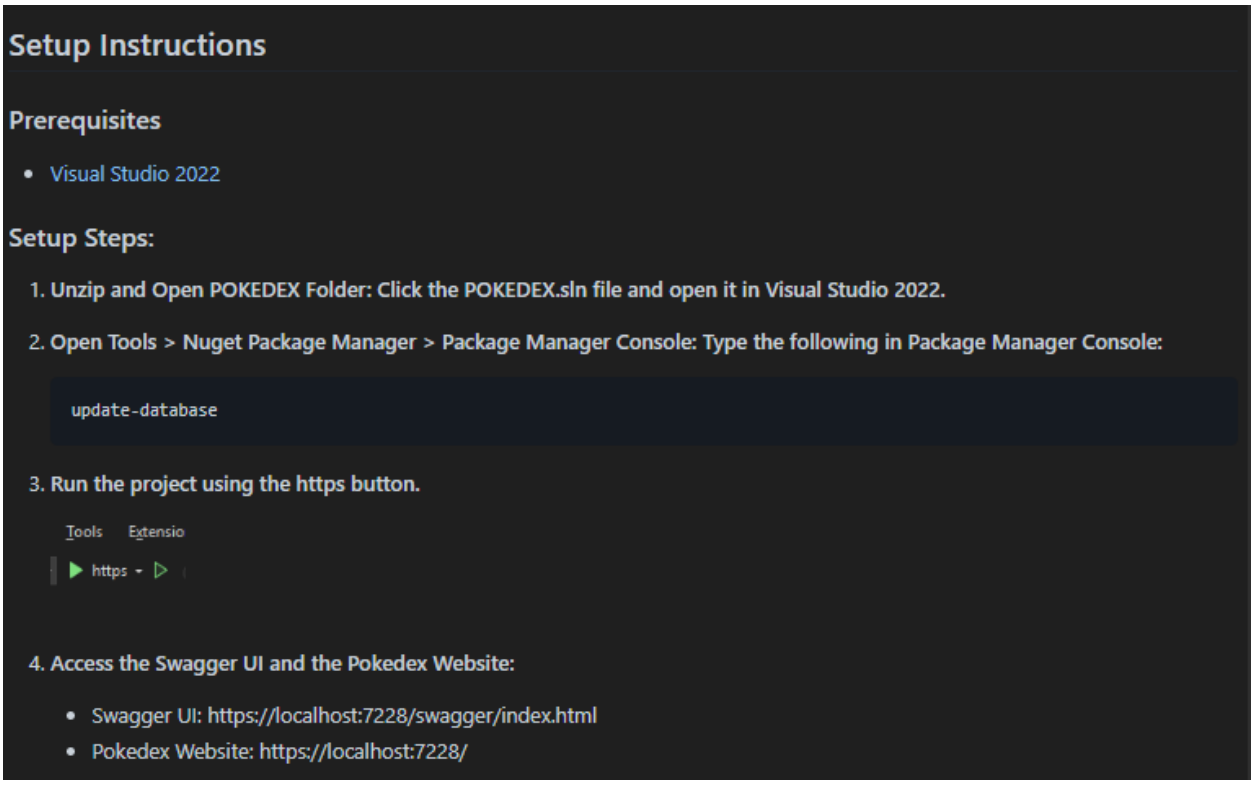
C# is the core programming language used to develop the business logic and API functionalities. It handles the data models, controller logic, database access, and routing. C# enables the system to process user input, communicate with the database, and manage the application's overall logic effectively.

Razor Pages

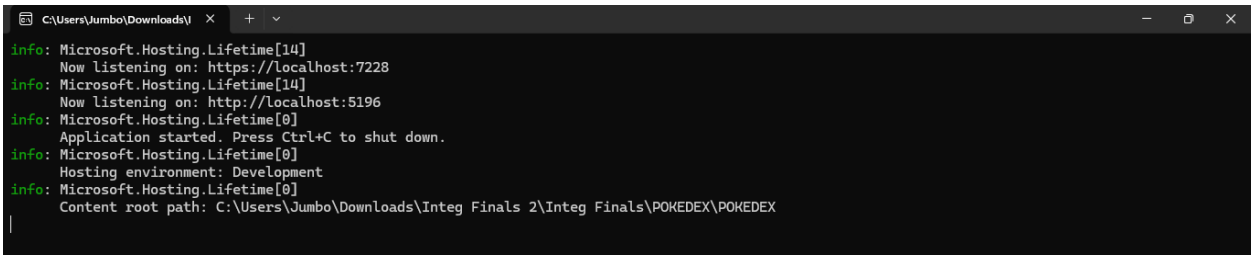
Razor is a syntax used in ASP.NET Core to combine HTML and C# in the same file. It is used for building dynamic web pages such as the documentation page, Pokémon listing pages, or forms for adding/editing entries. Razor helps bridge the gap between the frontend and backend by rendering dynamic content directly from the server.

This blend of technologies ensures that the Pokédex API is not only functional and reliable but also visually refined, interactive, and easy to navigate — simulating the experience of using a real-world digital Pokédex.

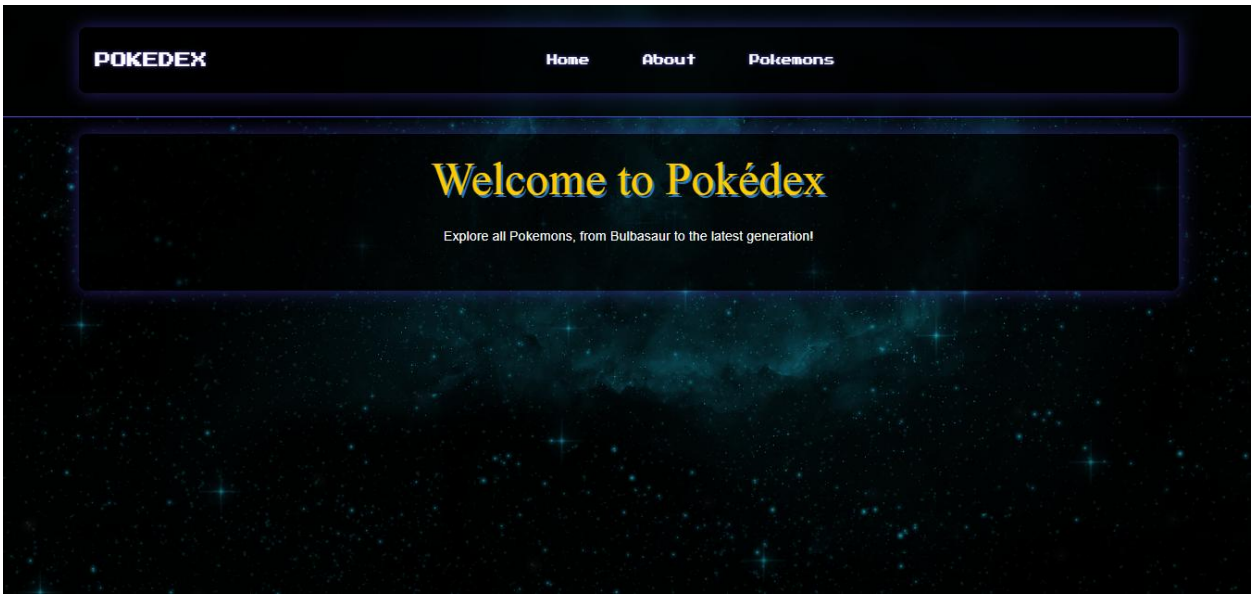
How to Use?



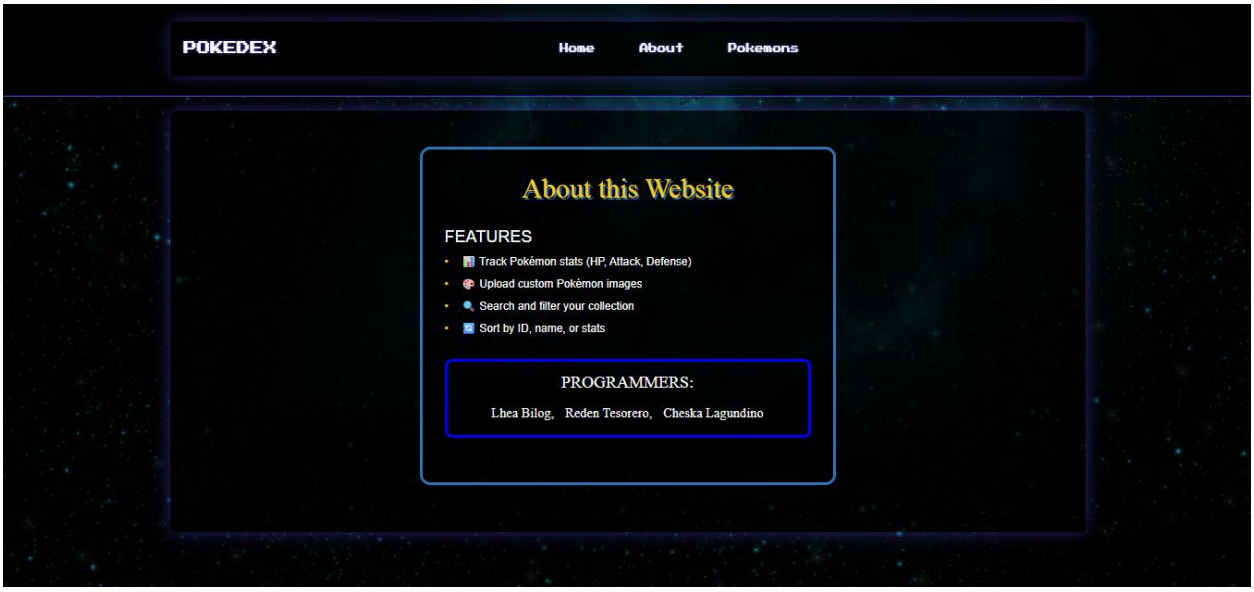
- When you run the project, it will direct here, just wait and it will automatically go to the Pokédex Website on your browser/chrome.



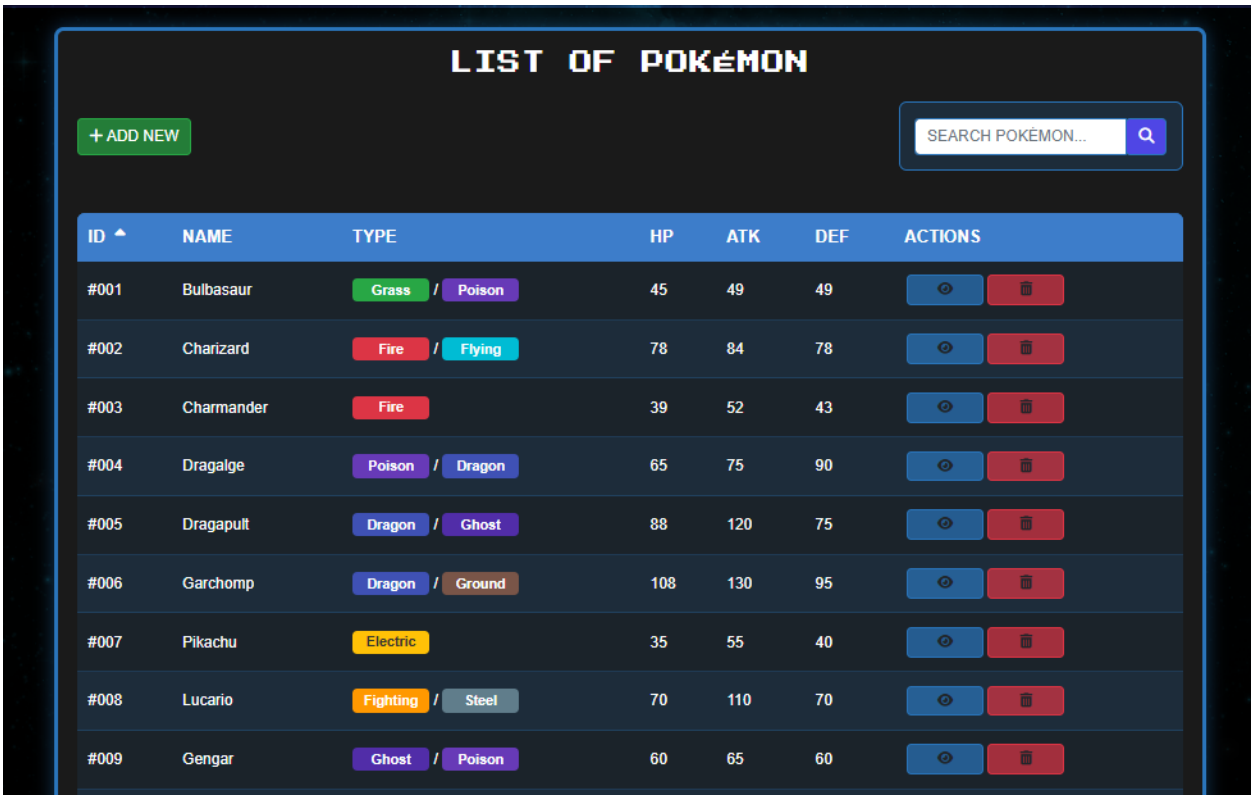
- Homepage



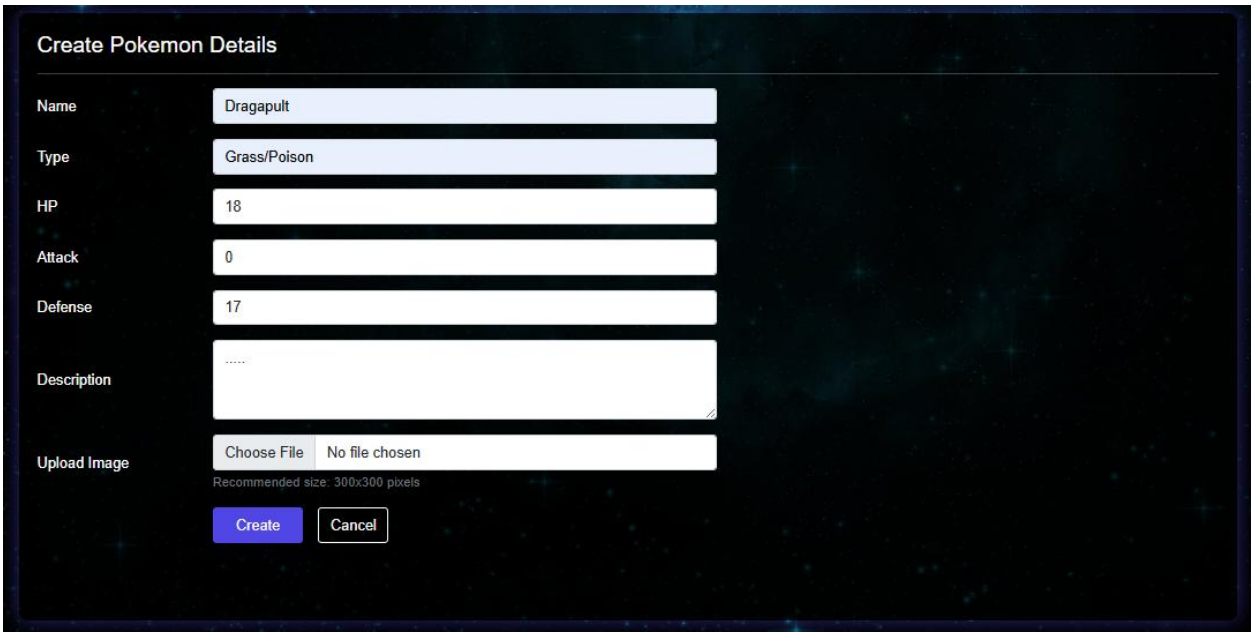
- About



- When you click the Pokémons, it will show all the Pokémon Lists.

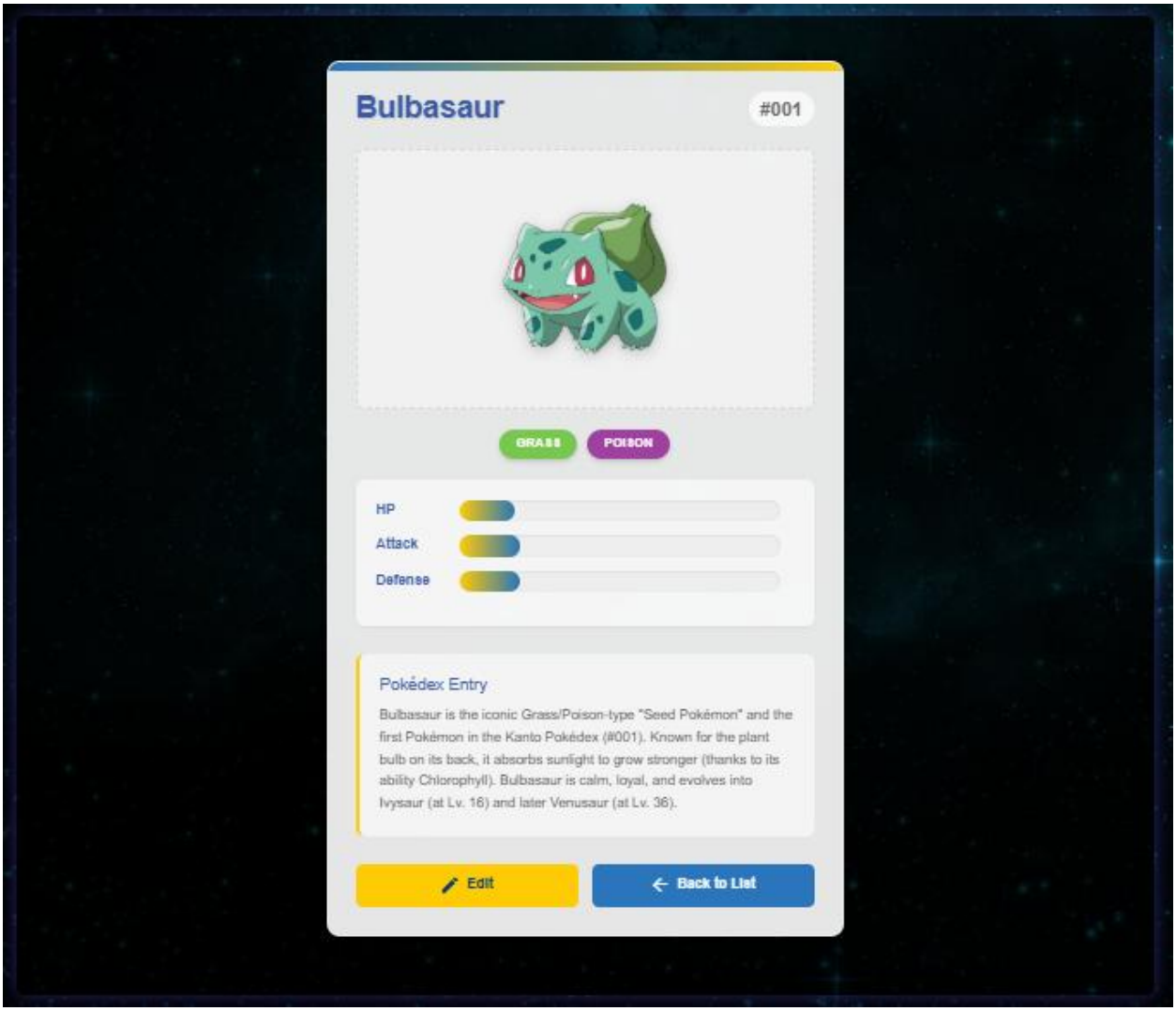


- On the left side, you can Add New Pokémons in the List

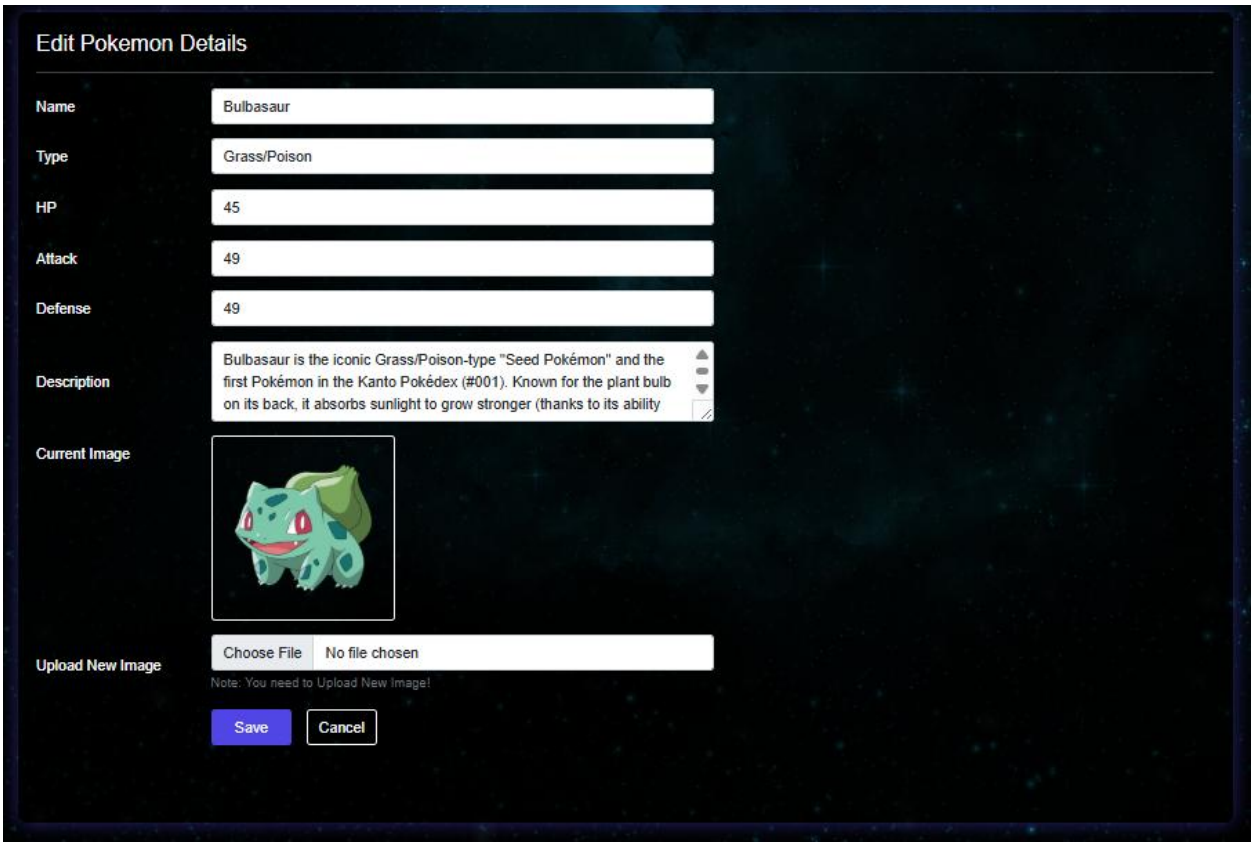


- On the right side, you can search Pokémon names

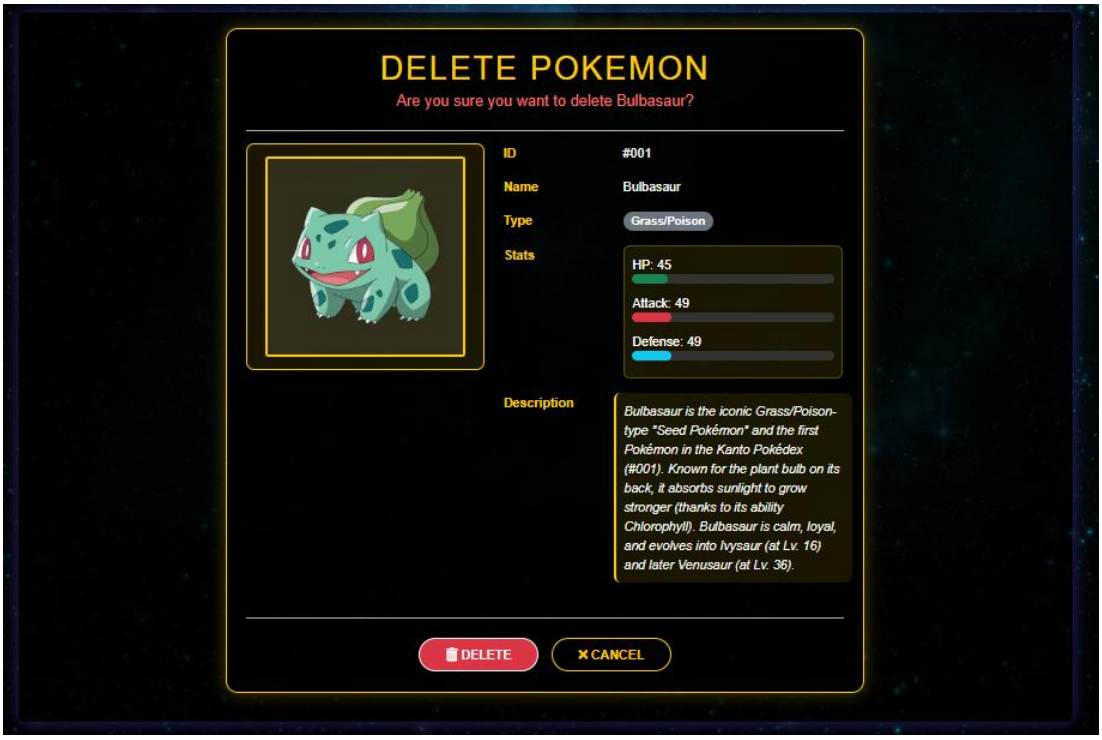
- When you click the Blue with Eye Buttons in Actions, you can see the Details of Pokémons.



- There's also Edit Button in the Details so that you can easily change/update records.



- The Delete Button, when you click that button, you can still see the details of Pokémons.



SQL Database and Migration Files:

SQL Table Creation

dbo.PokemonDetails.sql | dbo.PokemonDetails [Data]

Update

```
CREATE TABLE [dbo].[PokemonDetails] (
    [ID]          INT            IDENTITY (1, 1) NOT NULL,
    [Name]        NVARCHAR (MAX) NOT NULL,
    [Type]        NVARCHAR (MAX) NOT NULL,
    [HP]          INT            NOT NULL,
    [Attack]      INT            NOT NULL,
    [Defense]     INT            NOT NULL,
    [Description] NVARCHAR (MAX) NOT NULL,
    [ImagePath]   NVARCHAR (MAX) NULL,
    CONSTRAINT [PK_PokemonDetails] PRIMARY KEY CLUSTERED ([ID] ASC)
);
```

Sample Data

dbo.PokemonDetails.sql | dbo.PokemonDetails [Data]

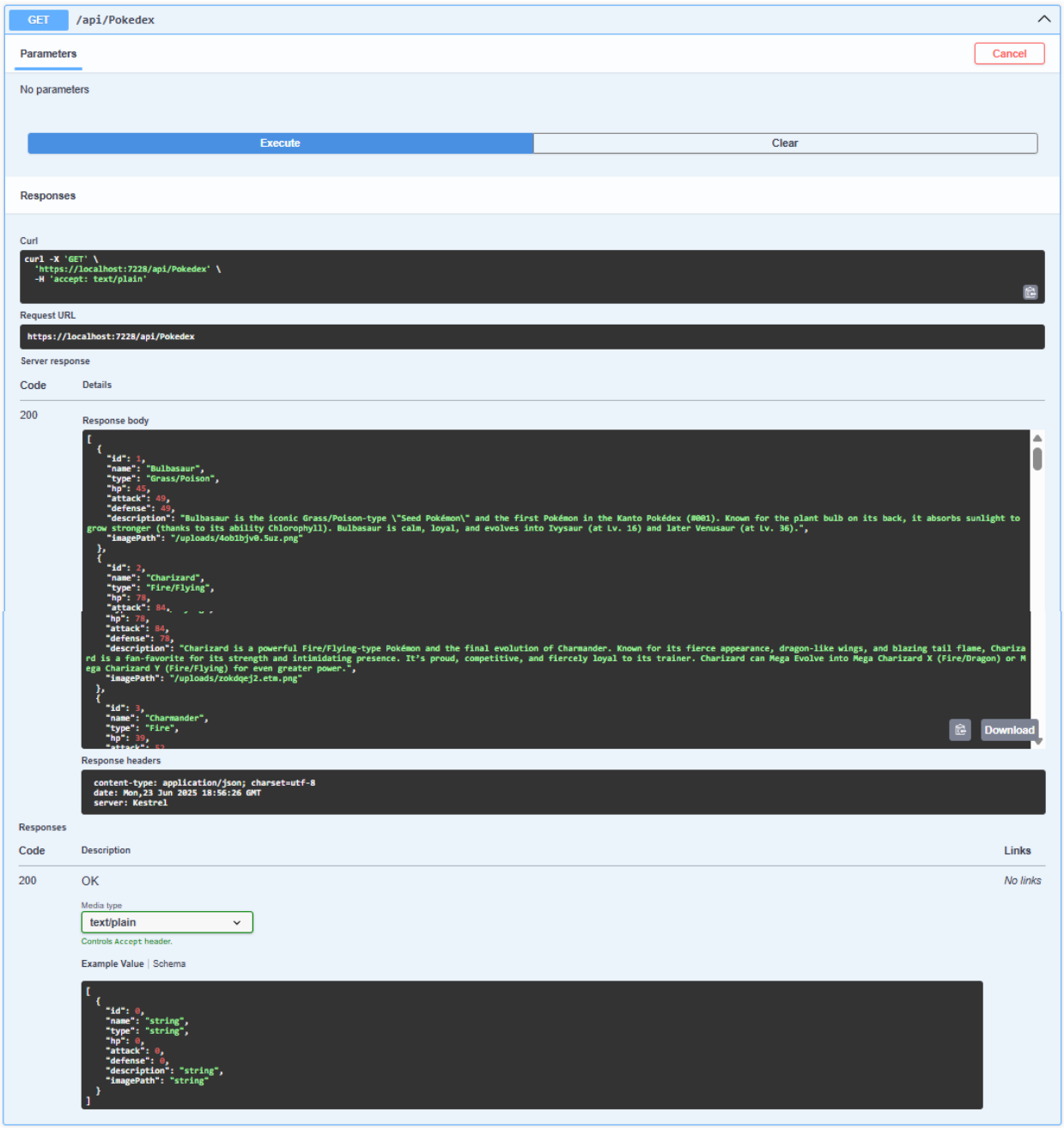
Max Rows: 1000

ID	Name	Type	HP	Attack	Defense	Description	ImagePath
1	Bulbasaur	Grass/Poison	45	49	49	Bulbasaur is the...	/uploads/4ob1...
2	Charizard	Fire/Flying	78	84	78	Charizard is a p...	/uploads/zokd...
3	Charmander	Fire	39	52	43	Charmander is ...	/uploads/2nhtu...
4	Dragalge	Poison/Dragon	65	75	90	Dragalge is a ve...	/uploads/q4iqf...
5	Dragapult	Dragon/Ghost	88	120	75	Dragapult is a f...	/uploads/vrs2l5...
6	Garchomp	Dragon/Ground	108	130	95	Garchomp is a f...	/uploads/pbfsx...
7	Pikachu	Electric	35	55	40	Pikachu is the ...	/uploads/aoofi...
8	Lucario	Fighting/Steel	70	110	70	Lucario is a fier...	/uploads/lamif...
9	Gengar	Ghost/Poison	60	65	60	Gengar is a mis...	/uploads/2kj0b...
10	Eevee	Normal	55	55	50	Eevee is the ad...	/uploads/0zuee...
11	Mewtwo	Psychic	106	110	90	Mewtwo is a le...	/uploads/vodg...
12	Gardevoir	Psychic/Fairy	68	65	65	Gardevoir is an ...	/uploads/twym...
13	Squirtle	Water	44	48	65	Squirtle is the ti...	/uploads/a3tve...
14	Greninja	Water/Dark	72	95	67	Greninja is a sle...	/uploads/3xbu3...
15	Blastoise	Water	79	83	100	Blastoise is the ...	/uploads/q4qg...
16	Snorlax	Normal	160	110	65	A giant, sleepy ...	/uploads/5hajp...
17	Tyranitar	Rock/Dark	100	134	110	A massive, arm...	/uploads/pm2i...
18	Mimikyu	Ghost/Fairy	54	90	80	Mimikyu disgui...	/uploads/a1v5il...
19	Rayquaza	Dragon/Flying	105	150	90	A legendary Po...	/uploads/mixo...
20	Mew	Psychic	100	100	100	Mew is said to ...	/uploads/cj45qi...
21	Charmeleon	Fire	58	64	58	Charmeleon is t...	/uploads/f4lqjy...
22	Metapod	Bug	50	20	55	Metapod is the ...	/uploads/no31...
23	Slowpoke	Water/Psychic	90	65	65	Slowpoke is a sl...	/uploads/5rkfz2...
24	Butterfree	Bug/Flying	60	45	50	Butterfree flits f...	/uploads/eudw...
25	Ivysaur	Grass/Poison	60	62	63	Ivysaur is the ev...	/uploads/tti5zz...

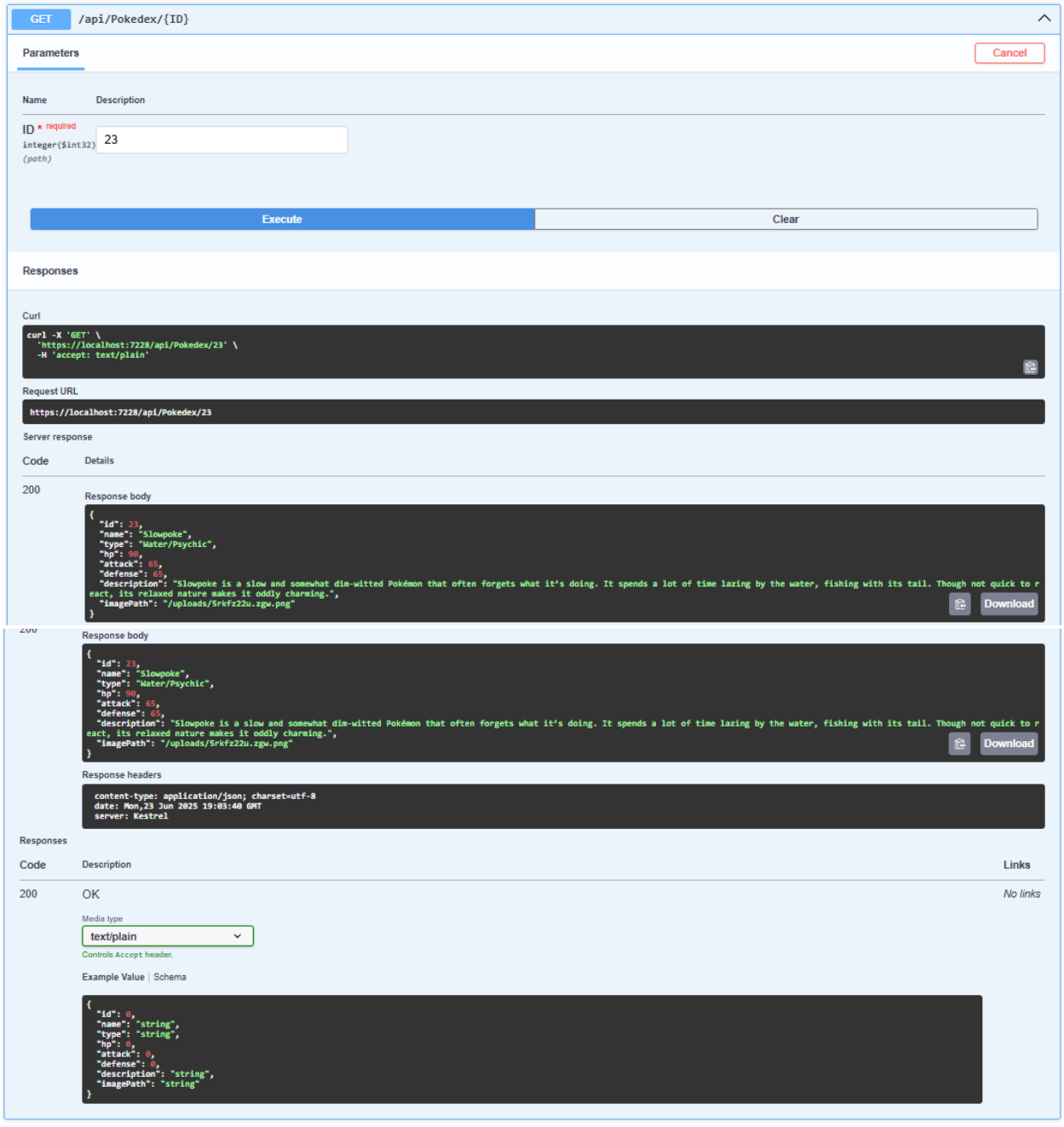
Swagger Documentation:

Successful CRUD Operations:

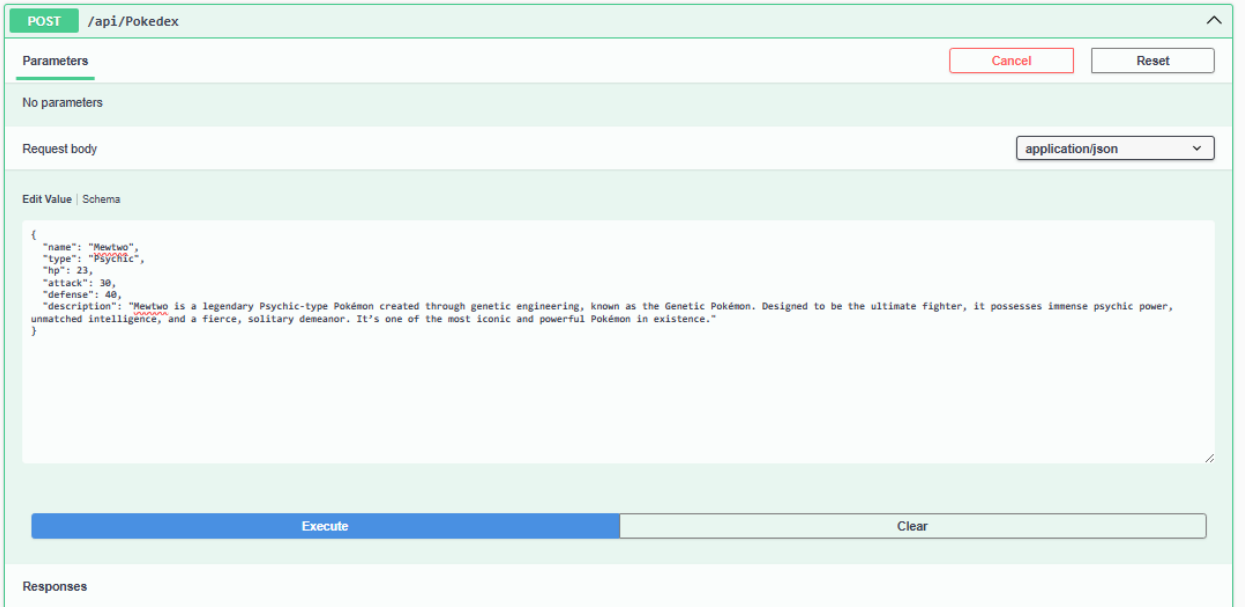
GET



GET(ID)

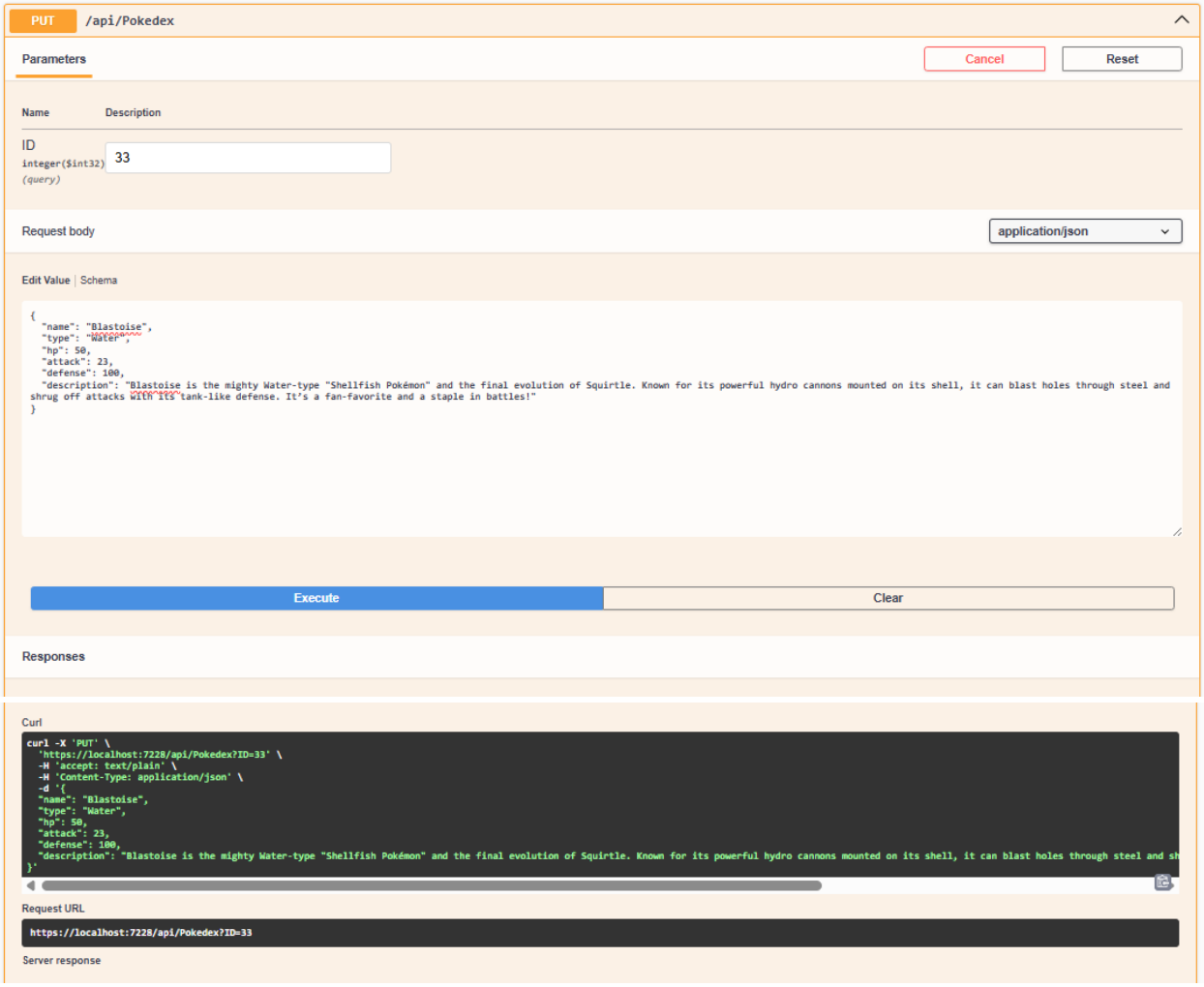

GET
/api/Pokedex/{ID}
Parameters
Cancel
Name
Description
ID * required
integer($int32)
(path)
23
Execute
Clear
Responses
Curl
curl -X 'GET' \
'https://localhost:7228/api/Pokedex/23' \
-H 'accept: text/plain'
Request URL
https://localhost:7228/api/Pokedex/23
Server response
Code
Details
200
Response body
{
"id": 23,
"name": "Slowpoke",
"type": "Water/Psychic",
"hp": 90,
"attack": 65,
"defense": 65,
"description": "Slowpoke is a slow and somewhat dim-witted Pokémon that often forgets what it's doing. It spends a lot of time lazing by the water, fishing with its tail. Though not quick to r
eact, its relaxed nature makes it oddly charming.",
"imagePath": "/uploads/5rkfz22u.zgw.png"
}
Download
Response body
{
"id": 23,
"name": "Slowpoke",
"type": "Water/Psychic",
"hp": 90,
"attack": 65,
"defense": 65,
"description": "Slowpoke is a slow and somewhat dim-witted Pokémon that often forgets what it's doing. It spends a lot of time lazing by the water, fishing with its tail. Though not quick to r
eact, its relaxed nature makes it oddly charming.",
"imagePath": "/uploads/5rkfz22u.zgw.png"
}
Download
Response headers
content-type: application/json; charset=utf-8
date: Mon,23 Jun 2025 19:03:40 GMT
server: Kestrel
Responses
Code
Description
Links
200
OK
No links
Media type
text/plain
Controls Accept header.
Example Value | Schema
{
"id": 0,
"name": "string",
"type": "string",
"hp": 0,
"attack": 0,
"defense": 0,
"description": "string",
"imagePath": "string"
}

POST

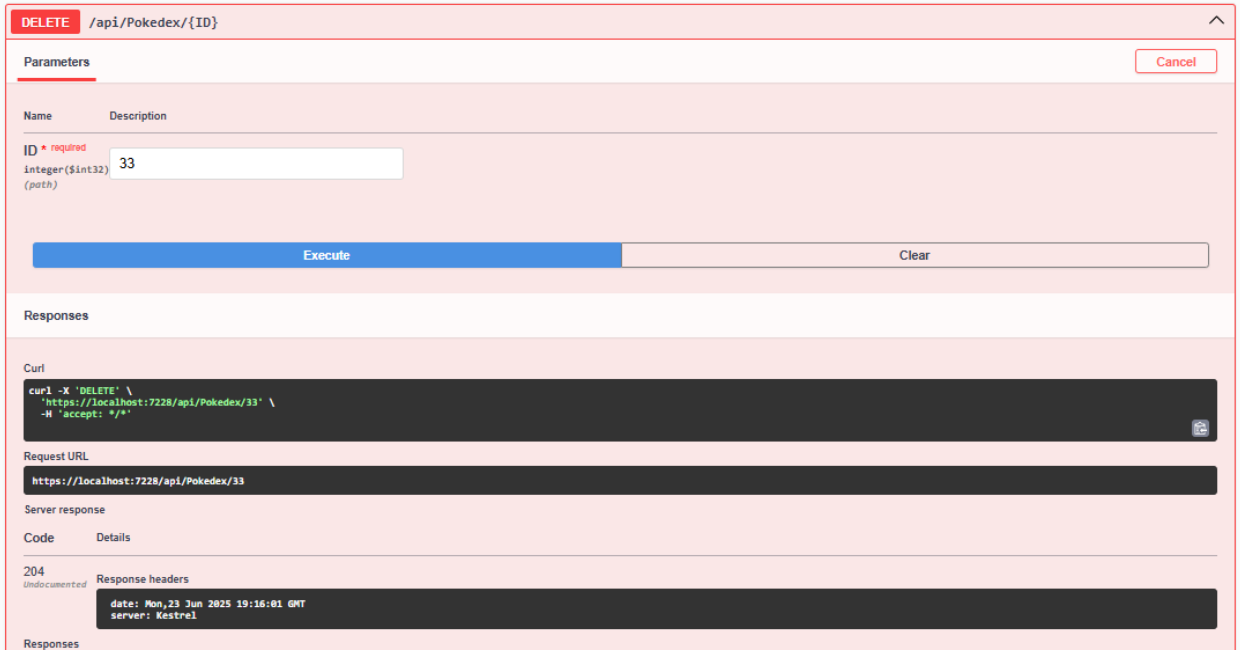

POST
/api/Pokedex
Parameters
Cancel
Reset
No parameters
Request body
application/json
Edit Value | Schema
{
"name": "Mewtwo",
"type": "Psychic",
"hp": 23,
"attack": 30,
"defense": 40,
"description": "Mewtwo is a legendary Psychic-type Pokémon created through genetic engineering, known as the Genetic Pokémon. Designed to be the ultimate fighter, it possesses immense psychic power, unmatched intelligence, and a fierce, solitary demeanor. It's one of the most iconic and powerful Pokémon in existence."
}
Execute
Clear
Responses

Curl
curl -X 'POST' \
'https://localhost:7228/api/Pokedex' \
-H 'accept: text/plain' \
-H 'Content-Type: application/json' \
-d '{
"name": "Mewtwo",
"type": "Psychic",
"hp": 23,
"attack": 30,
"defense": 40,
"description": "Mewtwo is a legendary Psychic-type Pokémon created through genetic engineering, known as the Genetic Pokémon. Designed to be the ultimate fighter, it possesses immense psychic power, unmatch
}'
Request URL
https://localhost:7228/api/Pokedex
Server response
Code
Details
201
Undocumented
Response body
{
"id": 34,
"name": "Mewtwo",
"type": "Psychic",
"hp": 23,
"attack": 30,
"defense": 40,
"description": "Mewtwo is a legendary Psychic-type Pokémon created through genetic engineering, known as the Genetic Pokémon. Designed to be the ultimate fighter, it possesses immense psychic power, unmatched intelligence, and a fierce, solitary demeanor. It's one of the most iconic and powerful Pokémon in existence.",
"imagePath": null
}
Download

PUT

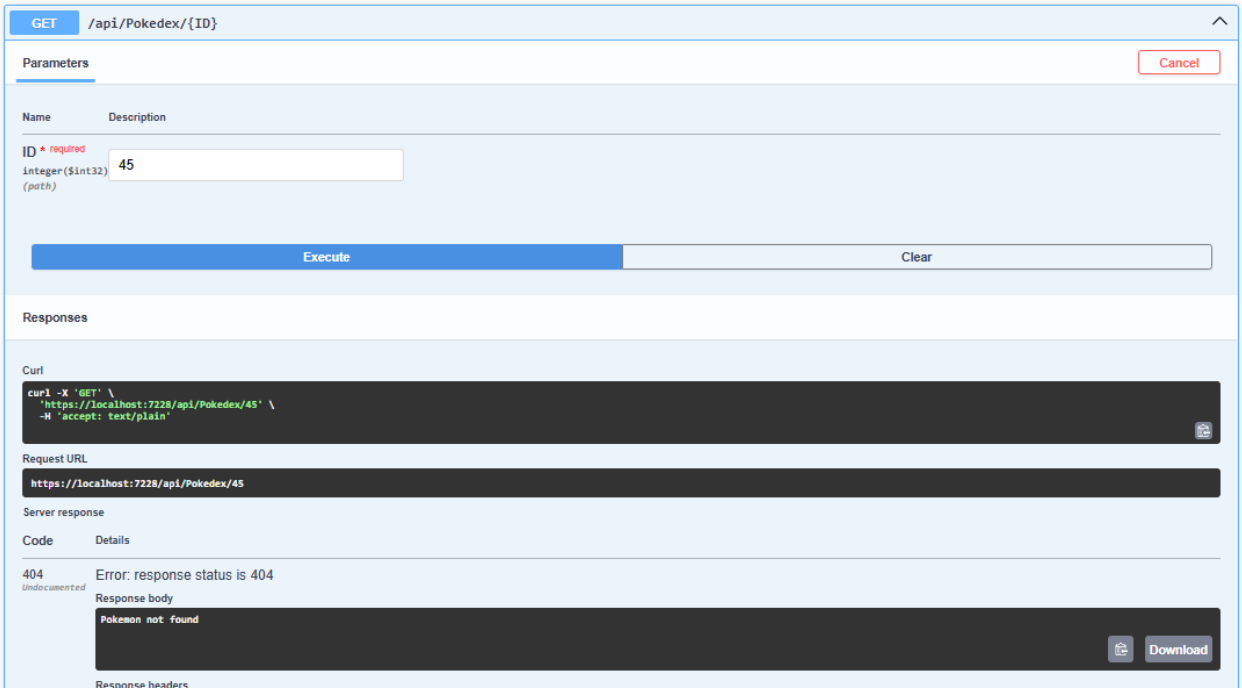

PUT
/api/Pokedex
Parameters
Cancel
Reset
Name
Description
ID
integer($int32)
(query)
33
Request body
application/json
Edit Value | Schema
{
"name": "Blastoise",
"type": "Water",
"hp": 50,
"attack": 23,
"defense": 100,
"description": "Blastoise is the mighty Water-type "Shellfish Pokémon" and the final evolution of Squirtle. Known for its powerful hydro cannons mounted on its shell, it can blast holes through steel and shrug off attacks with its tank-like defense. It's a fan-favorite and a staple in battles!"
}
Execute
Clear
Responses
Curl
curl -X 'PUT' \
'https://localhost:7228/api/Pokedex?ID=33' \
-H 'accept: text/plain' \
-H 'Content-Type: application/json' \
-d '{
"name": "Blastoise",
"type": "Water",
"hp": 50,
"attack": 23,
"defense": 100,
"description": "Blastoise is the mighty Water-type "Shellfish Pokémon" and the final evolution of Squirtle. Known for its powerful hydro cannons mounted on its shell, it can blast holes through steel and sh
}'
Request URL
https://localhost:7228/api/Pokedex?ID=33
Server response

DELETE



ERROR Handling:

GET (ID)



POST

Code | Details

400 *Undocumented* — Error: response status is 400

Response body


```
{
  "type": "https://tools.ietf.org/html/rfc9110#section-15.5.1",
  "title": "One or more validation errors occurred.",
  "status": 400,
  "errors": {
    "$": [
      "'G' is invalid after a value. Expected either ',', '}', or ']'. Path: $ | LineNumber: 5 | BytePositionInLine: 113."
    ],
    "createDto": [
      "The createDto field is required."
    ]
  },
  "traceId": "00-e5f13b09d278b0264aed4fb4790ba943-8c949eccd5098b7b-00"
}
```


Download

Response headers

```
content-type: application/problem+json; charset=utf-8
date: Mon,23 Jun 2025 19:41:31 GMT
server: Kestrel
```

Responses

Code	Description	Links
200	OK	*No links*

Media type: text/plain

Controls Accept header.

Example Value | Schema


```
{
  "id": 0,
  "name": "string",
  "type": "string",
  "hp": 0,
  "attack": 0,
  "defense": 0,
  "description": "string",
  "imagePath": "string"
}
```


PUT

Code | Details

400 *Undocumented* — Error: response status is 400

Response body


```
{
  "type": "https://tools.ietf.org/html/rfc9110#section-15.5.1",
  "title": "One or more validation errors occurred.",
  "status": 400,
  "errors": {
    "$": [
      "'S' is invalid after a value. Expected either ',', '}', or ']'. Path: $ | LineNumber: 6 | BytePositionInLine: 54."
    ],
    "updateDTO": [
      "The updateDTO field is required."
    ]
  },
  "traceId": "00-569d38c92374f6cabddc03f2b1f5484f-c5b3de9f96eb8db1-00"
}
```


Download

Response headers

```
content-type: application/problem+json; charset=utf-8
date: Mon,23 Jun 2025 19:42:20 GMT
server: Kestrel
```

Responses

Code	Description	Links
200	OK	*No links*

Media type: text/plain

Controls Accept header.

Example Value | Schema


```
{
  "id": 0,
  "name": "string",
  "type": "string",
  "hp": 0,
  "attack": 0,
  "defense": 0,
  "description": "string",
  "imagePath": "string"
}
```

DELETE

Code	Details

404
Undocumented
	Error: response status is 404
	Response body
	`{ "message": "Pokemon with ID 70 not found." }`
	Download
	Response headers
	`content-type: application/json; charset=utf-8`
	`date: Mon,23 Jun 2025 19:43:29 GMT`
	`server: Kestrel`

Responses

Code	Description	Links
200	OK	*No links*