

C# ASP.NET Core Web API part deux

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Agenda

Completing the CharactersController

Design Patterns in Practice

gRPC

GraphQL

Docker and Docker Compose

Integration Testing ASP.NET Core

(Gilded Rose Recap)



Completing the CharactersController

Demo



Design Patterns in Practice

IoC Container

Tool to facilitate *dependency injection*.

Using a factory to either manually or automatically create types at runtime.

Various implementations:

- Microsoft.Extensions.DependencyInjection
- Ninject
- Unity
- AutoFac
- StructureMap

IoC Container II

Lifetime:

Transient (every time)

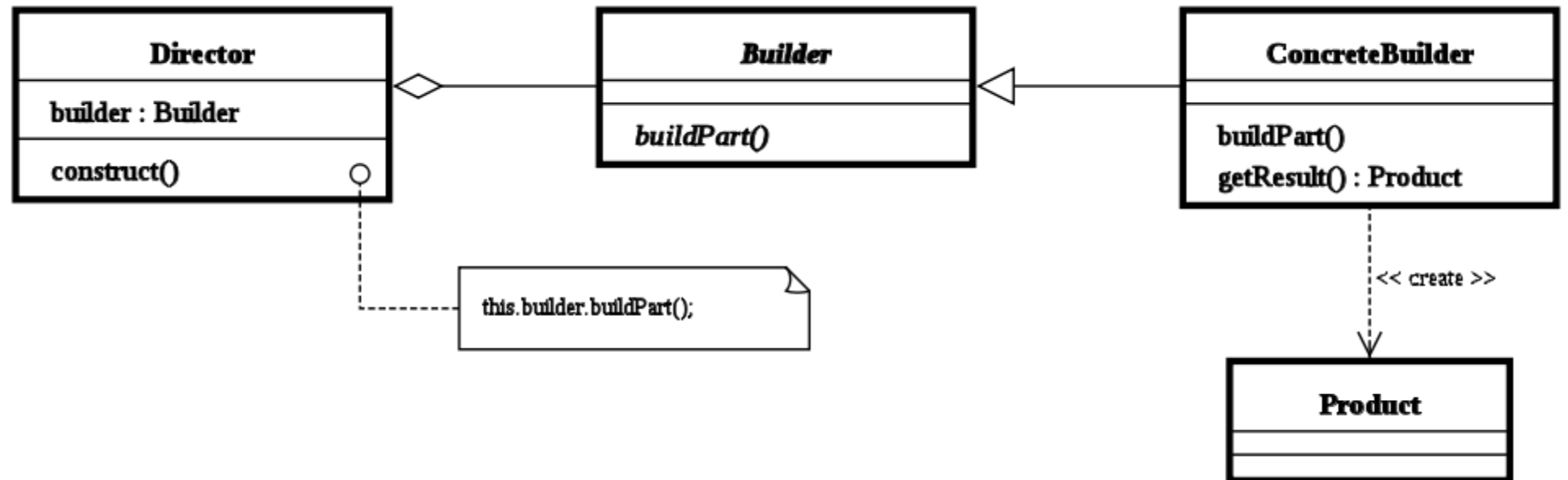
Scoped (once per request)

Singleton (once)

Builder

Separate the construction of a complex object from its representation

```
serviceCollection.AddScoped<,>();  
serviceCollection.BuildServiceProvider();
```



Singleton

Only ever one single instance of a given type.

Considered an anti-pattern by many, it:

- is overused
- introduces unnecessary restrictions in situations where a sole instance of a class is not actually required
- introduces global state into an application

Singleton II

Use carefully

Implement using an interface

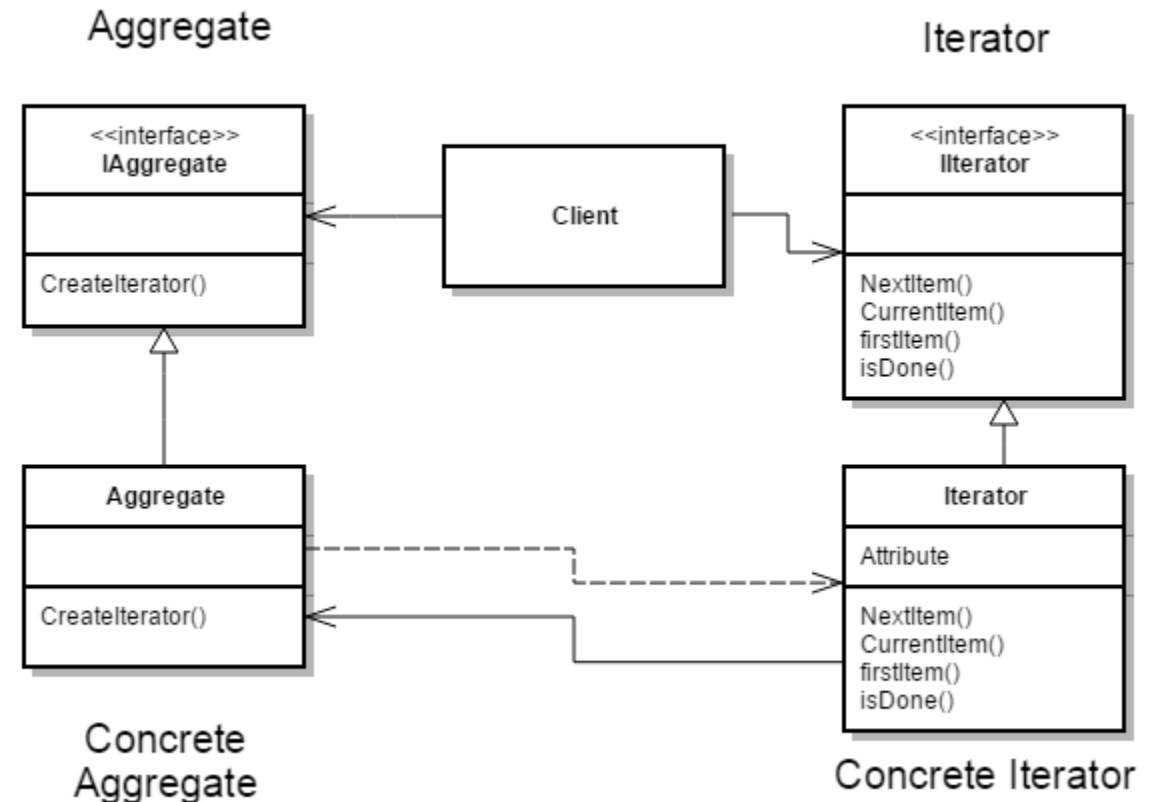
Use an IoC container

Singleton
-instance : Singleton
-Singleton() +Instance() : Singleton

Iterator

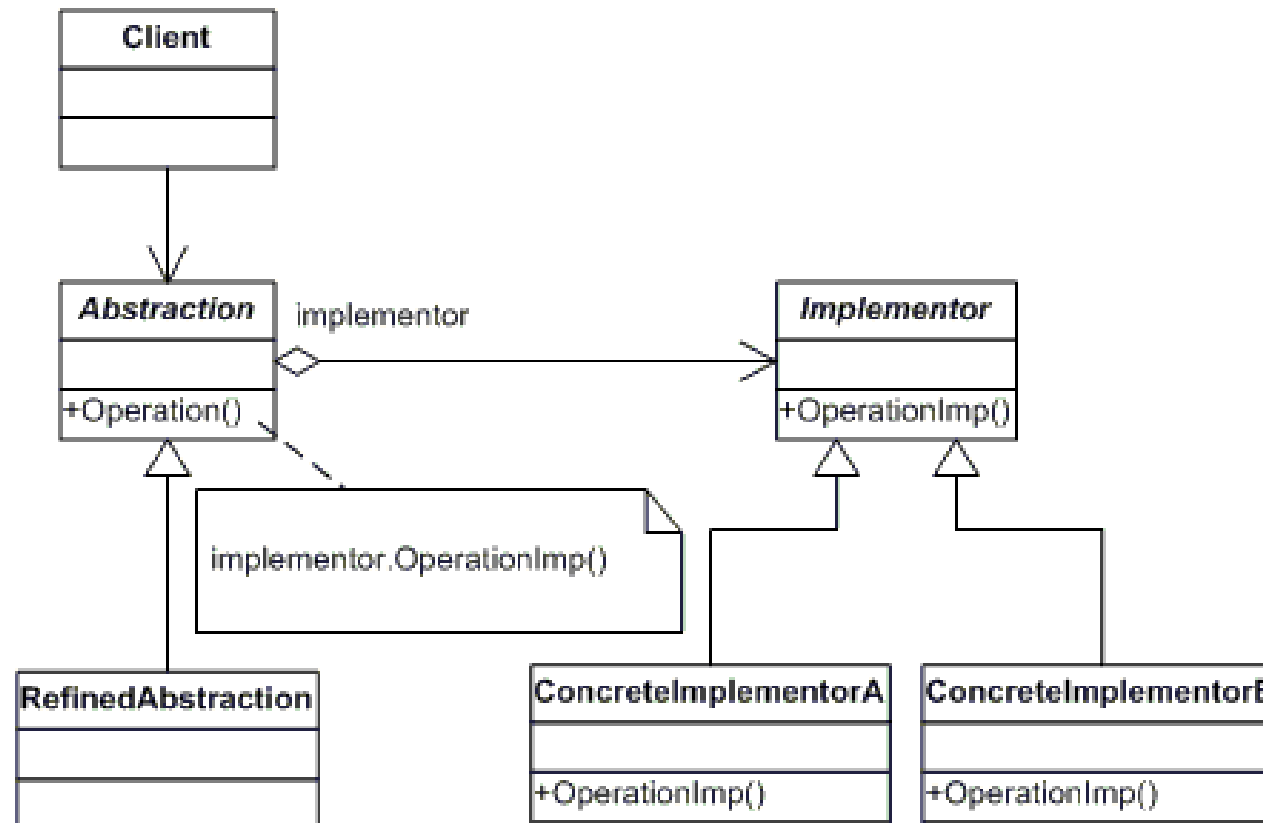
Provide a way to access the elements of an aggregate object (collection) sequentially without exposing the underlying representation

IEnumerable
IEnumerable<T>
IEnumerator
IEnumerator<T>
foreach...



Bridge

Decouple an abstraction from its implementation so that the two can vary independently.



Docker & Docker Compose

Demo

gRPC

gRPC Remote Procedure Calls

gRPC is a modern, open source, high-performance remote procedure call (RPC) framework that can run anywhere. gRPC enables client and server applications to communicate transparently, and simplifies the building of connected systems.

```
$ dotnet new grpc
```

GraphQL

GraphQL

GraphQL is a query language for APIs and a runtime for fulfilling those queries with your existing data. GraphQL provides a complete and understandable description of the data in your API, gives clients the power to ask for exactly what they need and nothing more, makes it easier to evolve APIs over time, and enables powerful developer tools.