Dependency injection

Adrian Mularczyk

PGS Software

Agenda

1. Description of the problem

2. Dependency injection

3. Code

4. Summary

Description of the problem

Dependency injection

Code

Summary

SOLID

Dependency injection container

Description of the problem

Description of the problem
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Summary

SOLID
Dependency injection container

SOLID

- S - SRP (Single responsibility principle)
- O - OCP (Open/closed principle)
- L - LSP (Liskov substitution principle)
- I - ISP (Interface segregation principle)
- D - DIP (Dependency inversion principle)

Description of the problem
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SOLID
Dependency injection container

SOLID

- S - SRP (Single responsibility principle)
- O - OCP (Open/closed principle)
- L - LSP (Liskov substitution principle)
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- D - DIP (Dependency inversion principle)

Description of the problem
Dependency injection
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SOLID
Dependency injection container

Dependency Inversion Principal

```csharp
public class Foo
{
    public void DoSomeWork()
    {
        //do some work
    }
}

public class Bar
{
    private readonly Foo _foo;

    public Bar()
    {
        _foo = new Foo();

    }

    public void DoSomething()
    {
        _foo.DoSomeWork();
    }
}
```

```csharp
public interface IFoo
{
    void DoSomeWork();
}

public class Foo : IFoo
{
    public void DoSomeWork()
    {
        //do some work
    }
}

public class Bar
{
    private readonly IFoo _foo;

    public Bar(IFoo foo)
    {
        _foo = foo;
    }

    public void DoSomething()
    {
        _foo.DoSomeWork();
    }
}
```

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Dependency injection container

- Register
- Resolve

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Dependency injection container

```csharp
public class A
{
    public A(IB b) { }
}

public interface IB
{
}

public class B : IB
{
}
```

```csharp
container.Register<A>();

container.Register<IB, B>();


container.Resolve<IB>();

container.Resolve<A>();
```

Dependency injection

Description of the problem
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Dependency injection
Registration types
Sample implementations

Dependency injection

- Injecting by the constructor
- Injecting by the method
- Injecting by the property

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Dependency injection

```csharp
public class SampleClass
{
    public SampleClass()
    {
    }

    [DependencyConstructor]
    public SampleClass(EmptyClass emptyClass)
    {
        EmptyClass = emptyClass;
    }

    public EmptyClass EmptyClass { get; }
}
```

```csharp
public class SampleClass
{
    [DependencyMethod]
    public void SetEmptyClass(EmptyClass emptyClass)
    {
        EmptyClass = emptyClass;
    }

    public EmptyClass EmptyClass { get; private set; }
}
```

```csharp
public class SampleClass
{
    [DependencyProperty]
    public EmptyClass EmptyClass { get; set; }
}
```

Description of the problem
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Dependency injection
Registration types
Sample implementations

Registration types

- Register as Singleton,
- Register as Transient,
- Register as Scope (Thread, HttpRequest),
- Register as FactoryMethod.

Description of the problem
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Dependency injection
Registration types
Sample implementations

Sample implementations

- NInject
- Unity
- Autofac
- StructureMap
- Windsor

- Grace
- DryIoc
- LightInject
- SimpleInjector

http://www.palmmedia.de/blog/2011/8/30/ioc-container-benchmark-performance-comparison

Code

Description of the problem
Dependency injection
Code
Summary

Usage
Sample implementation
Extensions

Adding DI to our project

- .NET Framework
- .NET Core

Description of the problem
Dependency injection
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Usage
Sample implementation
Extensions

Sample implementation

Demo

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Description of the problem
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Usage
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Extensions

- List instead Dictionary
- Many destination types
- Many input types

Summary

Questions?

Thank you!
e-mail: amularczyk@pgs-soft.com