

Demystifying Dependency Injection

Hi, my name is

Brent



“Dependency injection separates the creation of a client's dependencies from the client's behavior, which allows program designs to be loosely coupled and to follow the dependency inversion and single responsibility principles.”

- “Dependency Injection”, Wikipedia, 2016

Single Resp

Open/Clos

Liskov Subs

Interface Seg

Dependency Inversion Principle



Why do we want loosely coupled code?



Easier to
maintain



Easier to
write tests
against



Flexible
Configuration



Teams can
work in
parallel



Consequences of using DI



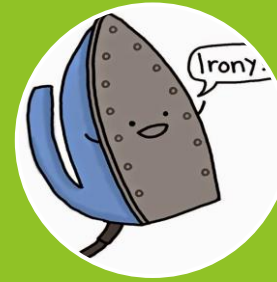
More
difficult to
trace



Takes extra
effort



Explosion of
types



Can create a
dependency
on an DI
framework



Types of Dependency Injection

Constructor Injection

Property Injection

Method Injection

Service Locator

Others

Demo App Layout

Application Layers

- Composition Root
- View
- Presentation
- Business Logic
- Repositories
- Data Access

Other

- Shared Components

Constructor Injection

```
public class HeroFinderViewModel
{
    private IHeroTracker { get; set; }

    public HeroFinderViewModel()
    {
        HeroTracker = new HeroTracker();
    }
}
```

Property Injection

```
public class Battle
{
    public IFightAlgorithm FightAlgorithm { get; set; }
    = new BasicFightAlgorithm();

    public static FightResult Fight(...)
    {
        return FightAlgorithm.Fight(...);
    }
}
```

Method Injection

```
public class Battle
{
    public IFightAlgorithm FightAlgorithm { get; set; }
    = new BasicFightAlgorithm();

    public FightResult Fight(IArena arena)
    {
        // We could depend on a different
        // arena on every call
        return FightAlgorithm.Fight(arena);
    }
}
```

Service Locator

Anti-Pattern?

Ninject

Castle Windsor

Unity

What is a DI Container?

StructureMap

Autofac

References

Web Articles

- Inversion of Control Containers and the Dependency Injection pattern
Martin Fowler, <http://www.martinfowler.com/articles/injection.html>
- Developer's Guide to Dependency Injection Using Unity
Microsoft Patterns & Practices, <https://msdn.microsoft.com/en-us/library/dn223671>

Books

- Dependency Injection in .NET - Mark Seeman

Pluralsite Courses

- Dependency Injection On-Ramp - Jeremy Clark

Thank you

Follow me on twitter
@brentestewart

Slides and code available on my github
github.com/brentestewart