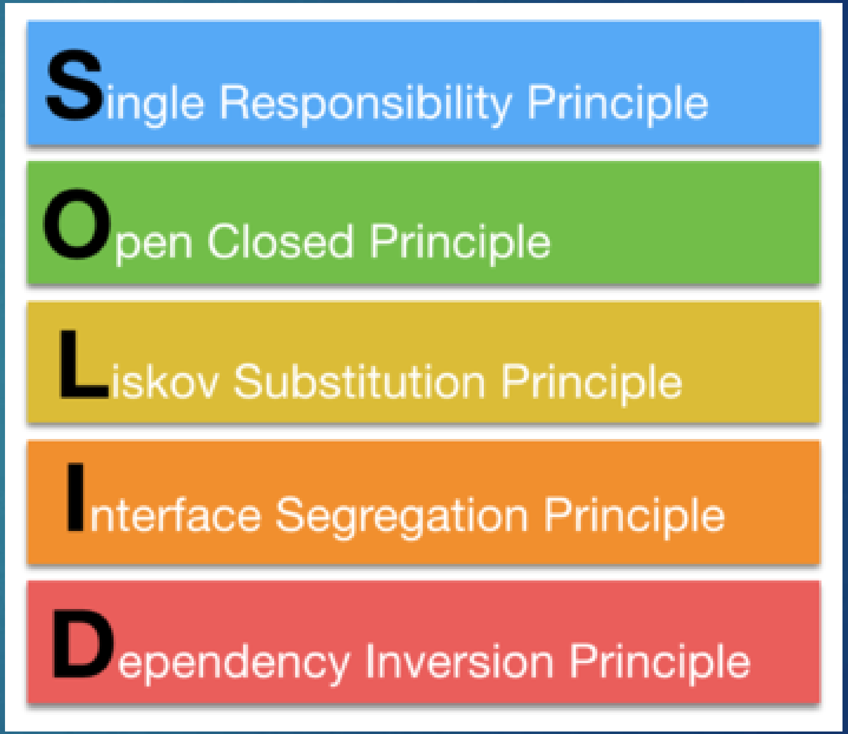
Logols Learning

WEEKEND WEB DEVELOPMENT BOOT CAMP

TRAINING: ARCHITECTURE

SOLID

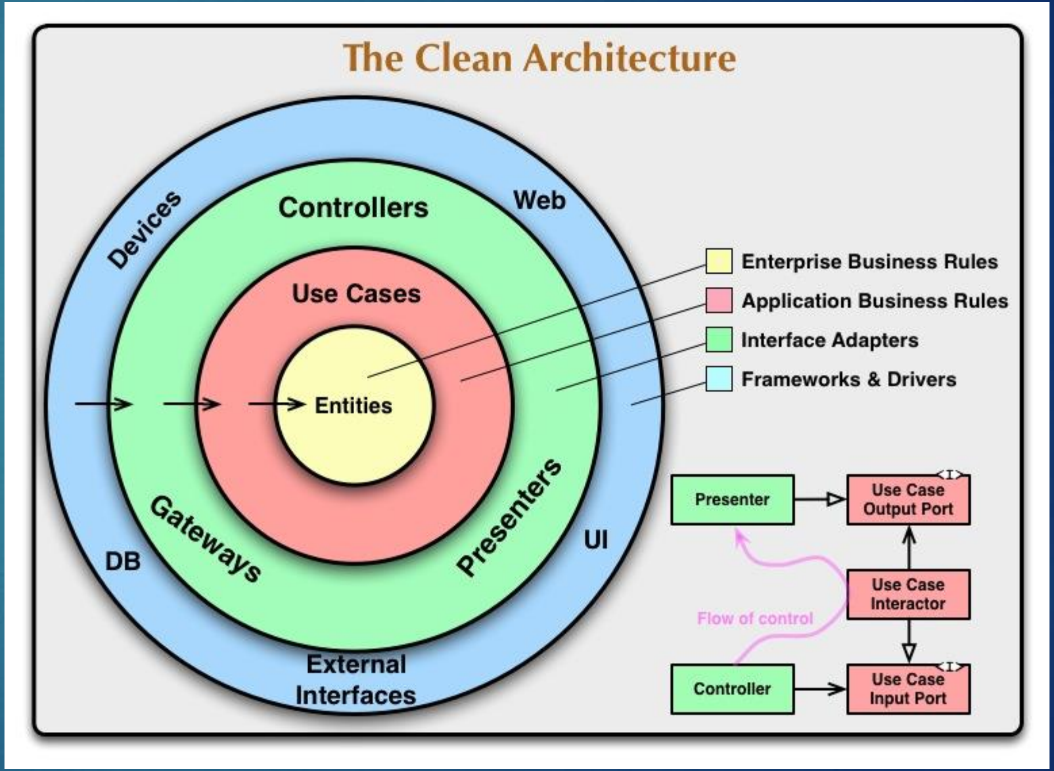
- **Single Responsibility**
- Open / Closed
- Liskov Substitution
- Interface Segregation
- **Dependency Inversion**



Single Responsibility Principle
Open Closed Principle
Liskov Substitution Principle
Interface Segregation Principle
Dependency Inversion Principle

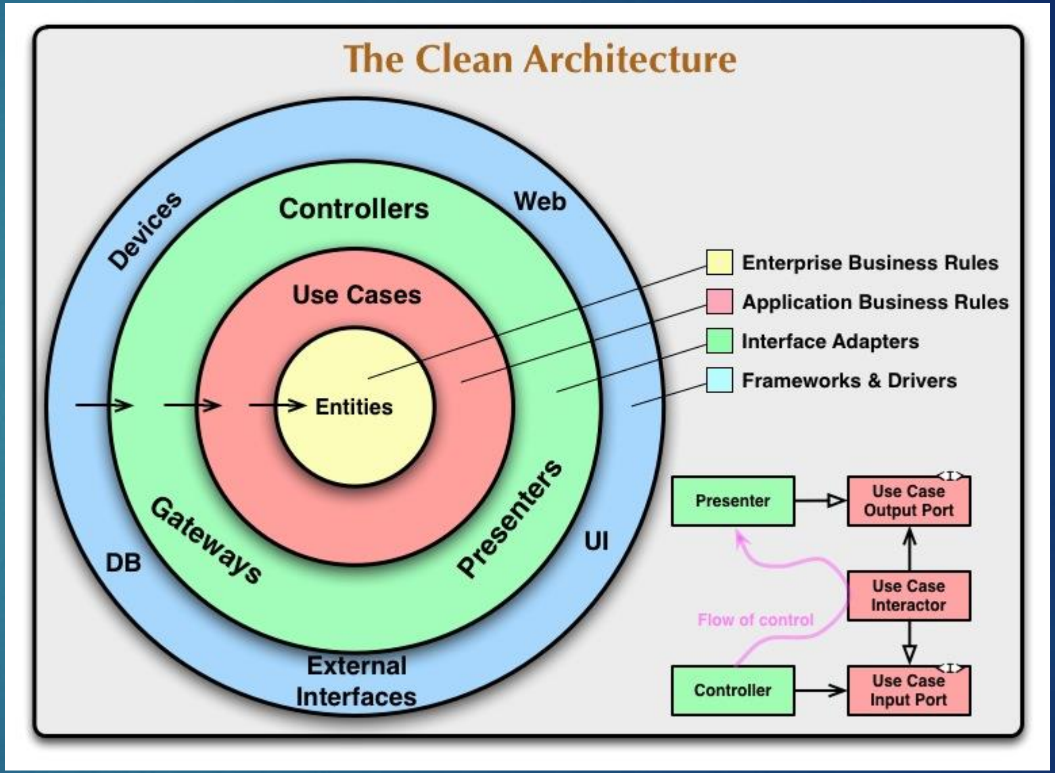
Clean Architecture

- SOLID extended to Components
- High Level or Core Components should not depend on Low Level Components or Details
- Components have Single Responsibility
- Details can Change



Components

- Database
- DAL
- Entities
- Web API
- UI



CLI Commands

- mkdir – Create Directory
- cd – Change Directory
- Add project:
  - dotnet new classlib
  - dotnet new webapi
- Add reference:
  - dotnet add reference [path]/[name.csproj]
  - dotnet add package Dapper
  - dotnet add package MySql.Data

Angular CLI

- Install Angular CLI
  - npm install –g @angular/cli
- Create a new Angular App
  - ng new [app-name]
- Change Directory
  - cd [app-name]
- Run the Application
  - ng serve

EXAMPLE

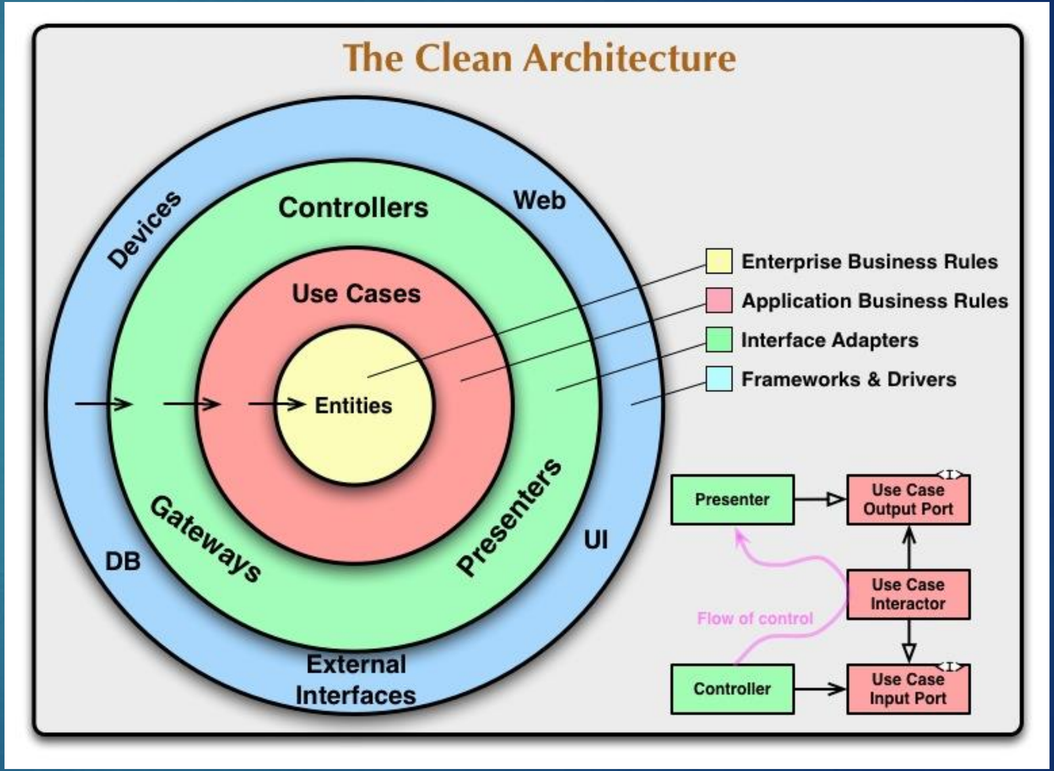
CREATING THE APPLICATION AND PROJECTS

TEAM PROJECT

CREATING THE APPLICATION AND PROJECTS

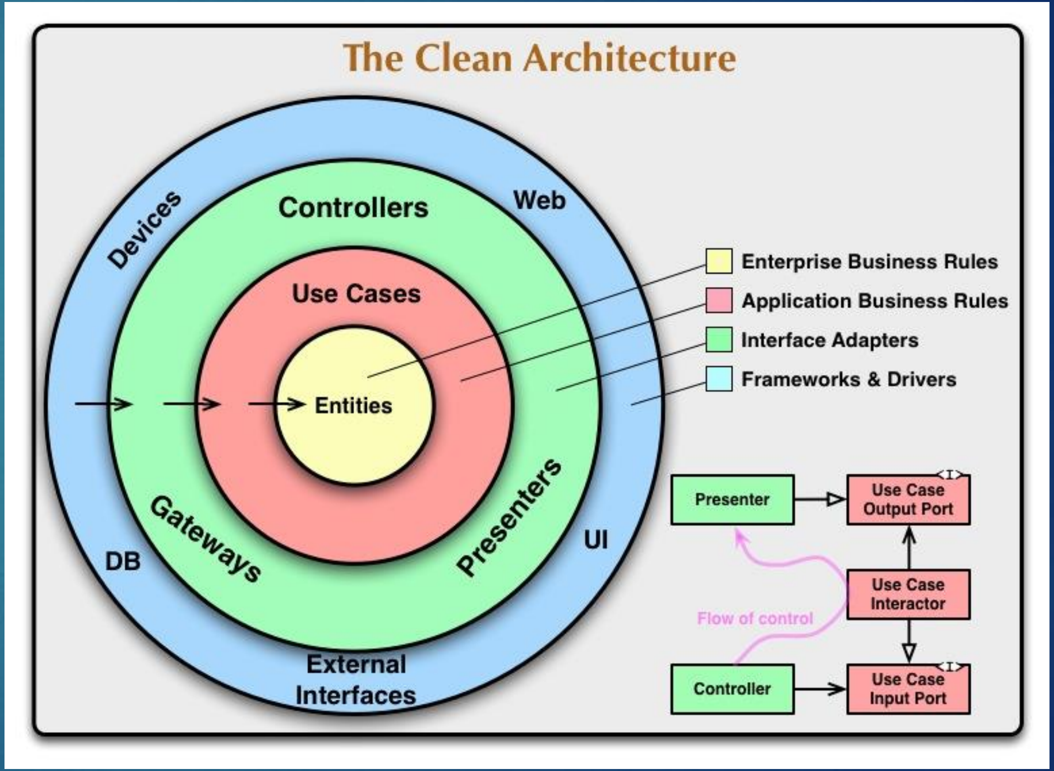
Entities

- Class with Properties or Data only
- Center of Clean Architecture
- Relates to Entity in Data Model
- Used to transfer data in application
- POCO – Plain Old CLI Object



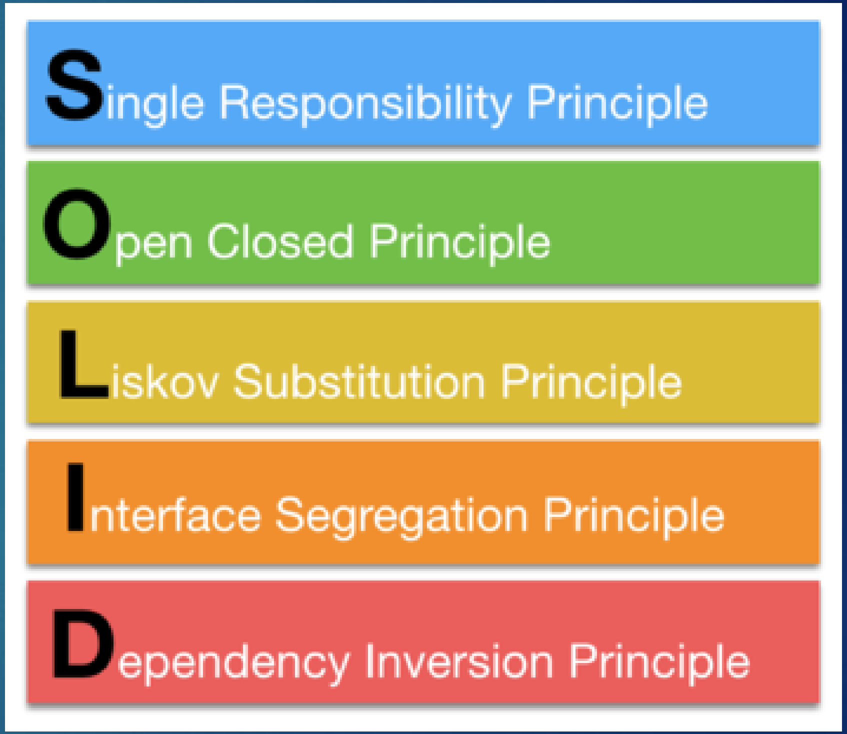
Services

- Currently we are using to return Entity Objects
- Could be used to implement logic
- Could be used to implement calculations



Dependency Inversion

- Do not want Inner Components dependent on Outer Components
- Create interfaces for data repositories
- Entities only know about the interface
- Implementation passed in constructor
  - Known as constructor injection
- Could use DI/IOC framework



Single Responsibility Principle

Open Closed Principle

Liskov Substitution Principle

Interface Segregation Principle

Dependency Inversion Principle

EXAMPLE

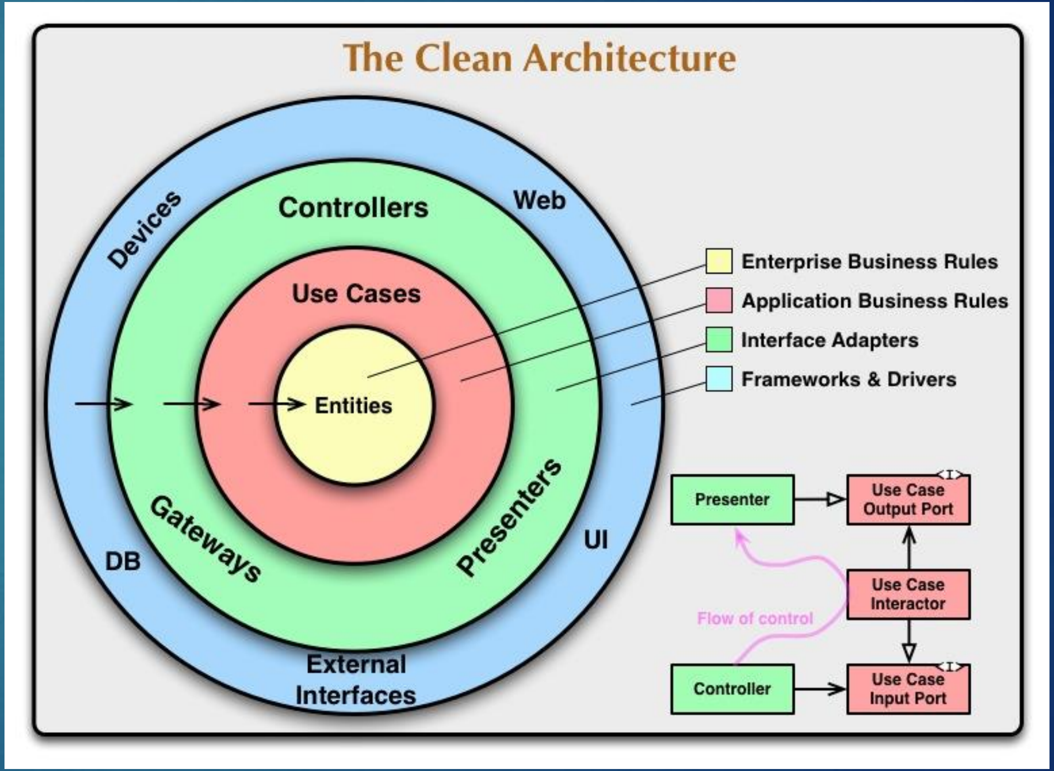
CREATING THE ENTITIES

TEAM PROJECT

CREATING THE ENTITIES

DAL / Repository

- DAL – Data Access Layer
- Separates data access from the rest of the application.
- Allows for changes in database
- Repository pattern
  - Separation for each entity



EXAMPLE

CREATING THE DAL

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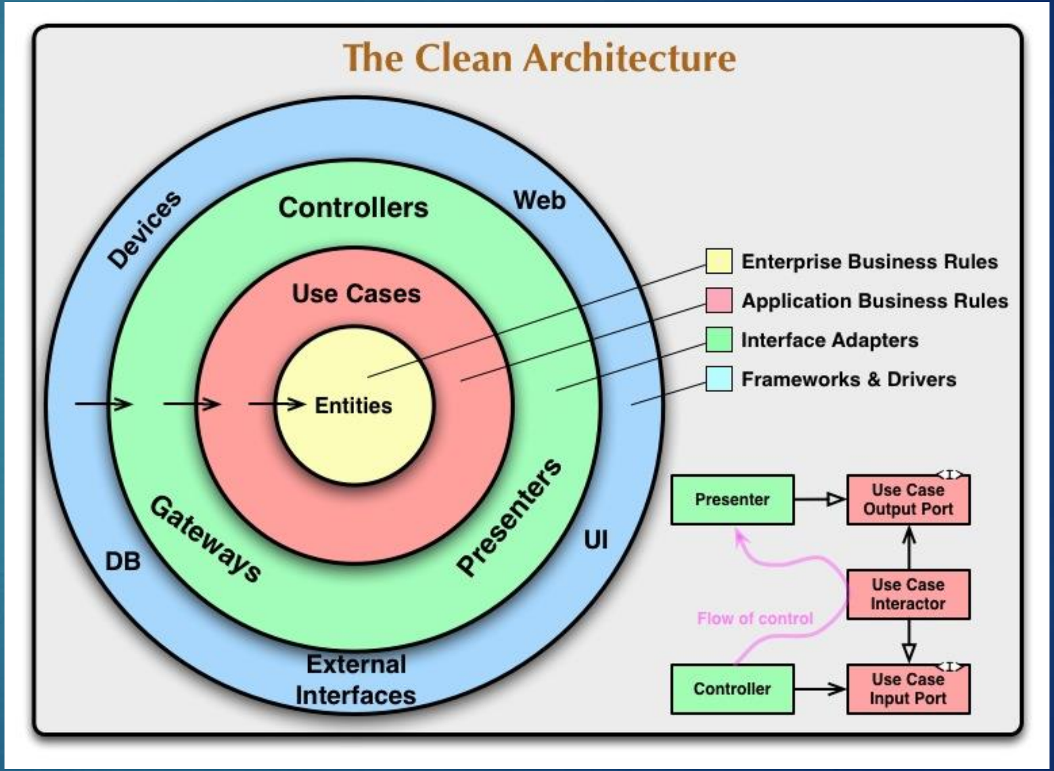
CREATING THE DAL

Web API

- Separates UI from the rest of the application.
- Allows for changes in UI
- Allows for multiple UI's.



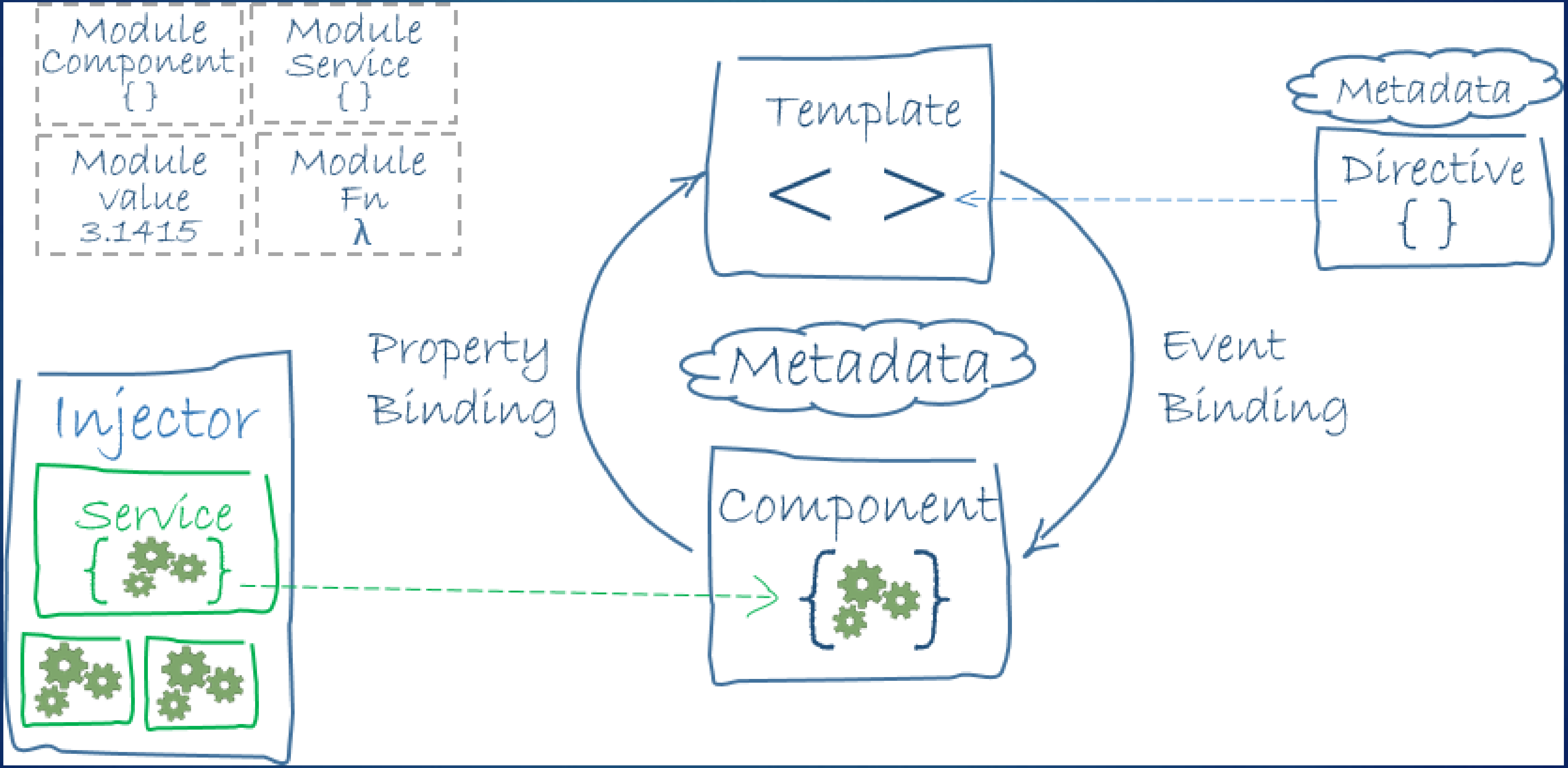
EXAMPLE

CREATING THE WEB API

TEAM PROJECT

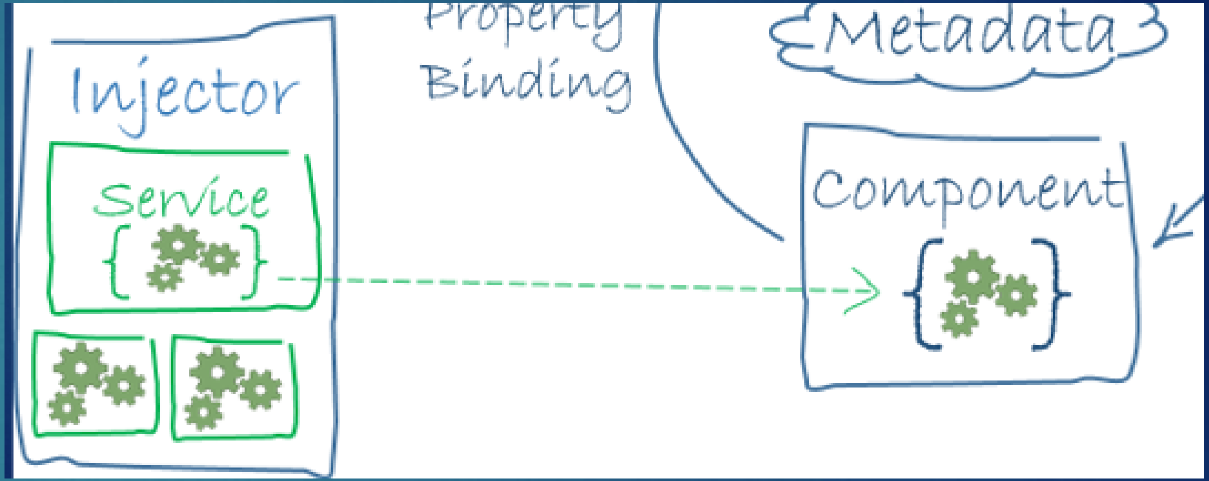
CREATING THE WEB API

Architecture of Angular



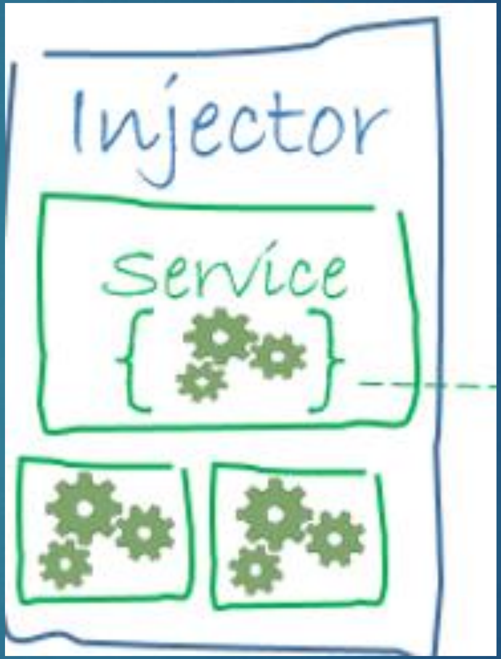
UI Entities

- Similar to Entities in C#
- In memory data
- Passed from Service to Component
- Used in Template



UI Services

- Interacts with Web API
- Retrieves data
- Could perform other logic
- Single Responsibility
- Abstracts data access from Component



EXAMPLE

CREATING THE UI IN ANGULAR

TEAM PROJECT

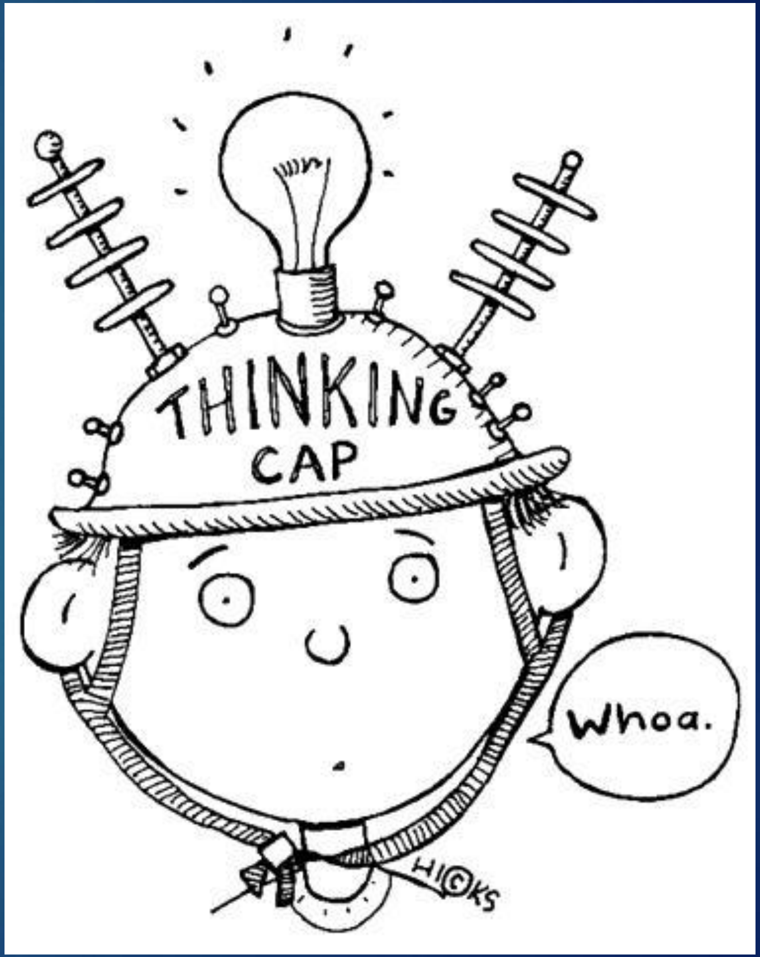
CREATING THE UI IN ANGULAR

What about Security?

- Authentication
- Authorization
- Threats:
  - Sql Injection
  - Cross Site Scripting
  - Cross Site Request Forgery
  - OWASP top 10

ASSESSMENT

ARCHITECTURE



QUICK REVIEW

ARCHITECTURE

Not really a sign you'd want to see whilst driving through an eerily quiet neighbourhood...

Additional Resources

- Clean Architecture
  - https://8thlight.com/blog/uncle-bob/2012/08/13/the-clean-architecture.html
- Scotch.io
  - https://scotch.io/bar-talk/s-o-l-i-d-the-first-five-principles-of-object-oriented-design
- Design Patterns
  - http://www.dofactory.com/net/design-patterns
- Refactoring
  - https://refactoring.guru/