

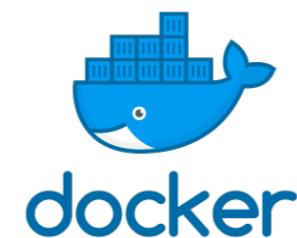
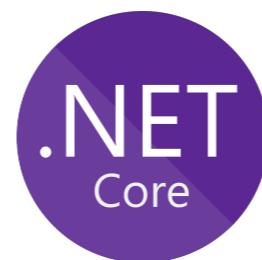
Angular + ASP .NET Core + Docker

Point of Sale workshops

Day1

Install (latest version)

- Node (LTS)
- Angular CLI
- ASP .NET Core
- VSCode
 - C# (Extension)
- Docker
- Postman





Install Extensions VSCode

Angular

- Angular2-switcher
- Angular 8 Snippets typeScript, Html, -
- Angular Snippets (Version 8)
- Angular Language Service.
- Angular Schematics.

Install Extensions VSCode (cont.)

ASP .NET Core

- WilderMinds' ASP.NET Core Snippets
- SQL Server (mssql)
- C# Extensions
- Docker
- Dotnet core commands
- NuGet Package Manager

Install Extensions VSCode (cont.)

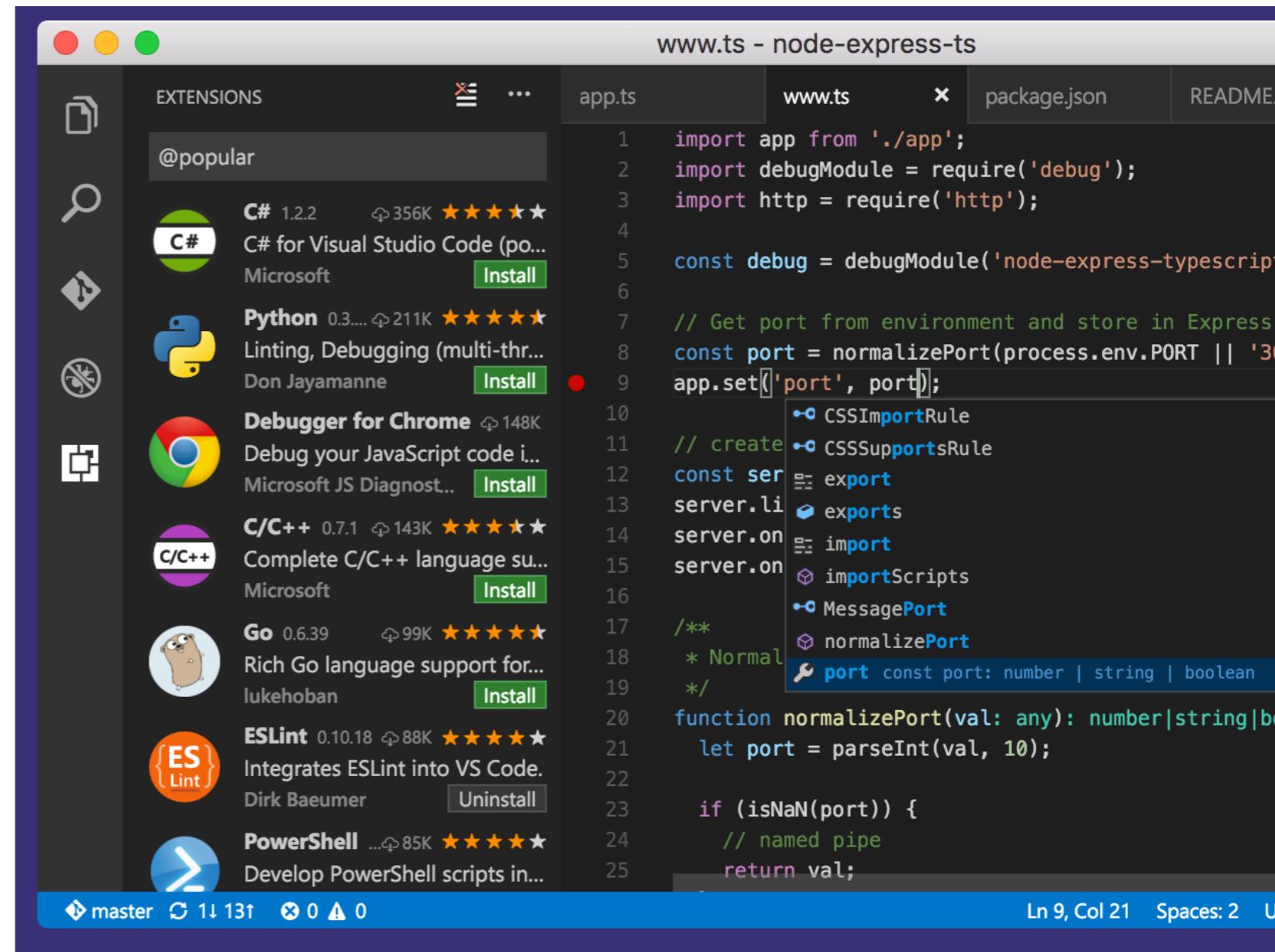
Additional

- Vscode-icon
- Auto rename tag
- vscode-faker
- Guides
- htmltagwrap
- npm Intellisense
- JavaScript (ES6) code snippets
- path-intellisense
- Terminal tabs
- Trailing Spaces
- Bootstrap 4, Font awesome 4,

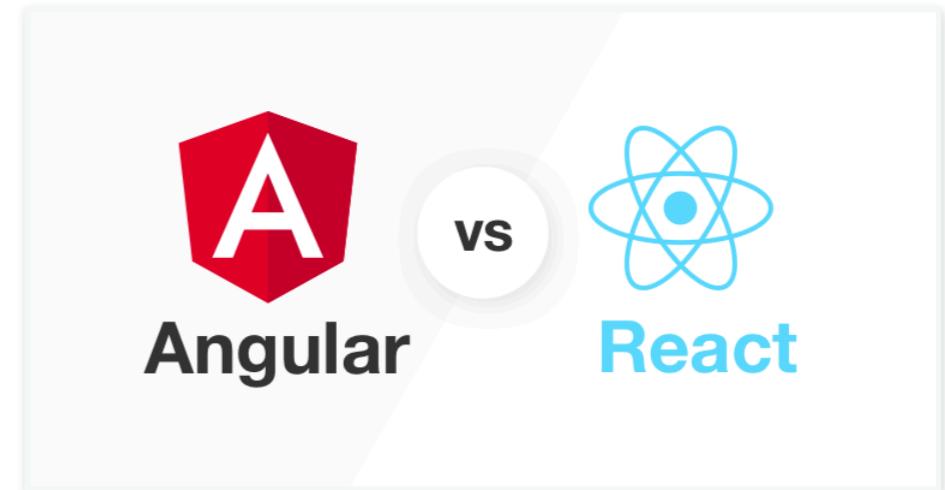
Recommended

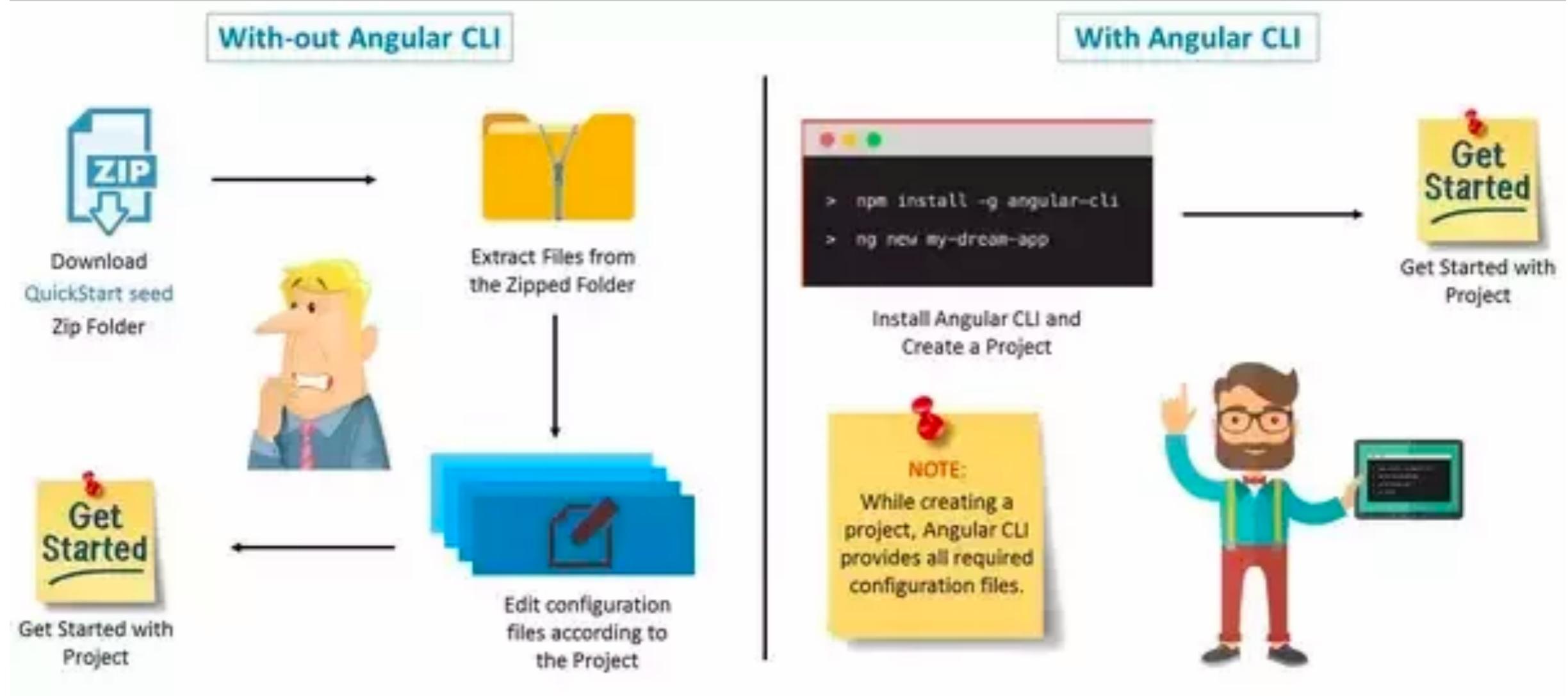
- Bracket-pair-colorizer
- Bookmarks
- Numbered Bookmarks
- Better Comments
- Peacock
- Change-case
- Dracula Official
- Material Theme
- EditorConfig for VS Code
- Indenticator
- Live Share
- Paste JSON as Code
- Code Runner
- Azure Cosmos DB
- Azure Account
- Prettier - Code formatter
- Project Manager
- REST Client
- Live Server
- TODO Highlight
- Quokka.js
- vscode-spotify

- Font size
 - Auto save
 - Icon
 - Theme



- What & Why Angular
- Angular vs React
- Angular CLI
- Create project
 - `ng n {project-name}`
 - `code .` (open project on vscode)
 - `ng s [-o | --port]`, `npm start`
- Project Structure
 - dependencies
 - index.html
 - components
 - app.module.ts





NPM Install Error:Unexpected end of JSON input
while parsing near '...nt-webpack-plugin":"0'

npm cache clean --force

npm install -g @angular/cli@latest

Global package:

```
npm uninstall -g @angular/cli  
npm cache verify  
# if npm version is < 5 then use `npm cache clean`  
npm install -g @angular/cli@latest
```

Upgrade version



Angular CLI Commands

By @yaircarreno with special thanks to @John_Papa and @DeborahKurata.

Generating new projects

Generate a new app in /my-app
`ng new my-app`

Don't write the files, but report them.
`ng new my-app --dry-run`

Style should use SASS
`ng new my-app --style sass`

Generate app with routing class included.
`ng new my-app --ng4 --routing`

Set the default selector prefix(i.e. mp).
`ng new my-app --prefix mp`

Linting

Lint the typescript code.
`ng lint`

Generating components

Generate a new component.
`ng g c my-component`

Generating directives

Generate a new directive.
`ng g d my-directive`
Generate a directive in your own folder.
`ng g d my-directive --flat false`

Generating pipes

Generate a new pipe.
`ng g p my-pipe`

Generating modules

Generate my-module.module.ts.
`ng g module my-module`
Generate my-module.module.ts and my-module-routing.module.ts.
`ng g module my-module --routing`

Generating services

Generate a new service.
`ng g s my-service`
Include the provider service into app.module class.
`ng g s my-service -m app.module`

Generating guards

CanActive guard auth.guard.ts.
`ng g guard auth`

Build commands

Output dev build files.
`ng build`

Output prod build files.
`ng build --prod`

Serving commands

Serve a dev build in memory.
`ng serve`
Serve and lanch the browser.
`ng serve -o`

Generating classes

Generate a new model class.
`ng g cl my-class-model`

Generating interfaces

Generate a new interface.
`ng g i my-interface`

Generating enums

Generate a new enum.
`ng g e my-enum`

Common commands

Don't create a /my-component folder.
`--flat`

Put the template in the .ts file.
`--inline-template`

Put the style in the .ts file.
`--inline-style`

Don't create a spec file.
`--spec false`

src/app/app.component.html

```
<!-- "The sum of 1 + 1 is not 4" -->  
<p>The sum of 1 + 1 is not {{1 + 1 + getVal()}}.</p>
```

src/app/app.component.html

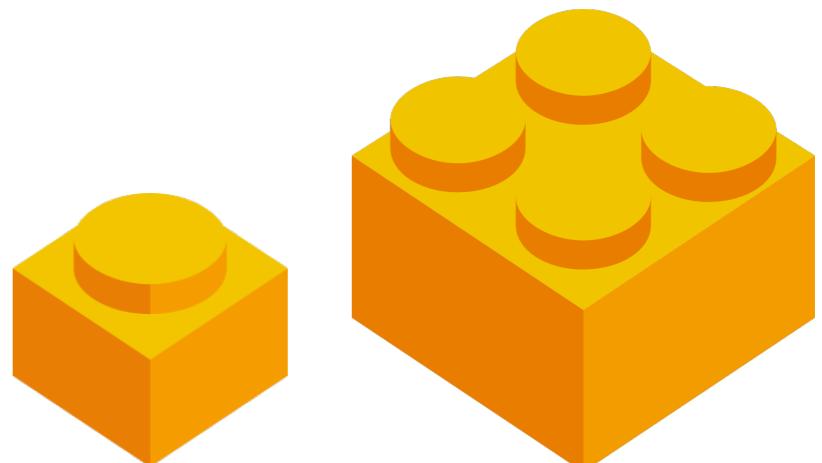
```
<p>{{title}}</p>  
<div>Delete hero</button>
```

src/app/app.component.html

```
<button (click)="onSave($event)">Save</button>
<button *ngFor="let hero of heroes" (click)="deleteHero(hero)">{{hero.name}}</button>
<form #heroForm (ngSubmit)="onSubmit(heroForm)"> ... </form>
```

One-way from view target to data source

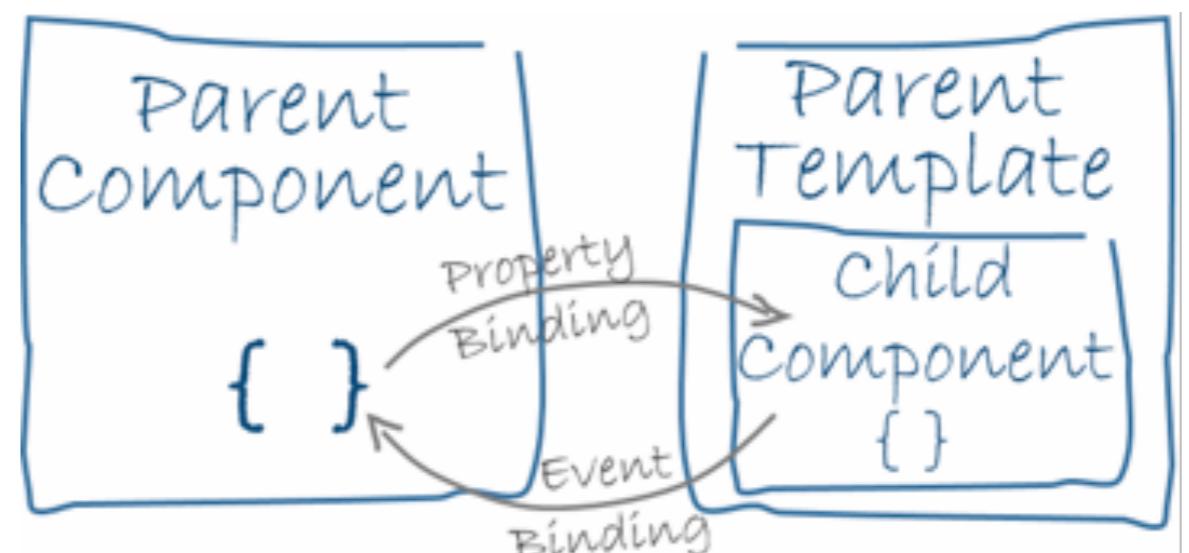
- What is component
- Generate Component
 - `ng g c {folder}/{component-name}`
 - option `--spec=false`
- Meta data
 - Selector (ref. selector in `{component-name}.ts`)
 - `templateUrl`
 - `styleUrls`



- **Go to file**
 - command + p (mac)
 - ctrl + p (windows)
- **Switch between .ts and .html (angular2-switcher extension)**
 - alt + shift + o (mac)
 - alt + o (windows)
- **Go to symbol**
 - command + shift + o (mac)
 - ctrl + shift + o (windows)

● Parent to child

- @Input() or Input('id')
- @ViewChild (#id)
- Html
- Programming

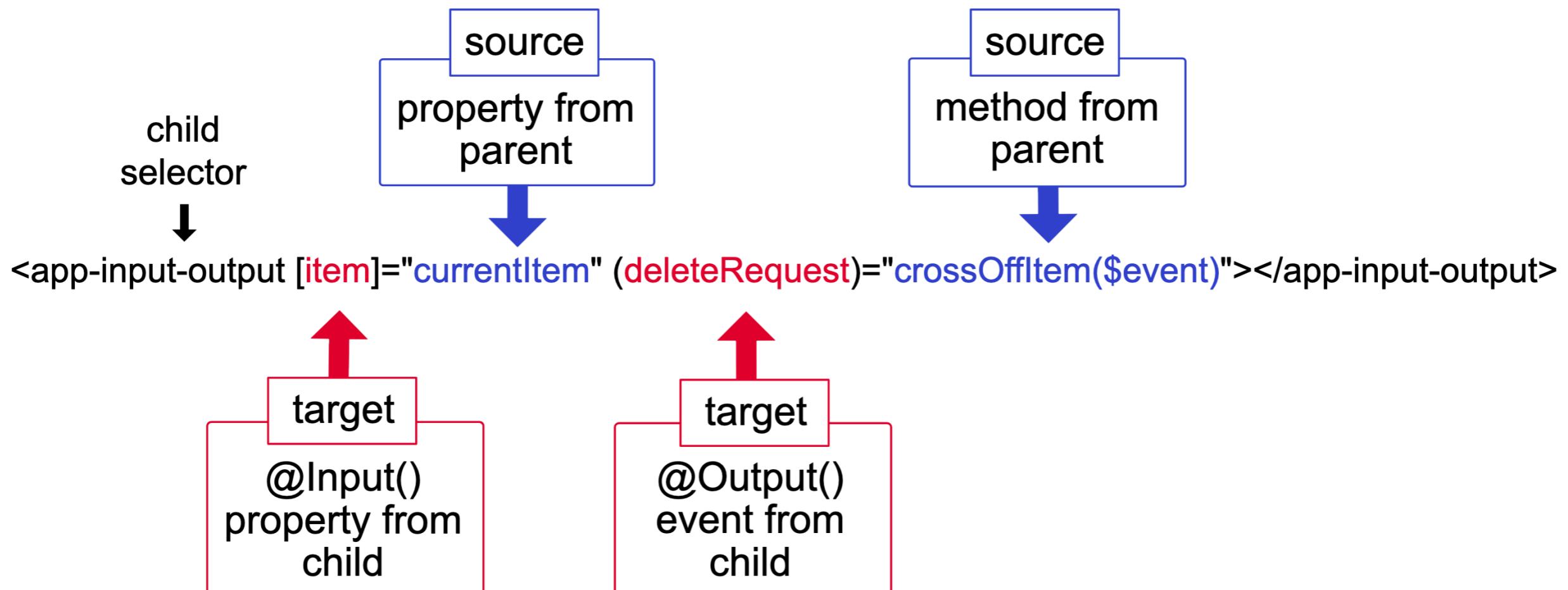


Keyword : Property binding

- **Child to parent**

- @Output() or Output('id') and EventEmitter
 - mark: make sure import
 - mark: beware symbol '\$event' (html)
 - EventEmitter<**datatype**> datatype ref. emit
 - exam: EventEmitter<void>(); xxx.emit()
 - exam: EventEmitter<number>(); xxx.emit(1234)

Keyword : Event binding



Parent and children communicate via a service

component-interaction/src/app/mission.service.ts

```
import { Injectable } from '@angular/core';
import { Subject } from 'rxjs';

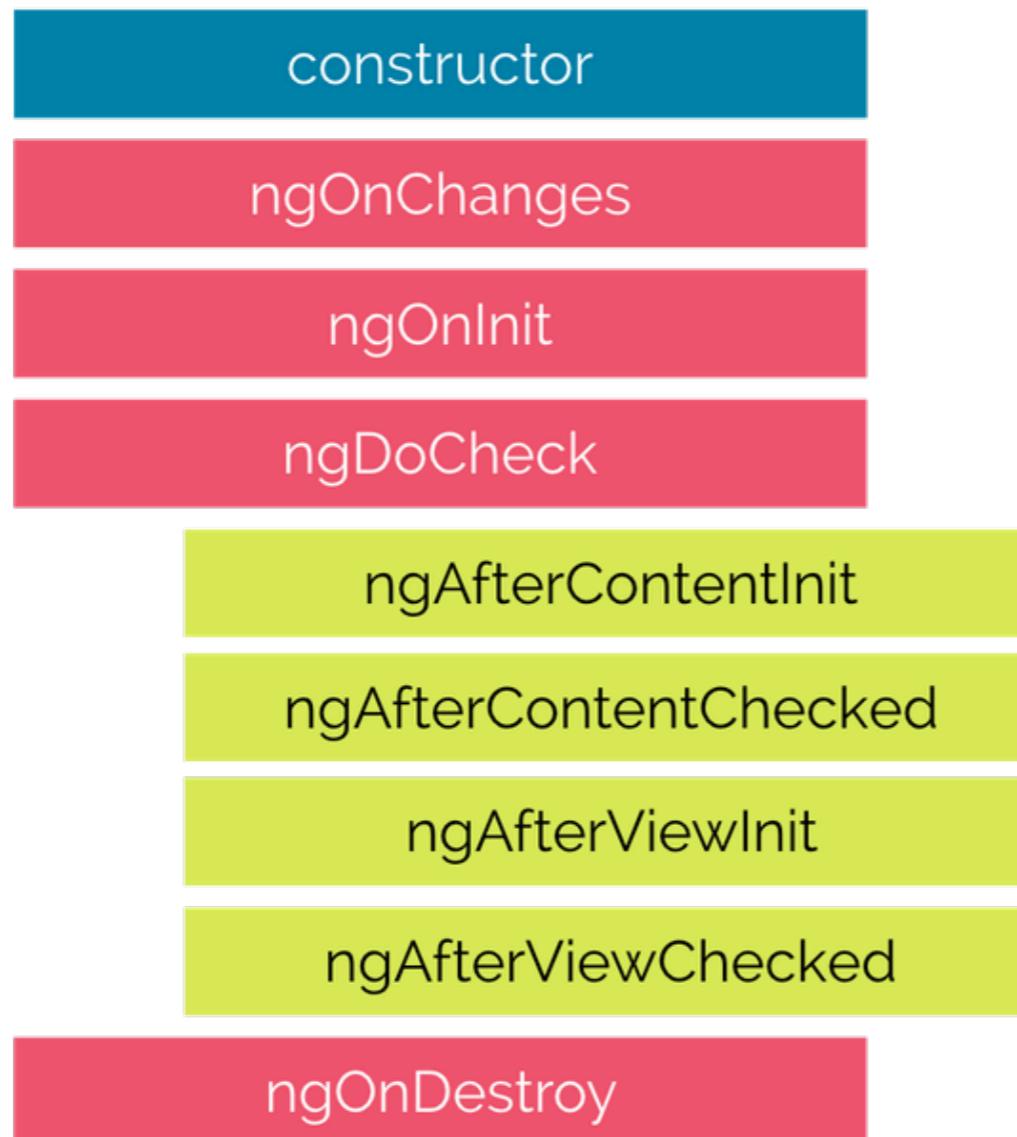
@Injectable()
export class MissionService {
```

Service

```
constructor(private missionService: MissionService) {
  missionService.missionConfirmed$.subscribe(
    astronaut => {
```

Component

Injects the service in its constructor.



Group1

- ngOnChanges
- ngOnInit
- ngDoCheck
- ngOnDestroy

Group2

- ngAfterContentInit
- ngAfterContentChecked
- ngAfterViewInit
- ngAfterViewChecked

Hooks for the component

constructor

This is invoked when Angular creates a component or directive by calling new on the class.

ngOnChanges

Invoked every time there is a change in one of the input properties of the component.

ngOnInit

Invoked when given component has been initialized. This hook is only called once after the first ngOnChanges

ngDoCheck

Invoked when the change detector of the given component is invoked. It allows us to implement our own change detection algorithm for the given component.

ngOnDestroy

This method will be invoked just before Angular destroys the component. Use this hook to unsubscribe observables and detach event handlers to avoid memory leaks.

Hooks for the components children

ngAfterContentInit

Invoked after Angular performs any content projection into the components view

ngAfterContentChecked

Invoked each time the content of the given component has been checked by the change detection mechanism of Angular.

ngAfterViewInit

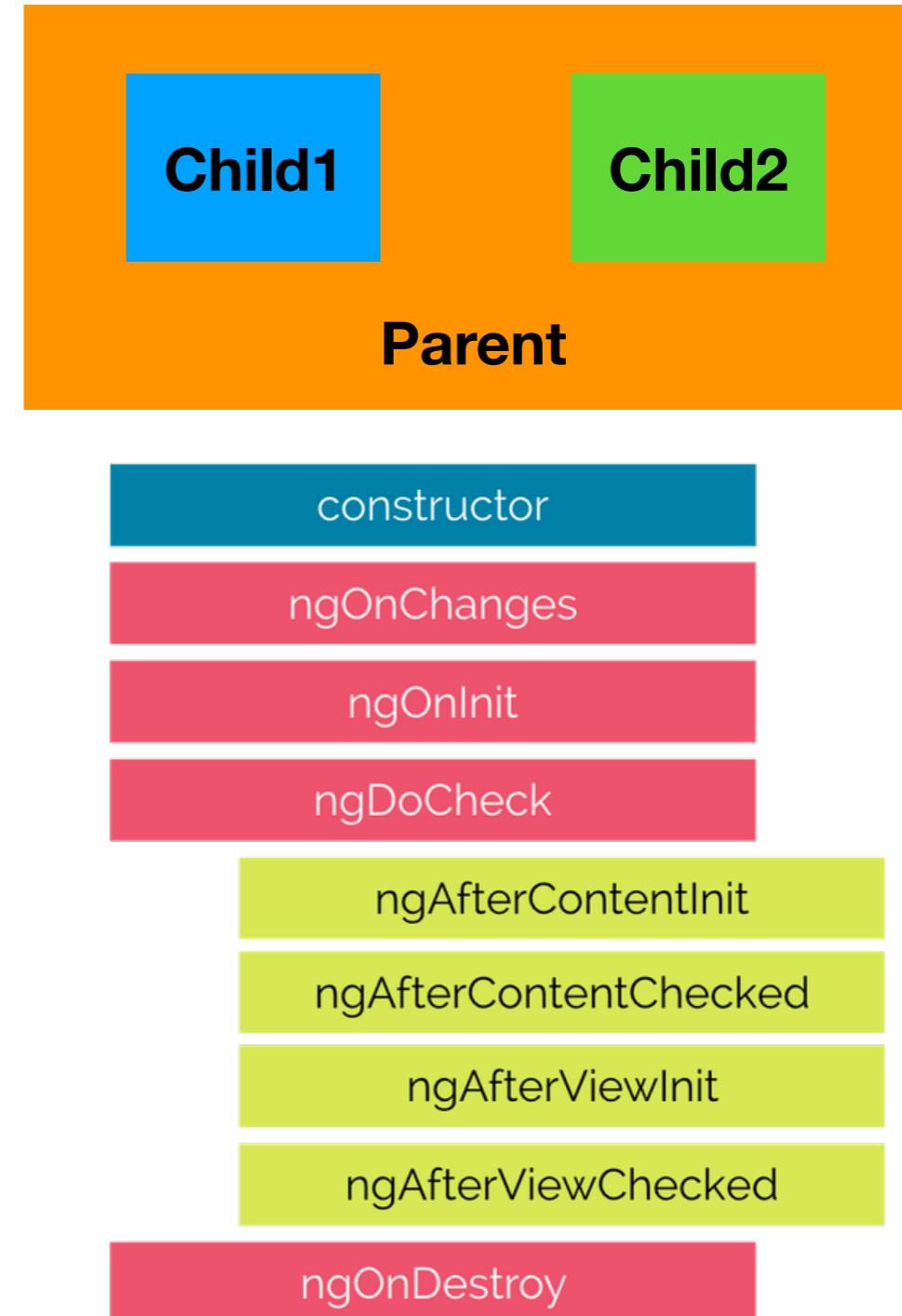
Invoked when the component's view has been fully initialized.

ngAfterViewChecked

Invoked each time the view of the given component has been checked by the change detection mechanism of Angular.

Life cycle hooks

(Parent) constructor
(Child1) constructor
(Child2) constructor
(Parent) ngOnInit
(Parent) ngDoCheck
(Parent) ngAfterContentInit
(Parent) ngAfterContentChecked
(Child1) ngOnChanges
(Child1) ngOnInit
(Child2) ngOnChanges
(Child2) ngOnInit
(Child1) ngAfterContentInit
(Child1) ngAfterContentChecked
(Child2) ngAfterContentInit
(Child2) ngAfterContentChecked
(Child1) ngAfterViewInit
(Child1) ngAfterViewChecked
(Child2) ngAfterViewInit
(Child2) ngAfterViewChecked
(Parent) ngAfterViewInit
(Parent) ngAfterViewChecked
(Parent) ngDoCheck
(Parent) ngAfterContentChecked
(Child1) ngAfterContentChecked
Child2) ngAfterContentChecked
(Child1) ngAfterViewChecked
(Child2) ngAfterViewChecked
(Parent) ngAfterViewChecked



POS workshop

- New project
- Integrate Admin LTE
 - Copy bower_components, dist to assets folder
 - Copy code of index.html
- Copy images and js to assets folder
- Create Components
 - `ng g c {folder}/{component-name}`
 - option `--spec=false`
- Copy and paste html files (header, footer, menu)
- Edit app.component.html

Day2

- Edit routes (app-routing.module.ts)
- ng-template (app.component.html)
- Login component
 - Import FormsModule (app.module.ts)
 - Design html (Template-driven forms)

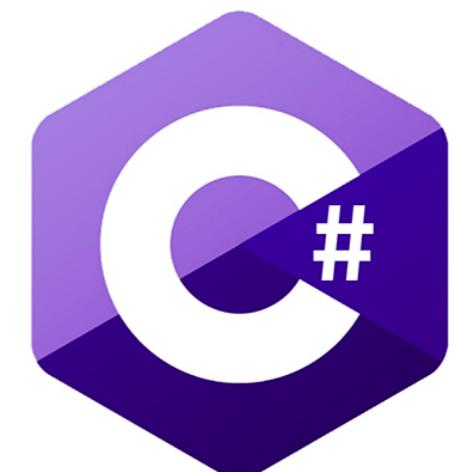
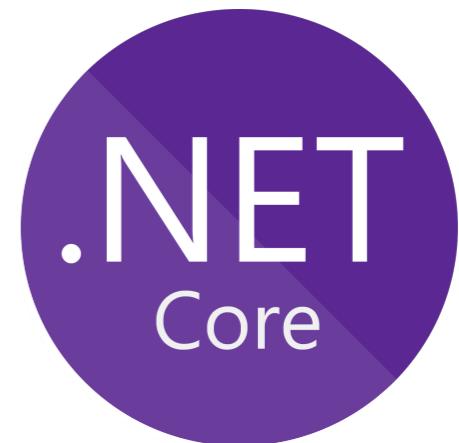
- Create services
 - `ng g s {folder}/{service-name}`
 - option `--spec=false`
 - Import `HttpClientModule` (`app.module.ts`)
 - Copy `environment.ts`, `environment.prod.ts`
 - Create models
 - `ng g class {folder}/{class-name}`
 - option `--spec=false`
 - <http://json2ts.com/> or <https://quicktype.io/>

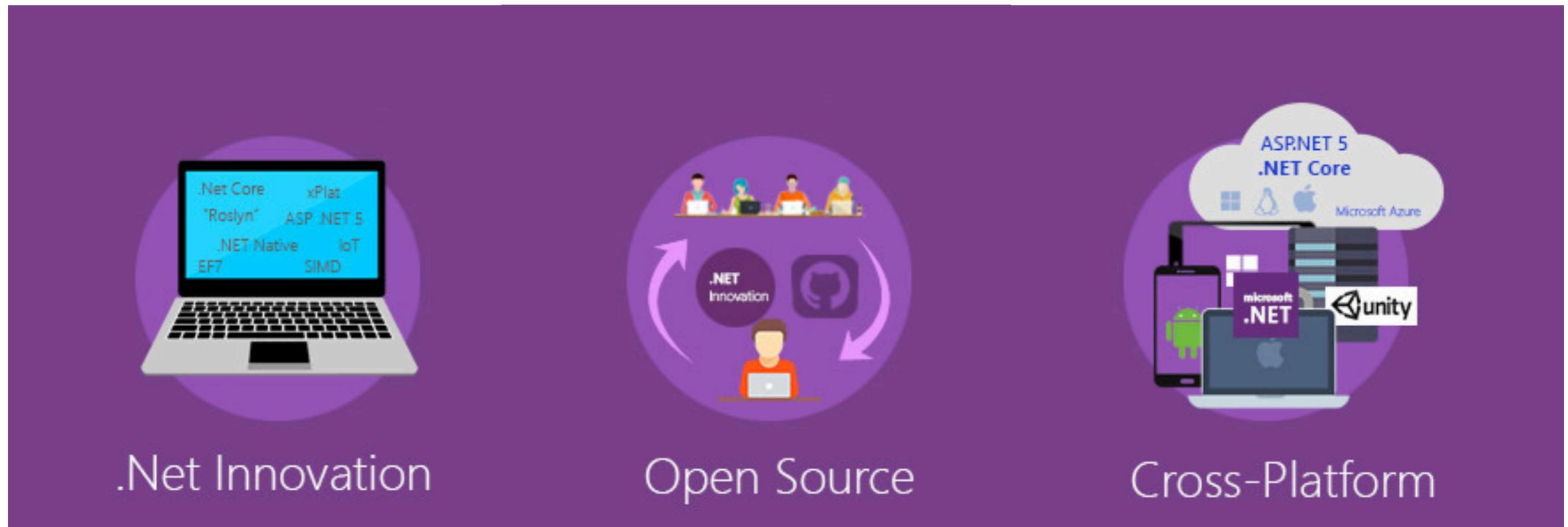
- Create services (cont.)
 - Implement rest.service
 - Beware import name
 - DI HttpClient to constructor
 - Implement login service
 - Implement login.component
 - Make sure attribute name of input tag (.html)
- Register component
 - Make sure attribute name of input tag (.html)

Day3

Introduction ASP .NET Core

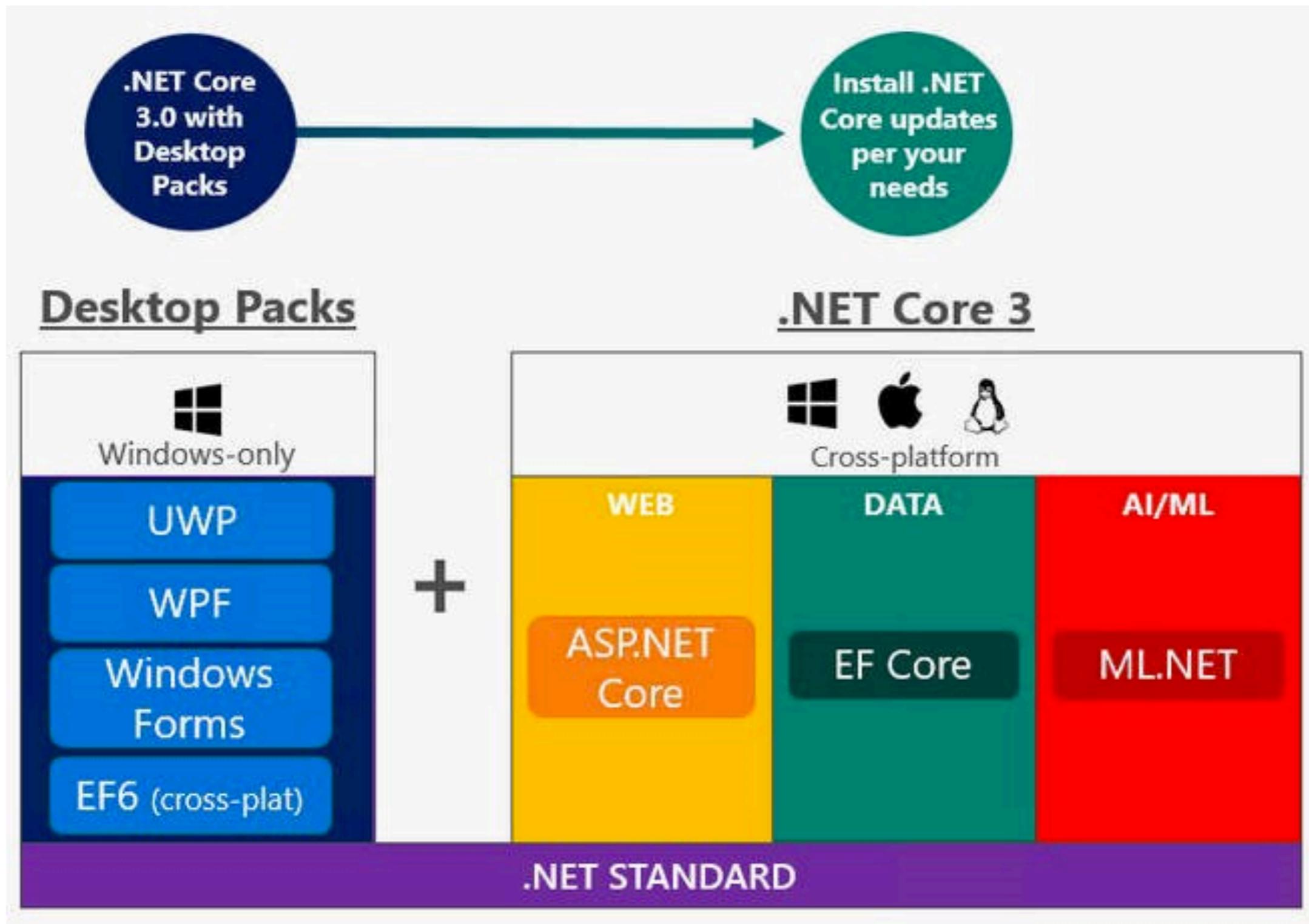
- What & Why ASP .NET Core
- Create project
 - Create folder and cd to folder
 - dotnet new webapi
 - code . (open project on vscode)





ASP.NET Core is a cross-platform, high-performance, open-source framework for building modern, cloud-based, Internet-connected applications.

ASP.NET Core was released in 2016.



- Project Structure
 - Controllers
 - launchSettings.json
 - *.csproj
 - Program.cs
 - Startup.cs
- Generate self cert
 - dotnet dev-certs https --trust
 - Close and open browser



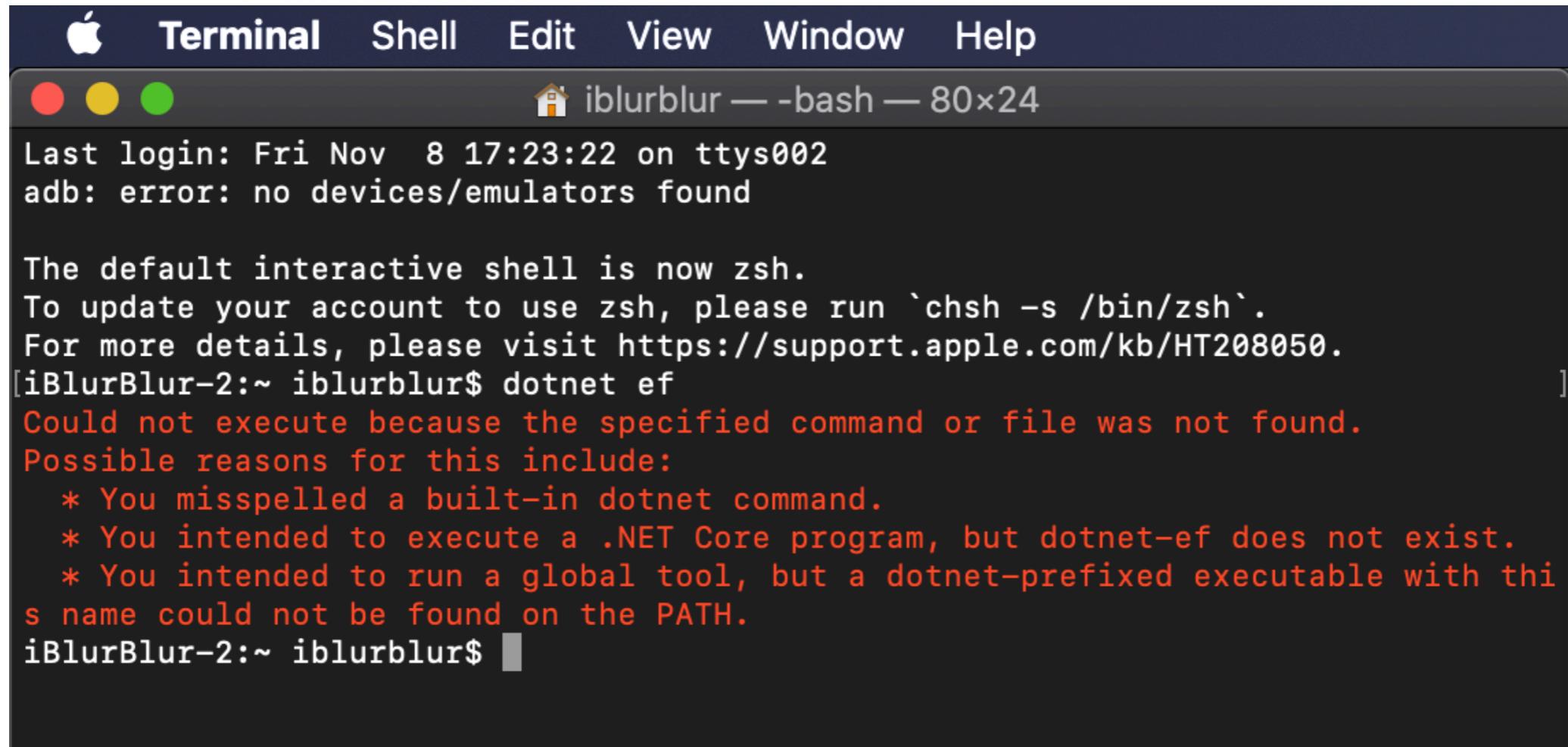
API Workshop

- Implement sql server service (database-first concept)
 - Models (Generate from ef-core command) // step 1
 - DatabaseContext (Generate from ef-core command) // step 2
 - Appsettings.json (ConnectionStrings) // step 3
 - Declare sql server service on ConfigureServices method (Startup.cs) // step 4
- Convert json key-name to snake case (optional)
 - Declare code on ConfigureServices method (Startup.cs)

Entity Framework Core tools .NET CLI

```
dotnet tool install --global dotnet-ef --version 3.0.0
```





The screenshot shows a macOS Terminal window with the following content:

```
Terminal Shell Edit View Window Help
iblurblur — -bash — 80x24
Last login: Fri Nov  8 17:23:22 on ttys002
adb: error: no devices/emulators found

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
[iBlurBlur-2:~ iblurblur$ dotnet ef
Could not execute because the specified command or file was not found.
Possible reasons for this include:
  * You misspelled a built-in dotnet command.
  * You intended to execute a .NET Core program, but dotnet-ef does not exist.
  * You intended to run a global tool, but a dotnet-prefixed executable with thi
s name could not be found on the PATH.
iBlurBlur-2:~ iblurblur$ ]
```

bash/zsh: export PATH="\$PATH:\$HOME/.dotnet/tools/"

csh/tcsh: set path = (\$path \$HOME/.dotnet/tools/)

```
dotnet ef dbcontext scaffold "Server=DESKTOPDUD9DE\SQLEXPRESS;  
Database=CMPOS; Trusted_Connection=True;"  
Microsoft.EntityFrameworkCore.SqlServer -o Models -t products -t users  
-c DatabaseContext --context-dir Database
```

```
dotnet ef dbcontext scaffold "Server=localhost,1150;user id=sa;  
password=Tel1234!; Database=CMPOS;"  
Microsoft.EntityFrameworkCore.SqlServer -o Models -t products -t users  
-c DatabaseContext --context-dir Database
```

mark: macOs use ' (single quote)
mark: beware double backslash (used single backslash)
mark: ef-core command single line
mark: fix code error (use cli "dotnet build")
mark: stop run project

Implement authen with JWT (JSON Web Tokens)

- Appsettings.json (jwt) // step 1
- Declare authen jwt service on ConfigureServices method (Startup.cs) // step 2
- Declare app.UseAuthentication(); on Configure method (Startup.cs) // step 3
 - Declare before app.UseEndpoints();
- [Authorize], [AllowAnonymous] on Controllers or Actions

mark: payload key is case-sensitive

Using Postman <https://www.youtube.com/watch?v=wzNigwFmpdQ>

- authorizataion tab > type (Bearer Token) > input jwt token

CORS (Cross-Origin Resource Sharing)

- Declare cors service on ConfigureServices method (Startup.cs)
- [EnableCors("...")] on Controllers or Actions or Middleware

Day4

- Implement isLogin service
 - Login component
 - App component
- Stock component
 - Create model
 - Feed Data
 - Design html
 - Search
 - Delete product
 - npm i sweetalert2

- Stock component (cont.)
 - Edit product
 - ActivatedRoute
 - Don't forget import { Location }
 - Create product
 - Don't forget import { Location }
- Http interceptor with JWT
 - ng g class {folder}/{class-name}
 - option --spec=false
 - jwt.interceptor (Easy to understand file names)

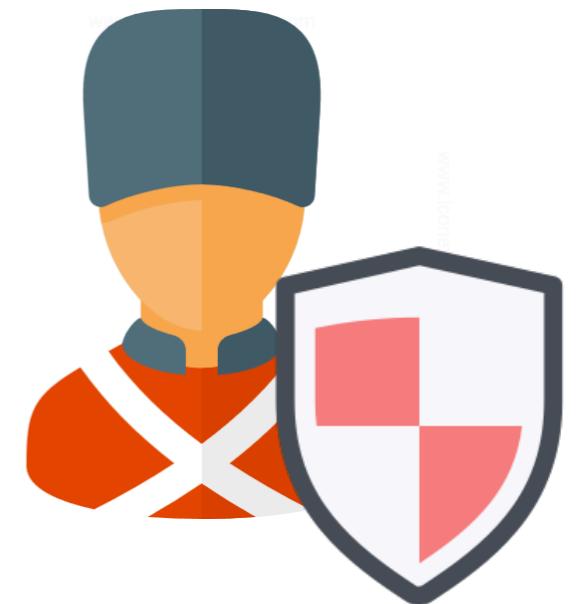


- Http interceptor with JWT (cont.)
 - Copy and paste code
 - Add `@Injectable()` above class name (`jwt.interceptor.ts`)
 - `npm i rxjs-compat`
 - `import 'rxjs/add/operator/do';`
 - Declare providers (`app.module.ts`)
 - Add http interceptor before http service
 - Try comment `makeJWTManual()` of `rest.service.ts`

Day5

Guard

- `ng g g {folder}/{guard-name}`
 - option `--implements=CanActivate`
 - option `--spec=false`
- `CanActivate`
- `CanDeactivate`
- Declare guard (`app-routing.module.ts`)



- Shop component
 - Implement order and product item
 - Payment component
 - `ng g p {folder}/{pipe-name}`
 - option `--spec=false`
 - Component Communication
 - `@Input()` // Parent to Child
 - `@Output()` // Child to parent
 - Declare payment-component.html in shop-component.html

- Transaction component
 - Home
 - Detail
 - ActivatedRoute
 - Don't forget import { Location }
- Report component (optional)
 - npm i chart.js (<https://www.chartjs.org/>)



Deploy Angular to IIS Server

- Install the URL Rewrite Module
 - If you are only interested in deploying your application to the web root, you can skip this step. (no sub-folder in wwwroot)
 - <https://www.iis.net/downloads/microsoft/url-rewrite>
- Create `web.config` in angular project (`{project-name}/src`)
 - Add path `web.config` in `angular.json`
 - build assets and test assets (`src/web.config`)



```
<?xml version="1.0" encoding="utf-8"?>
<configuration>

<system.webServer>
    <rewrite>
        <rules>
            <rule name="Redirect404" stopProcessing="true">
                <match url=".*" />
                <conditions>
                    <add input="{REQUEST_FILENAME}" matchType="IsFile" negate="true" />
                    <add input="{REQUEST_FILENAME}" matchType="IsDirectory" negate="true" />
                </conditions>
                <action type="Redirect" url="/index.html" />
            </rule>
        </rules>
    </rewrite>
</system.webServer>

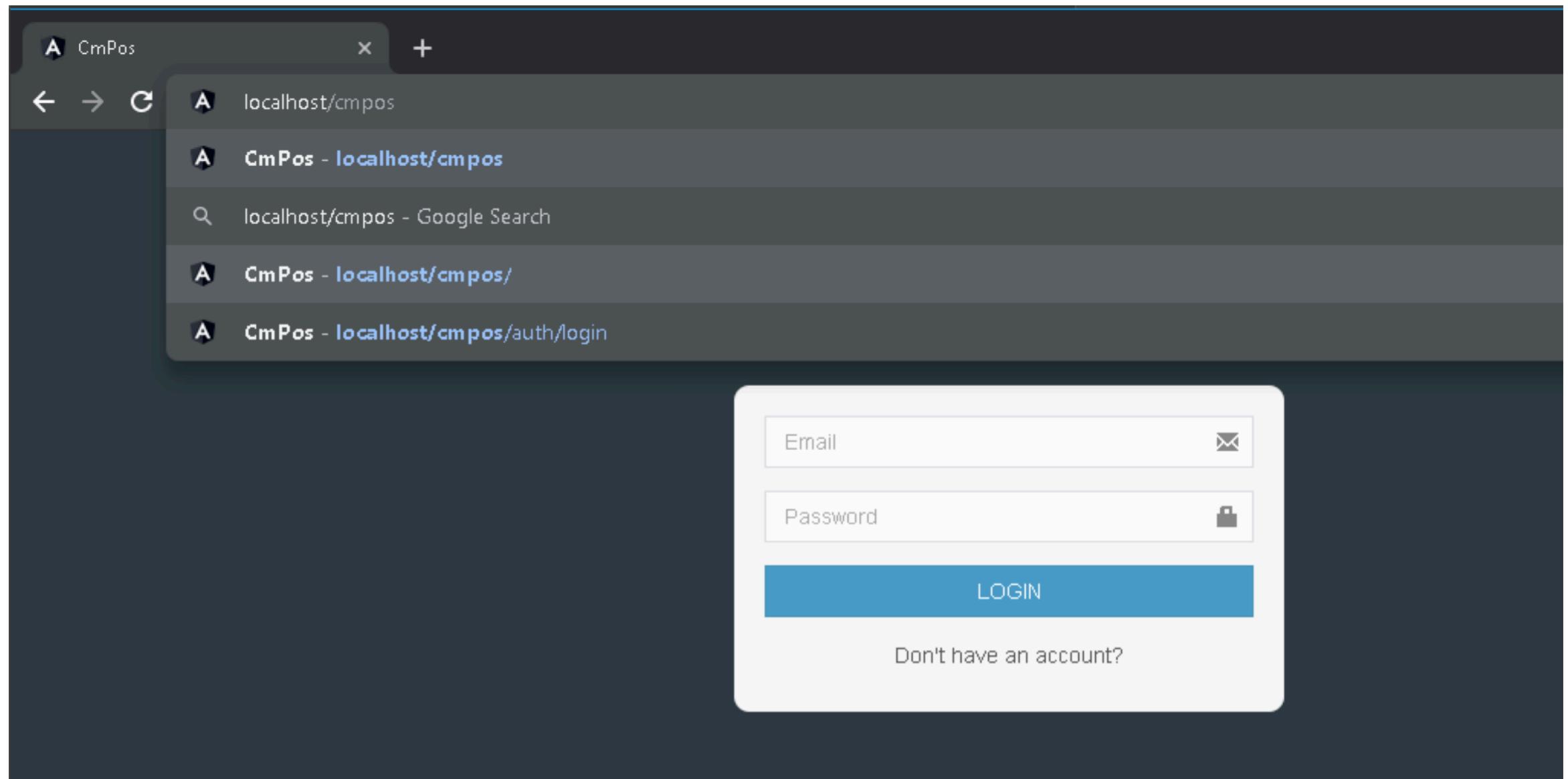
</configuration>
```

web.config

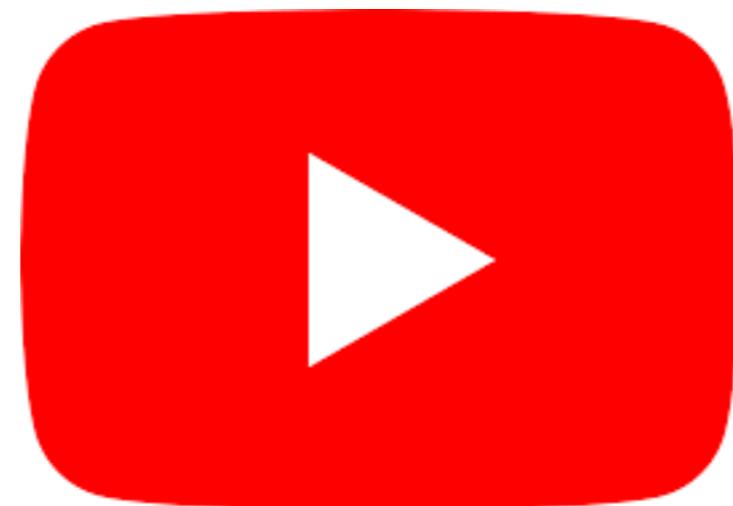
mark: url="/index.html" (root)
mark: url=".index.html" (sub folder)

Deploy Angular to IIS Server (cont.)

- `ng build --base-href "/{folder-name-in-wwwroot}/" --prod`
 - e.g. `wwwroot/cmpos` on the iis server.
`ng build --base-href "/cmpos/" --prod`
- Copy the contents of dist to our iis server (wwwroot)



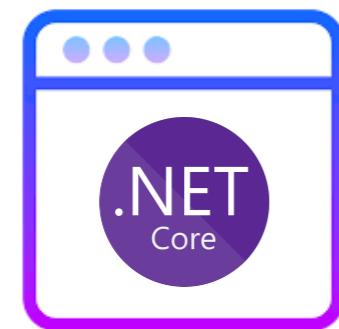
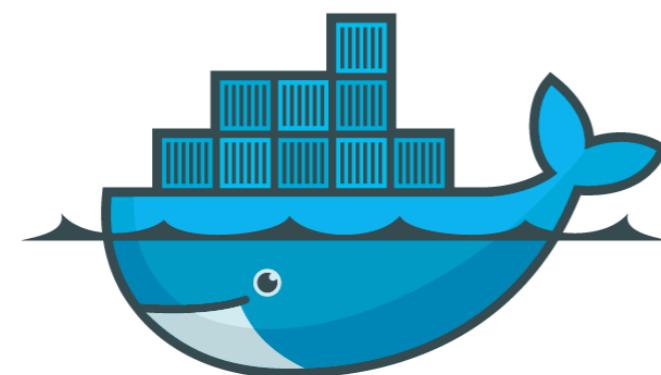
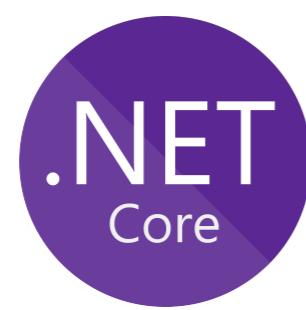
Deploy



Deploy Angular + ASP .NET Core IIS Server

https://www.youtube.com/watch?v=xF05L_oACyM

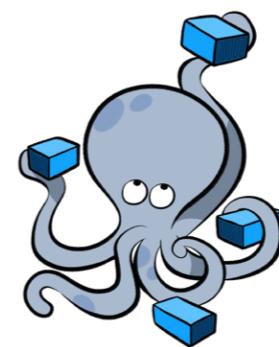
<https://www.youtube.com/watch?v=Y9nxGybbh0>



Web API



Docker file



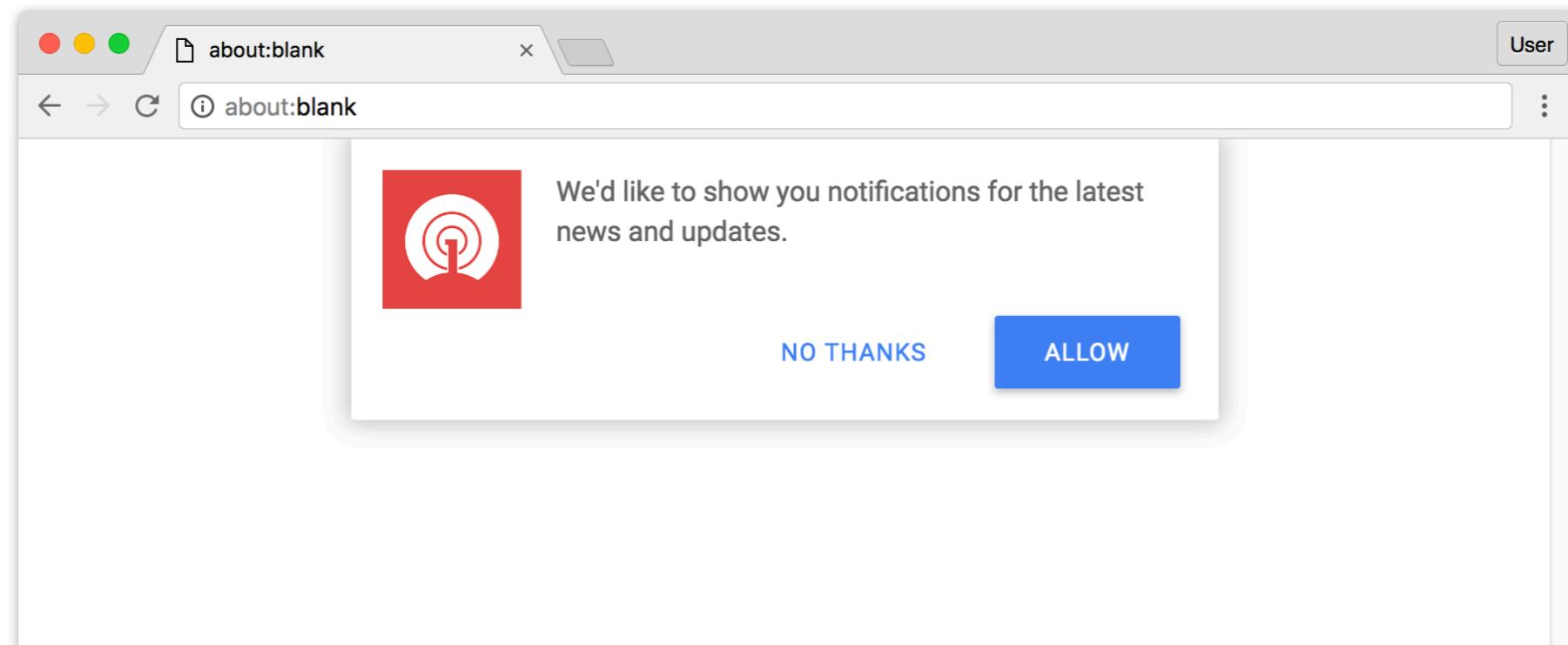
Docker compose

Loading spinner

- ngx-spinner (<https://github.com/Napster2210/ngx-spinner>)

Push notifications

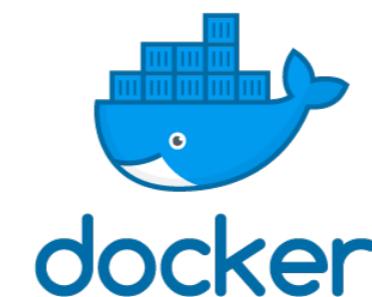
- One signal (<https://onesignal.com>)



Introduction Docker

- Docker Desktop
- Docker Toolbox (vm ware)
- Enable VT-Technology in BIOS
- Windows 10 open hyper-v





SQL server linux on docker. Load > run image-name

- https://hub.docker.com/_/microsoft-mssql-server
- docker run -e 'ACCEPT_EULA=Y' -e
'SA_PASSWORD=yourStrong(!)Password' -p 1433:1433 -d
mcr.microsoft.com/mssql/server:2017-CU14-ubuntu
 - yourStrong(!)Password // exam: Tel123456789!
 - Beware -e (environment). do not type wrong

mark: windows uses double quotation "..."

mark: mac uses single quotation '...'

Backup Database macOS

```
docker exec -it d41392ad4b83 /opt/mssql-tools/bin/sqlcmd -S localhost -U SA -P  
'Tel1234!' -Q 'BACKUP DATABASE cmpos TO DISK = "/var/opt/mssql/  
cmpos.bak" WITH FORMAT, INIT, COMPRESSION, STATS = 10'
```

```
docker cp d41392ad4b83:/var/opt/mssql/cmpos.bak cmpos.bak
```

Backup Database Windows

```
docker exec -it d41392ad4b83 /opt/mssql-tools/bin/sqlcmd -S localhost -U SA -P  
"Tel1234!" -Q "BACKUP DATABASE cmpos TO DISK = '/var/opt/mssql/  
cmpos.bak' WITH FORMAT, INIT, COMPRESSION, STATS = 10"
```

```
docker cp d41392ad4b83:/var/opt/mssql/cmpos.bak cmpos.bak
```

Restore Database macOS

```
docker cp cmpos.bak d41392ad4b83:/var/opt/mssql/
```

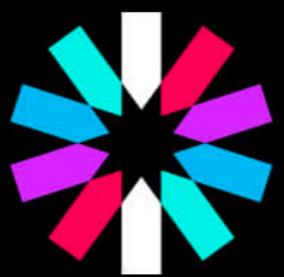
```
docker exec -it 4ffba /opt/mssql-tools/bin/sqlcmd -S localhost -U SA -P  
'Tel1234!' -Q 'RESTORE DATABASE cmpos FROM DISK = "/var/opt/mssql/  
cmpos.bak"'
```

Restore Database Windows

```
docker cp cmpos.bak d41392ad4b83:/var/opt/mssql/
```

```
docker exec -it d41392ad4b83 /opt/mssql-tools/bin/sqlcmd -S localhost -U SA -P  
"Tel1234!" -Q "RESTORE DATABASE cmpos FROM DISK = '/var/opt/mssql/  
cmpos.bak'"
```

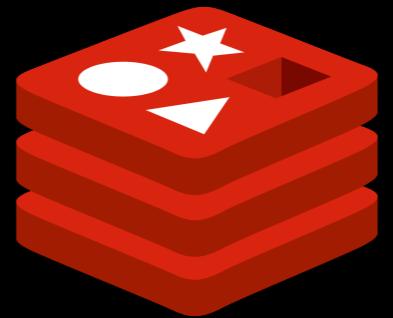
Revoking Tokens



JWT



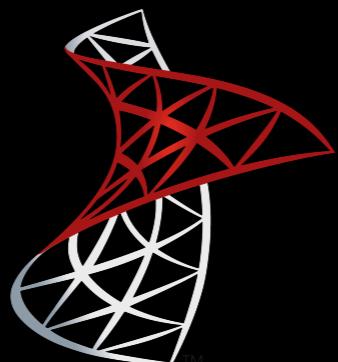
eyJhbGciO



redis

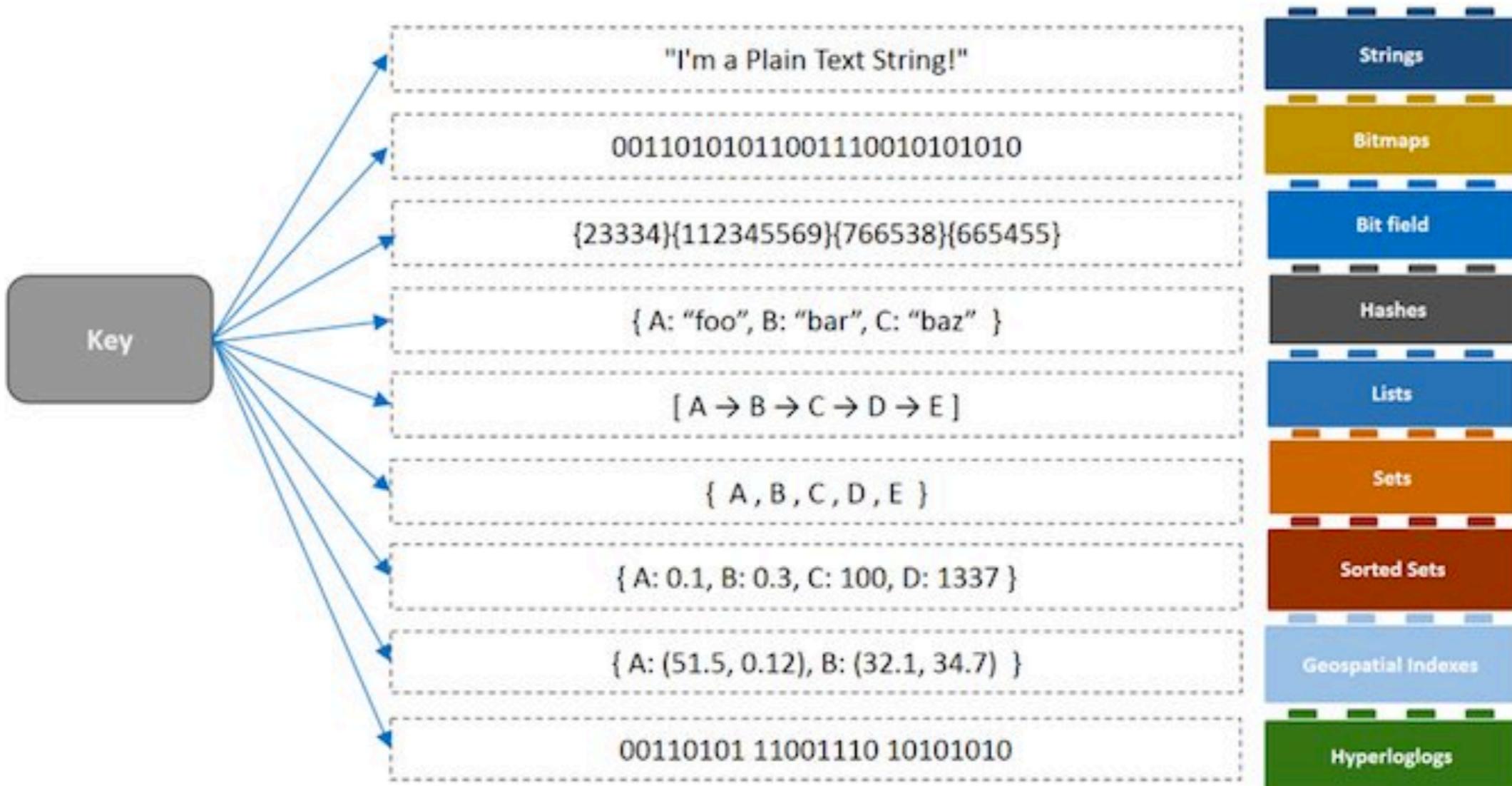


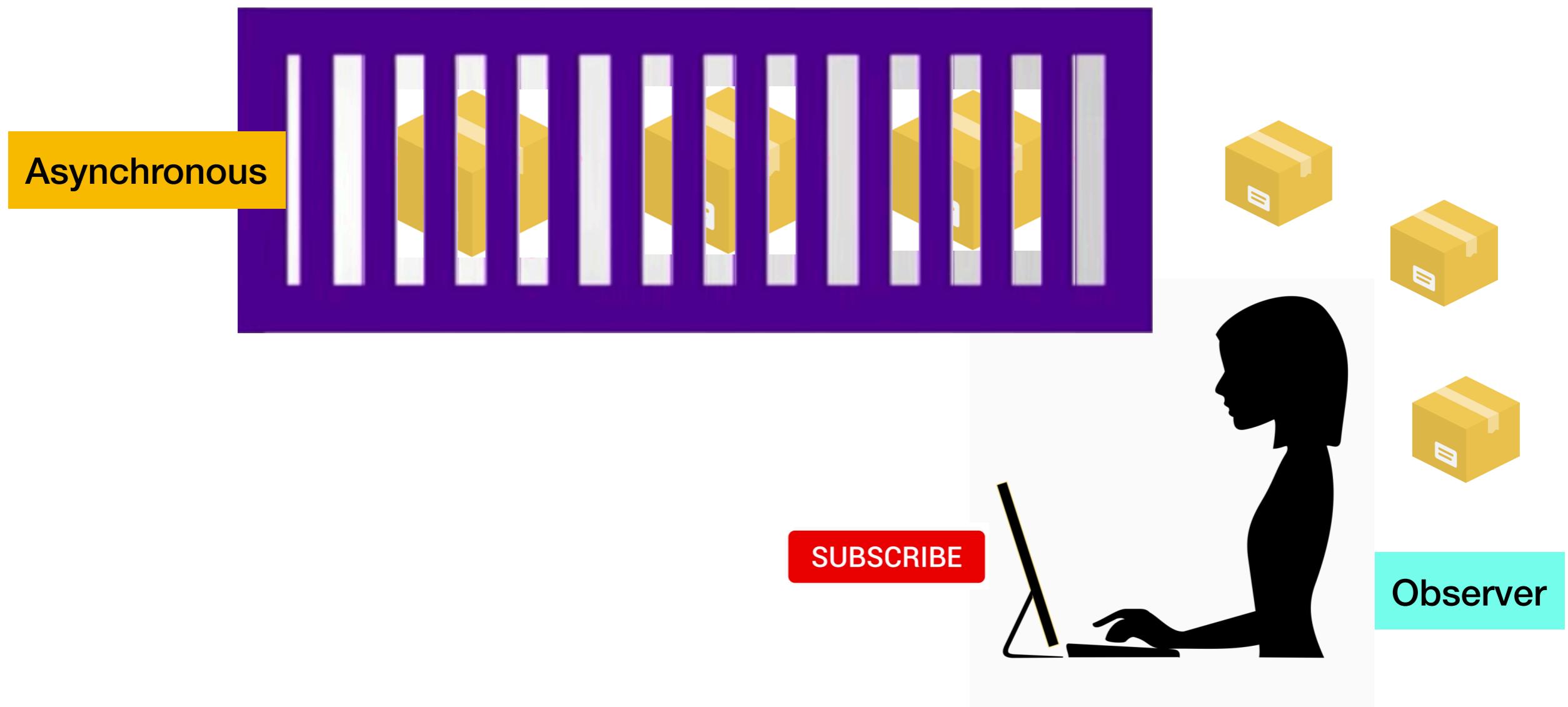
eyJhbGciOiJIUzI1NilsIn...

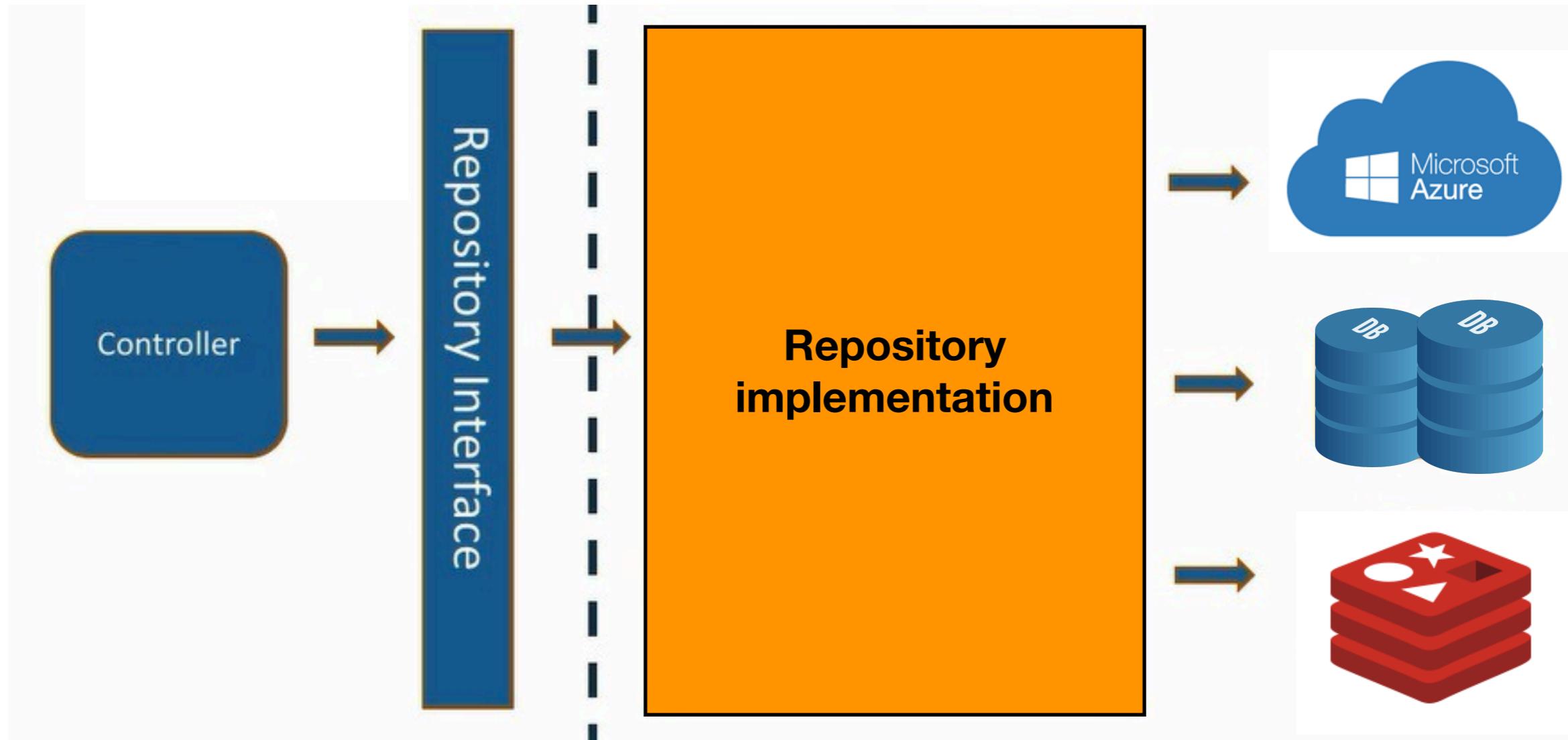


SQL Server

Redis data structures







- Unit tests
- Reduce duplicate code
- Flexible architecture
- Separate presentation from business logic