

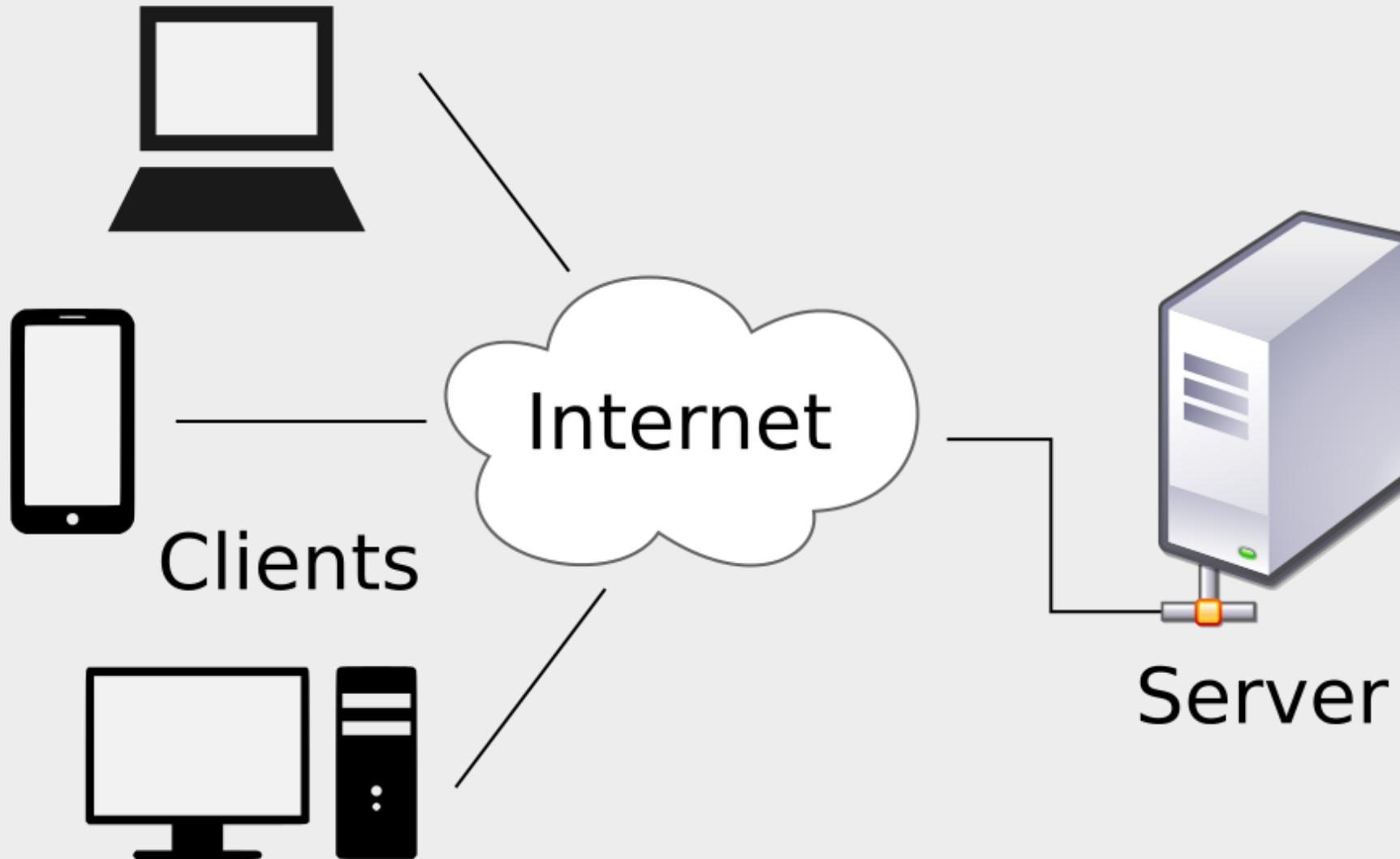
# A Best Way to Learn

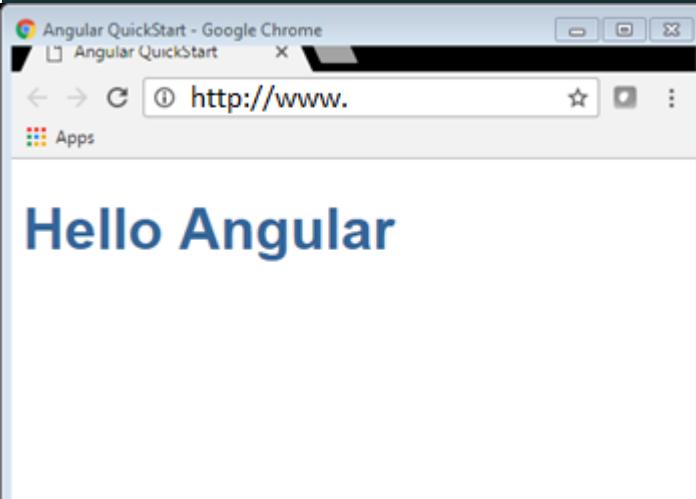


PRAVIN SAWANT

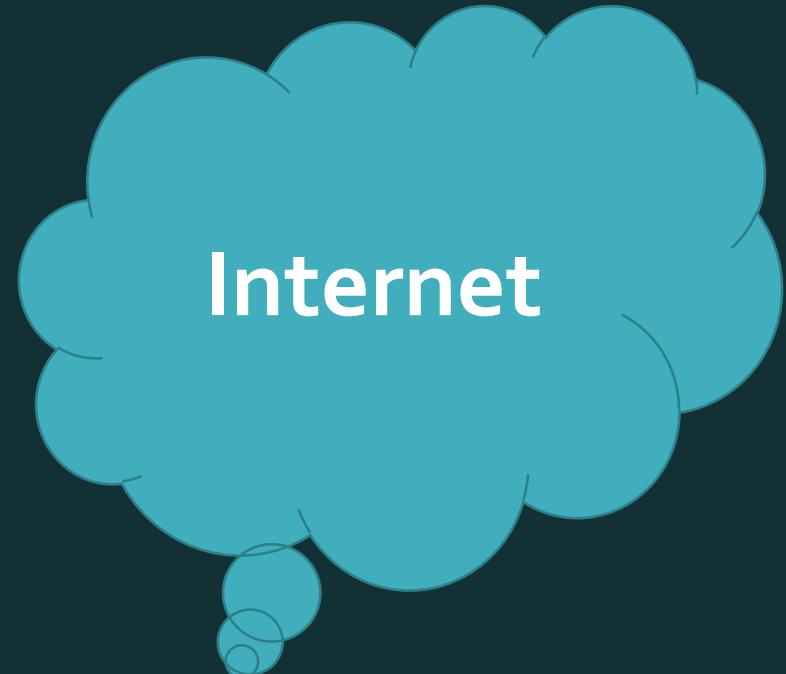
If any content of the training material used knowingly or unknowingly & which is copyright/objectional/proprietary then I really apologize & let know me so it can be removed or added as courtesy.







Request



Response





Web-API



**Import – Modules**

**Declare – Components**

**Provider - Services**

**IM-DC-PS**



Foundation  
Start here, build everywhere.



Skeleton

P | Pure.CSS  
CSS

Angular Material  
Material Design components for Angular

# CSS Frameworks

Pravin Sawant

# SUMMARY



## Browser Supports

HTML

JAVASCRIPT

CSS



# JavaScript Library vs. Framework



# JavaScript Framework

Pravin Sawant



# JavaScript Framework

Pravin Sawant



# JavaScript Library

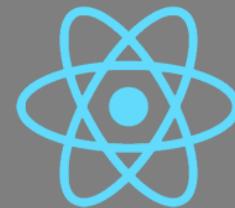
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# Library vs. Framework



Ext JS

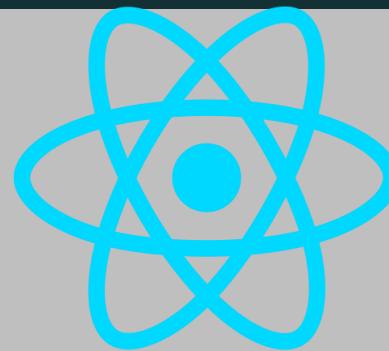


React



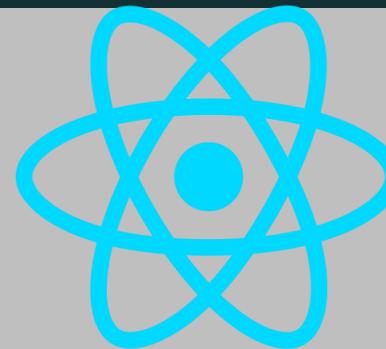
# JavaScript Frameworks & Libraries



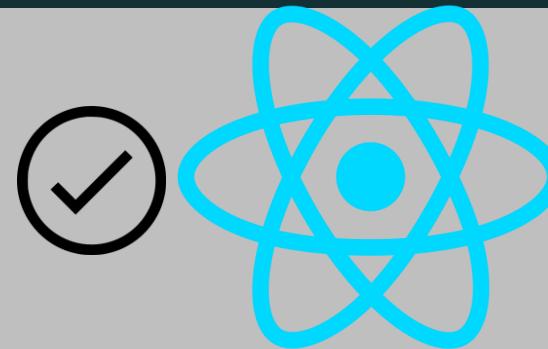


Pravin Sawant

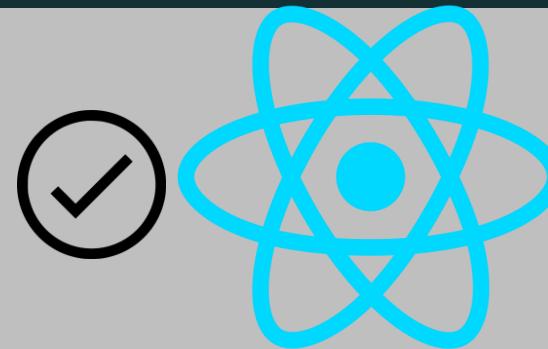
# Framework



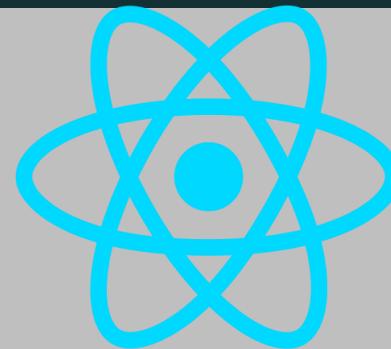
# Backing Support



# Community Support



# Better in decision making

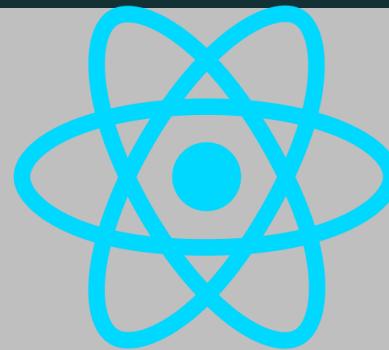


# DOM

Shadow



Virtual



Virtual

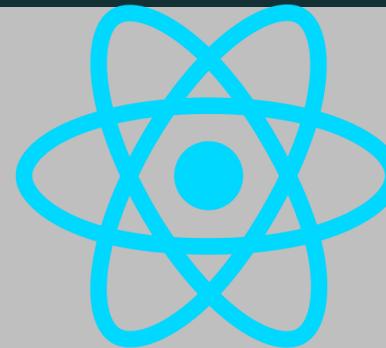


# Performance

High



Higher



Highest

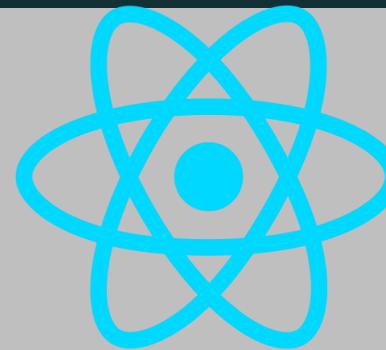


# Learning Curve

High



Medium



Low

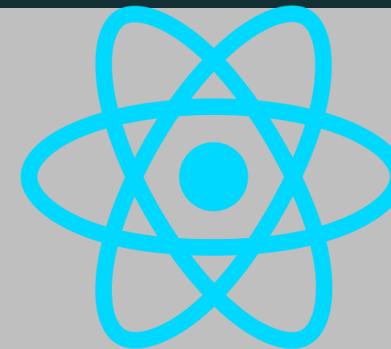


# Programming Language

TypeScript



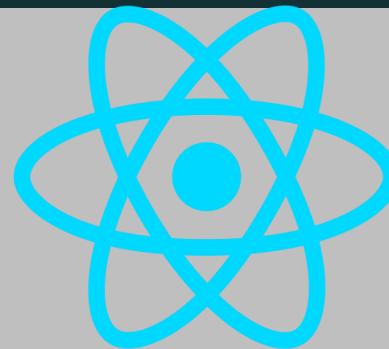
JSX



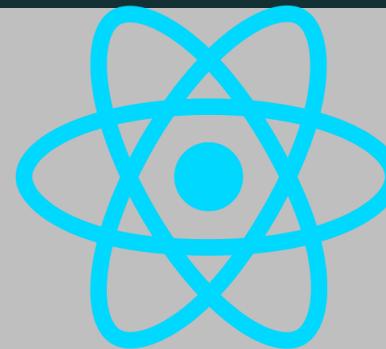
Template Syntax & JSX



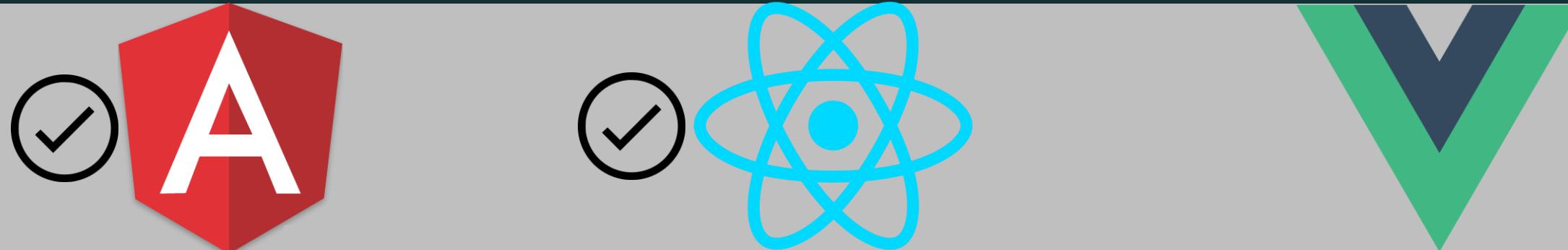
# OOP



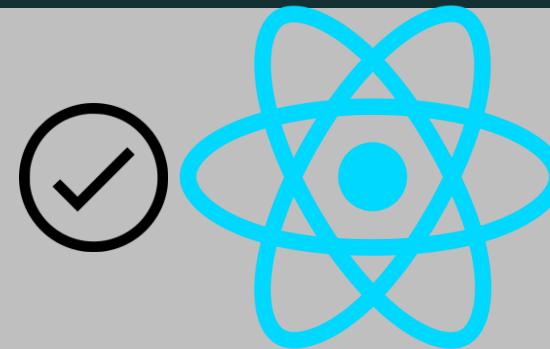
# Clean HTML – Designer friendly



# Ecosystem for Large Applications



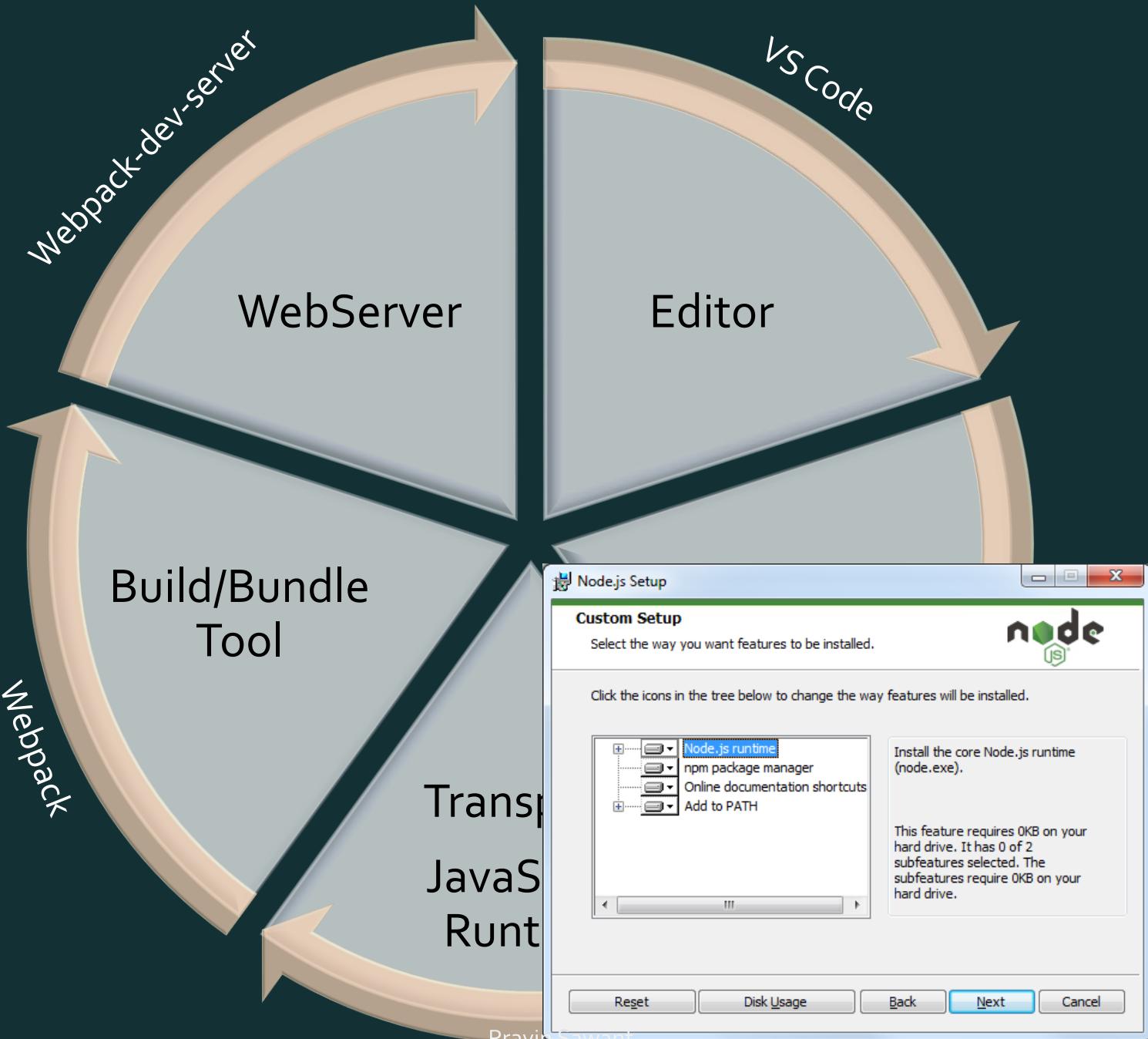
# Current Job Openings

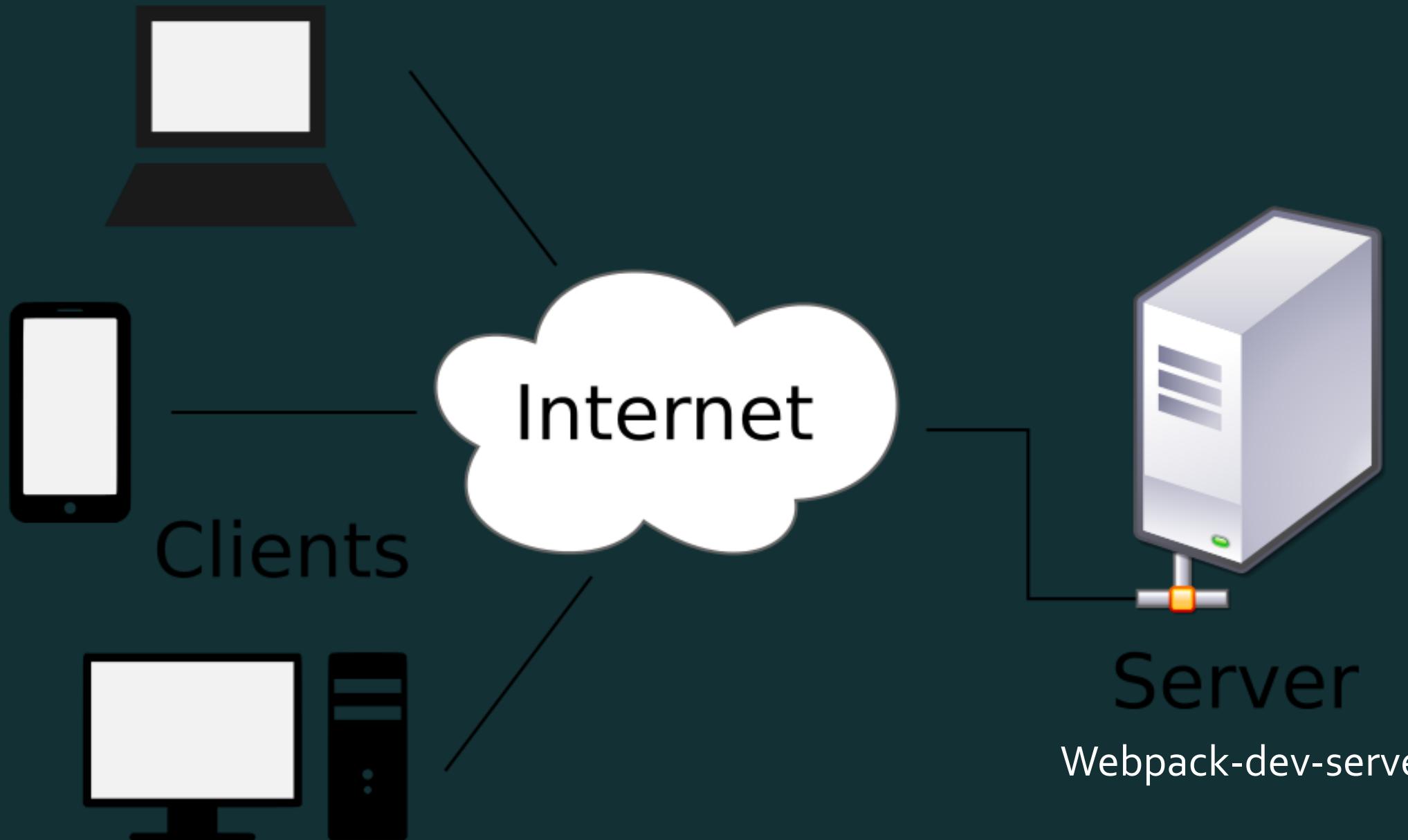






# Angular dev. environment setup





<https://github.com/angular/angular2-seed>

<https://code.visualstudio.com/>

<https://nodejs.org/en/>

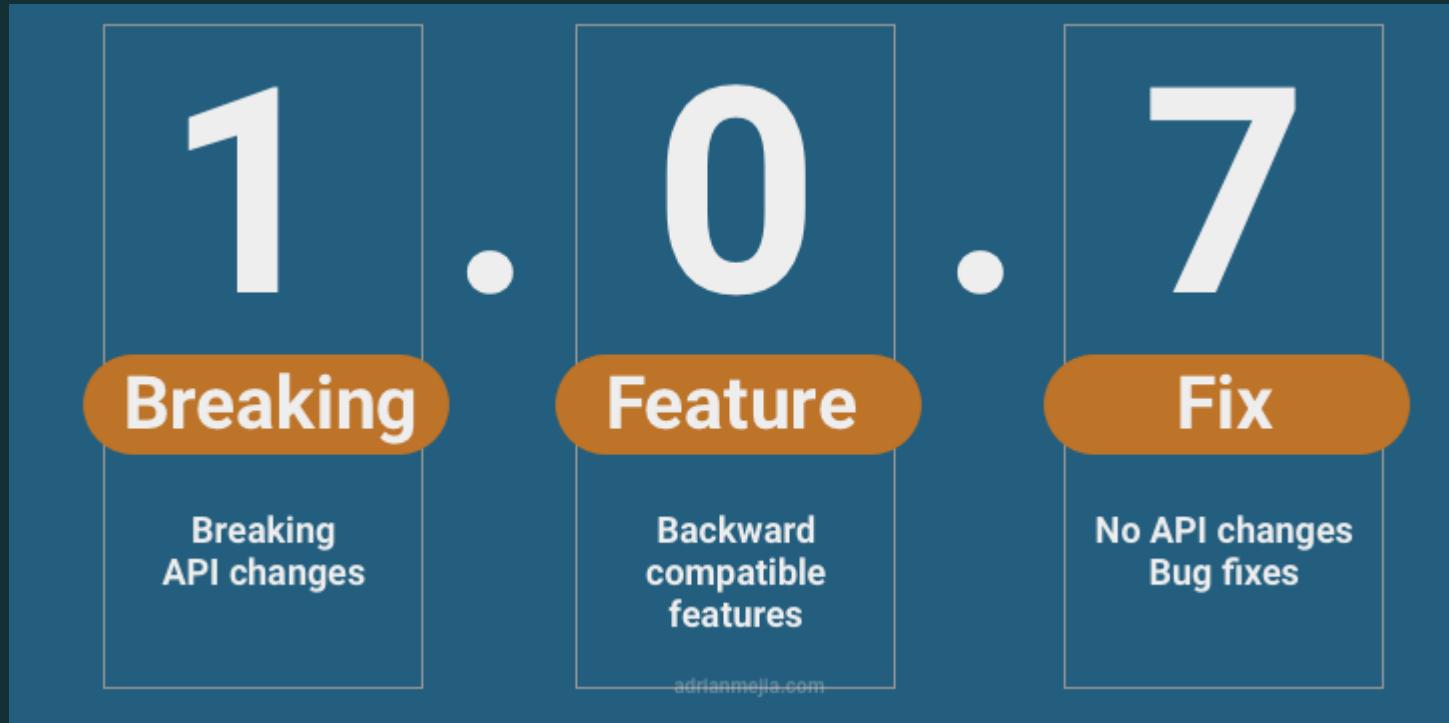


{ let s = “Setup Environment” }

- Project Information
- Build Information
- Runtime Dependencies
- Dev Dependencies
- Repository Information



# package.json



## OPEN EDITORS



src

.editorconfig

.gitignore

LICENSE

package.json

README.md

tsconfig.aot.json

tsconfig.json

webpack.config.js

yarn.lock

```
1  {
2    "name": "angular2-seed",
3    "version": "1.0.0",
4    "description": "A simple starter Angular2 project",
5    "scripts": {
6      "build": "rimraf dist && webpack --progress",
7      "watch": "npm run build -- --watch",
8      "server": "webpack-dev-server --inline --progress --port 3000"
9      "start": "npm run server"
10    },
11    "contributors": [
12      "Rob Wormald <robwormald@gmail.com>",
13      "PatrickJS <github@gdi2290.com>"
14    ],
15    "license": "MIT",
16    "dependencies": {
17      "@angular/common": "~4.0.1",
18      "@angular/compiler": "~4.0.1",
Pravin Sawant
```

EXPLORER

{ } package.json ×

▶ OPEN EDITORS

◀ ANGULAR

▶ src

⚙ .editorconfig

◆ .gitignore

🔑 LICENSE

{ } package.json

ⓘ README.md

{ } tsconfig.aot.json

{ } tsconfig.json

JS webpack.config.js

─── yarn.lock

```
14  ],
15  "license": "MIT",
16  "dependencies": {
17    "@angular/common": "~4.0.1",
18    "@angular/compiler": "~4.0.1",
19    "@angular/compiler-cli": "~4.0.1",
20    "@angular/core": "~4.0.1",
21    "@angular/forms": "~4.0.1",
22    "@angular/http": "~4.0.1",
23    "@angular/platform-browser": "~4.0.1",
24    "@angular/platform-browser-dynamic": "~4.0.1",
25    "@angular/platform-server": "~4.0.1",
26    "@angular/router": "~4.0.1",
27    "@angular/upgrade": "~4.0.1",
28    "angular-in-memory-web-api": "^0.3.1",
29    "core-js": "^2.4.1",
30    "ie-shim": "^0.1.0",|
31    "reflect-metadata": "^0.1.9",
32    "rxjs": "5.0.1",
33    "zone.js": "^0.8.4"
34  },
35  "devDependencies": {
```

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EXPLORER



{ } package.json ×

```
32      "ts-jest": "0.9.1",
33      "zone.js": "^0.8.4"
34    },
35    "devDependencies": {
36      "@types/node": "^7.0.12",
37      "angular2-router-loader": "^0.3.4",
38      "angular2-template-loader": "^0.6.0",
39      "awesome-typescript-loader": "^3.1.2",
40      "css-loader": "^0.26.0",
41      "html-webpack-plugin": "^2.28.0",
42      "raw-loader": "^0.5.1",
43      "rimraf": "^2.5.4",
44      "to-string-loader": "^1.1.4",
45      "typescript": "~2.2.0",
46      "webpack": "^2.4.1",
47      "webpack-dev-server": "2.4.2",
48      "webpack-merge": "^4.1.0"
49    },
50    "keywords": [
51      "Angular2",
52      "angular2-seed",
53      "official angular 2 seed",
54      "official angular2 seed"
```

EXPLORER

## { } package.json X

▶ OPEN EDITORS

◀ ANGULAR

▶ src

⚙ .editorconfig

◆ .gitignore

👤 LICENSE

{ } package.json

ℹ README.md

{ } tsconfig.aot.json

{ } tsconfig.json

JS webpack.config.js

🔒 yarn.lock

```
43     "rimraf": "^2.5.4",
44     "to-string-loader": "^1.1.4",
45     "typescript": "~2.2.0",
46     "webpack": "^2.4.1",
47     "webpack-dev-server": "2.4.2",
48     "webpack-merge": "^4.1.0"
49   },
50   "keywords": [
51     "Angular2",
52     "angular2-seed",
53     "official angular 2 seed",
54     "official angular2 seed"
55   ],
56   "repository": {
57     "type": "git",
58     "url": "git+https://github.com/angular/angular2-seed.git"
59   },
60   "bugs": {
61     "url": "https://github.com/angular/angular2-seed/issues"
62   },
63   "homepage": "https://github.com/angular/angular2-seed#readme"
64 }
```

Pravin Sawant

Search package.json – current directory

Install runtime dependencies

Install dev. dependencies



**Command – npm install**

Looks for scripts section in package.json

Compile & build project

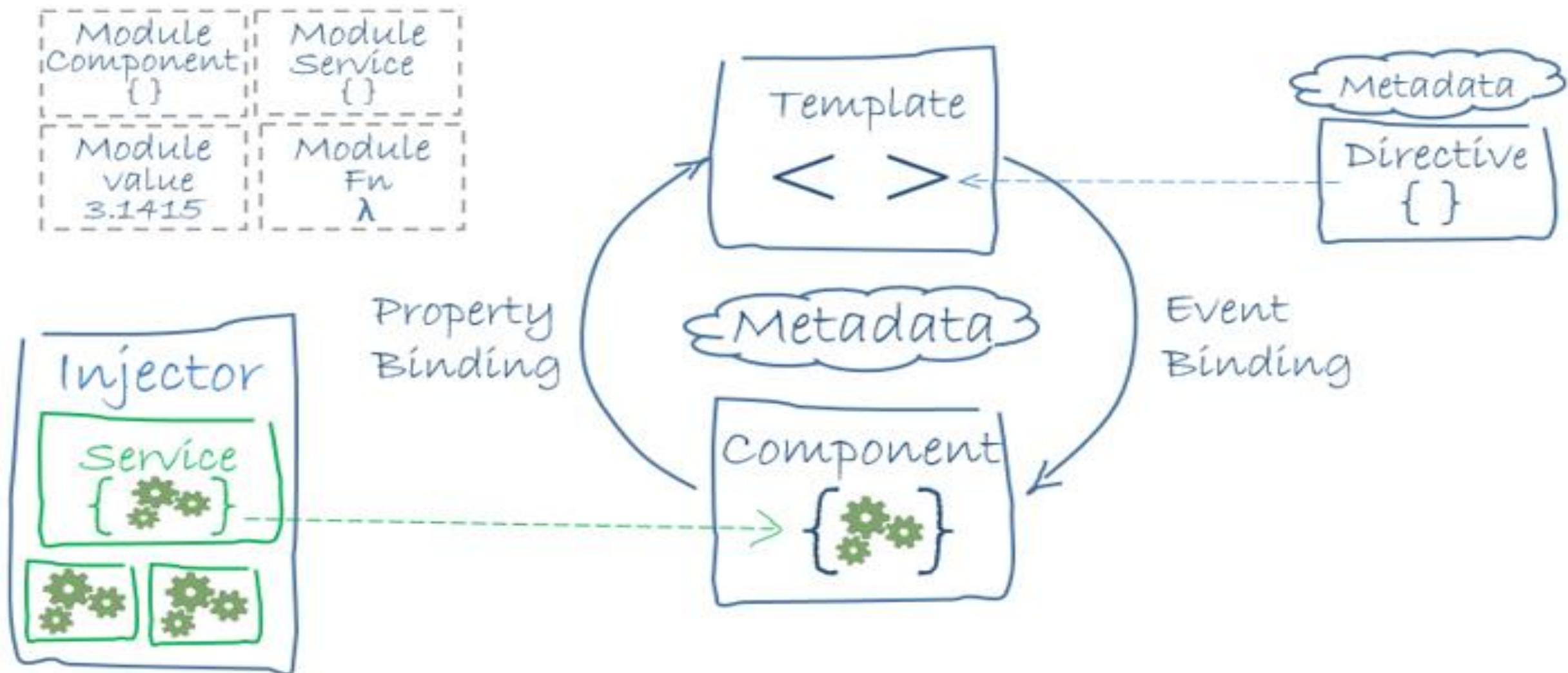
Run webpack dev server



# Command – npm start



{ let s = “Run application & understand code” }



# Architecture

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Components

Directives

Routers

Services



# Architecture

EXPLORER

OPEN EDITORS

ANGULAR

node\_modules

src

app

# app.component.css

<> app.component.html

TS app.component.ts

TS app.module.ts

TS app.routes.ts

TS custom-typings.d.ts

★ favicon.ico

<> index.html

TS main.browser.ts

<> index.html x

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <meta charset=UTF-8>
5          <meta name="viewport" content="width=device-width, :
6          <title>Pravin-Sawant-Demo</title>
7          <base href="/">
8      </head>
9      <body>
10         <app>
11             Loading...
12         </app>
13     </body>
14 </html>
```



# Loading Angular App

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EXPLORER

&lt;&gt; index.html

TS app.component.ts X

```
1 import {Component, OnInit} from '@angular/core';
2
3 @Component({
4   selector: 'app',
5   templateUrl: './app.component.html',
6   styleUrls : ['./app.component.css']
7 })
8 export class AppComponent implements OnInit{
9   name : string;
10  no : number = 10;
11
12 //Suitable for dependency injection & object creation
13 //Do non costly operations here
14 constructor(){}
15
16 }
17
18 ngOnInit(){
```



# Loading Angular App

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Navbar



Sidebar



Courses



## Angular Components

# Udemy

Navbar



Course



Course



Course



Course

Sidebar



Sidebar



Courses

# Udemy

Navbar



Course



Course



Course



Course



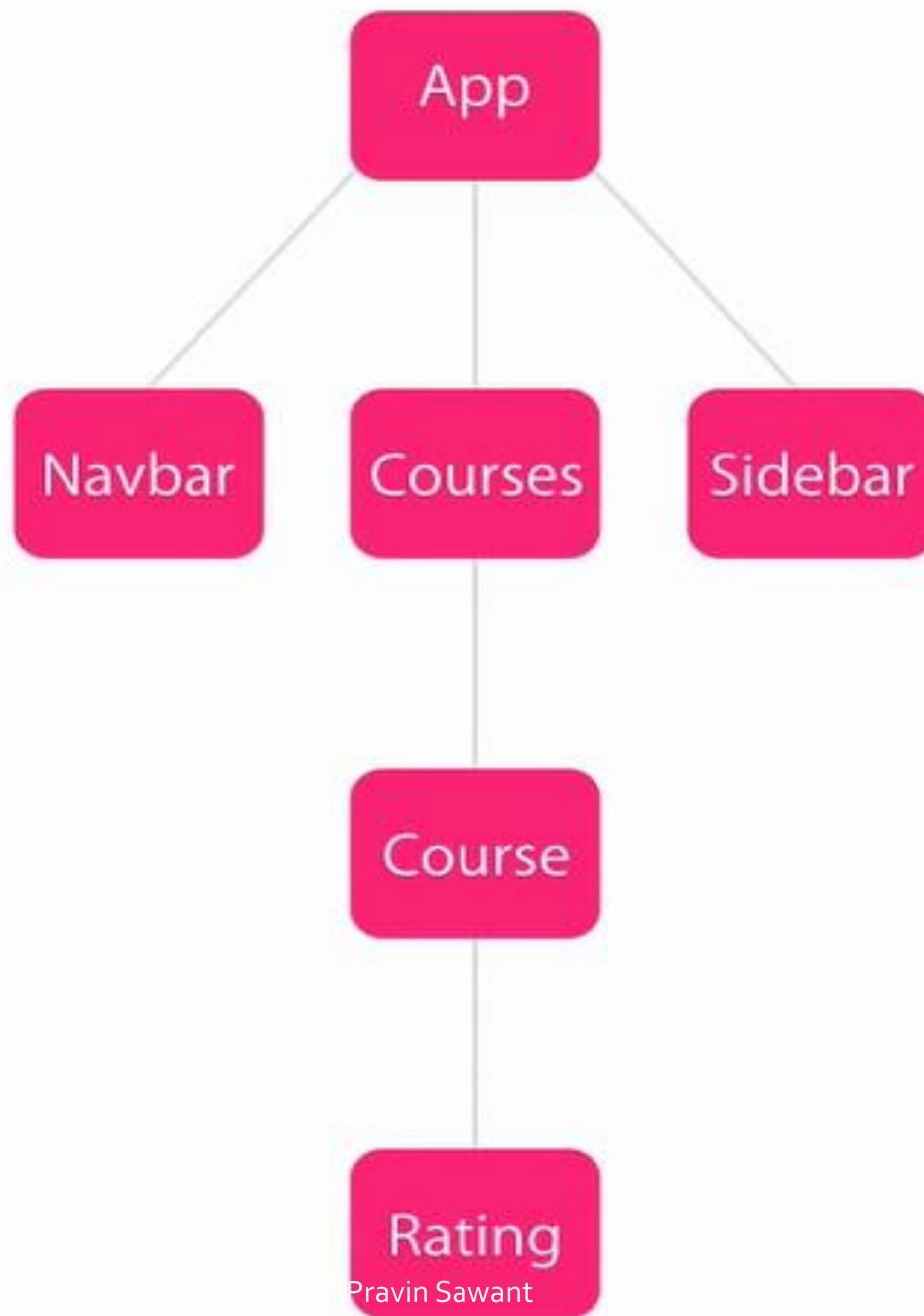
Sidebar

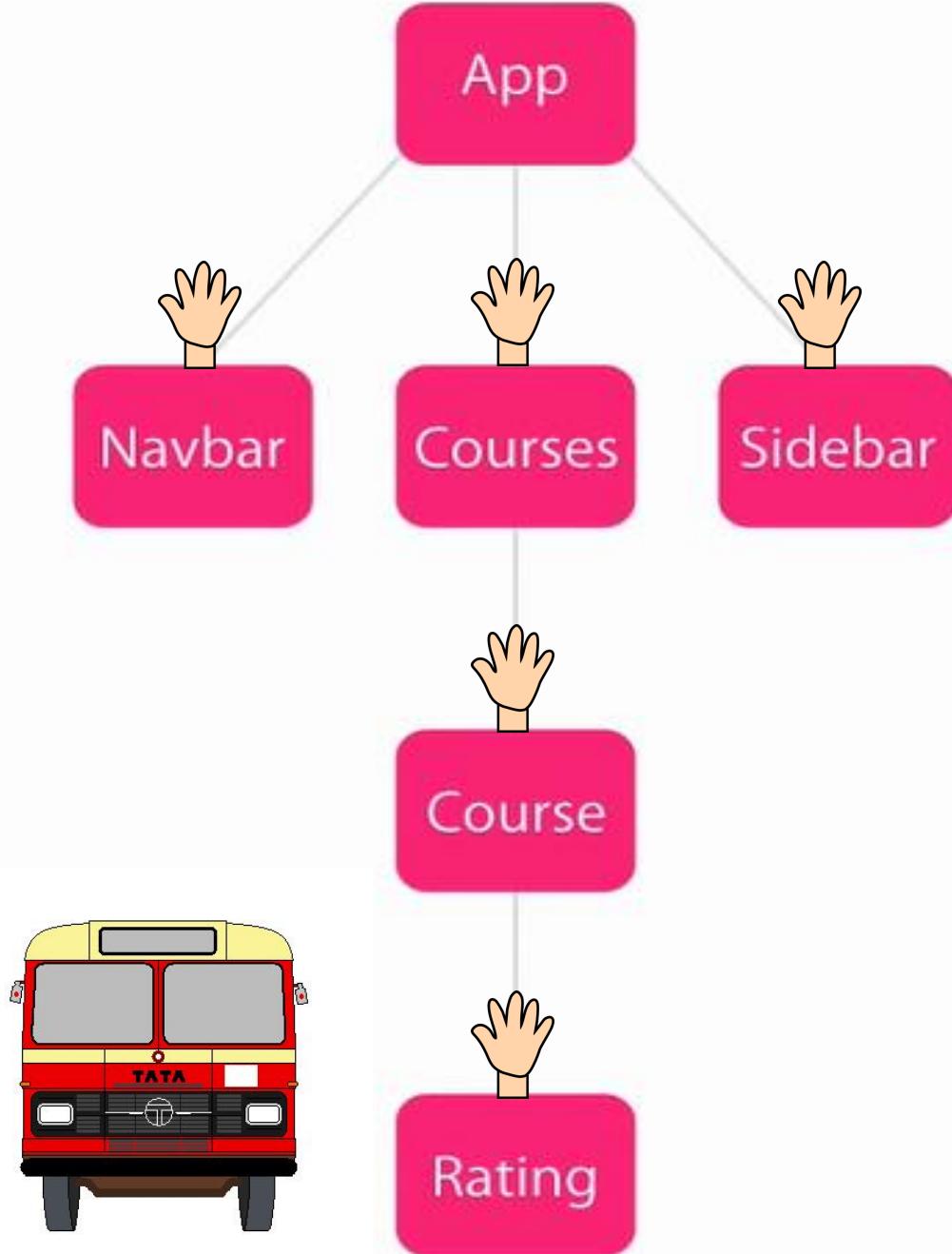


Sidebar



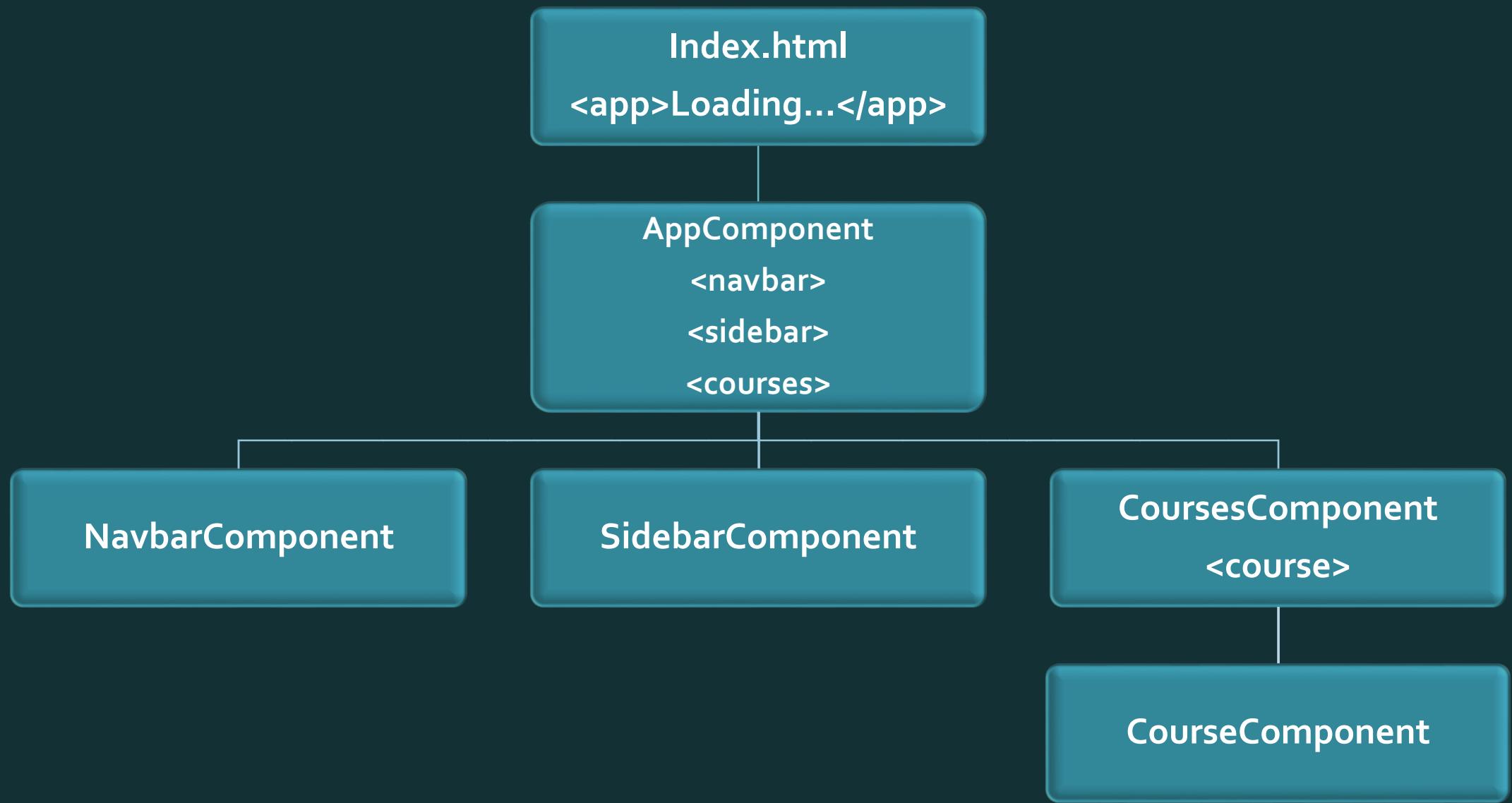
Courses





```
<App>
  <Navbar></Navbar>
  <Courses></Courses>
  <Sidebar></Sidebar>
</App>
```





# Loading Angular App

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**Component**

html

ts

CSS

**@Component Decorator**

Pravin Sawant

```
1 import {Component, OnInit} from '@angular/core';
2
3 @Component({
4   selector: 'app',
5   templateUrl: './app.component.html',
6   styleUrls : ['./app.component.css']
7 })
8 export class AppComponent implements OnInit{
9   name : string;
10
```

## @Component Decorator

# Hello Angular



## Expected output



## EXPLORER

## OPEN EDITORS 1 UNSAVED

app.component.html src\app

app.component.ts src\app

## 3. FINALIZED-HEL...

node\_modules

## src

app

github

# app.component.css

app.component.html

TS app.component.ts

TS app.module.ts

TS custom-typings.d.ts

app.component.html

TS app.component.ts

1 &lt;h1&gt;Hello Angular&lt;/h1&gt;

2



## EXPLORER

## OPEN EDITORS

## ANGULAR



node\_modules

src

app

# app.component.css

&lt;&gt; app.component.html

TS app.component.ts

TS app.module.ts

TS app.routes.ts

TS custom-typings.d.ts

TS app.component.ts

```
1 h1{  
2   color: white;  
3   background-color: midnightblue;  
4   font-size: 70px;  
5 }  
6
```

# app.component.css

# Hello Angular



## EXPLORER

## OPEN EDITORS 1 UNSAVED

● TS app.component.ts src\app  
    <> app.component.html src\app

## 3. FINALIZED-HELLO-ANGULAR

node\_modules

src

app

github

# app.component.css

<> app.component.html

TS app.component.ts

TS app.module.ts

TS custom-typings.d.ts

★ favicon.ico

<> index.html

TS app.component.ts

<> app.component.html

```
1 import {Component, OnInit} from '@angular/core';
2
3 @Component({
4   selector: 'app',
5   templateUrl: './app.component.html',
6   styleUrls : ['./app.component.css']
7 })
8 export class AppComponent{
9
10 }
11
```



EXPLORER

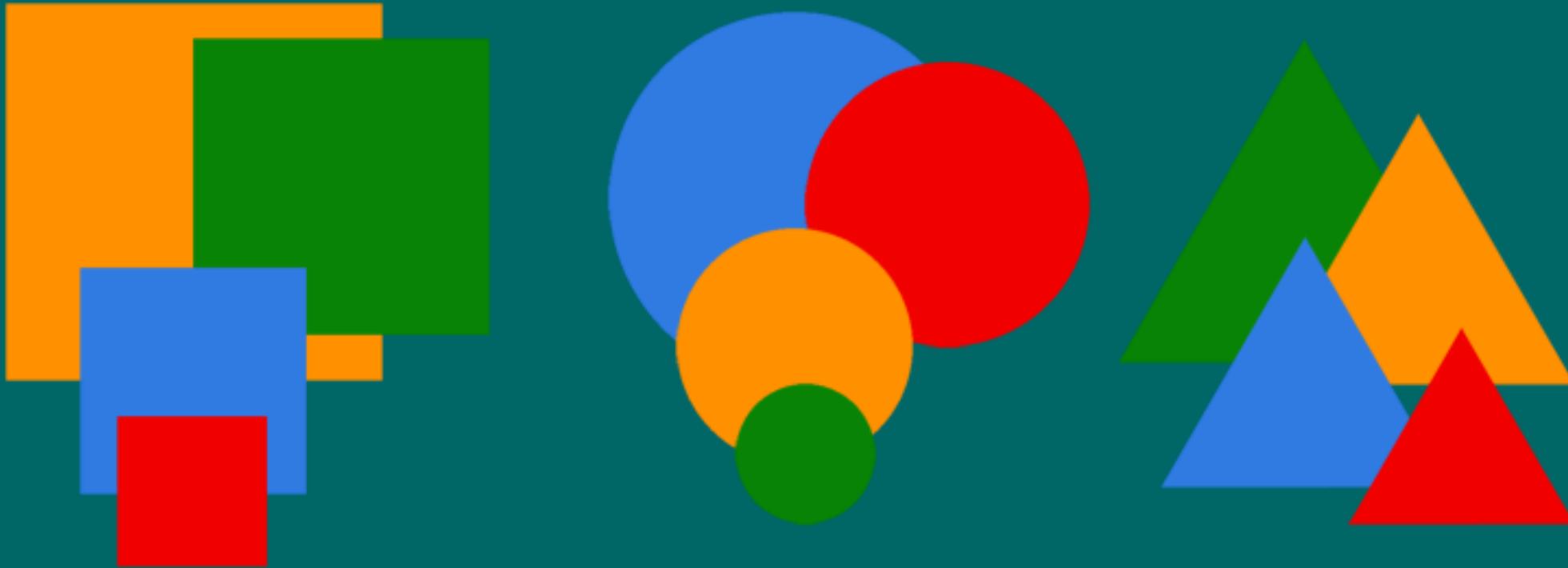
- ▶ OPEN EDITORS
- ◄ ANGULAR
  - node\_modules
  - src
    - app
      - # app.component.css
      - ↳ app.component.html
      - TS app.component.ts
    - TS app.module.ts
    - TS app.routes.ts
  - TS custom-typings.d.ts
  - ★ favicon.ico
  - ↳ index.html
  - TS main.browser.ts
  - TS polyfills.browser.ts
  - .editorconfig
  - .gitignore
  - LICENSE
  - { package-lock.json
  - { package.json
  - ⓘ README.md
  - { tsconfig.aot.json
  - { tsconfig.json
  - JS webpack.config.js

## TS app.module.ts ×

```
1 import { NgModule } from '@angular/core'
2 import { RouterModule } from '@angular/router';
3 import { rootRouterConfig } from './app.routes';
4 import { AppComponent } from './app.component';
5 import { BrowserModule } from '@angular/platform-browser';
6 import { HttpClientModule } from '@angular/http';

7
8 import { FormsModule, ReactiveFormsModule } from '@angular/forms';

9
10 @NgModule({
11   declarations: [
12     AppComponent, declare - component
13   ],
14   imports: [
15     BrowserModule,
16     FormsModule,
17     ReactiveFormsModule, import - module
18     HttpClientModule,
19     RouterModule.forRoot(rootRouterConfig)
20   ],
21   providers: [
22     provider - services
23   ],
24   bootstrap: [ AppComponent ]
25 })
26 export class AppModule { Pravin Sawant
27 }
```



# Grouping - Components



## Need of Module

Home

Customer Management

Asset Management

# Welcome to Asset Management System

all

## Customer Listing

## New Customer

Id	Name	City	Phone	Delete
19	<u>Jack</u>	PUNE	020-823234981	X
20	<u>Jill</u>	PUNE	020-823234982	X
21	<u>Jane</u>	PUNE	020-823234983	X
22	<u>Jimy</u>	MUMBAI	022-823234984	X
24	<u>Jason</u>	MUMBAI	022-823234986	X
31	<u>pravin</u>	SANGLI	022-3436565	X

all

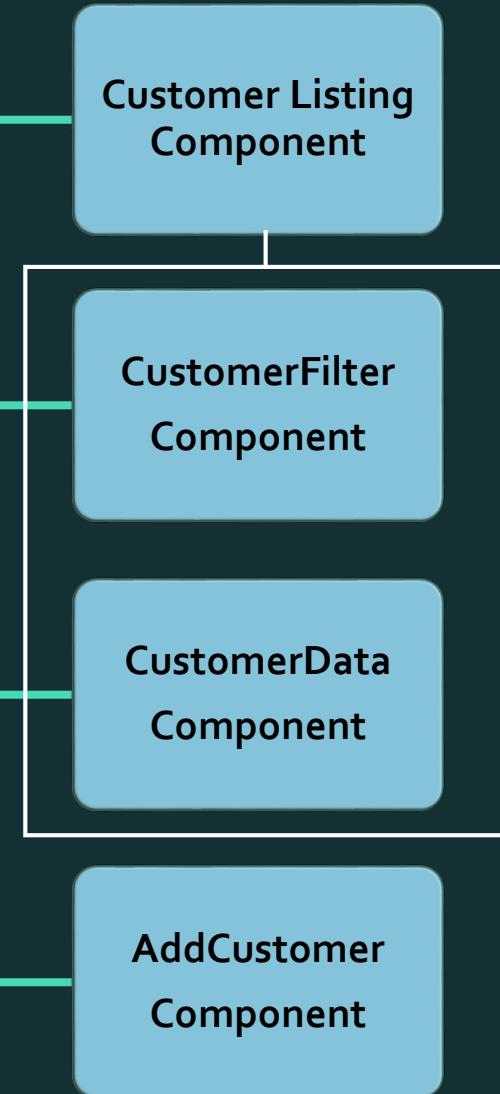
Refr

## Transaction Listing

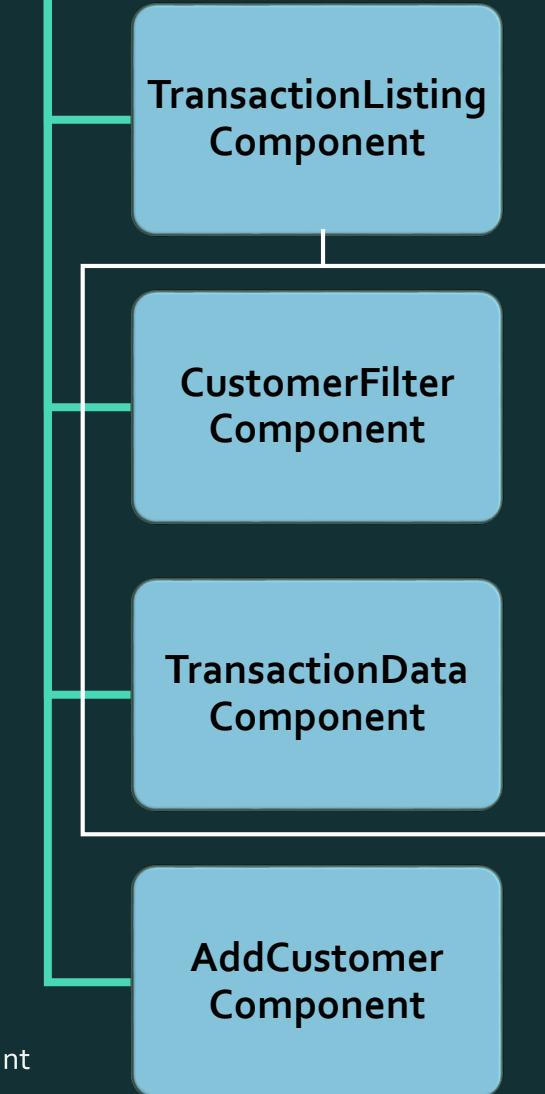
Add Transaction

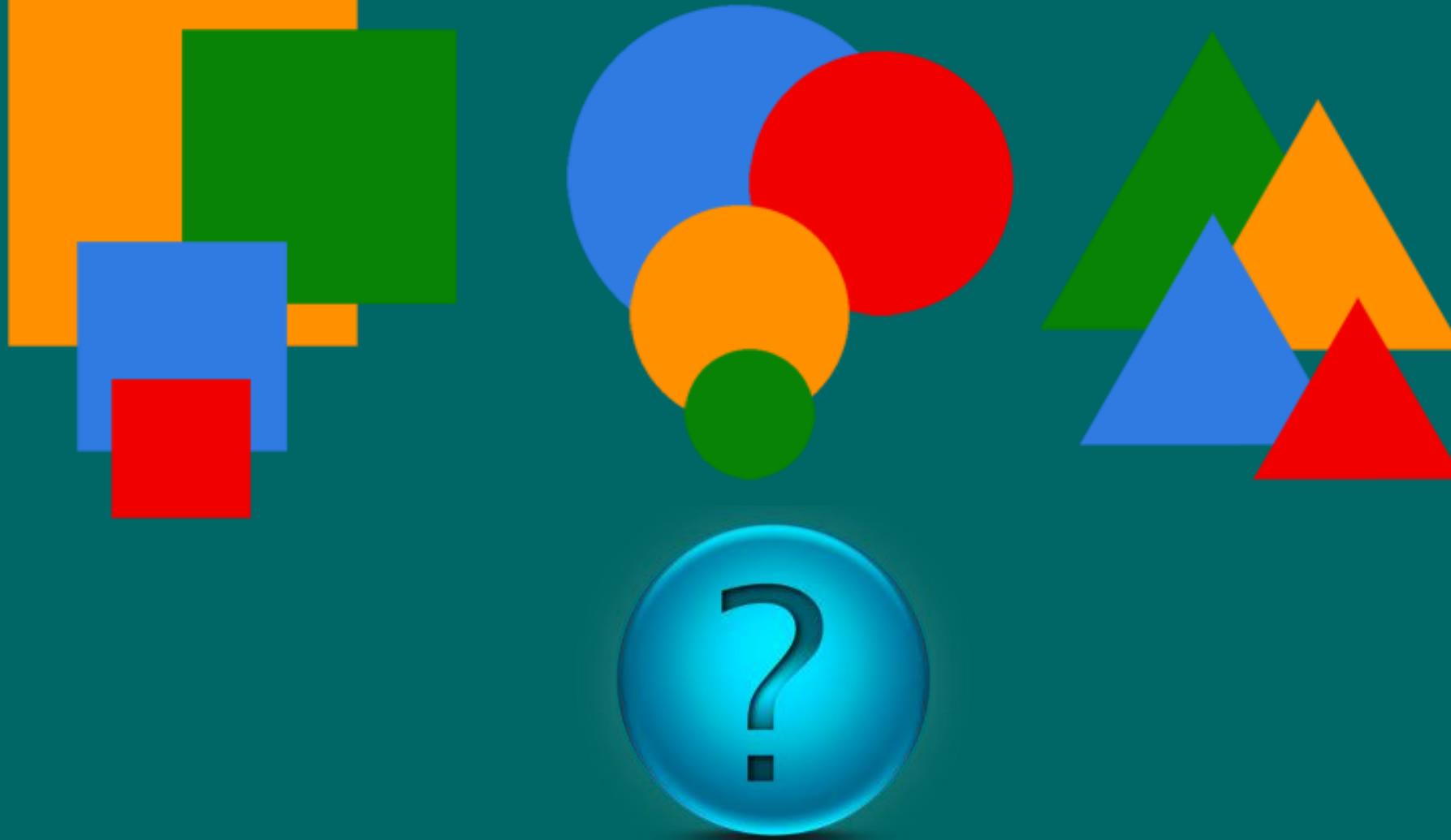
Id	Customer Name	Price	Sy		ete
1	Jack	500	MSFT	5	X
3	Jill	200	COGN	10	X
5	Jill	400	FTIL	50	X
6	Jill	1200	Synes	54	X
7	Jimy	1200	Synes	54	X
9	pravin	8300	JARTAR	8	X

# CustomerManagement Module



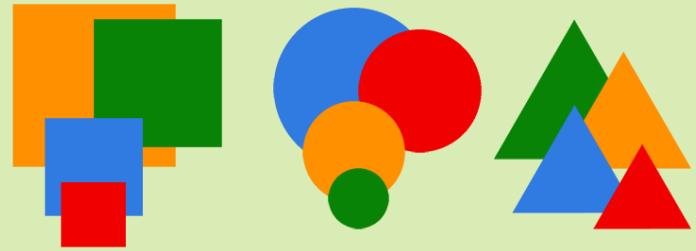
# AssetManagement Module





# Why Grouping

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## Grouping

Add here customer grouping image from last slide after completion of project

# Lazy Loading of components



## Need of Module

# A Better Way to Learn



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If any content of the training material used knowingly or unknowingly & which is copyright/objectional/proprietary then I really apologize & let know me so it can be removed or added as courtesy.





{ let s = “START PROJECT – DESIGN MENU” }



{ let s = Create Component & Modules }



# Routing

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Customer Listing

New Customer

http://localhost:3000

Index.html

/home

Home

App router-outlet

/customer-listing

CustomerListing

/new-customer

NewCustomer

/transaction-listing

TransactonListing O

/add-transaction

Add Transaction O

CustomerFilter

CustomerData

TransactionFilter

TransactionData

index.html

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <base href="/">
5     <meta charset=UTF-8>
6     <meta name="viewport" content="widt
7     <title>Pravin-Sawant-Demo</title>
8   </head>
9   <body>
```



## ANGULAR ROUTING - STEP 1 : Index.html <base href="/">

Pravin Sawant

```
import { Routes, RouterModule } from '@angular/router';

const customerMgtmtRoutes: Routes = [
  { path: 'customer-listing', component : CustomerListingComponent },
  { path: 'new-customer', component : NewCustomerComponent }
];

@NgModule({
  imports: [RouterModule.forChild(customerMgtmtRoutes)],
  exports: [],
  declarations: [],
  providers: []
})
export class CustomerManagementRoutingModule { }
```



## ANGULAR ROUTING - STEP 2 : Define Routes

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```
4
5  <div class="navbar">
6    <a routerLink="home">Home</a>
7    <div class="dropdown">
8      <button class="dropbtn">Customer Management
9      </button>
10     <div class="dropdown-content">
11       <a routerLink="/customer-listing">Customer Listing</a>
12       <a routerLink="/new-customer">New Customer</a>
13     </div>
14   </div>
```



## ANGULAR ROUTING - STEP 3 : Define Directives

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```
<tr *ngFor = "let customer of customers">
  <td>{{customer.Id}}</td>
  <td>
    <a [routerLink]=["/transaction-listing", customer.Name]>
      {{customer.Name}}
    </a>
  </td>
```

```
export class TransactionListingComponent implements OnInit {

  constructor(private _activatedRoute : ActivatedRoute,
  private _customerService : CustomerService) {
  }

  ngOnInit() {
    debugger;
    this._customerService.selectedCustomer =  this._activatedRoute.snapshot.params['name'];
  }
}
```

## Parameterized routes

path:customer-details/:id

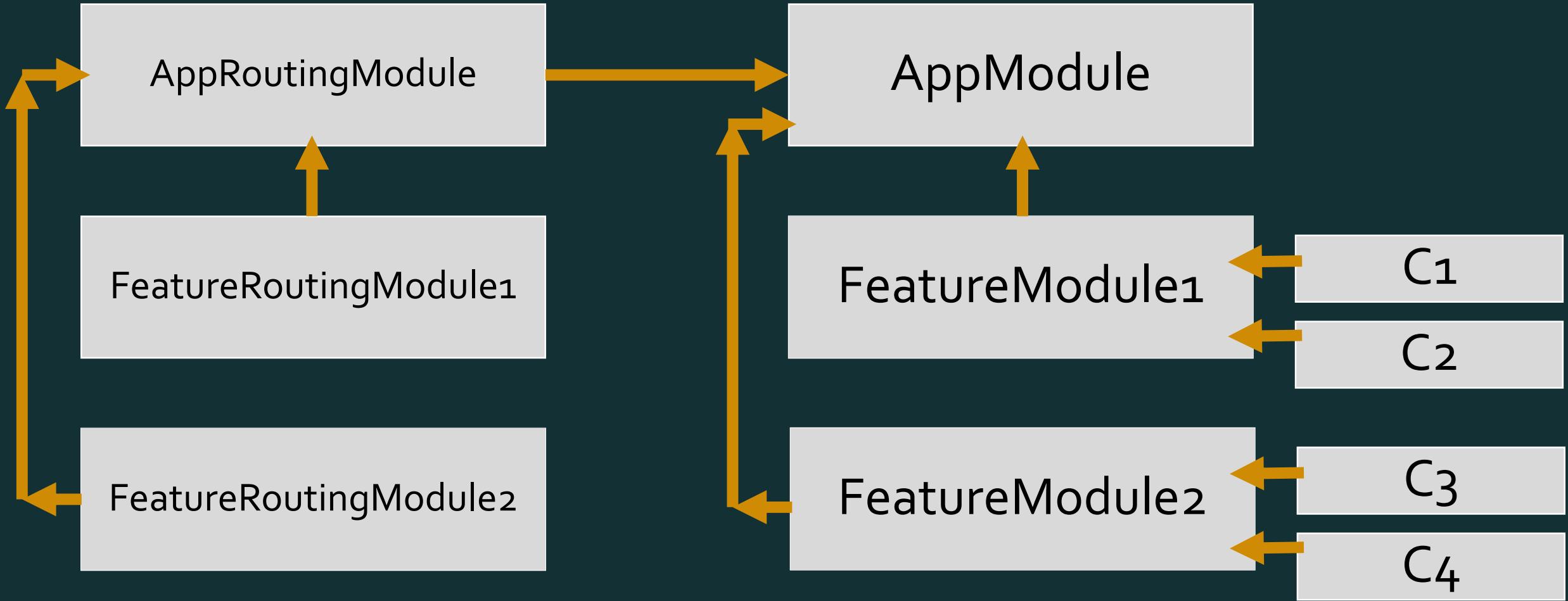
---

```
Router-> @angular/Router
_router: Router
This.router.navigate('/transaction-listing', id)
```



# ANGULAR ROUTING – Programmatically Routing

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# RoutingModule

```
@NgModule({  
  imports: [RouterModule.forRoot(appRoutes, {useHash : true})],  
  exports: [],  
  declarations: [],  
  providers: []  
})  
export class AppRoutingModule { }
```

localhost:3000/#/customer-listing

```
@NgModule({  
  imports: [RouterModule.forRoot(appRoutes)],  
  exports: [],  
  declarations: [],  
  providers: []  
})
```

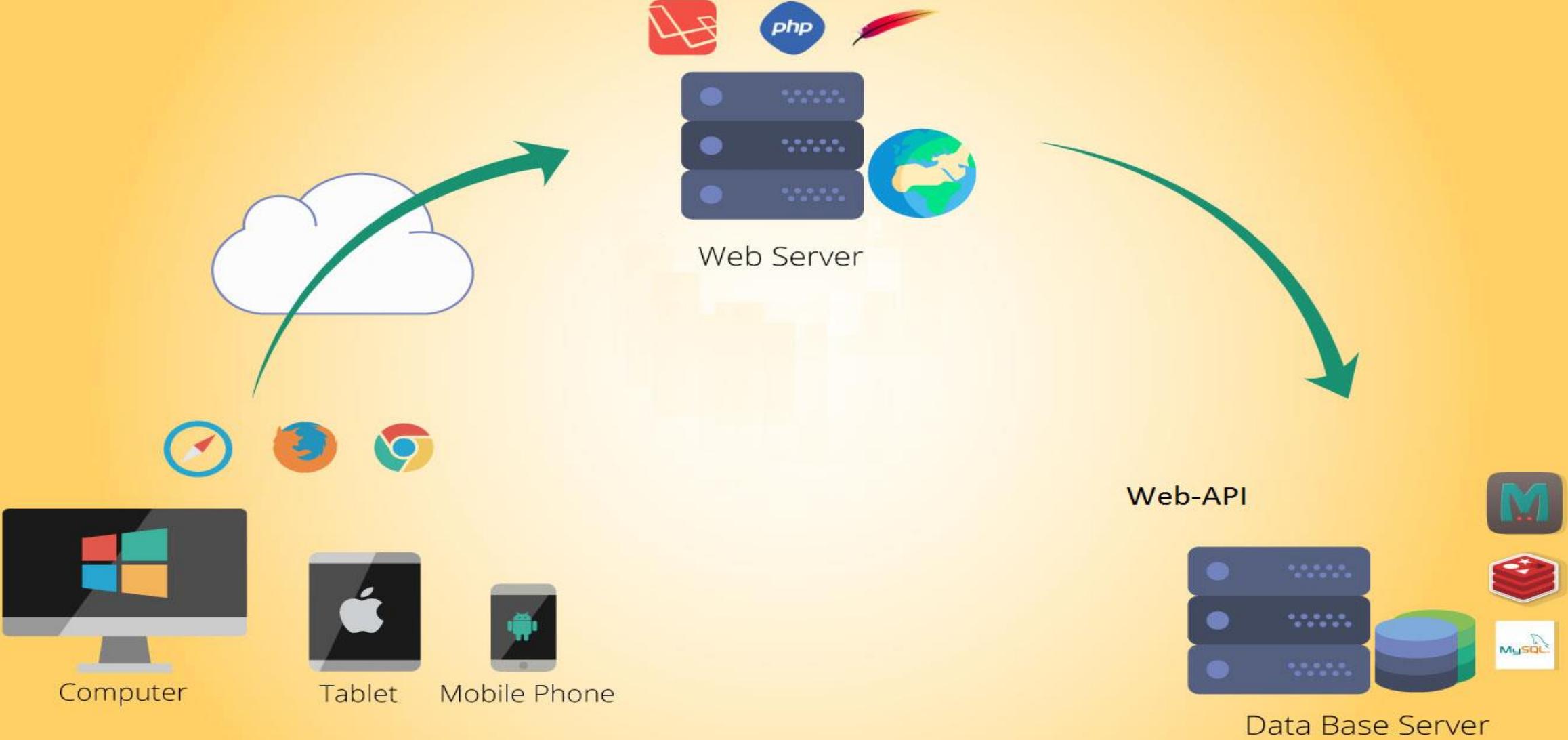
localhost:3000/customer-listing



# Routing - # vs HTML5 Style



{ let s = Create Routes }



# Server side technologies

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**django**



mojolicious



Ruby  
RAILS



**nodeJS**



**node** express

ASP.NET | Web API

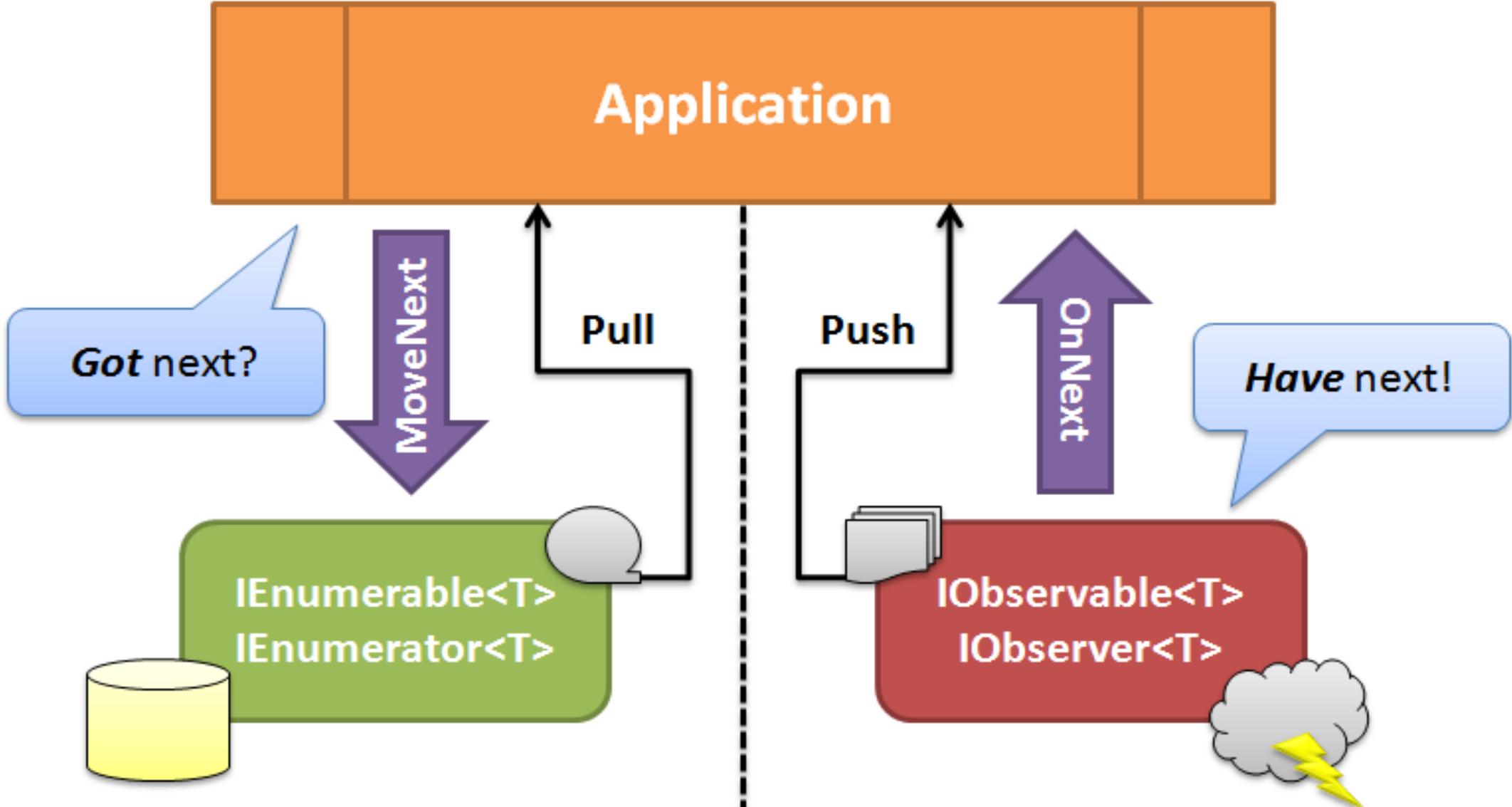
Pravin Sawant

python  
**Flask**  
web development,  
one drop at a time



{ let s = Understand WebAPI & DB }

Interactive



# Reactive extension - rxjs

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Courtesy : <http://community.bartdesmet.net/blogs/bart/archive/2009/12/25/more-linq-with-system-interactive-getting-started.aspx>

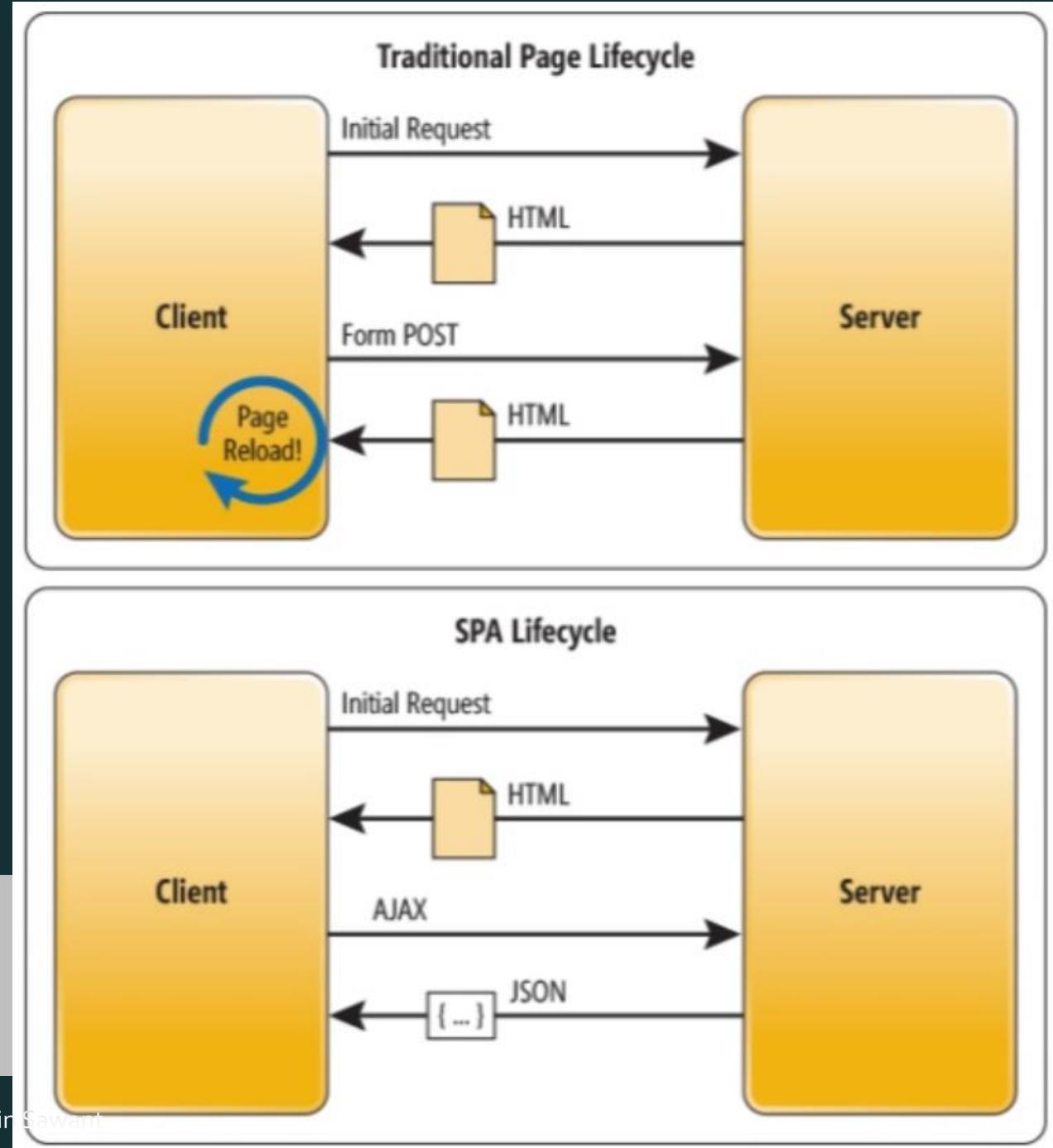
Reactive



# Why SPA



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{ let s = Create Services }

constructor

ngOnChanges

ngOnInit

ngDoCheck

ngAfterContentInit

ngAfterContentChecked

ngAfterViewInit

ngAfterViewChecked

ngOnDestroy

# Lifecycle

Component Element

OnChanges

OnInit

DoCheck

OnDestroy

Content Children

AfterContentInit

AfterContentChecked

View Children

AfterViewInit

AfterViewChecked



# Angular Lifecycle Hooks

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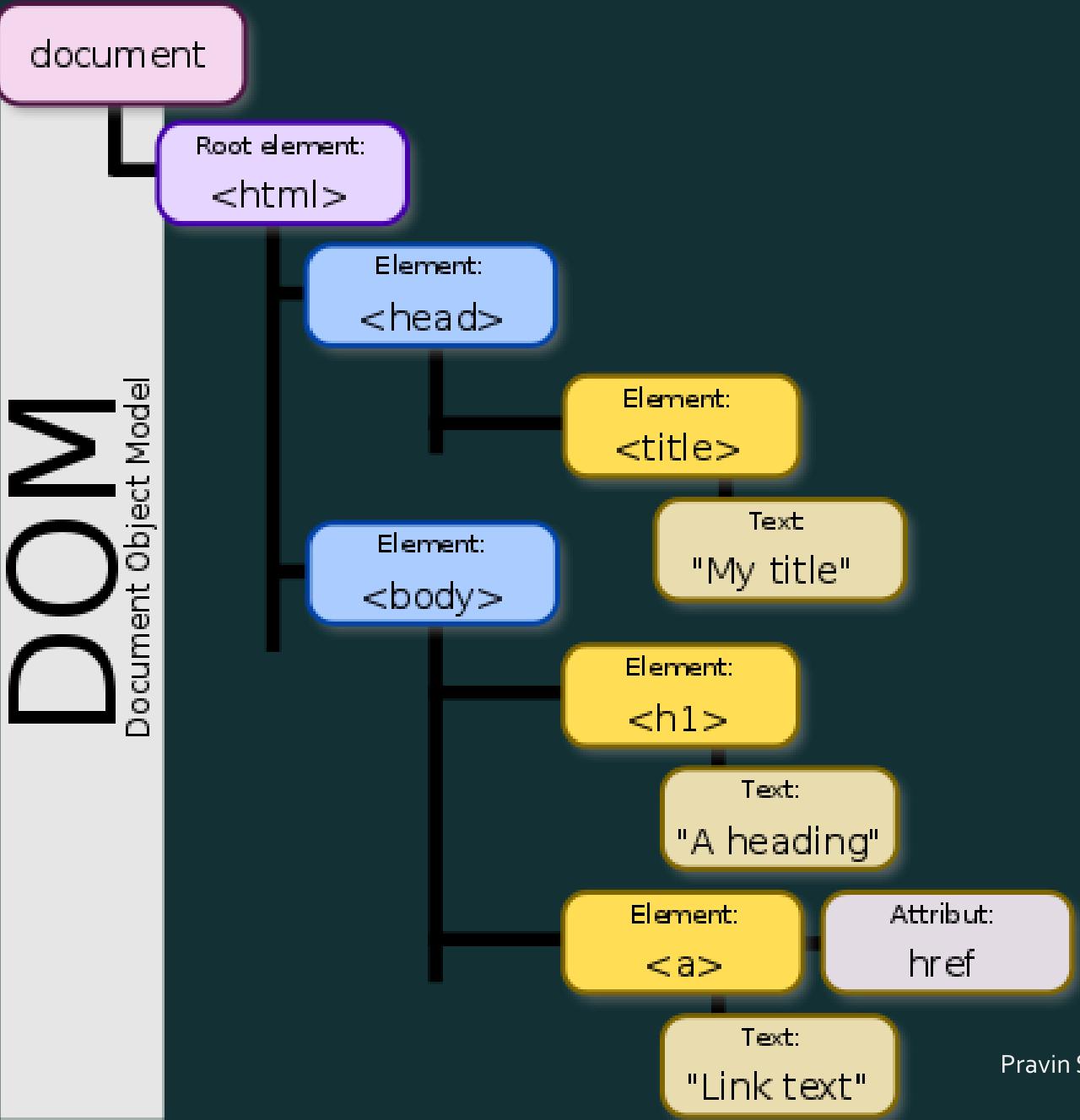
<https://www.linkedin.com/pulse/angular2-lifecycle-hooks-digvijay-deshmukh/>



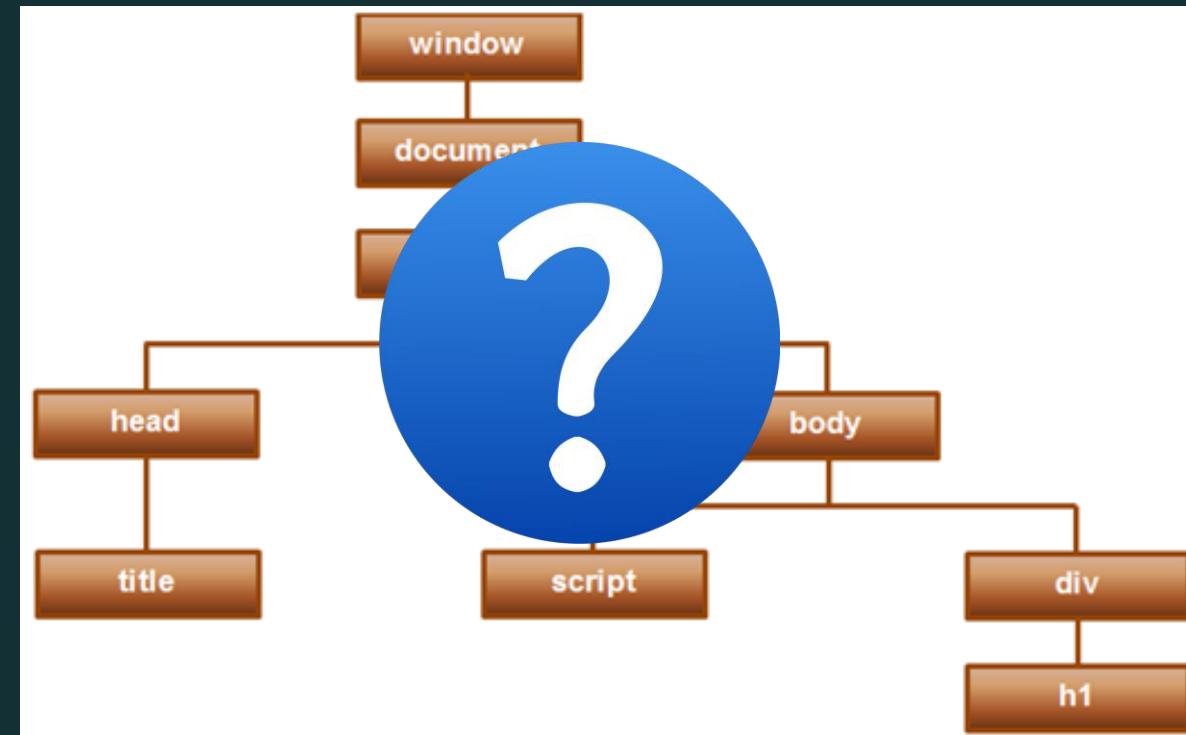
# Component gets loaded into?

# DOM

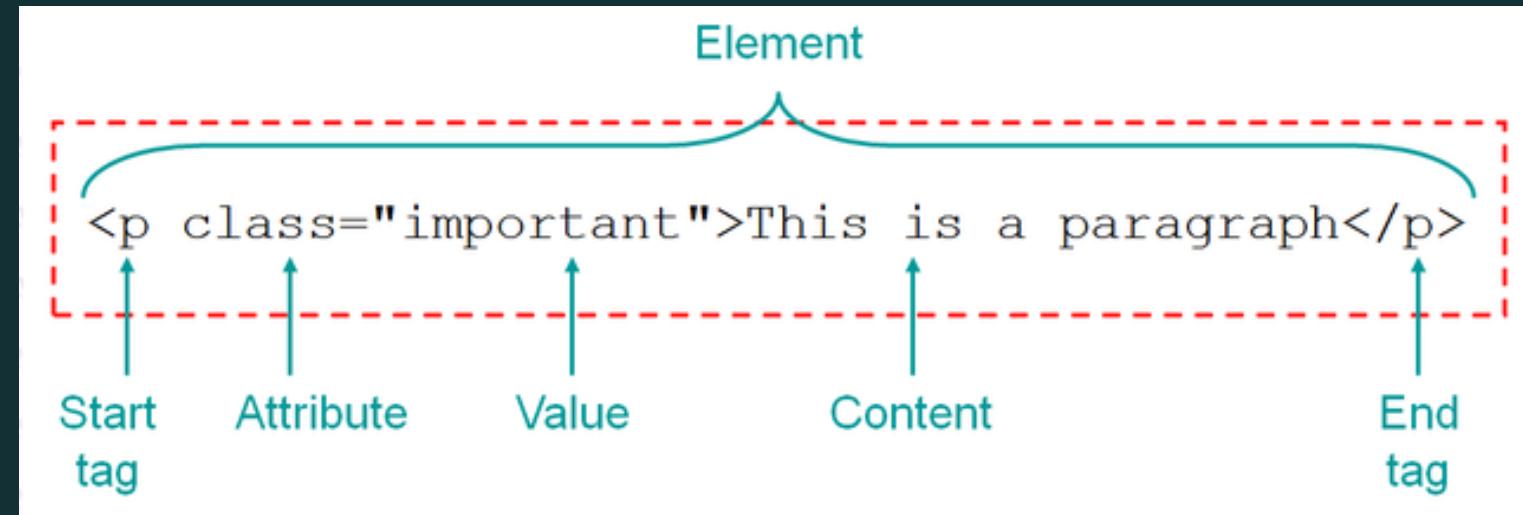
Document Object Model



```
<html>
  <head>
    <title>My Page Title</title>
  </head>
  <body>
    <script type="text/javascript">
    </script>
    <div>
      <h1>This is browser DOM</h1>
    </div>
  </body>
</html>
```



- Properties
- Events
- Attributes



# DOM Properties vs. Attribute

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Courtesy : <http://matin.cf/pages/html/elements.html>

- Properties
- Events
- Attributes

The screenshot shows the Visual Studio Code interface with the following details:

- File Bar:** app.component.html - angular - Visual Studio Code, File Edit Selection View Go Debug Tasks Help
- Explorer:** Shows the project structure:
  - OPEN EDITORS
  - ANGULAR
    - node\_modules
    - src
      - app
        - app.component.css
        - app.component.html
        - app.component.ts
      - app.module.ts
- Editor:** index.html, app.component.html (selected).

```
1 <h1 [textContent]='name'></h1>
2 <h1>{{5 + no}}</h1>
3
```



# DOM Properties vs. Attribute

- Properties
- Events
- Attributes

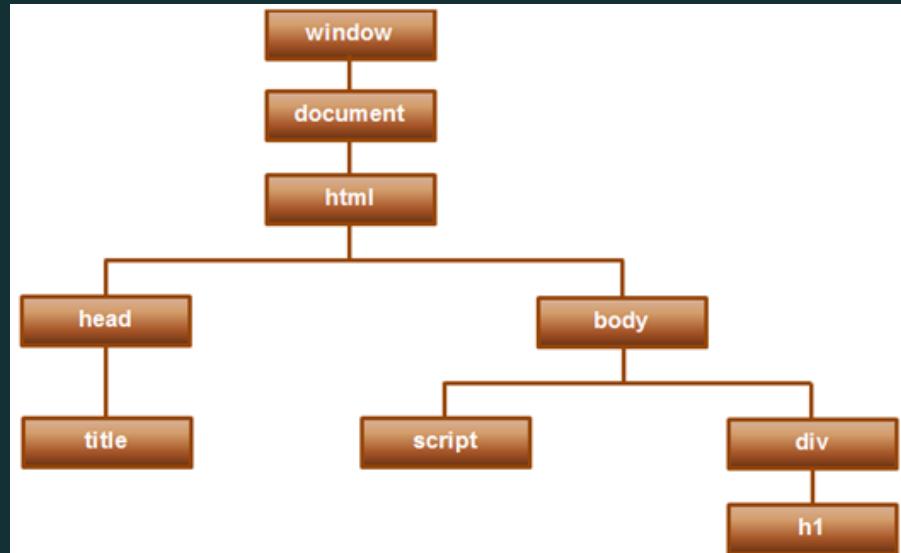
## HTML

- Attribute

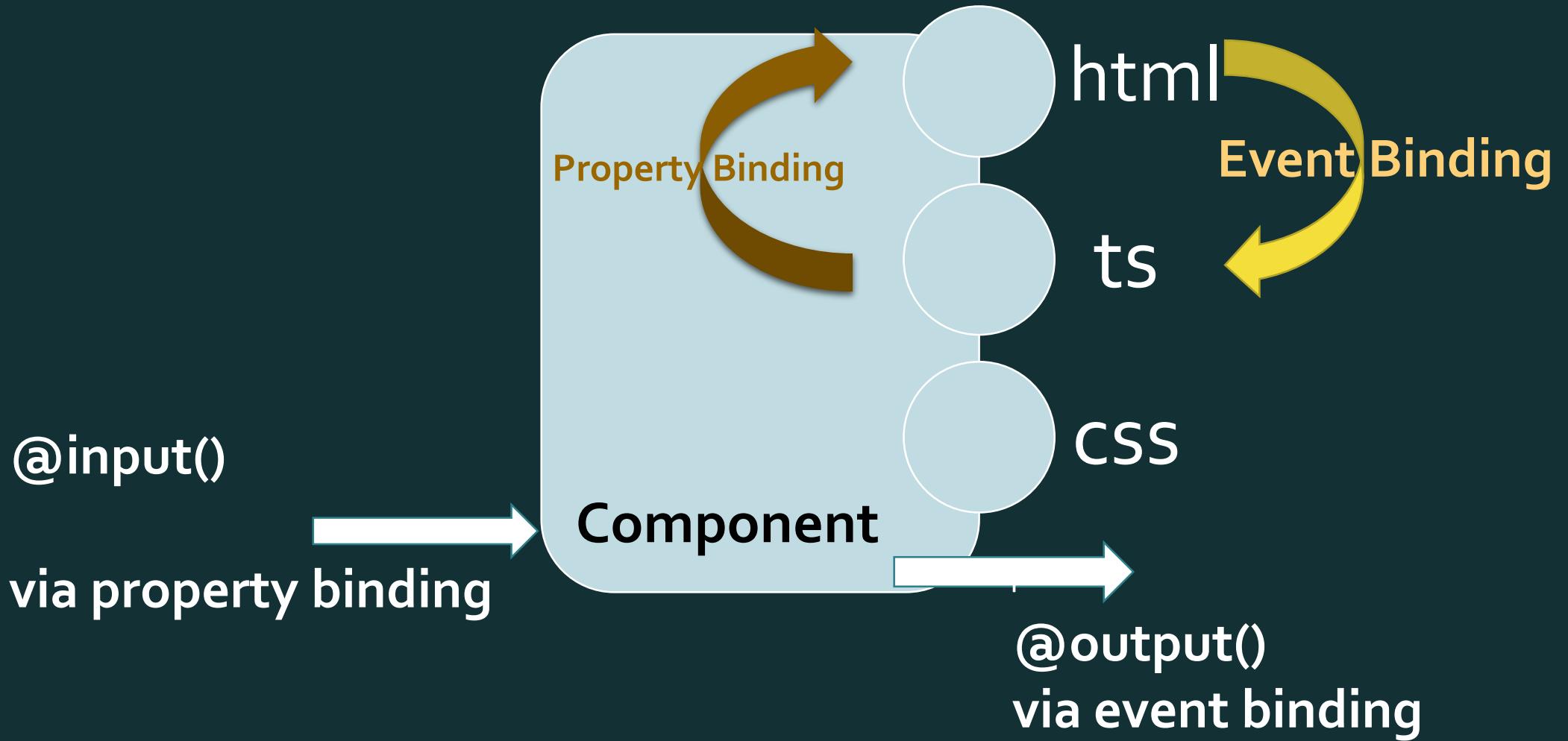
## DOM

- Property

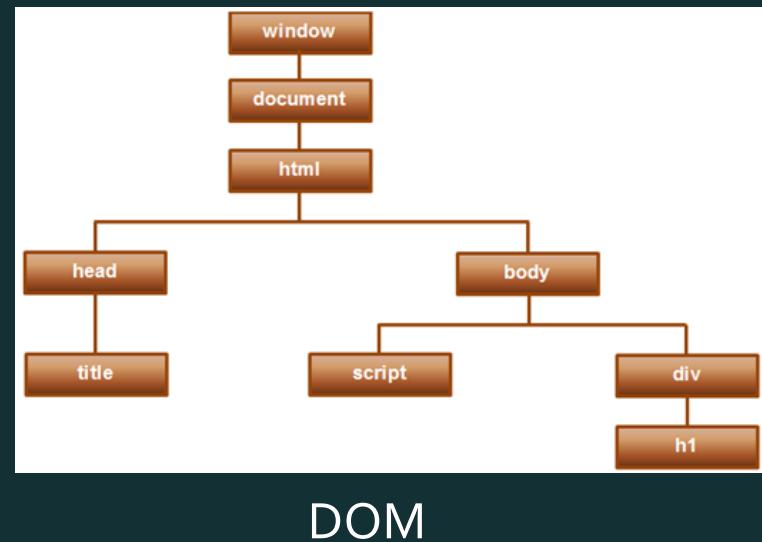
```
<html>
  <head>
    <title>My Page Title</title>
  </head>
  <body>
    <script type="text/javascript">
    </script>
    <div>
      <h1>This is browser DOM</h1>
    </div>
  </body>
</html>
```



# DOM Properties vs. Attribute



# Binding



`{{expression}}`

Interpolation

`[property] = “expression”`

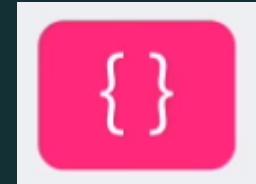
One Way Binding

`(event) = “statement”`

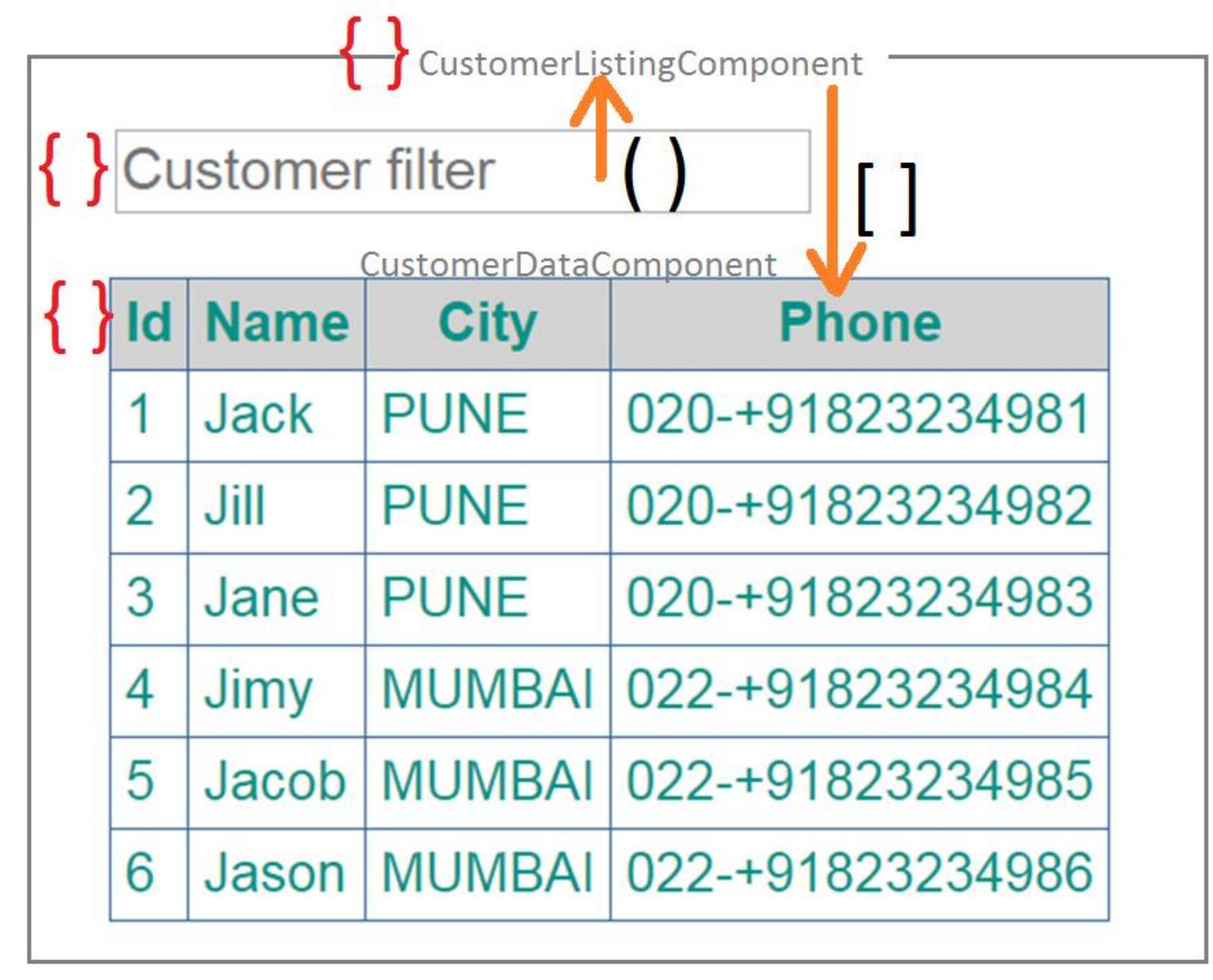
Event Binding

`[(ngModel)] = “property”`

Two Way Binding

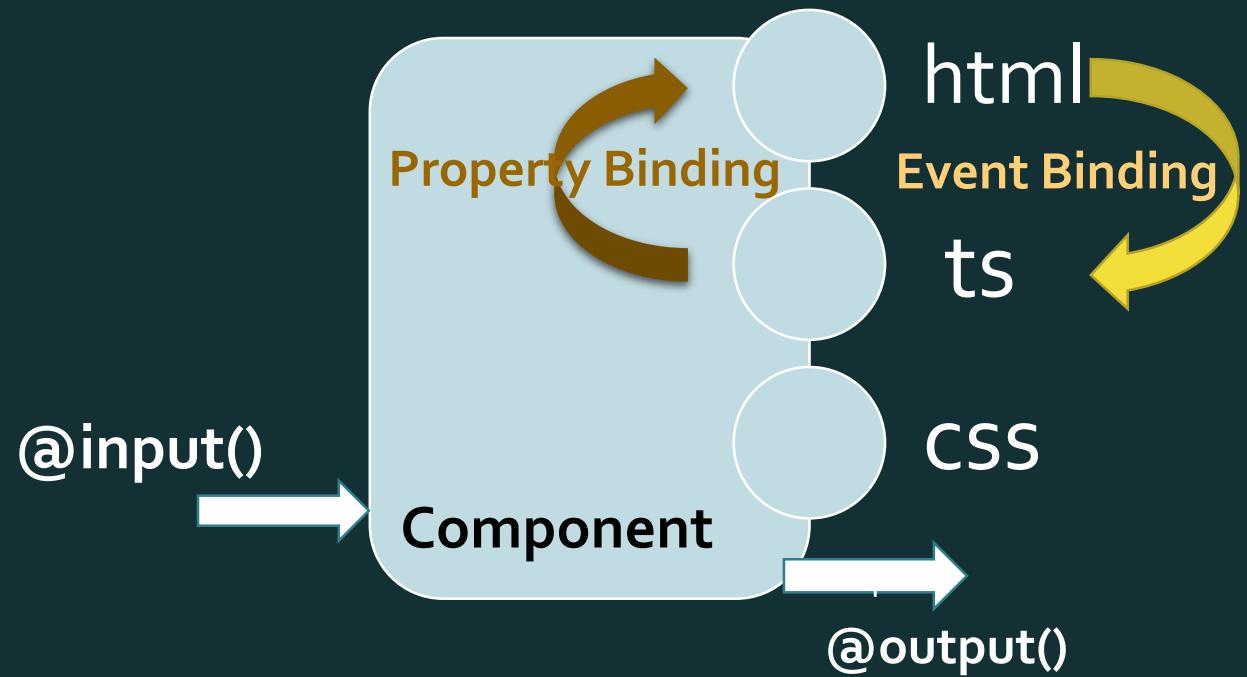


Component



```
<customer-filter (customerSelected)='onCustomerSelected($event)'></customer-filter>
<customer-data [customerNameToFilter]='customerName'></customer-data>
```

- Easy to manage -Enterprise applications
- Can be designed as loosely coupled – input/output property
- Loosely coupled - Unit testable
- Lazy loaded with modules – Less memory footprint
- Modular



# Components Advantages

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{ let s = Start Project }

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# Angular Pipe

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## Data Transformation



# Angular Pipe

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# Custom Pipe

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- `{{ price | currency:'USD':true }}`
- `{{ user.name | uppercase }}`  
`{{ user.name | lowercase }}`
- `<ul> <li *ngFor=`  
  `"let item of data | async">`  
    `{{ item.name }}`  
`</li> </ul>`
- `{{ someDate | date:'fullDate' }}`  
`{{ someDate | date:'yy' }}`
- `{{ decimalValue | number:'4.3-5' }}`
- `{{ someObject | json }}`
- `{{ decimalValue | percent }}`  
`{{ decimalValue | percent:'3.2-3' }}`



# Pipes



# Dependency Injection

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App Module



CustomerManagement  
Module

Customer Listing  
Component

CustomerFilter  
Component

CustomerData  
Component

AddCustomer  
Component

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AssetManagement  
Module

TransactionListing  
Component

CustomerFilter  
Component

TransactionData  
Component

AddCustomer  
Component

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Module

M1

C1 { }



Ch1  
{ }



Ch2  
{ }



C2 { }

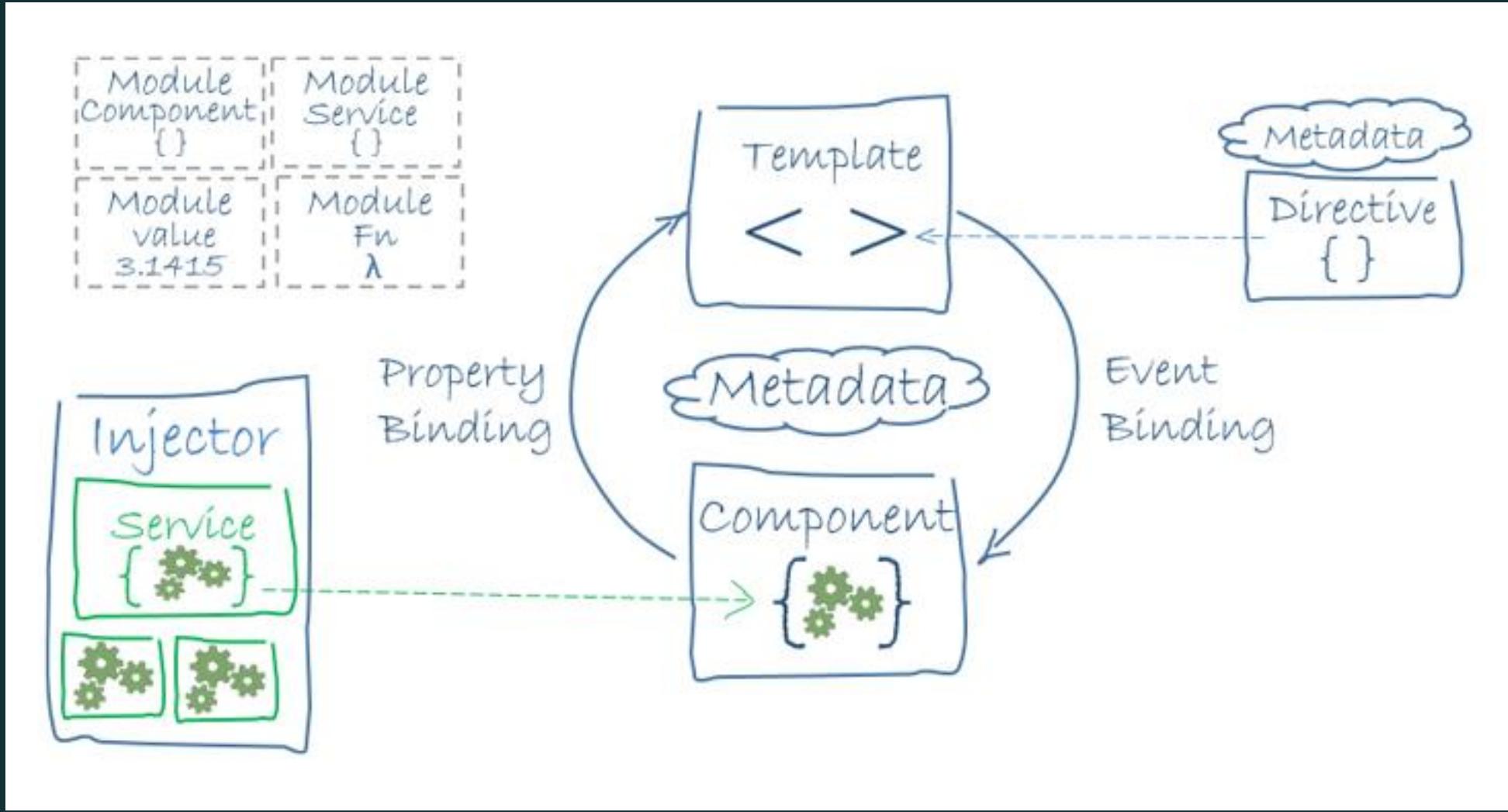


Ch1  
{ }

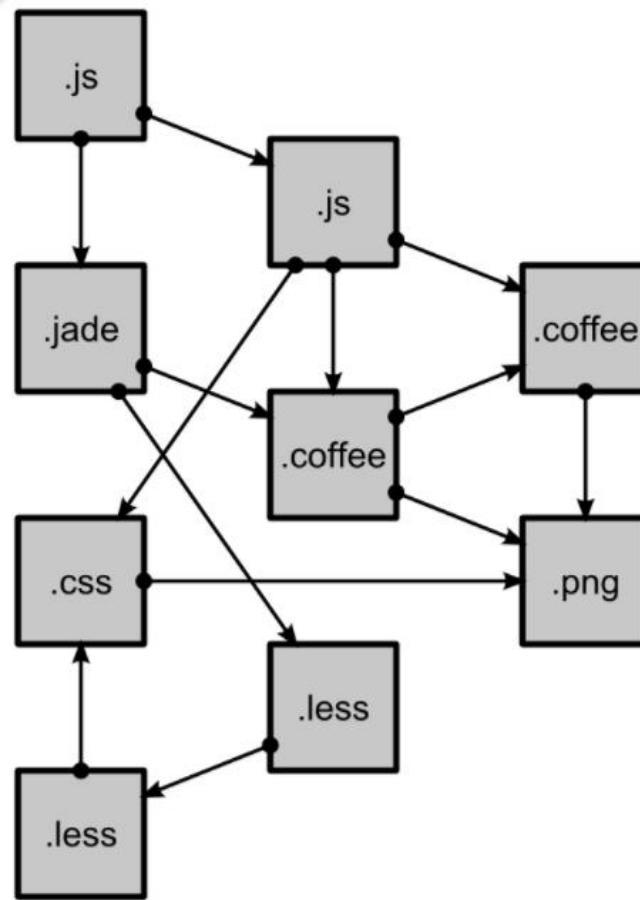


Ch2  
{ }

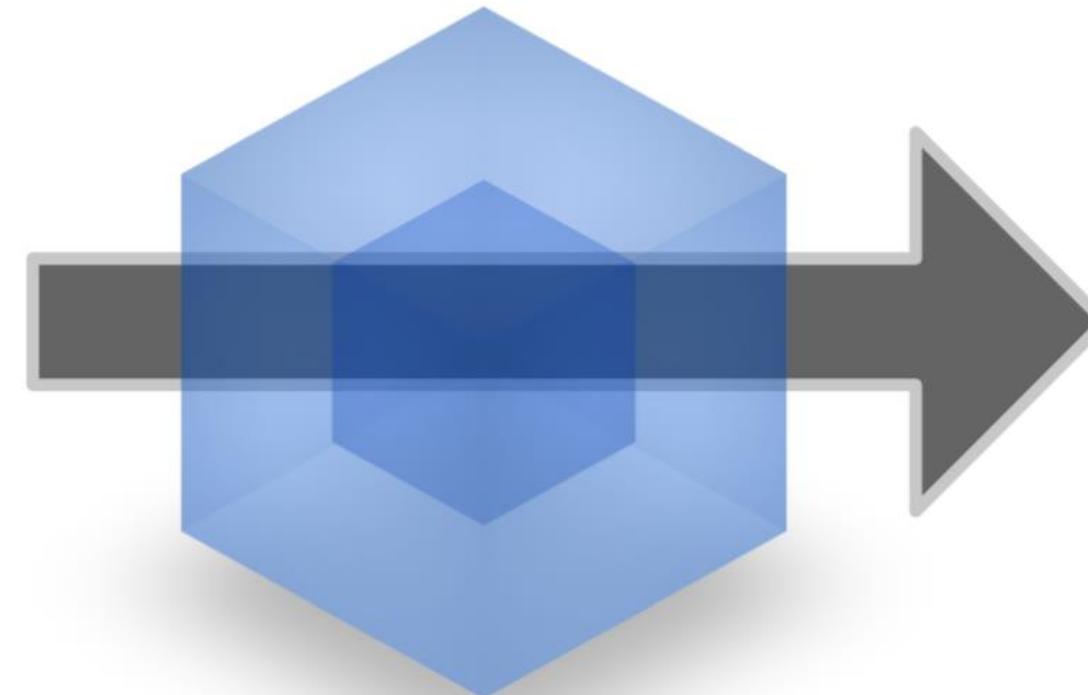




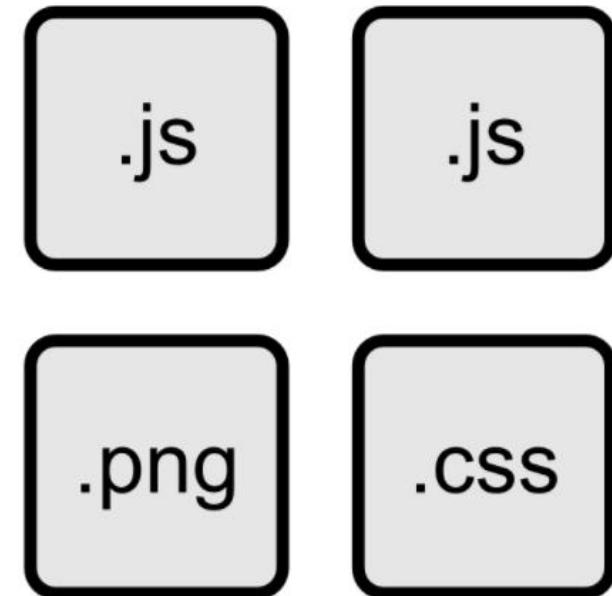
# Architecture



modules  
with dependencies



**webpack**  
MODULE BUNDLER



static  
assets



**webpack**  
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# webpack



THANK YOU



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