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Angular 4 Tutorial

Agenda

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- Webpage and DOM
- DOM Manipulation
- JavaScript and jQuery
- Why Angular?
- What is SPA?
- Angular Introduction
- Angular Features
- Angular Installation
- Basic Building Blocks of Angular
- Angular Architecture

Webpage and DOM

Webpage and DOM

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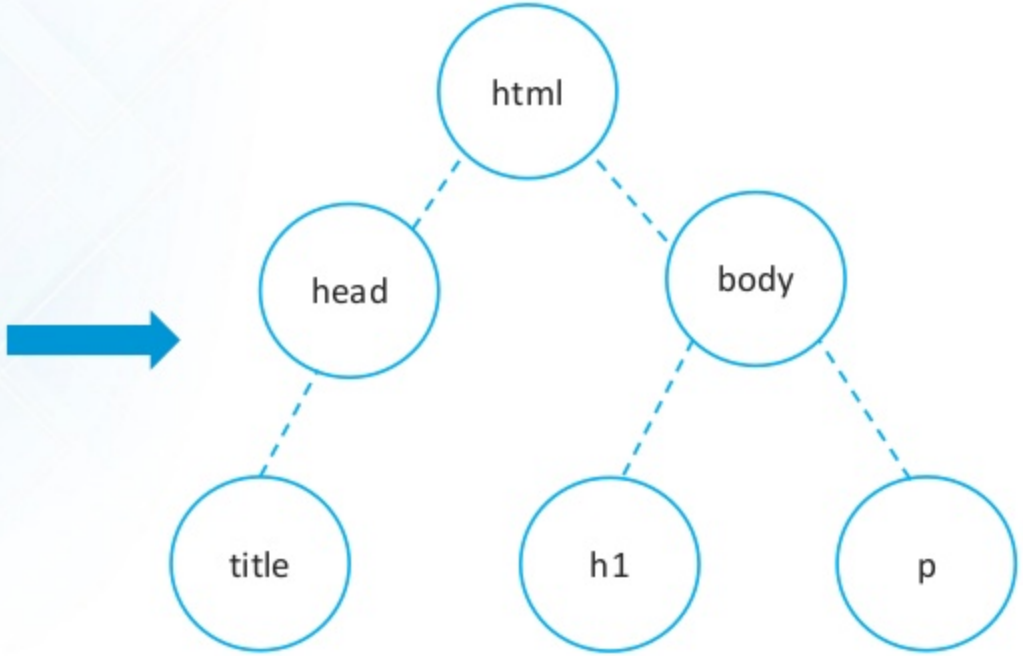
```
<html>
 <head>
 <title> Angular 2 Tutorial </title>
 </head>
 <body>
    <h1> Welcome to Angular 2 Tutorial </h1>
    <p>Angular is a development platform for creating
      applications using modern web standards.</p>
 </body>
</html>
```

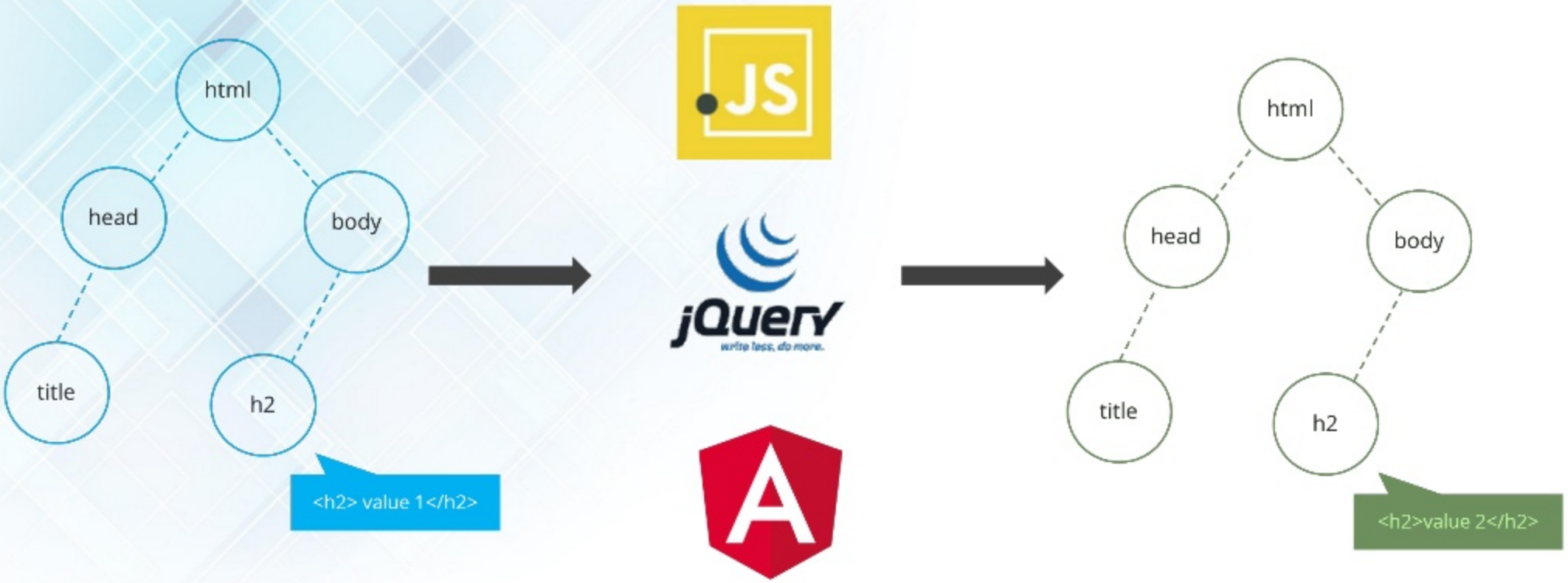
HTML Markup



DOM Tree of the HTML document

DOM Manipulation

DOM Manipulation



JavaScript

JavaScript & jQuery

- JavaScript is a programming language designed for use in a web browser.
- Used for manipulating DOM
- Example:

```
Document.body.style.background = red;
```

- jQuery is a library built in JavaScript to automate and simplify common tasks.
- Used for manipulating DOM
- Example:

```
$ ('body') .css ('background', '#ccc');
```

Why Angular?

Why Angular?

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	jQuery	Angular
DOM Manipulation	✓	✓
RESTful API	✗	✓
Animation Support	✓	✓
Deep Linking Routing	✗	✓
Form Validation	✗	✓
2 Way Data Binding	✗	✓
AJAX/JSONP	✓	✓

What is a Single Page Application?

What is SPA?

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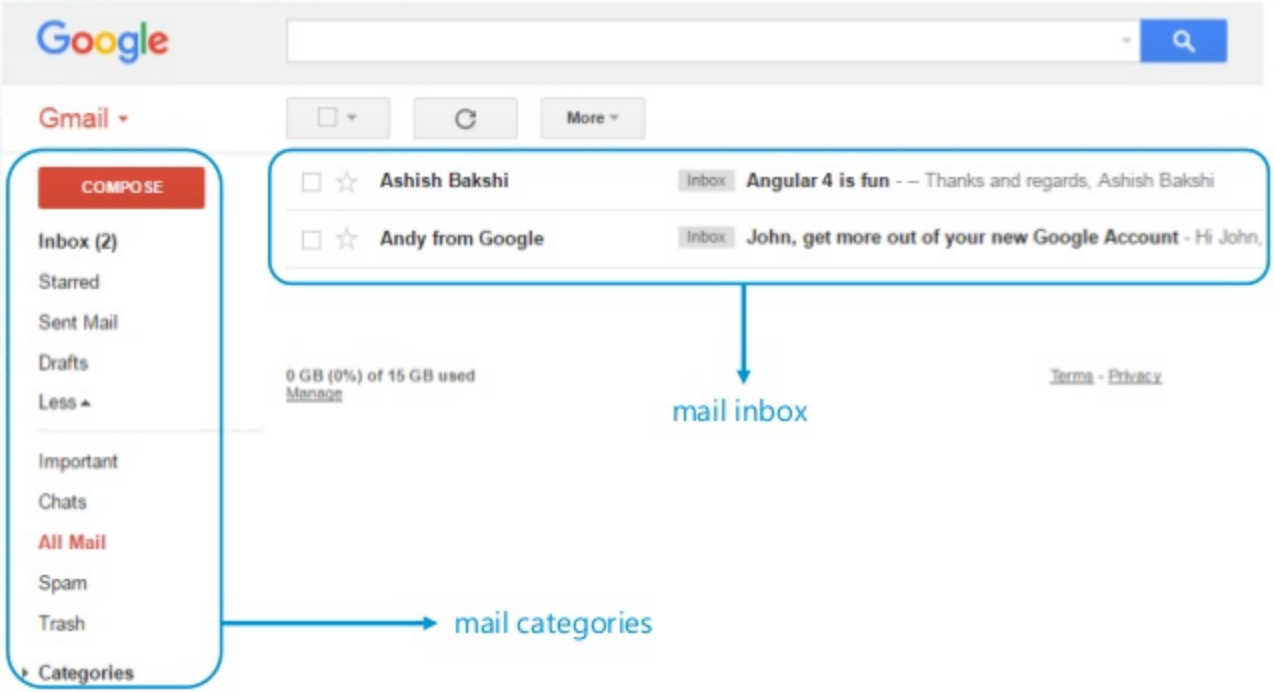
A Single Page Application is a web application that requires only a single page load in a web browser.

- Whole page is not reloaded every time
- Your browser fully renders the DOM once
- Later any server interactions is performed by JavaScript which modifies the view



Traditional Way Vs Single Page Application

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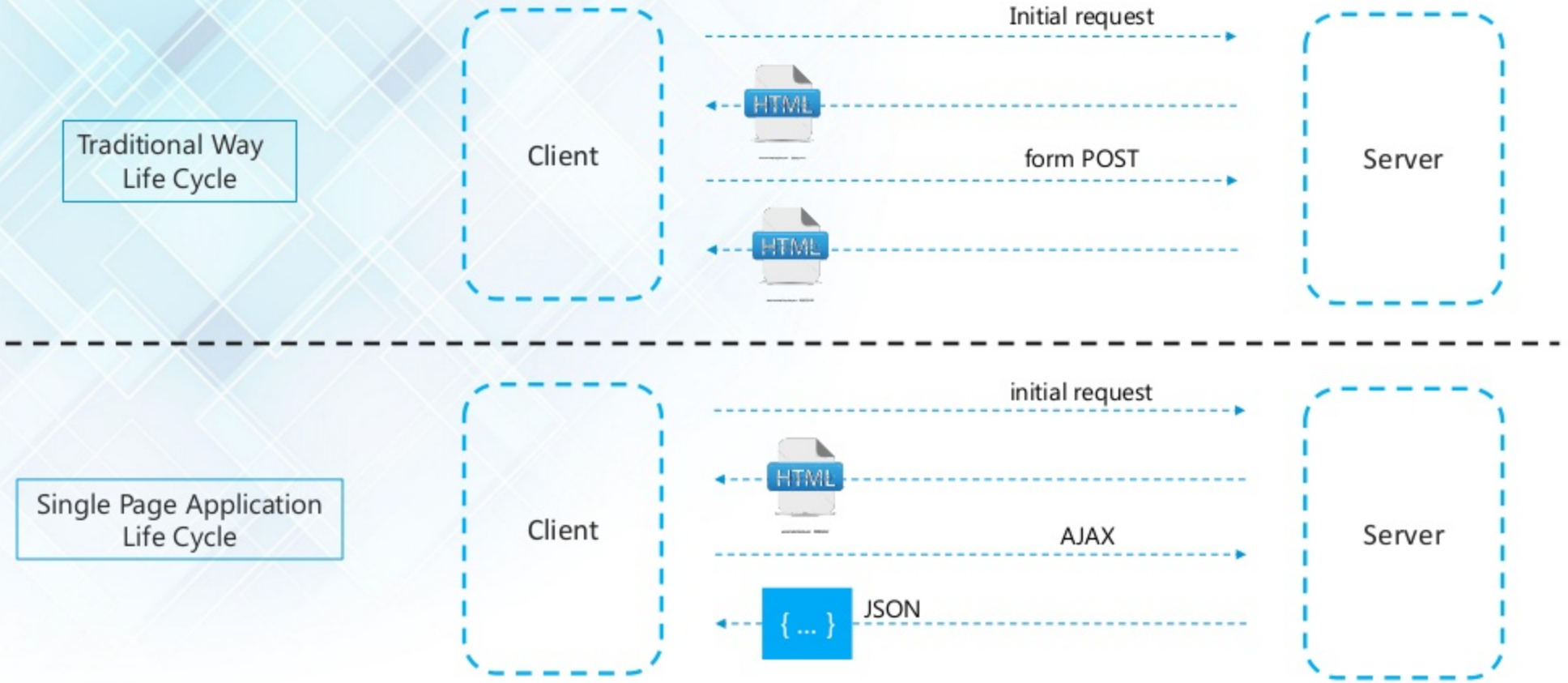

Angular Introduction

Angular Introduction

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Useful for building complex applications in the browser (and beyond).

OpenSource Client Side JavaScript framework created by Google

Introduction of Object Oriented Web Development using TypeSCript

Angular accomplishes a lot by embracing HTML, JavaScript & CSS

Angular Features

Angular Features

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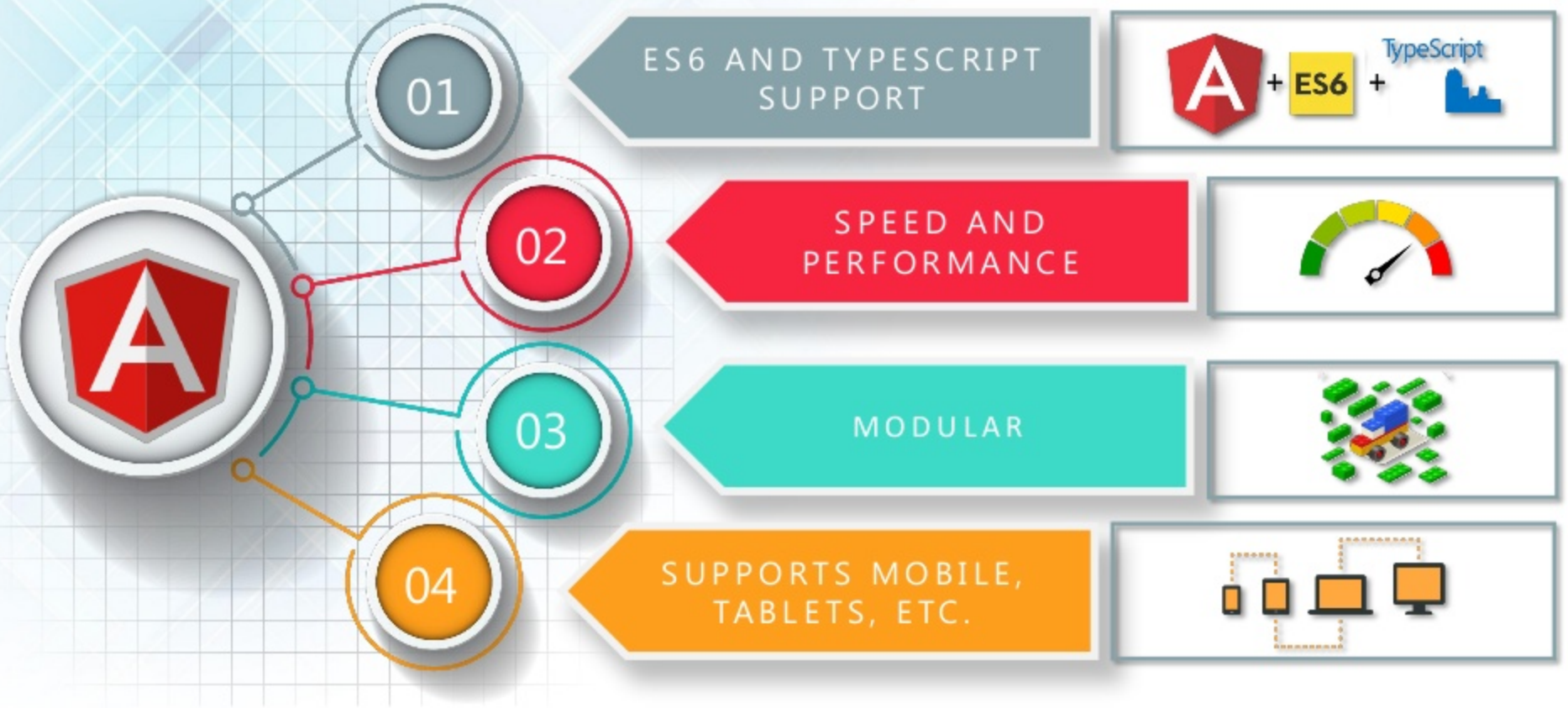

Angular Installation

Building Blocks of Angular

Building Blocks of Angular

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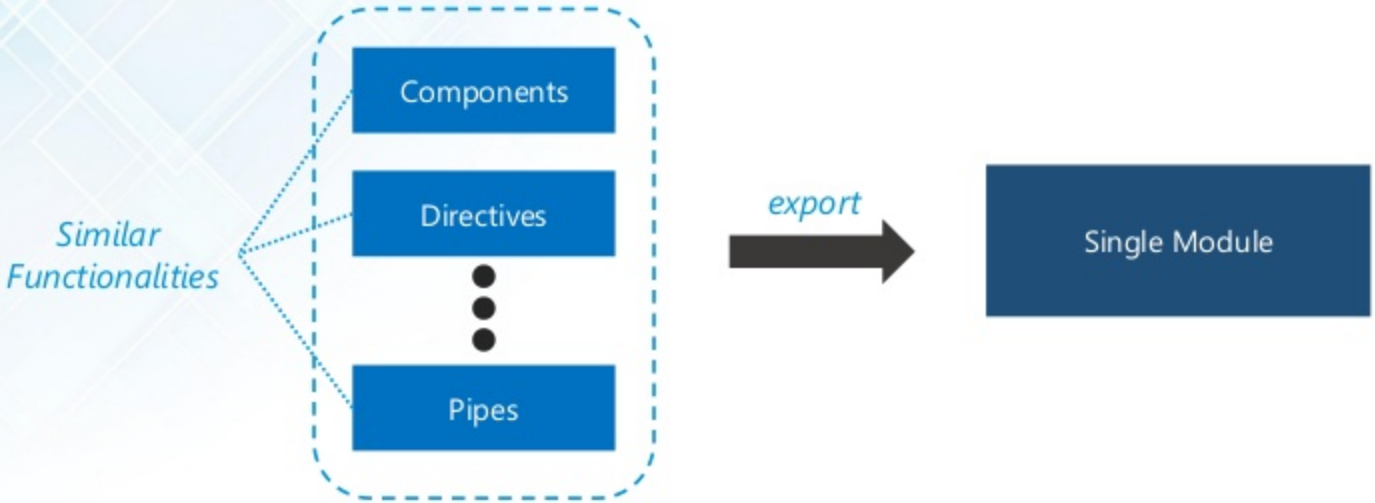
- **Module**
- Component
- Metadata
- Template
- Data Binding
- Services
- Directives

Module is a class with @NgModule metadata

Every Angular app has at least one root module

Encapsulation of different similar functionalities



Building Blocks of Angular

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- **Module**
- Component
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```
import { BrowserModule } from '@angular/platform-browser';
import { NgModule } from '@angular/core';
import { FormsModule } from '@angular/forms';
import { HttpModule } from '@angular/http';

import { AppComponent } from './app.component';
import { TaskComponent } from './task/task.component';

@NgModule({

  declarations: [
    AppComponent,
    TaskComponent
  ],
  imports: [
    BrowserModule,
    FormsModule,
    HttpModule
  ],
  providers: [],
  bootstrap: [AppComponent]
})
export class AppModule { }
```

Decorator

Declaring all the components

Importing Modules

Provide Services to all module's component

Building Blocks of Angular

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- Module
- **Component**
- Metadata
- Template
- Data Binding
- Services
- Directives

Nav Bar

News Feed

Building Blocks of Angular

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- Module
- **Component**
- Metadata
- Template
- Data Binding
- Services
- Directives

Sports Component

Building Blocks of Angular

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- Module
- **Component**
- Metadata
- Template
- Data Binding
- Services
- Directives

```
import { Component, OnInit } from '@angular/core';

@Component({
  selector: 'app-example',
  templateUrl: './example.component.html',
  styleUrls: ['./example.component.css']
})

export class ExampleComponent implements OnInit {

  constructor() { }

  ngOnInit() {
  }

}
```

Importing Component Decorator

Decorator

Meta Data

Exporting Component Class

Building Blocks of Angular

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- Module
- Component
- **Metadata**
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- Data Binding
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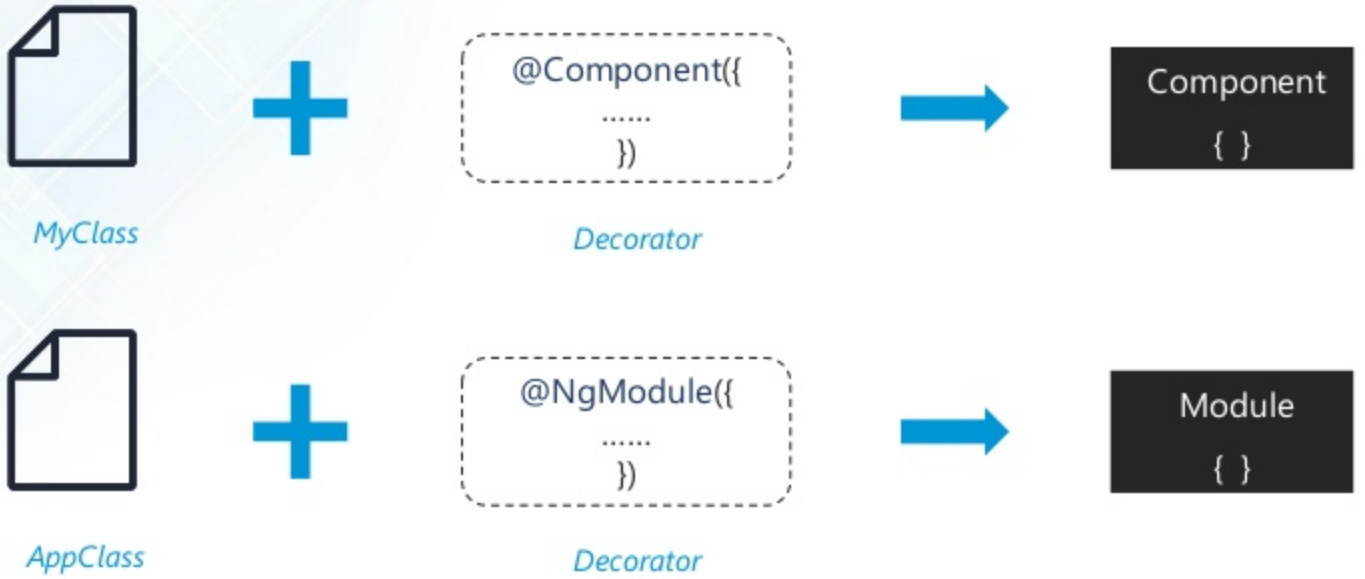
Metadata describes how to process the class

Decorator is used to attach metadata

Example:



Building Blocks of Angular

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- Module
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- **Metadata**
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- Data Binding
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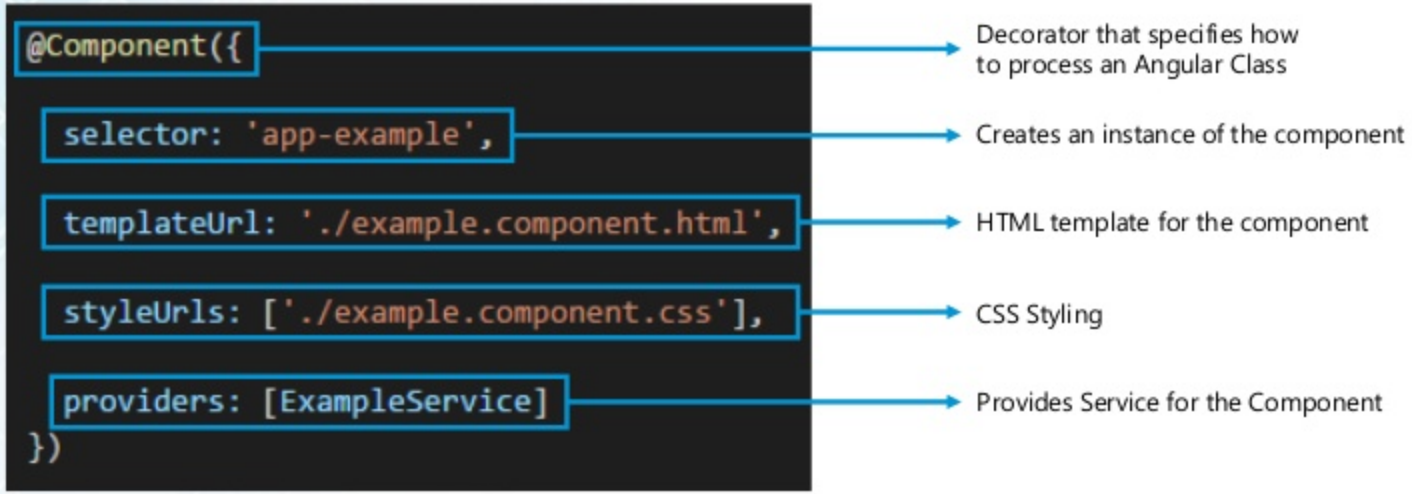

Building Blocks of Angular

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- Module
- Component
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- **Template**
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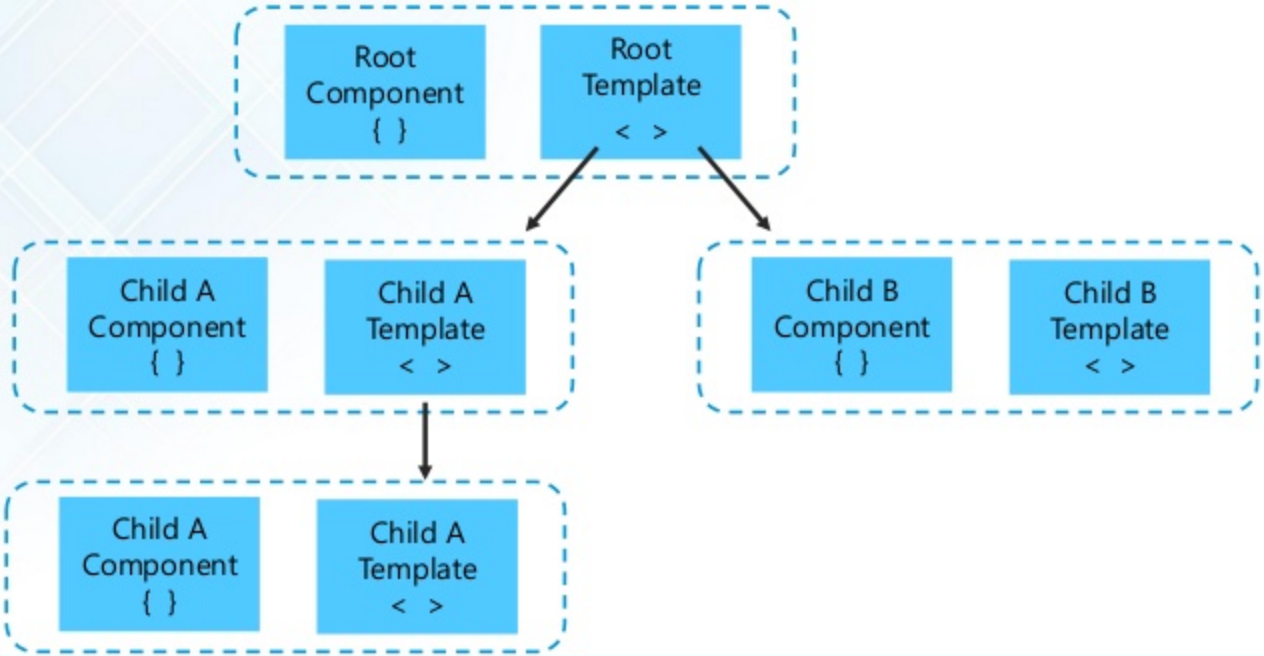
Used to define view of a component

Looks like HTML, except for a few differences.

Describes how the component is rendered on the page.



Building Blocks of Angular

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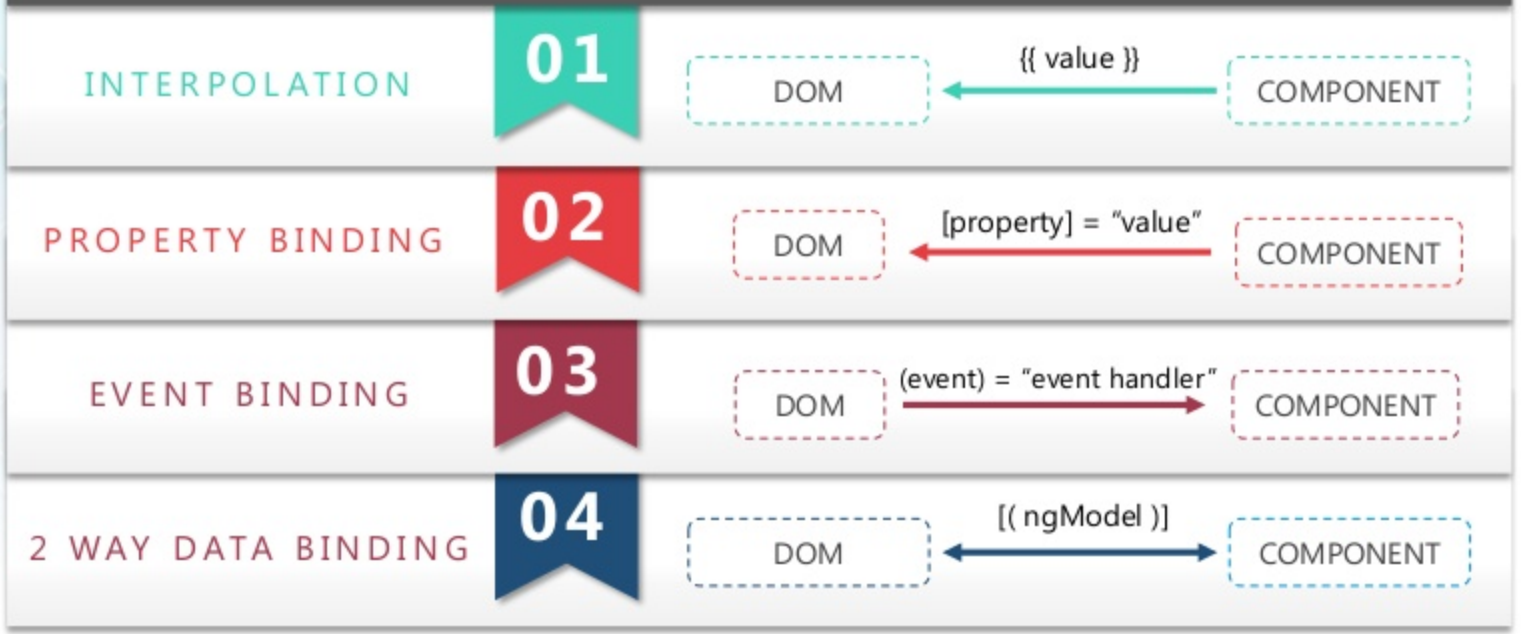
- Module
- Component
- Metadata
- Template
- **Data Binding**
- Services
- Directives

TYPES OF DATA BINDING

Data binding plays an important role in communication between a template and its component



Building Blocks of Angular

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- Module
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- **Data Binding**
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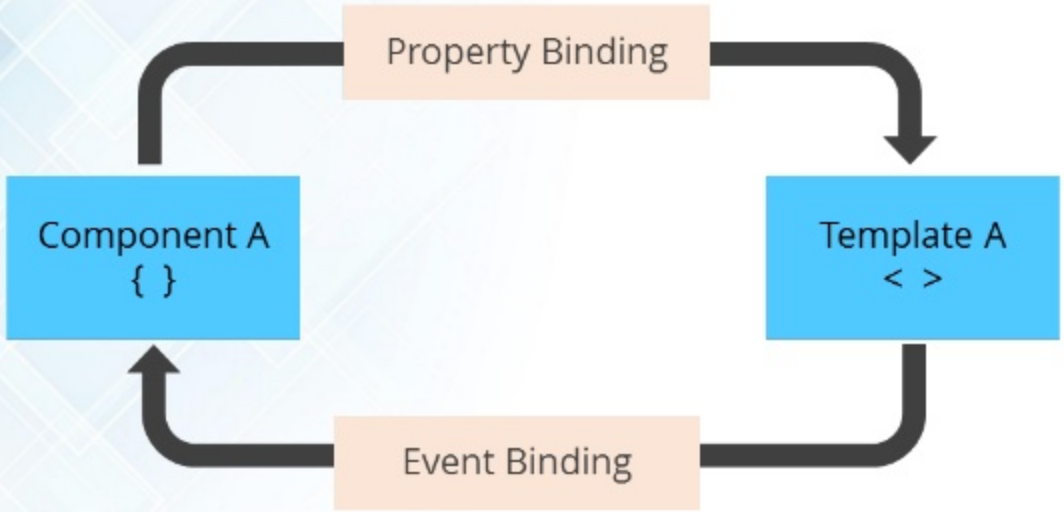
- Directives



Data binding plays an important role in communication between a template and its component.

Building Blocks of Angular

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- Module
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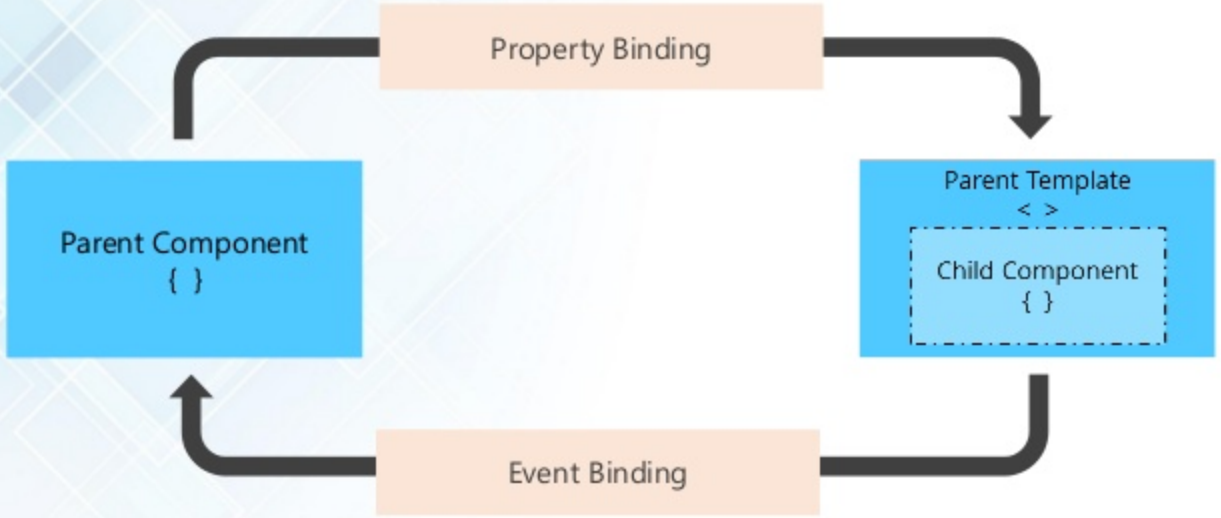
- Template
- **Data Binding**
- Services
- Directives



Data binding is also important for communication between parent and child components.

Building Blocks of Angular

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- Module
- Component
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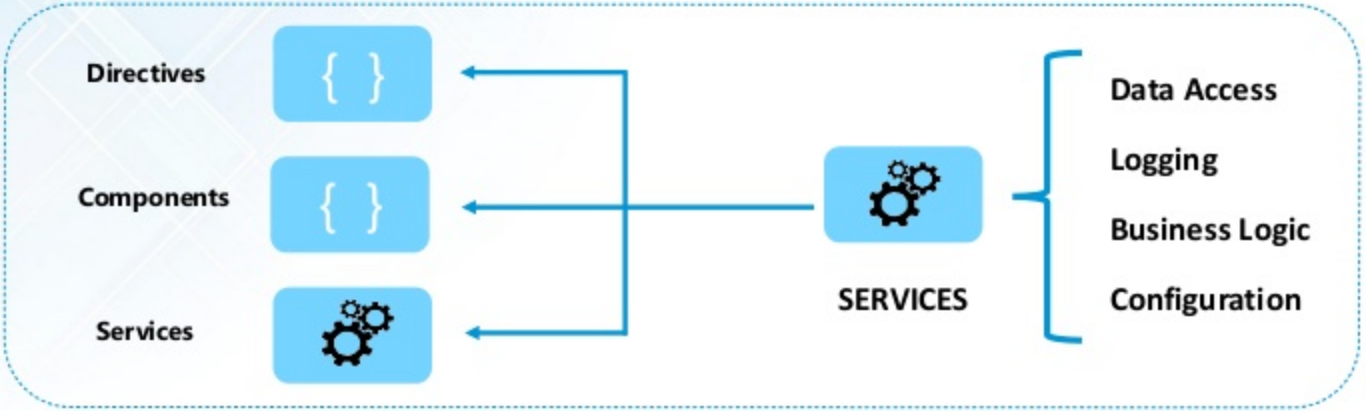
- **Services**
- Directives

Service is a broad category encompassing any value, function, or feature that your application needs.

Example:

logging service | data service | message bus | tax calculator



Building Blocks of Angular

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- Module
- Component
- Metadata
- Template
- Data Binding
- **Services**
- Directives

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

@Injectable()
export class ExampleService {

  movies: string[] = ["Inception", "Dark Knight", "Shutter Island"];

  constructor() { }

  getMovies(): string[]
  {
    return this.movies;
  }

}
```

Service Class

Service Method for retrieving data

Building Blocks of Angular

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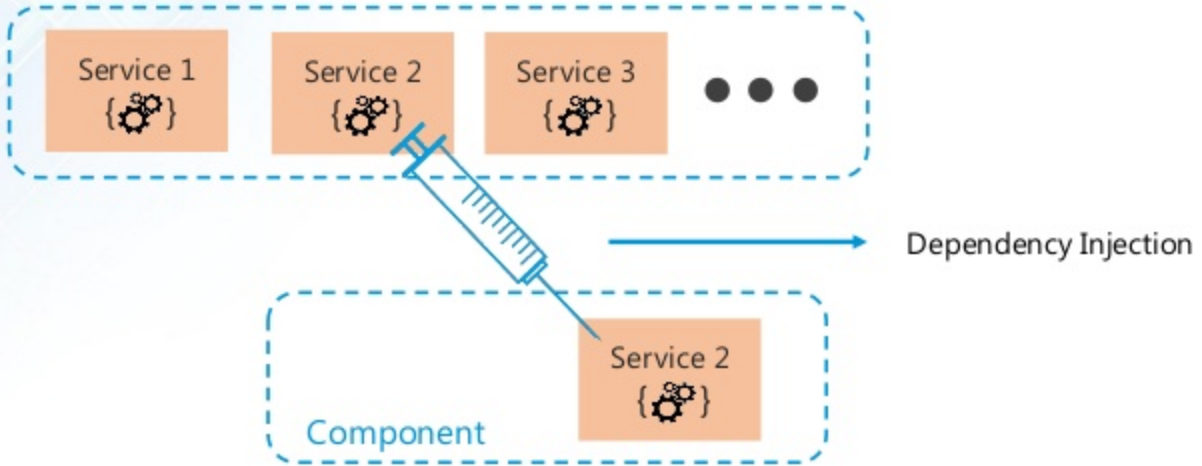
- Module
- Component
- Metadata
- Template
- Data Binding
- **Services**
- Directives

Creates a new instance of class along with its required dependencies

Used to provide services to a component



Building Blocks of Angular

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- Module
- Component
- Metadata
- Template
- Data Binding
- **Services**
- Directives

```
import { Component, OnInit } from '@angular/core';
import {ExampleService} from '../example.service';

@Component({
  selector: 'app-example',
  templateUrl: './example.component.html',
  styleUrls: ['./example.component.css'],
  providers: [ExampleService]
})
export class ExampleComponent implements OnInit {

  movies: string[];
  constructor(private exampleService: ExampleService) { }

  ngOnInit() {
      this.movies = this.exampleService.getMovies();
  }

}
```

Importing Service Class

Injecting Service into the Component

Retrieving data

Building Blocks of Angular

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- Module
- Component
- Metadata
- Template
- Data Binding
- Services
- **Directives**

Changes the appearance or behavior of a DOM element

1. COMPONENTS → Directives with a template
2. STRUCTURAL DIRECTIVE → Adds & removes DOM elements to change DOM layout
3. ATTRIBUTE DIRECTIVE → Changes the appearance or behavior of an element

Building Blocks of Angular

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- Module
- Component
- Metadata
- Template
- Data Binding
- Services
- **Directives**

2 STRUCTURAL DIRECTIVE → Adds & removes DOM elements to change DOM layout

```
<ul>
  <li *ngFor = "let movie of movies">{{movie}}</li>
</ul>
```

Iterating over the movies list

Building Blocks of Angular

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- Module
- Component
- Metadata
- Template
- Data Binding
- Services
- **Directives**

3 ATTRIBUTE DIRECTIVE

Changes the appearance or behavior of an element

```
import { Directive, ElementRef, HostListener } from '@angular/core';

@Directive({
  selector: '[appBoldText]'
})
export class BoldTextDirective {

  constructor(private elementRef: ElementRef) { }

  @HostListener('mouseenter') onMouseEnter() {
     this.elementRef.nativeElement.style.fontWeight = 'bold';
  }

  @HostListener('mouseleave') onMouseLeave() {
   this.elementRef.nativeElement.style.fontWeight = null;
  }
}
```

- Importing Directive, ElementRef & HostListener
- Directive Metadata
- Injecting ElementRef to access the DOM elements
- Bold the text on cursor hover
- Un-bold the text

Angular Architecture

Angular Architecture

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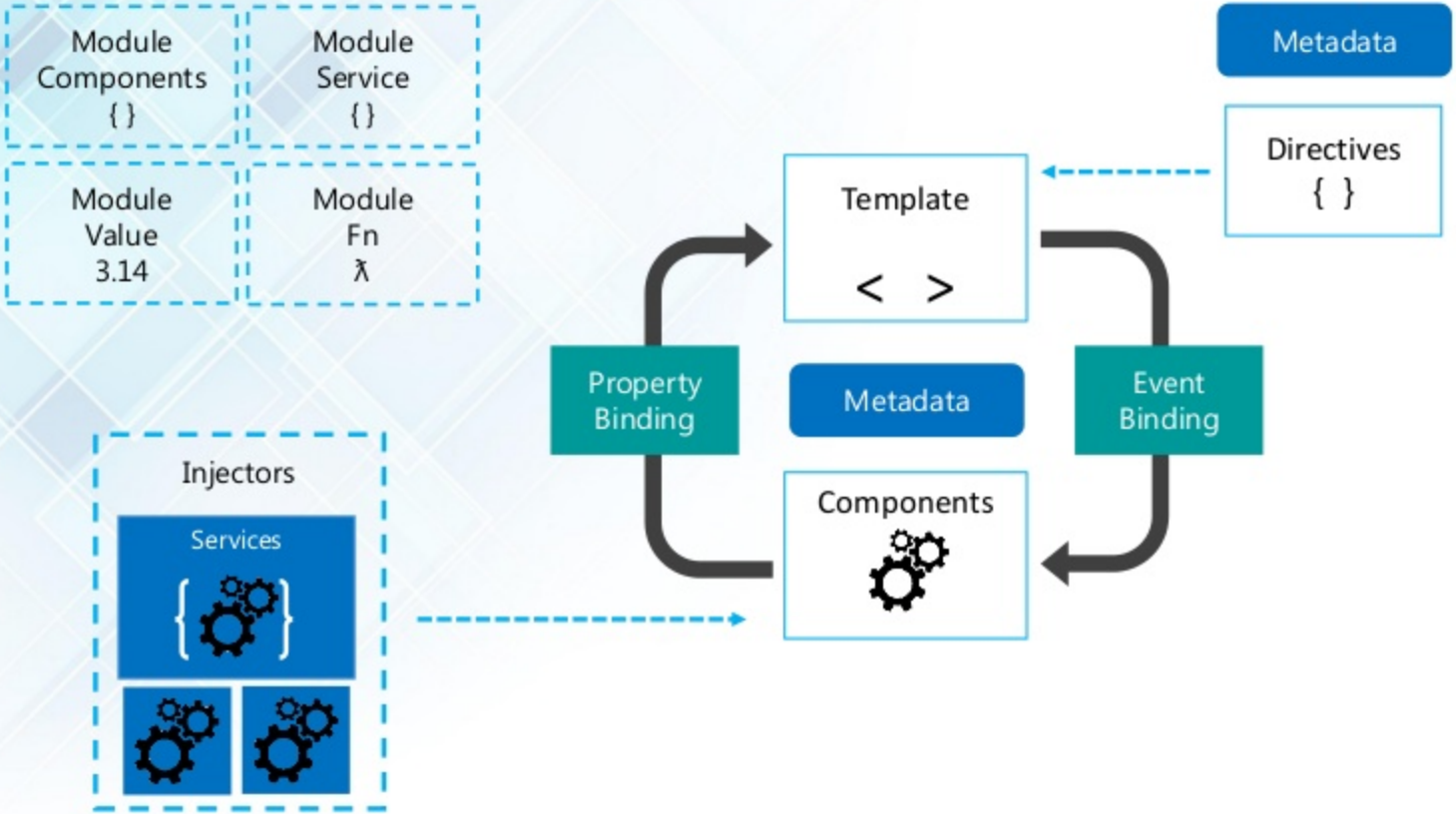

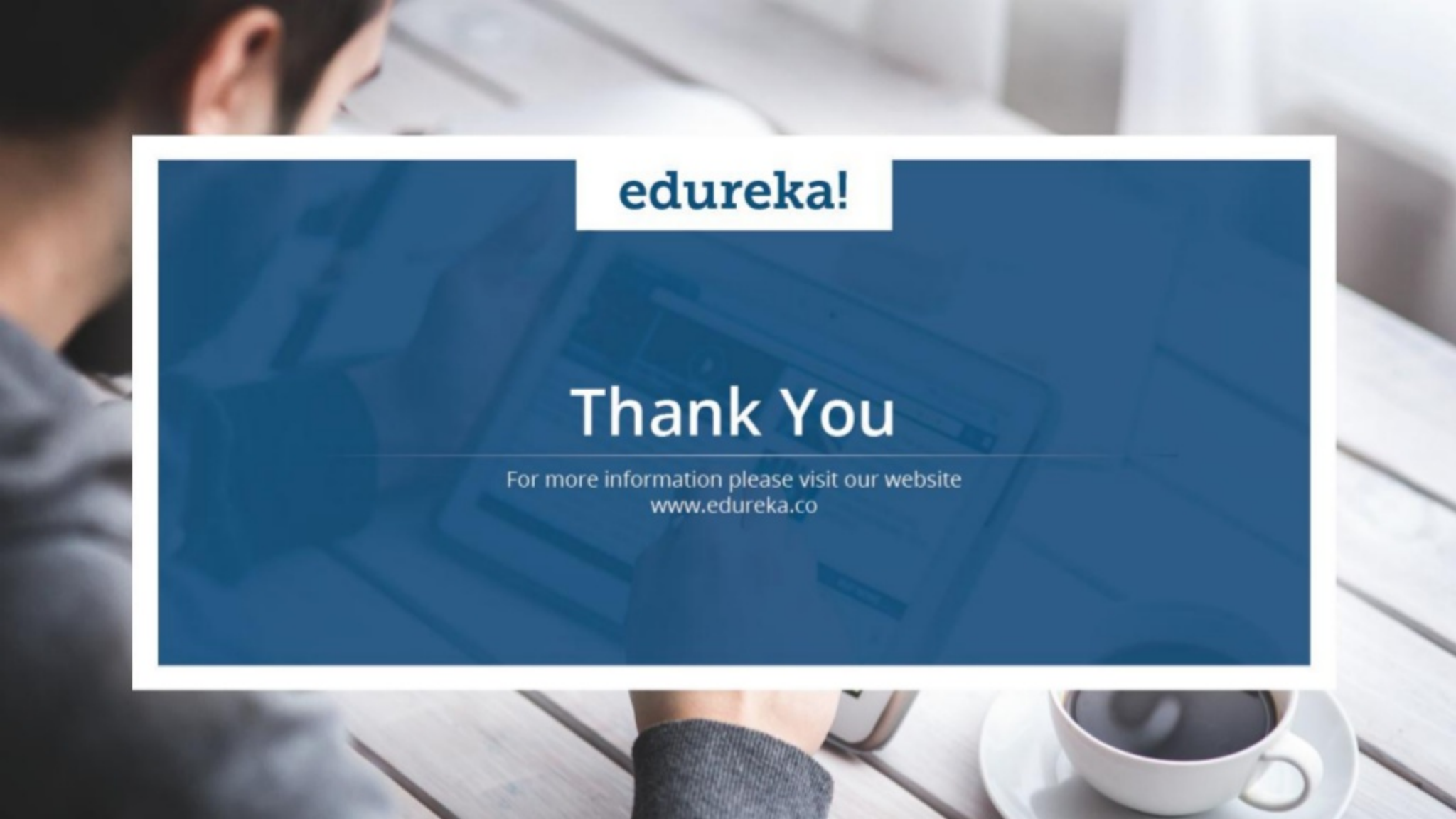
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