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Corporate Training Company

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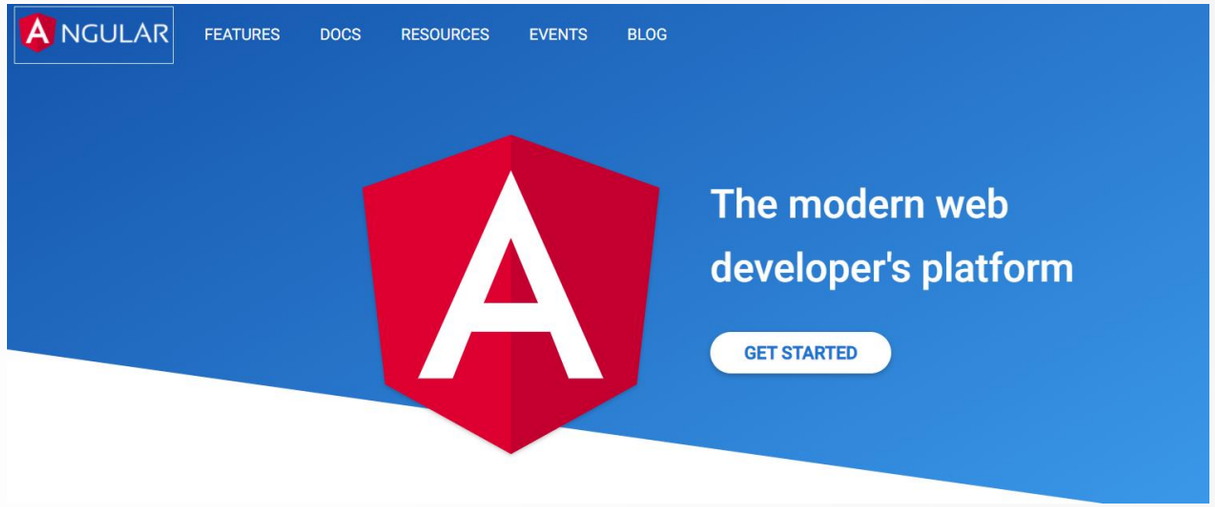


Angular

Creating Front End

(Always latest version)

About us

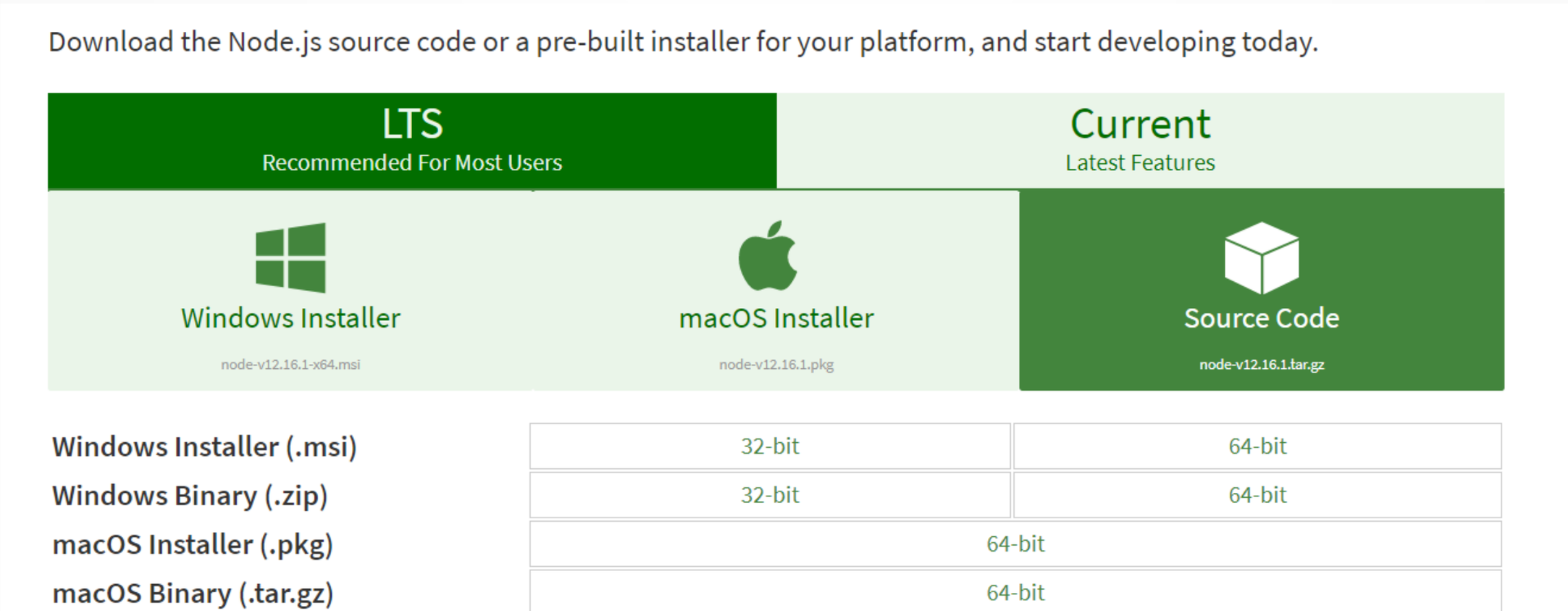
MKJ IT Learning is the corporate training firm, delivered enterprise level training across the globe.

The instructor of the training is
Ashish Bansal
Having 10+ years of experience in corporate trainings and project consultancies

https://www.mkj-it-learnings.com/online-training-team-profiles

Setting up Development Environment

1) Download Node .js



Continue…

```
C:\Users\ashish>node -v
v12.14.0

C:\Users\ashish>npm install -g typescript
C:\Users\ashish\AppData\Roaming\npm\tsc -> C:\Users\ashish\AppData\Roaming\npm\node_mo
s\typescript\bin\tsc
C:\Users\ashish\AppData\Roaming\npm\tsserver -> C:\Users\ashish\AppData\Roaming\npm\no
odules\typescript\bin\tsserver
+ typescript@3.8.3
added 1 package from 1 contributor in 4.636s

C:\Users\ashish>tsc -v
Version 3.8.3
```

Check node Js

Install Typescript (-g means globally)

Check Type script latest version

Advance Java Script ES6

Var vs let

```
function doStuff(){
    for(var i=0;i<5;i++){
      console.log(i);
    }//end of for
console.log("after doStuff i "+i);
}
doStuff();
```

```
0
1
2
3
4
after doStuff i 5
```

After for loop i is valid and accessible

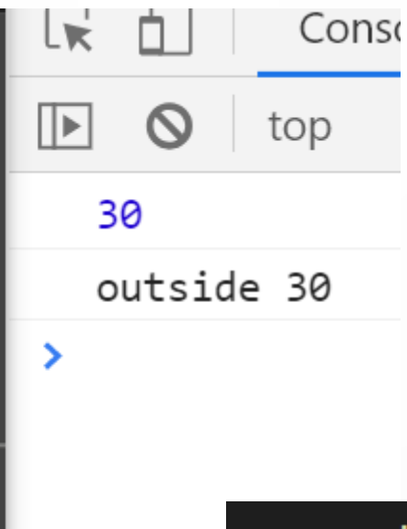
```
function doStuff(){
    for(let i=0;i<5;i++){
      console.log(i);
    }//end of for
console.log("after doStuff i "+i);
}
doStuff();
```

```
0
1
2
3
4
Uncaught ReferenceError: i is not defined
    at doStuff (<anonymous>:5:32)
    at <anonymous>:7:1
```

Using let we can avoid such problem

Functions

```
1  function doAdd(a,b)
2  {
3      console.log(a+b);
4      return a+b;
5  }
6
7  var x = doAdd(10,20);
8  console.log("outside "+x);
```

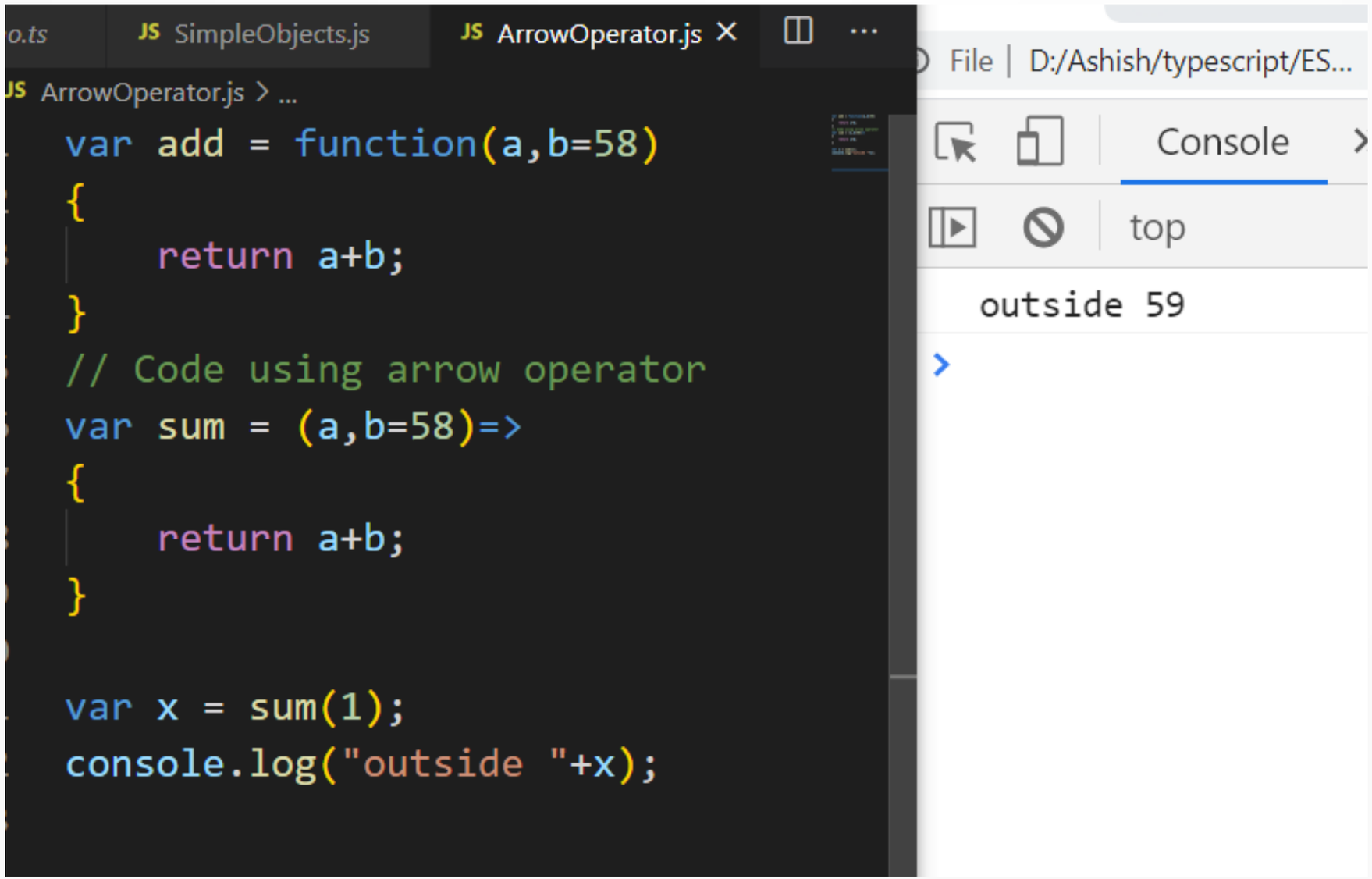


- Java Script allows to pass default arguments
- Function object and calling a function

```
var doAdd = function (a,b=58)
{
    console.log(a+b);
    return a+b;
}

var x = doAdd(15);
console.log("outside "+x);
```

Arrow (=>) Operator



Creating Object in Java Script

```
const Person =
{
    name : 'Ashish',

    walk()
    {
        console.log("-->  "+this.name+" walks")
    },

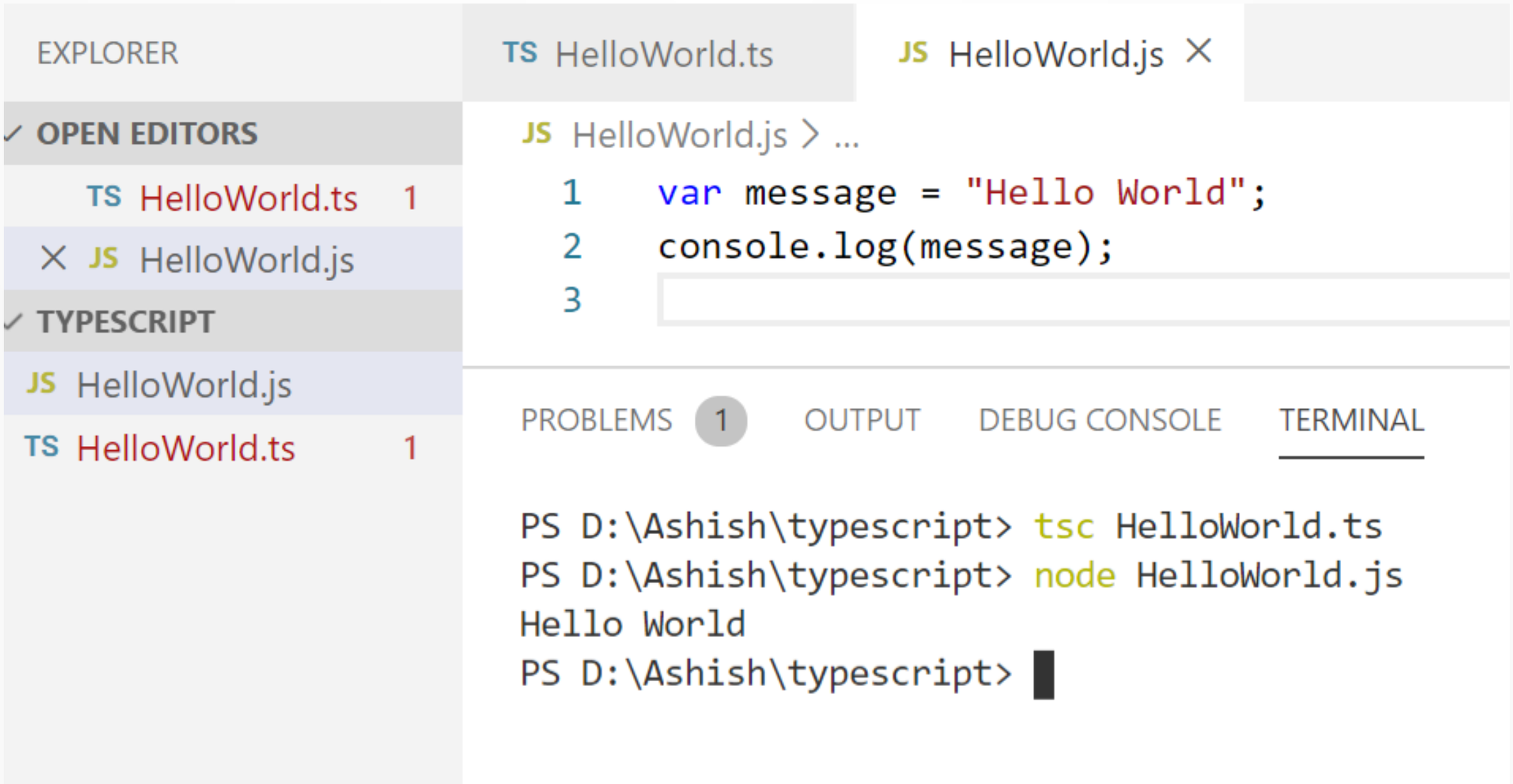
    talk()
    {
        console.log(name+"talks");
    }
}

Person.walk();
Person[name.value] = 'ramesh';
console.log("name "+Person.name);
```

Discuss

- What is Objects.
- What is Behaviour
- dot operator
- [ ] operator

Hello World of Type Script



Variable Declarations

1) Typescript uses let & const keywork to declare variables.
2) One side JavaScript only has global scope and function scope , let & const solve this issue .
   let don't allow to re declare the variable and also provides block level support.

```
> let x = 10;
  let x = 20;
```

```
Uncaught SyntaxError: Identifier 'x' has already been declared
```

Const is used to declare the constants.

```
> function doThings(){
      var x = 10;
      var x = 20;
      console.log(x);
  }
  doThings();
```

```
  20
```

```
<· undefined
```

```
>
```

Assign A Type

TS HelloWorld.ts > ...

```ts
export {}
let message = "Hello World";
console.log(message);

let isValid : boolean = true;
let age : number = 32;
let name : string = 'Mike';
console.log(isValid+" - "+age+" - "+name);
let aboutus : string = `My name is ${name} and i'm a full stack developer`;
console.log(aboutus);
```

```ts
function add(num1: number, num2: number): number {
    return num1 + num2;
}
add(5, 10);
add(5, '10');
```

Note: return type

Notice : error because of type mismatch

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2: powershell

```
PS D:\Ashish\typescript> node HelloWorld
Hello World
true - 32 - Mike
My name is Mike and i'm a full stack developer
PS D:\Ashish\typescript>
```

Array Type

We have two different type of syntaxes for array declaration in type script

```
2    /* 1st way*/
3    let list1:number[] = [1,505,14];
4    let list2:Array<number> = [1,505,14,885];
5
6    console.log(list1+"  - "+list2);
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS D:\Ashish\typescript> node ArraysDemo
1,505,14-1,505,14,885
PS D:\Ashish\typescript>
```

Functions

Typescript supports optional parameters & default parameters

```
> function foo(abc){
   console.log(abc);
  }

  foo();
  undefined
<· undefined
```

Notice : In JavaScript we can call method without parameter

```
TS FunctionsDemo.ts > ...
1   function foo(a:number,b:number){
2       console.log(a+b);
3   }
4
5   foo();
6
```

```
PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL

PS D:\Ashish\typescript> tsc FunctionsDemo.t
FunctionsDemo.ts:5:1 - error TS2554: Expecte

5 foo();
  ~~~~~

  FunctionsDemo.ts:1:14
    1 function foo(a:number,b:number){
                  ~~~~~~~~
    An argument for 'a' was not provided.
```

Continue…

? Used to make parameter optional

TS FunctionsDemo.ts > ...

```
1  function foo(a:number,b?:number){
2      console.log(a+b);
3  }
4
5  foo(5);
6
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS D:\Ashish\typescript> tsc FunctionsDemo.ts
PS D:\Ashish\typescript> node FunctionsDemo
NaN
PS D:\Ashish\typescript>
```

TS FunctionsDemo.ts > foo

```
1  function foo(a:number,b:number = 10){
2      console.log(a+b);
3  }
4
5  foo(5);
6
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS D:\Ashish\typescript> tsc FunctionsDemo.ts
PS D:\Ashish\typescript> node FunctionsDemo
15
PS D:\Ashish\typescript>
```

Function Object as argument

TS FunctionObjectArg.ts > ...

```typescript
let p:number = 20;

function getFullName(person:{firstname:string,lastname:string})
{
    console.log(`${person.firstname} ${person.lastname}`);
}

let person = {
    firstname : "ramesh",
    lastname : "kumar"
};

getFullName(person);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 3: powersh

```
PS D:\Ashish\typescript> tsc FunctionObjectArg.ts
PS D:\Ashish\typescript> node FunctionObjectArg
ramesh kumar
PS D:\Ashish\typescript>
```

Class

1) Creation of class
2) Adding a method
3) Extending the relationship

Self Learning

1) Modules
2) Decorators (more we discuss during angular.js)

Introduction of Angular What & Why?

1) What is Angular

2) Modular Approach

3) Re-Usable Code.

4) Inbuild Validation , Routing functionality

5) Unit testable

6) Using TypeScript from Microsoft.

Angular's History

2010 – Angular JS

2016 – Angular version 2

2016 Dec – Angular version 4

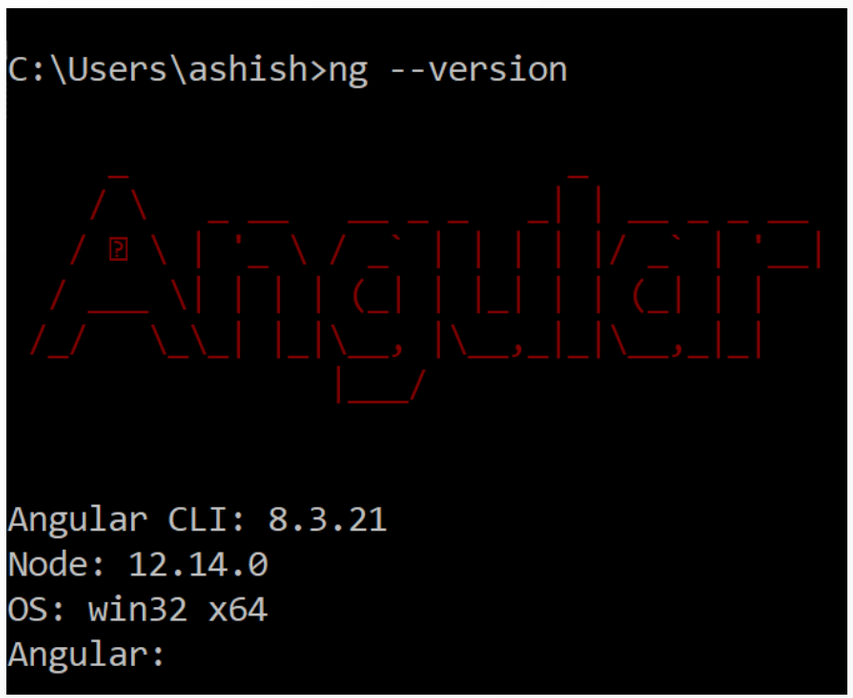
2017 Nov – Angular version 5

Setting up Development Environment

For Angular Js We need

1) node
2) Npm (node package manager)
3) Angluar cli

```
$ node -v
v9.3.0
$ npm -v
5.5.1
$ npm install @angular/cli -g
```



Angular CLI Commands

Purpose	Command	Shortcut Command
New Application	ng new DemoApp	
New Component	ng generate component User-View	ng g c User-View
New Class	ng generate class User	ng g cl User
New Class or Component within folder	ng generate class classes/User	ng g cl classes/User
New Service	ng generate service UserOperations	ng g s UserOperations
New Service with Module registration	ng generate service UserOperations --module	ng g s UserOperations --module
New Service with Module registration with specific module	ng generate service UserOperations -m=app.module	ng g s UserOperations -m=app.module
New Interface	ng generate interface Role	ng g i Role
New Module	ng generate module UserModule	ng g m UserModule

Check for –flat option

Creating the First Project

Creating the Application

```
D:\Ashish\angular-apps>ng new AmazonUI
? Would you like to add Angular routing? Yes
```

Compile the Application

```
D:\Ashish\angular-apps\AmazonUI>ng serve
10% building 3/3 modules 0 activei ﷐wds﷑: Project
00/webpack-dev-server/
i ﷐wds﷑: webpack output is served from /
```

Application live on

```
on http://localhost:4200/ **
﷐wdm﷑: Compiled successfully.
```

Understanding main Building blocks of Angular application

Components

- @Component Decorator is used to make a typescript class as component
- Angular app can have one or more components.

Templates

- It’s a HTML along with angular expressions

Modules

- Modules has collections of Components & Services

Service

- Services is a typescript class used for business logic and separation of concerns

Understanding Modules

```
1  import { NgModule } from '@angular/core';
2  import { BrowserModule } from '@angular/platform-browser';
3
4  import { AppRoutingModule } from './app-routing.module';
5  import { AppComponent } from './app.component';
6
7  @NgModule({
8    declarations: [
9      AppComponent
10   ],
11   imports: [
12     BrowserModule,
13     AppRoutingModule
14   ],
15   providers: [],
16   bootstrap: [AppComponent]
17 })
18 export class AppModule { }
19
```

@NgModule is used to register a class as module

Array used to include the component into app module

Array used to import other modules into the app module (root module)

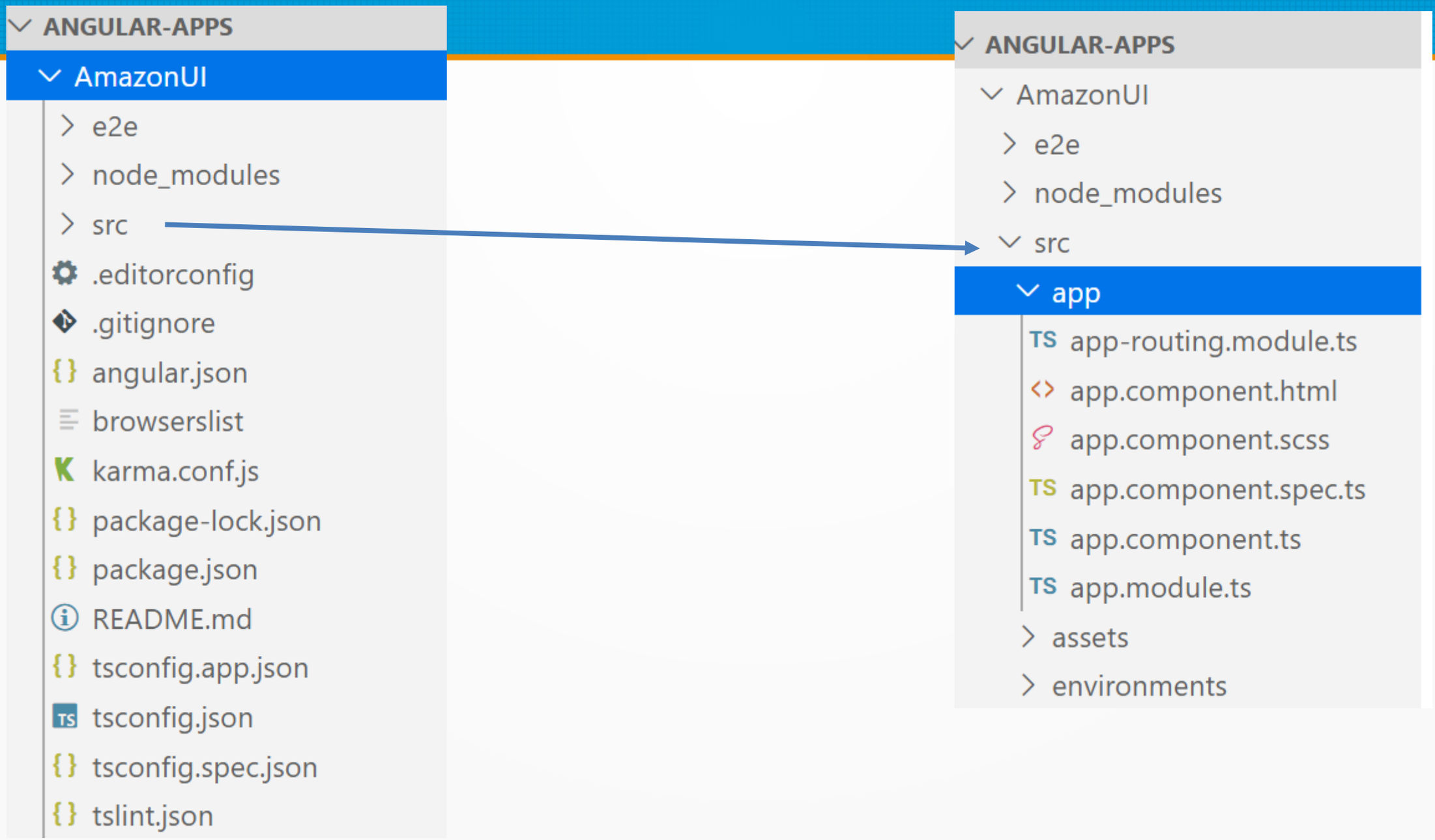
Array used to include the services

Bootstrap is used to registered the root component

Understanding the component

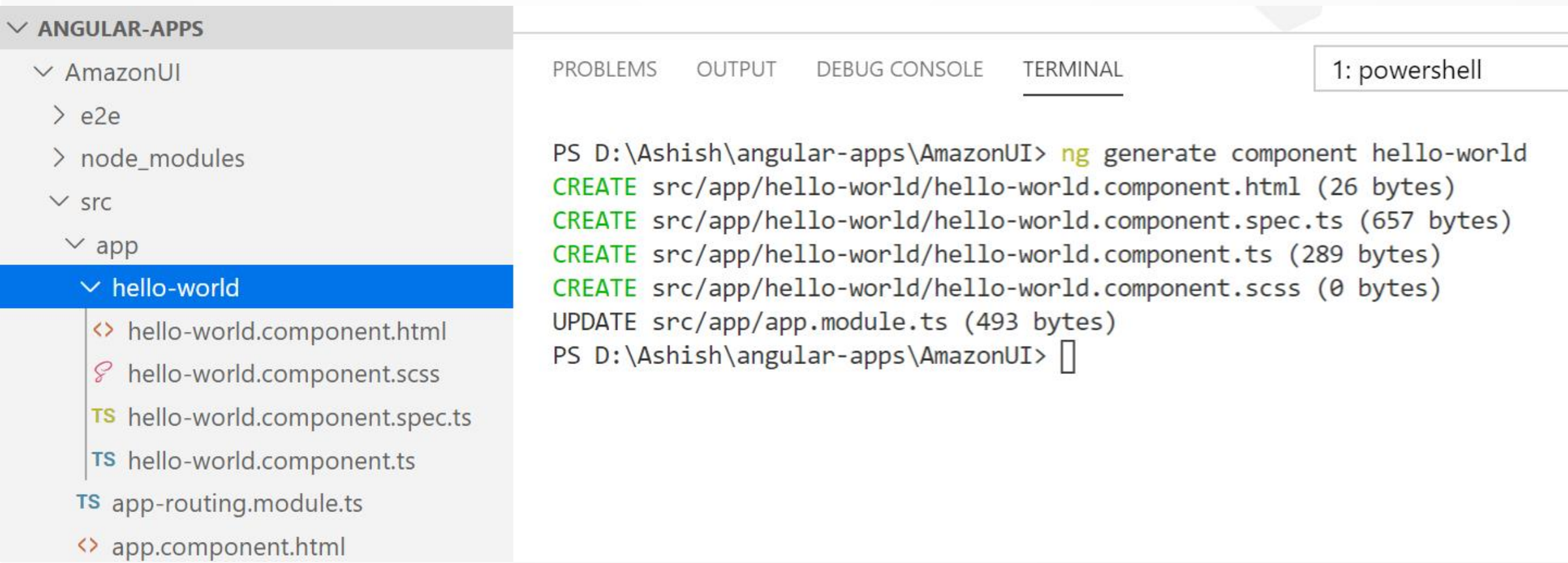
```
1  import { Component } from '@angular/core';
2
3  @Component({
4    selector: 'app-root',
5    templateUrl: './app.component.html',
6    styleUrls: ['./app.component.css']
7  })
8  export class AppComponent {
9    title = 'DemoApp10321';
10 }
11
```

Project Structure



Creating Angular Component in Angular 8

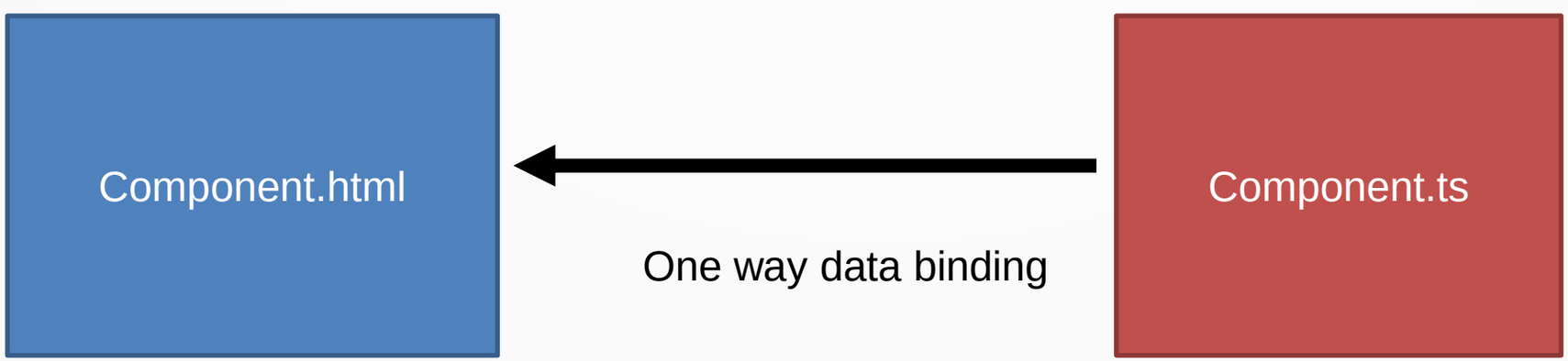
:> ng generate component <component-name>



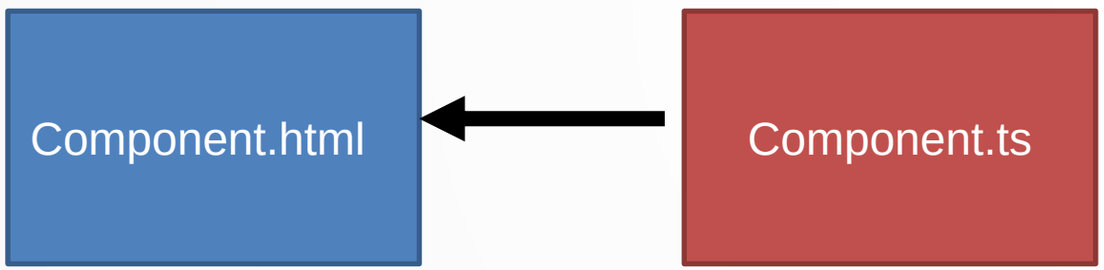
Interpolation

{{ expression }}

Used to retrieve values from component to html page (*.ts) to (*.html)



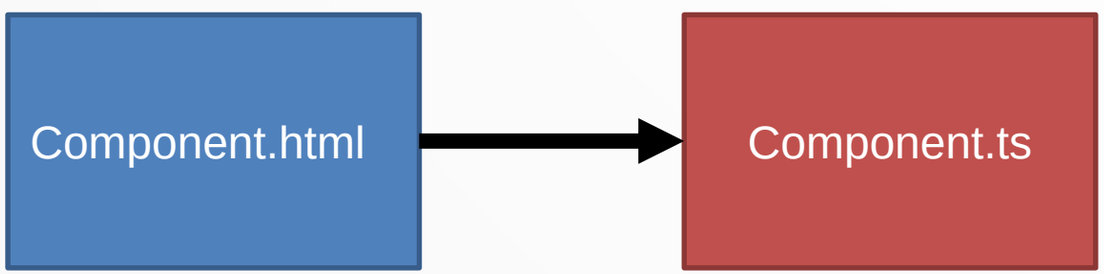
Other Data Binding approaches



Property binding

[property] = “value”

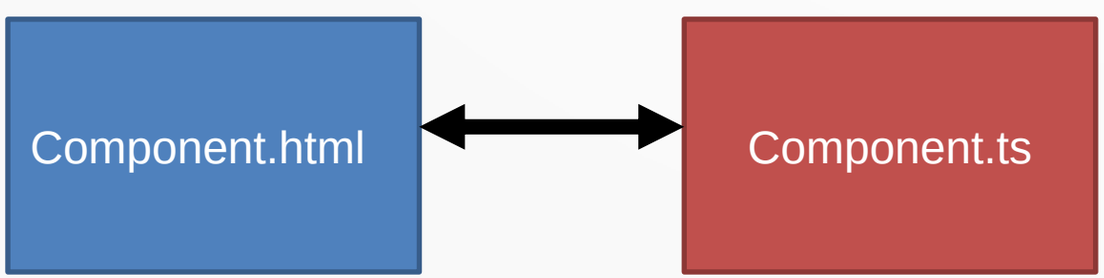
```
<input [disabled]="status" type="text"/>
```



Event binding

(event) = “Handler”

```
<button (click)="getTitle"> My Button
 </button>
```



Two ways Data Binding

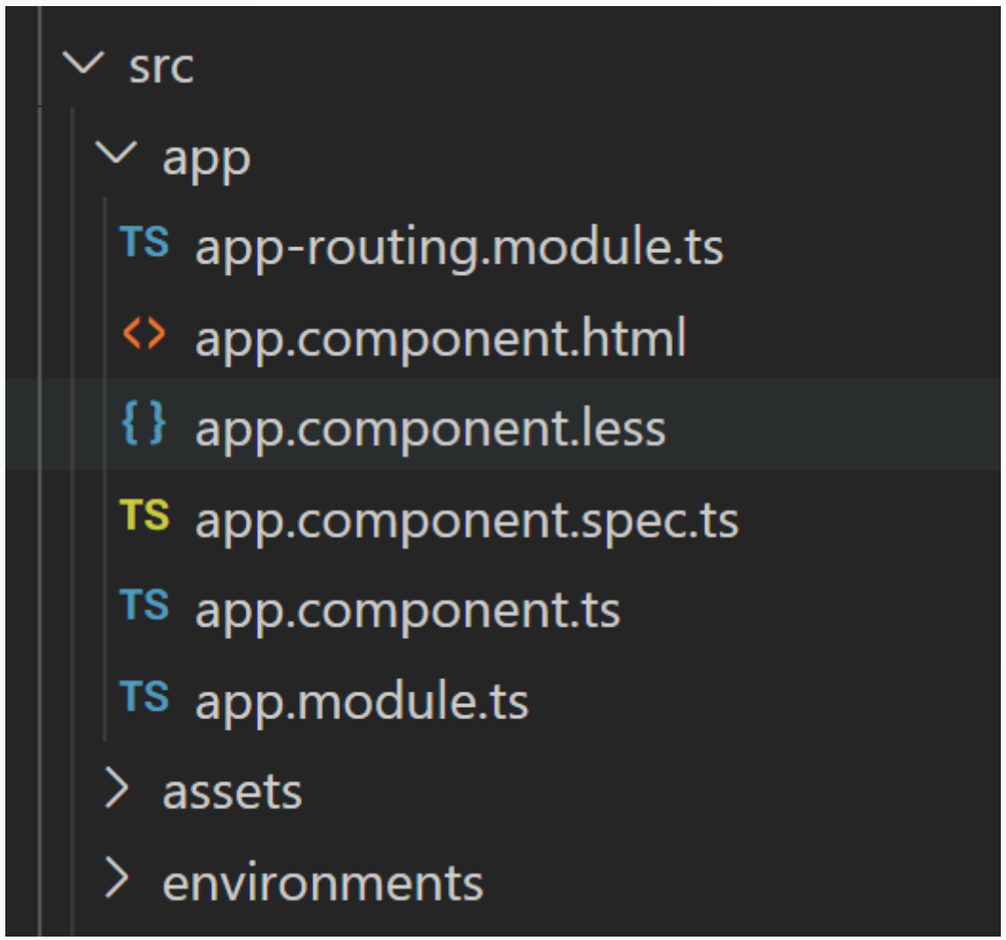
using ngModel

[(ngModel)] = “XYZModel.propertyName”

https://github.com/mkjitlearnings/AllAngular8/blob/main/TwoWayBinding

Component

component is the main building block of the angular application.
App component is the root component.



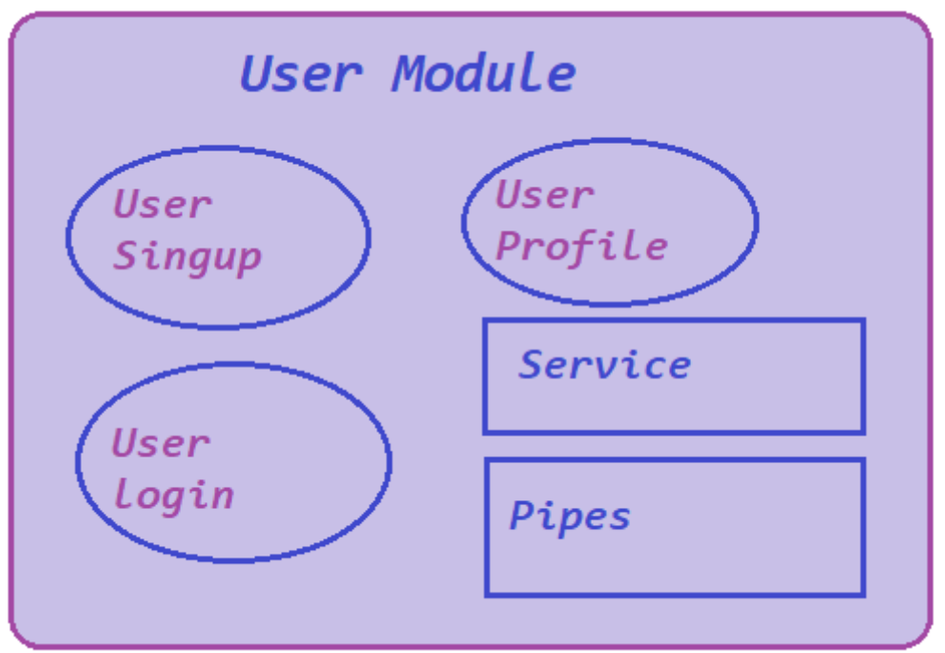
App.component.html is a view template

App.component.ts is the model .

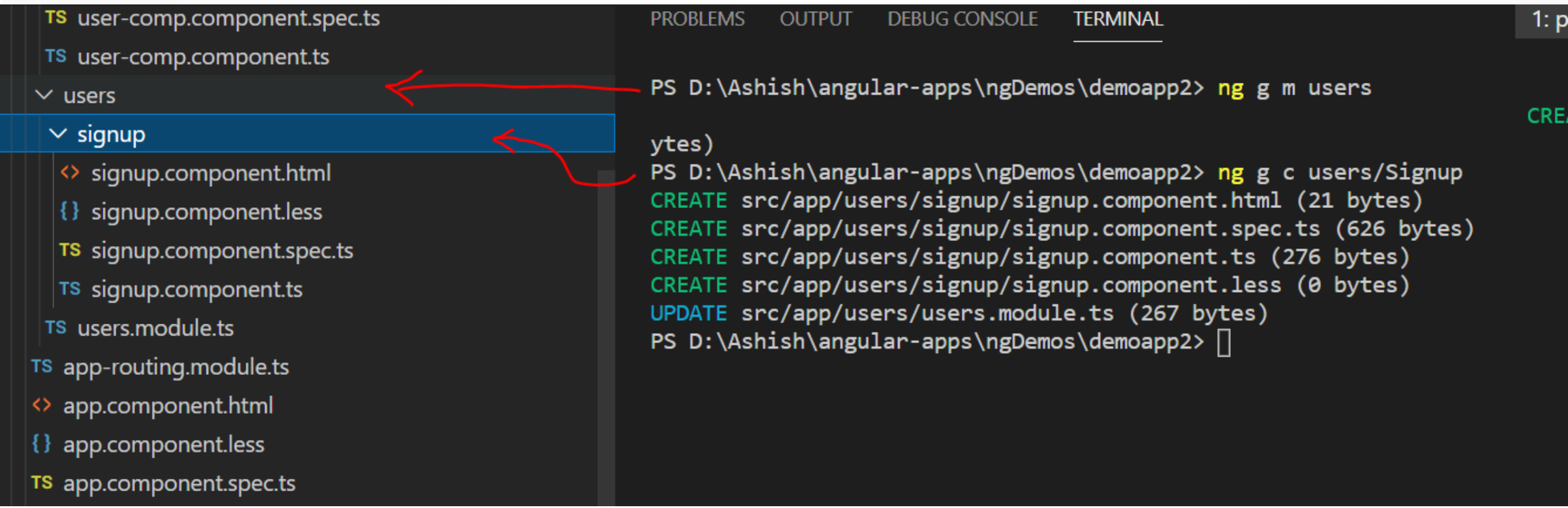
```
@Component({
  selector: 'app-root',
  templateUrl: './app.component.html',
  styleUrls: ['./app.component.less']
})
export class AppComponent {
 ….
}
```

Modules

So a module is a collection of related components.
ng g m mymodule
Create component inside module
ng g c mymodule/mycomponent

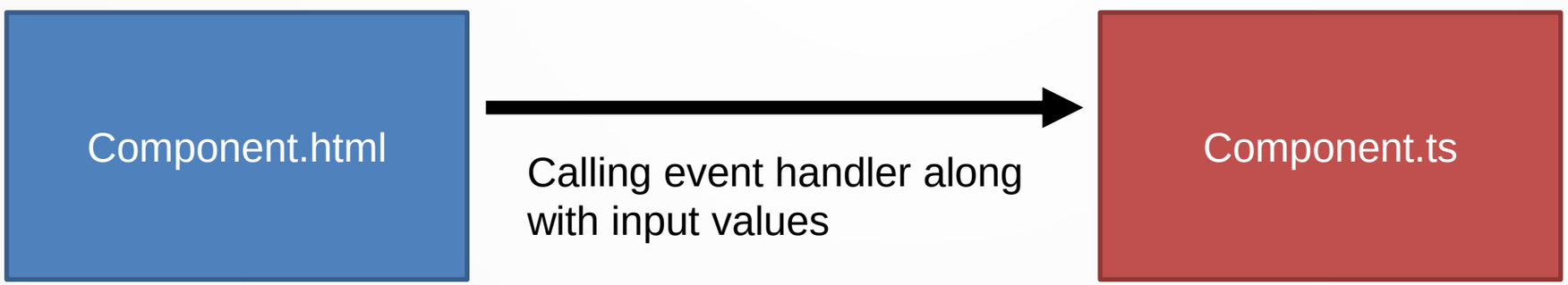


Creation of Module and Sub Components



Template Reference Variable

Template reference variable is used to bind DOM component to the model property
Mostly used with event binding



- Template reference variable is assigned using # followed by variable name.

https://github.com/mkjitlearnings/AllAngular8

Angular – 8 Directives

https://angular.io/guide/attribute-directives

There are three kinds of directives in Angular

1. Components—directives with a template.
2. Structural directives—change the DOM layout by adding and removing DOM elements.
3. Attribute directives—change the appearance or behaviour of an element, component, or another directive.

Structural Directive *ngIf & ngSwitch

https://angular.io/api/common/NgIf

```
<p>login works!</p>

<h2 *ngIf="status; else elseblock">
    Valid User status = {{status}}
</h2>
<ng-template #elseblock>
    User Not validated  status = {{status}}
</ng-template>
```

#Template Reference

```
export class LoginComponent

  status = false;
  constructor() { }

  ngOnInit(): void {
  }
```

```
<div [ngSwitch]="status">
    <div *ngSwitchCase='true' style="background-color: greenyellow;">Status is true
    <div *ngSwitchCase='false' style="background-color: lightsalmon;">Status is fal
</div>
```

Ng for

```
<table *ngFor="let emp of employees" class="table table-striped">
    <tr>
        <td style="color: mediumvioletred;">{{emp.id}}</td>
        <td style="color: mediumvioletred;">{{emp.name}}</td>
        <td style="color: mediumvioletred;">{{emp.salary}}</td>
        <td style="color: mediumvioletred;">{{emp.project}}</td>
    </tr>
</table>
```

```
export class AllEmployeeDetailsComponent implements OnInit {

  employees = [];
  __employeeService : EmployeeService;

  constructor( __employeeService : EmployeeService) {
    this.__employeeService = __employeeService;
  }

  ngOnInit() {
    this.employees = this.__employeeService.getAllEmployees();
  }
```

Angular Lifecycle hooks

Introduction

https://angular.io/guide/lifecycle-hooks

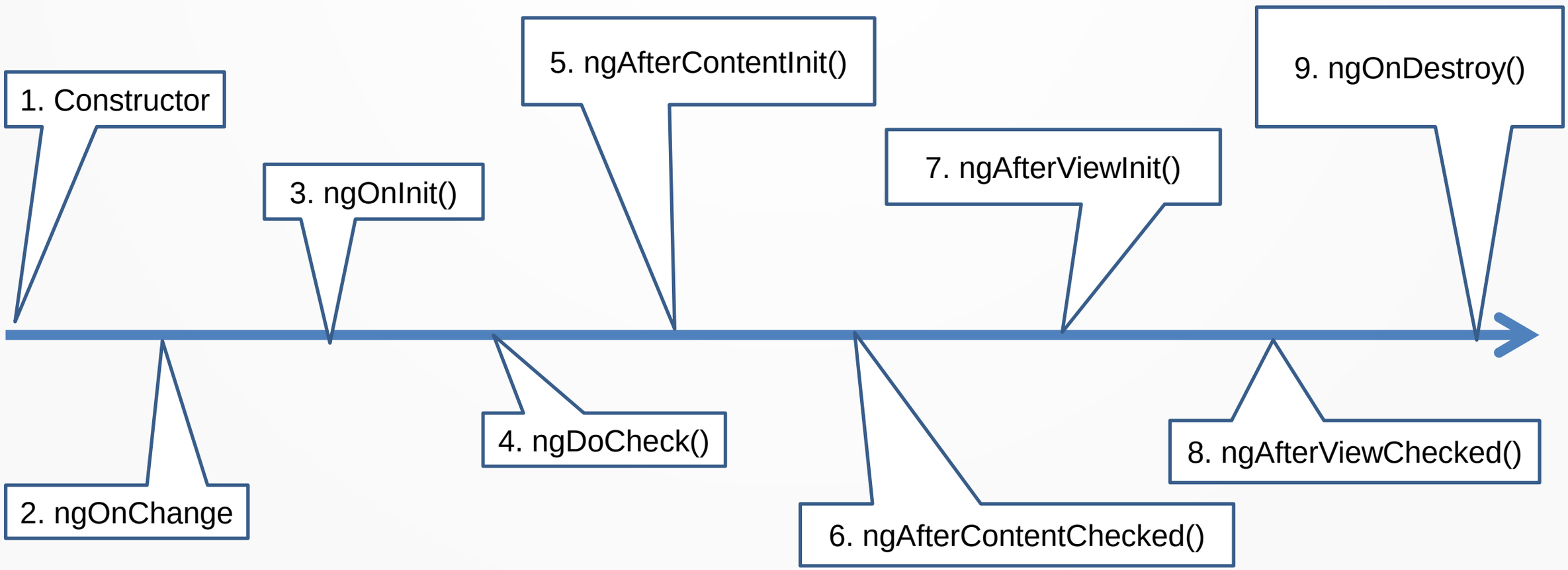
Angular allows us to trigger the actions at the specific point in the lifecycle of components.
Such as

a) Whenever property of component changes. or
b) Any view render or
c) Any component created or destroyed.

the lifecycle hooks (special lifecycle method) will be called.*

** No directive or component will implement all of the lifecycle hooks*

Sequence of hooks

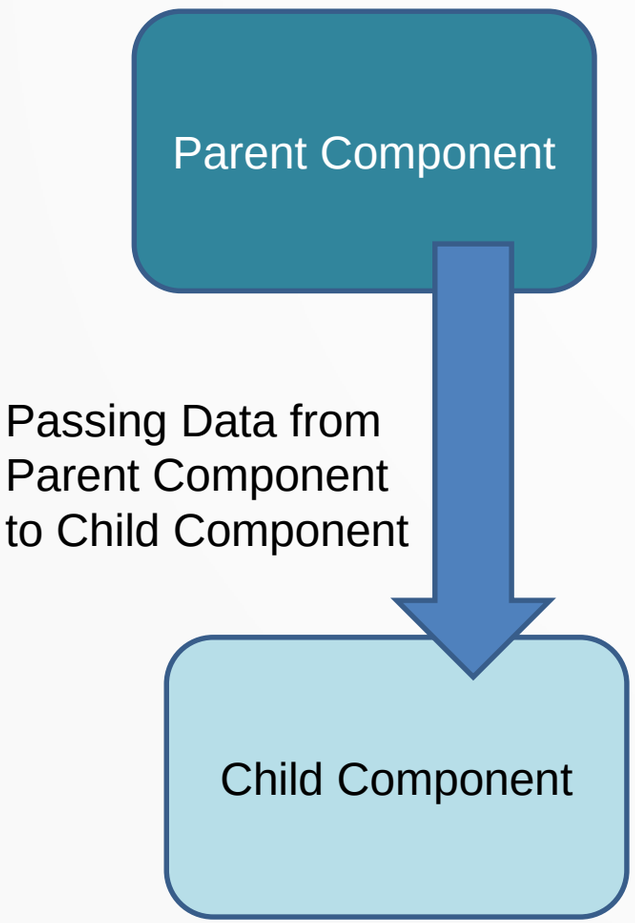


Decorators

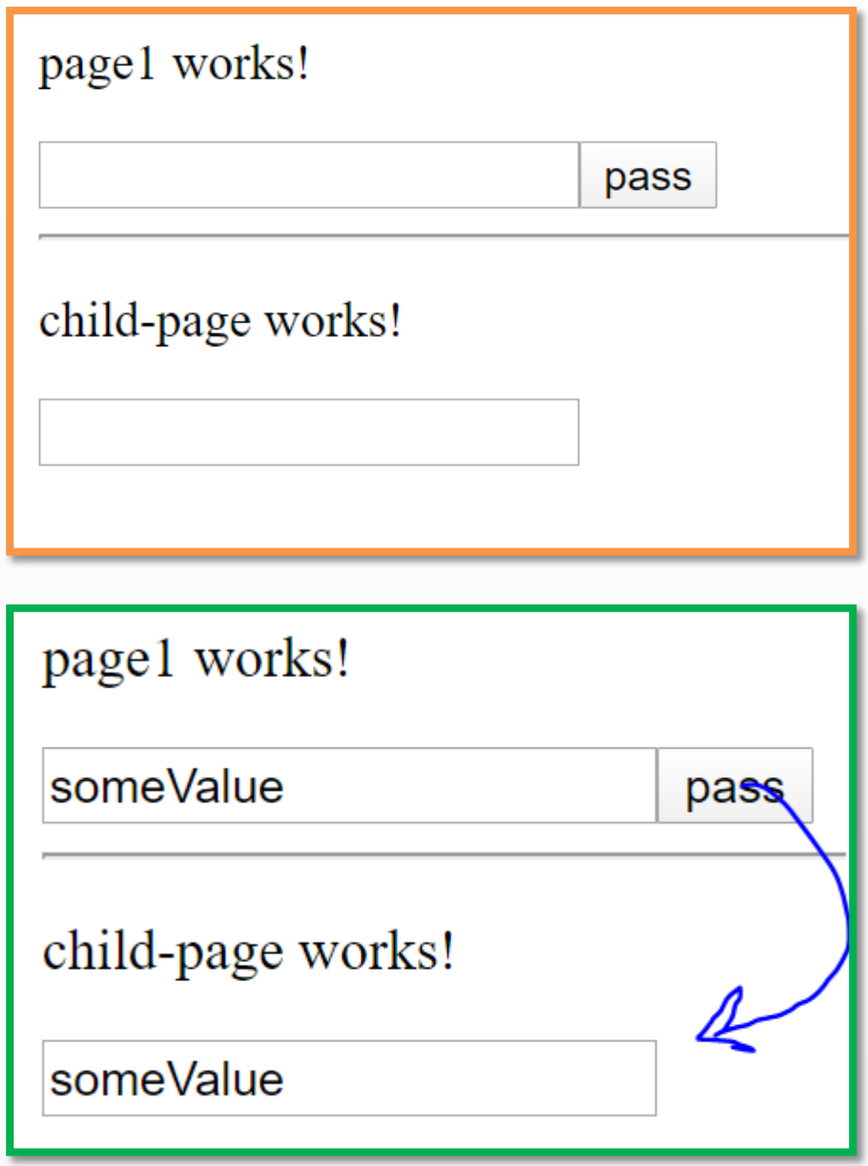
Decorators are a design pattern that is used to separate modification or *decoration* of a class without modifying the original source code. In AngularJS, decorators are functions that allow a service, directive or filter to be modified prior to its usage.

1) @NgModule
2) @Component
3) @Injectable
4) @Pipe
5) @Input & @Output

@Input() Decorator



Passing Data from Parent Component to Child Component



On click event data is passing from parent component to child component

Continue..

Parent Component

```
<p>page1 works!</p>
<input type="text" name="empName" #empName/>
<button (click)="submitAction(empName)">
    pass
</button>
<app-child-page
  [link_employeeName]="employeeName">
</app-child-page>
```

```
export class Page1Component
    implements OnInit {

  employeeName : string;
  submitAction(empName)
  {
    this.employeeName = empName.value;
    console.log(" ---->> Page 1 : - "+t
  }
  constructor() { }
```

Child Component

```
<hr/>
<p>child-page works!</p>

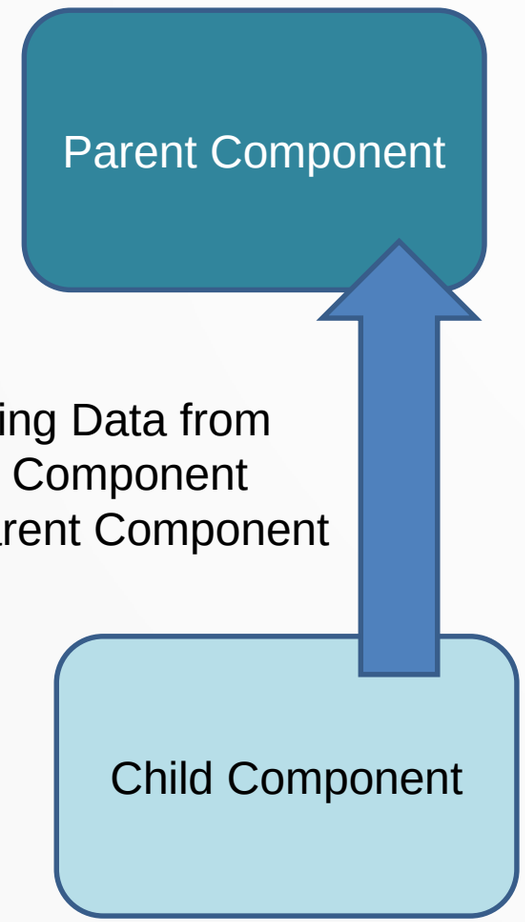
<input type="text"
value="{{link_employeeName}}"/>
```

```
export class ChildPageComponent implem

  constructor() { }

  @Input() link_employeeName:string;
  ngOnInit() {
  }
```

@Output() Decorator



Passing Data from
Child Component
to Parent Component

page1 works!

Child component :- Acknowledged!!!

someData | pass

child-page works!

someData

Registration Acknowledgement

Onclick of button
Parent component get data
from Child Component

Event Emitter

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

@Component({
  selector: 'app-child-page',
  templateUrl: './child-page.component.html',
  styleUrls: ['./child-page.component.css']
})
export class ChildPageComponent implements OnInit {

  constructor() { }

  @Input() link_employeeName:string;

  @Output() acknowlegementMsg = new EventEmitter<string>();

  sendAcknowledgement()
  {
    this.acknowlegementMsg.emit("Child component :- Employee Registered!!! ");
  }

  ngOnInit() {
  }
```

https://angular.io/api/core/EventEmitter

Code

https://github.com/mkjitsolution/angular_ComponentInteraction

```
<hr/>
<p>child-page works!</p>

<input type="text"
value="{{link_employeeName}}" />
<br/>
<button (click)="sendAcknowledgement()" s
    Registration Acknowledged
</button>
```

```
@Output() acknowlegementMsg = new EventEmitter<string>();

sendAcknowledgement()
{
  this.acknowlegementMsg.emit("Child component :- Employee Regi
}
```

Notice : add EventEmitter in import statement from angular/core

```
    pass
</button>
<app-child-page
  [link_employeeName]="employeeName"
  (acknowlegementMsg)="showAcknowlegeMsg($event)">
</app-child-page>
```

```
export class Page1Component
    implements OnInit {

  employeeName : string;
  msg: any;
  submitAction(empName)
  {
    this.employeeName = empName.value;
    console.log(" ---->> Page 1 : - "+this.employe
  }

  showAcknowlegeMsg(event)
  {
    this.msg = event;
  }
  constructor() { }

  ngOnInit() {
  }
```

Pipes

Pipes allowing to transform data before rendering them in view.

1) Lowercase
2) Uppercase
3) Titlecase
4) Slice
5) Json
6) Number
7) Percent
8) Currency
9) Date

Date & Time
Fri Apr 03 2020 22:09:07 GMT+0530 (India Standard Time)
4/3/20, 10:09 PM
4/3/20
10:09 PM

Currency
USD :- $3,600.00
GBP :- £3,600.00
INR :- ₹3,600.00
[object Object]
{ "name": "ramesh", "marks": 450, "subject": "computers" }

Percent
Profit 1,500%
Profit 15%
Profit 15.000%
Profit 0,015.000%

https://www.concretepage.com/angular-2/angular-2-decimal-pipe-percent-pipe-and-currency-pipe-example

Creation of Custom Pipes

In order to create Custom pipes.

1) Create a Separate class which implements PipeTrasform interface
2) Implement method **“transform”.**
3) Decorate the class with @Pipe decorator

```
import { Pipe, PipeTransform } from "@angular/core";

@Pipe({
    name:'mypipe'
})
export class MyPipe implements PipeTransform{

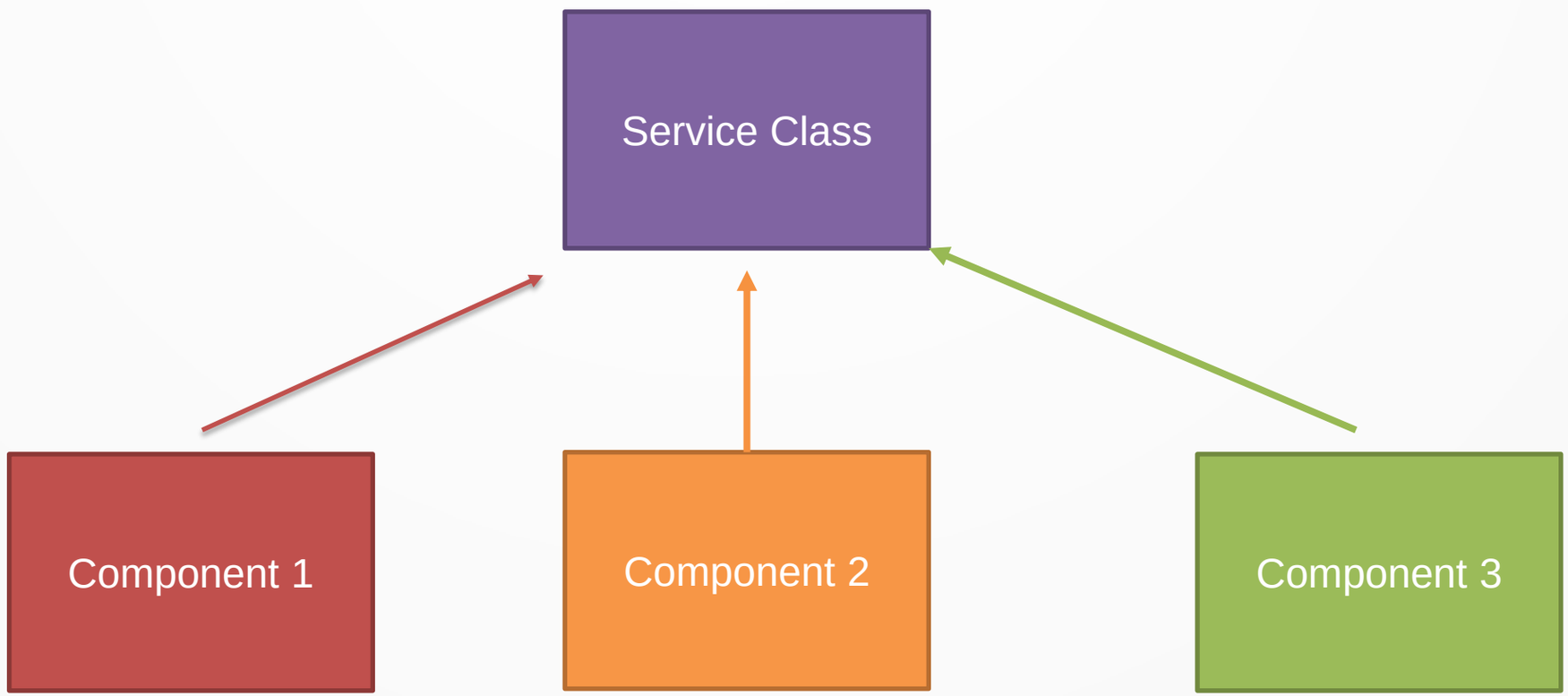
    transform(value:any)
    {

    }
}
```

Services

Services is the way of Separation of concerns
1) @Injectable

It is a separate class with Dependency Injection design pattern



Services – Development Process

```
PS D:\Ashish\angular-apps\Service-Demo> ng g s Accounts-Service
CREATE src/app/accounts-service.service.spec.ts (379 bytes)
CREATE src/app/accounts-service.service.ts (144 bytes)
```

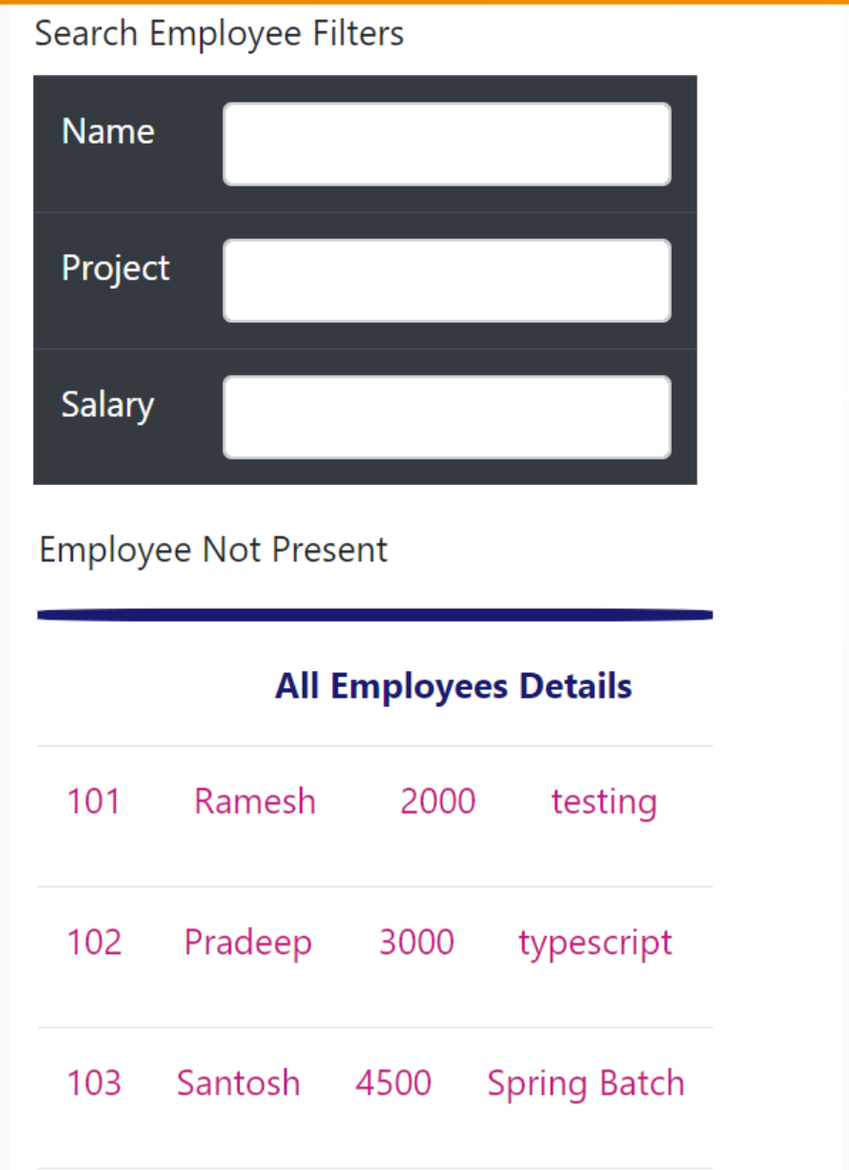
Service-Demo > src > app > TS accounts-service.service.ts > ...

```
1  import { Injectable } from '@angular/cor
2
3  @Injectable({
4    providedIn: 'root'
5  })
6  export class AccountsServiceService {
7
8    constructor() { }
9  }
10
```

```
import { AccountDetailsComponentComponent } from './account-details-
import { AccountsServiceService } from './accounts-service.service';

@NgModule({
  declarations: [
    AppComponent,
    AccountsNameComponentComponent,
    AccountDetailsComponentComponent
  ],
  imports: [
    BrowserModule
  ],
  providers: [AccountsServiceService],
  bootstrap: [AppComponent]
```

Assignment



Create an Application to Filter out Employees based on following Criteria

1) By Name or
2) Based on Project or
3) Based on salary (1500-3500, return two employees record)

Angular Forms

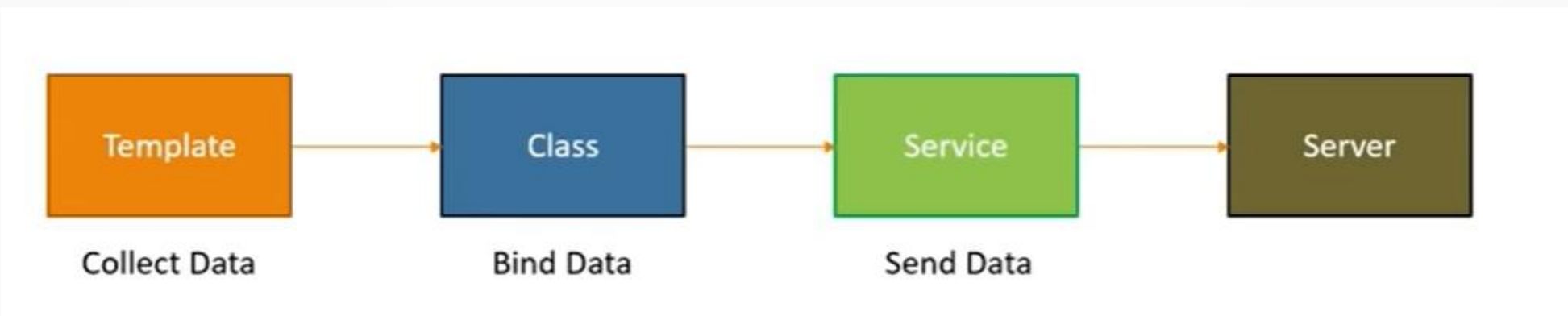
Forms are the vital part of business application

Developers Task

1) Data Binding
2) Change Tracking
3) Validation
4) Visual Feedback
5) Error Messages
6) Form submission

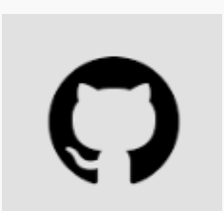
Prerequisites

- HTML
- CSS
- JavaScript
- Angular – Templates, Components, Data Binding and Services



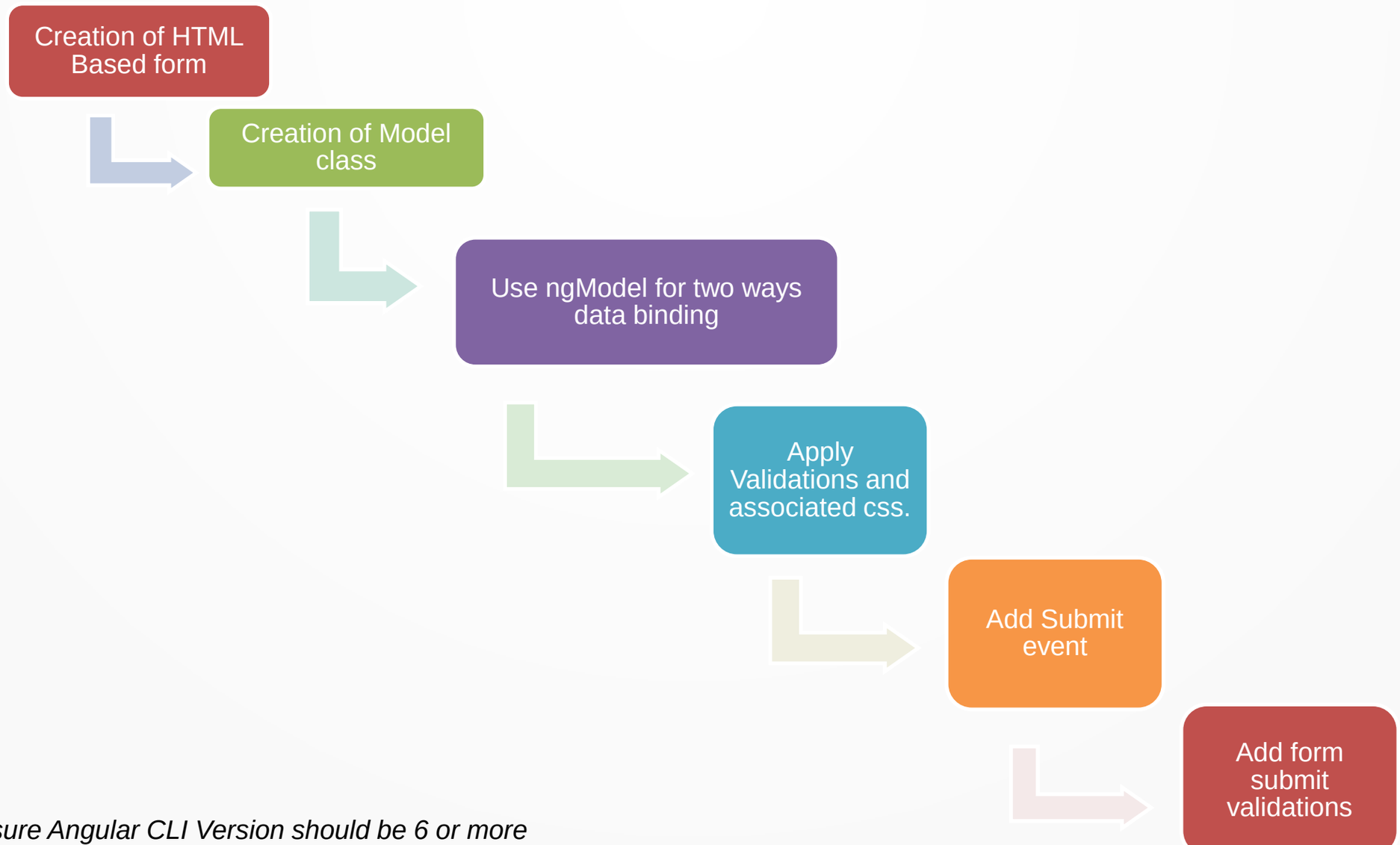
Template Driven Form (TDF)

- Easy to use and similar to Angular JS forms
- Two way data binding with ngModel
- Bulky HTML and minimal component code
- Automatically tracks the form and form elements state and validity
- Unit testing is a challenge
- Readability decreases with complex forms and validations



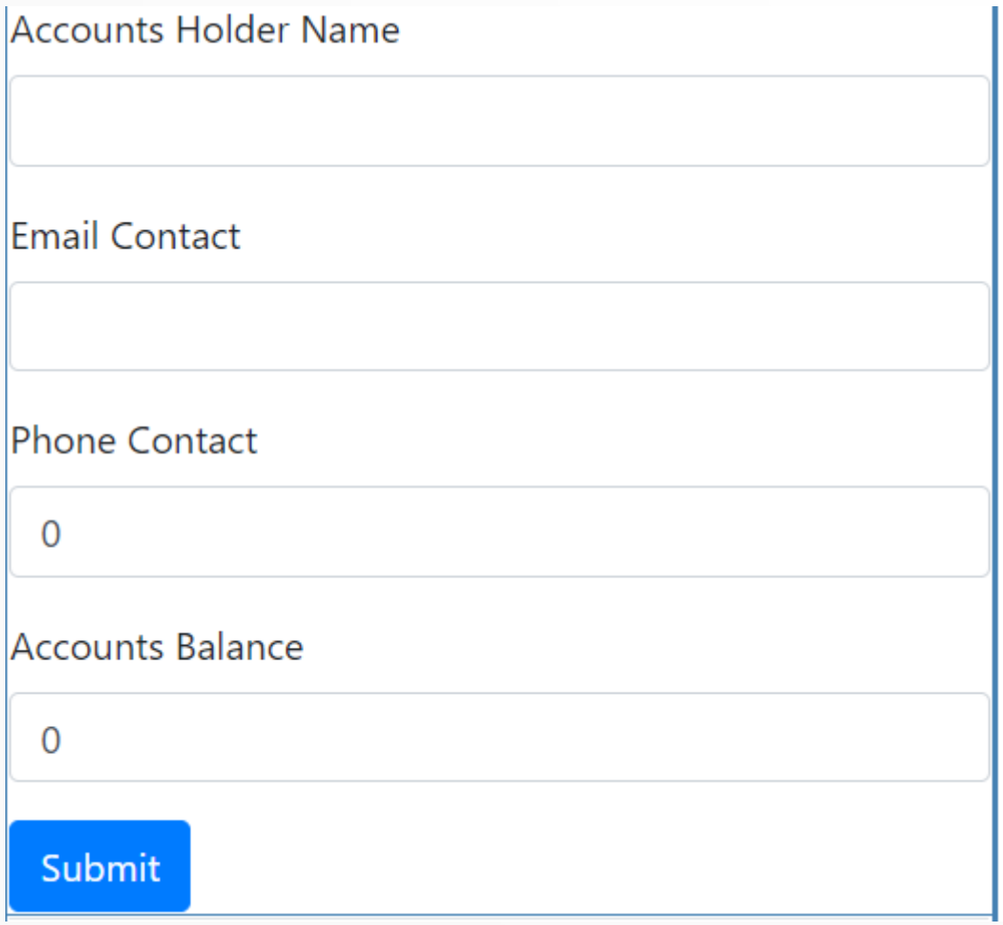
Git resource :- https://github.com/mkjitsolution/template_driven_forms

Development Process



Note : Make sure Angular CLI Version should be 6 or more

Step 1 : Create Form



Step 1-B : Binding Form With Component

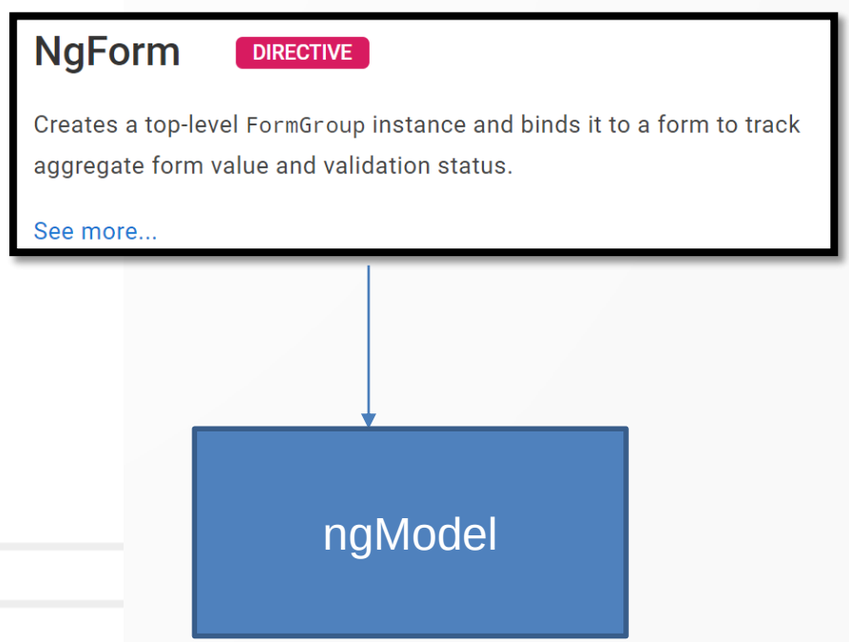
Step 1 : Add form modules in app.module.ts

```
import { BrowserModule } from '@angular/platform-browser';
import { NgModule } from '@angular/core';
import { FormsModule } from '@angular/forms';
import { AppComponent } from './app.component';

@NgModule({
  declarations: [
    AppComponent
  ],
  imports: [
    BrowserModule,
    FormsModule
  ],
  providers: [],
```

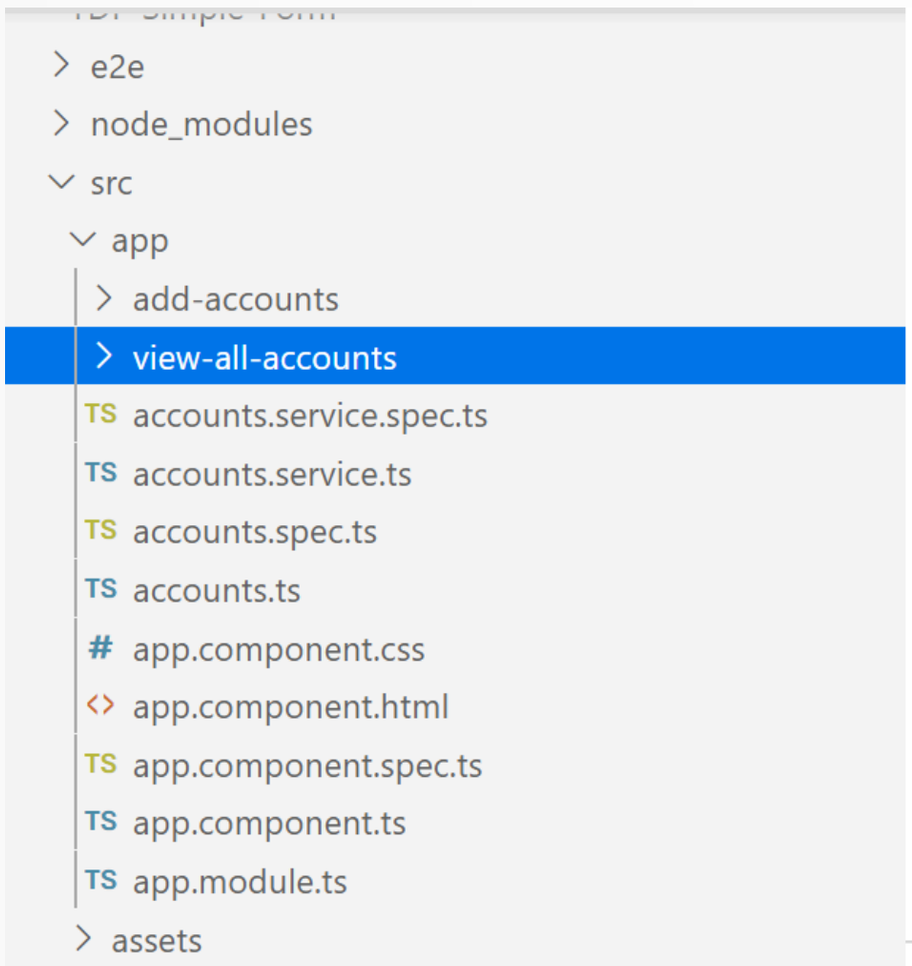
Discuss about :

ngForm



Step 2: Generate Model Class

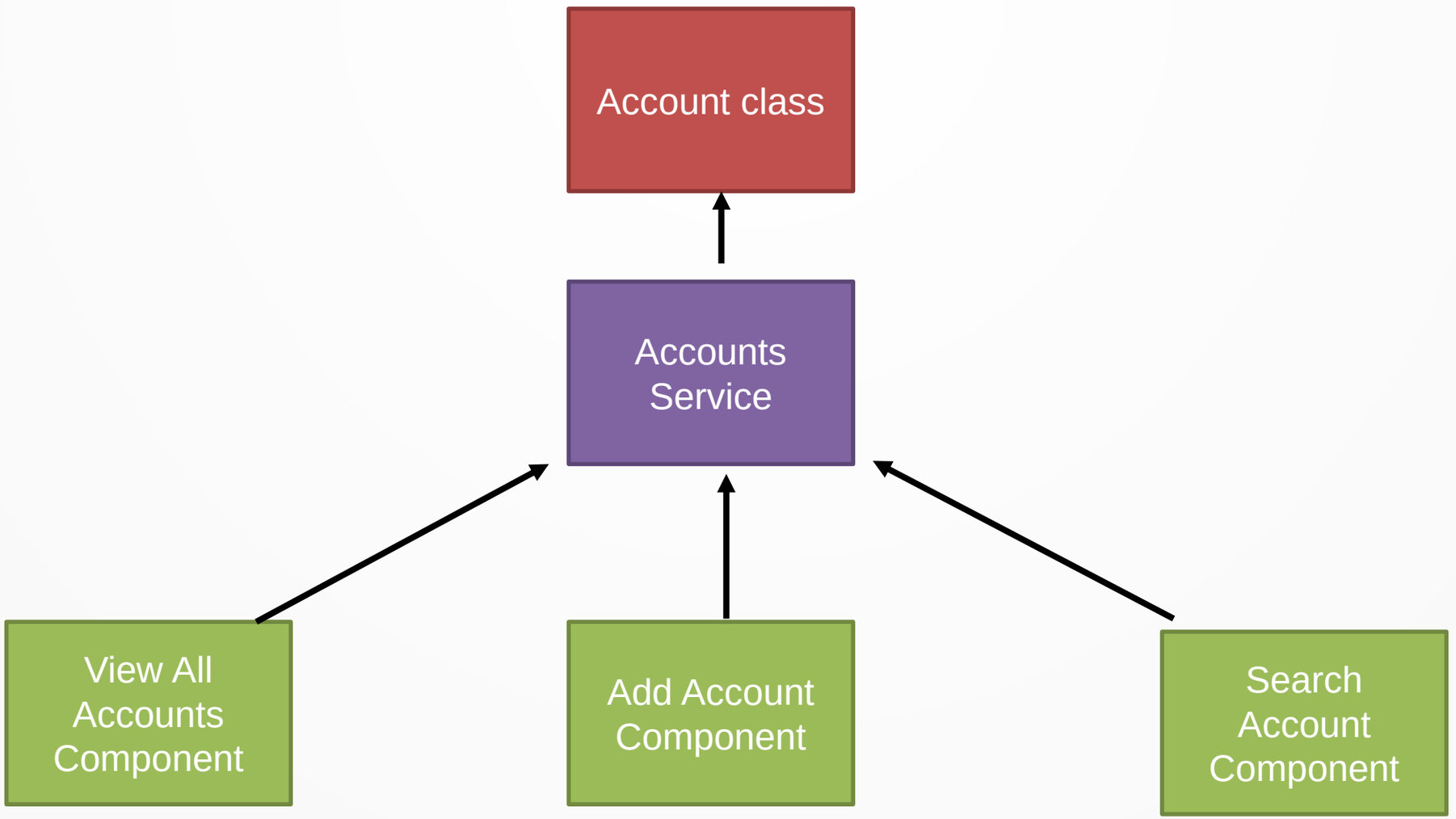
```
PS D:\Ashish\angular-apps\TDF-Form> ng g c TraderAccounts
CREATE src/app/trader-accounts/trader-accounts.component.html (30
```



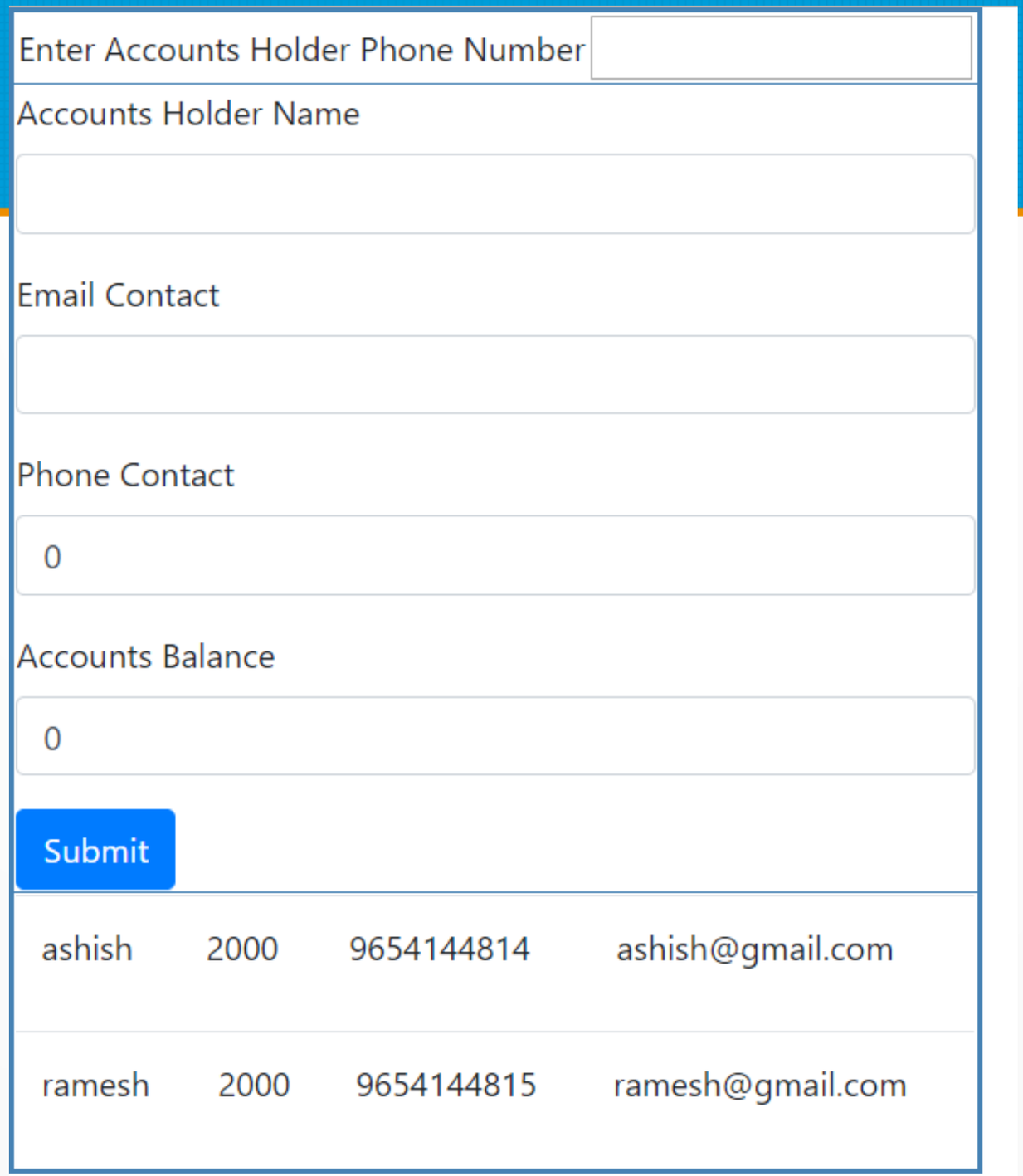
1) Model class will be responsible to bind form values with class properties
   using ngModel attribute of input controls

2) Model class at least consist a parameterized constructor.

Application Architecture



Application



Step 3 : Initialize Model class for two ways data binding

Create Model Object in Component
And associate model properties with controls

```
export class AddAccountsComponent implements OnInit {

  constructor() { }

  accountModel = new Accounts('',0,0,'');

  ngOnInit() {
  }
```

```
<div>
    <form #userForm="ngForm">

      <div class="form-group">
          <label>Accounts Holder Name</label>
          <input type="text" class="form-control" id="accountNameId" name="accountName" [(ngModel)] = "accountModel.accountName">
      </div>
      <div class="form-group">
          <label>Email Contact </label>
          <input type="text" class="form-control" id="emailId" name="email" [(ngModel)] = "accountModel.email">
      </div>
      <div class="form-group">
          <label>Phone Contact </label>
          <input type="text" class="form-control" id="phoneId" name="phone" [(ngModel)] = "accountModel.phone">
      </div>

      <div class="form-group">
          <label>Accounts Balance</label>
          <input type="text" class="form-control" id="accountBalanceId" name="balance" [(ngModel)] = "accountModel.balance">
      </div>


      <button type="submit" class="btn btn-primary">Submit</button>
    </form>
</div>
```

Angular Built In Validations

Angular Provides few built in validations,

- required.
- minlength.
- maxlength.
- Pattern = “Regular Exp”

These required, minlength, maxlength and pattern attributes are *already* in the official HTML specification.

They are a core part of HTML and we don’t actually need Angular in order to use them.

If they are present in a form then the browser will perform some default validation itself.

Understanding ngModel Validation properties

State	Class if true	Class if false
The control has been visited.	`ng-touched`	`ng-untouched`
The control's value has changed.	`ng-dirty`	`ng-pristine`
The control's value is valid.	`ng-valid`	`ng-invalid`

Note : form.valid : property is used to identify form valid or invalid state.

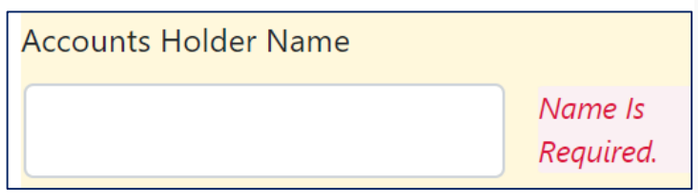
Source : https://angular.io/guide/forms

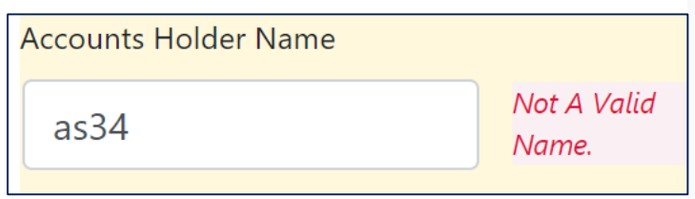
Continue…

Property	Description
error	error object contains all the validation attributes applied to the specified element.
pristine	Returns true if the user has not interacted with control yet else returns false.
valid	Returns true if the model is valid
invalid	Returns true if the model is invalid
dirty	Returns true if user changed the value of model at least once
touched	Returns true if the user has tabbed out from the control.
untouched	Returns true if the user has not tabbed out from the control.

Step 4 : Applying Validations

```
<div class="form-group">
    <label>Accounts Holder Name</label>
    <table>
        <tr>
            <td> <input type="text" class="form-control" id="accountNameId" name="accountName"
                [(ngModel)] = "accountModel.accountName"
                required pattern="[a-zA-Z][a-zA-Z ]+"
                #name="ngModel">
            </td>
            <td>
                <div *ngIf="name.invalid && (name.dirty || name.touched)" class="myerror">
                    <div *ngIf="name.invalid == true">
                        <div *ngIf="name.errors.required">
                            Name is required.
                        </div>
                        <div *ngIf="name.errors.pattern">
                            not a valid name.
                        </div>
                    </div>
                </div>
             </td>
        </tr>
    </table>
```





Step 5 : Submitting the Form

```
<form #userForm="ngForm" (ngSubmit)="submitingAccounts()" novalidate>
```

```
submitingAccounts()
{
  this.accountsService.addAccounts(this.accountModel);
}
```

Step 6 : Adding form validation

```
<button type="submit" [disabled]="userForm.form.invalid" class="btn btn-primary">Submit</button>
```

Reactive Forms

- ✓ Reactive forms are more explicit as they manage from component class.
- ✓ It has Structured data model and form validations are handled through functions.

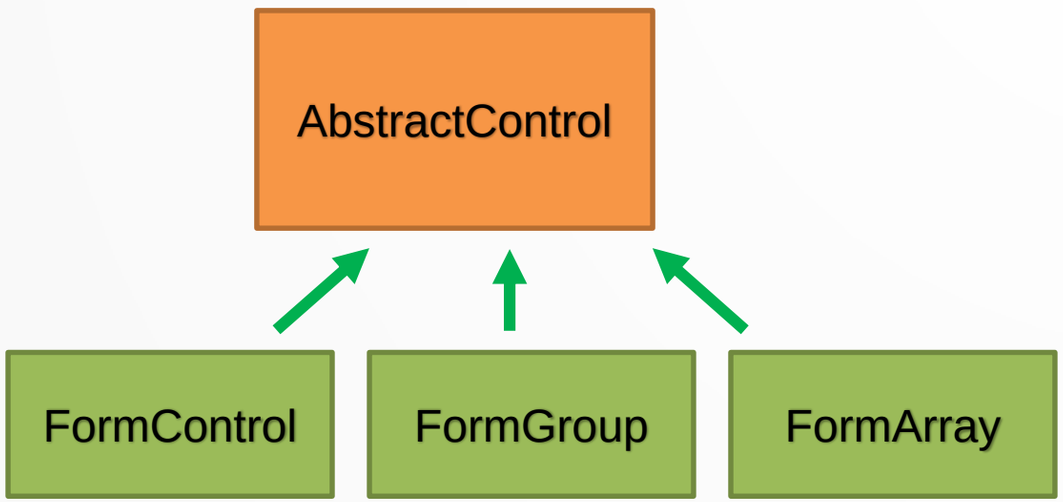
FormControl Class

https://angular.io/api/forms/FormControl

- Angular FormControl is an inbuilt class that is used to get and set values and validation of the form control fields like <input> or <select>.
- The FormControl tracks the value and validation status of an individual form control.
- It can be used standalone as well as with a parent form.

Understanding FormControl

Form control is one of the fundamental building block of Angular Forms, along with FormGroup and FormArray



AbstractControl interface provides some of the shared behaviour like

1) Running validators
2) Calculating status and resetting state.

It also defines the properties that are shared between all sub-classes, like value, valid, and dirty. It shouldn't be instantiated directly.

For every form control such as text, checkbox, radio button, we need to create the instance of **FormControl** in our component.

Component Class & HTML-Template

```ts
import { FormControl , Validator, Validators} from '@angular/forms';

@Component({
  selector: 'app-simple-reactive-form',
  templateUrl: './simple-reactive-form.component.html',
  styleUrls: ['./simple-reactive-form.component.css']
})
export class SimpleReactiveFormComponent implements OnInit {

  policyName = new FormControl('',[Validators.required]);

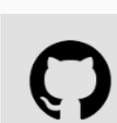
  constructor() { }

  ngOnInit() {
  }

}
```

```html
Policy Name <input [formControl]="policyName" #policy/>
<div *ngIf="policyName.touched == true &&
            policyName.invalid == true"
     style="color: crimson;font-size: small;">
Policy Name is Required

</div>
```



Git Resource

https://github.com/mkjitsolution/Reactive_Forms

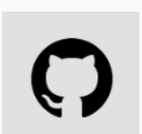
FormGroup

FormGroup is one of the three fundamental building blocks used to define the forms in Angular, along with FormControl and FormArray.

The FormGroup aggregates the values of each child FormControl into one object, with each control name as a key.

It calculates its status by reducing the status values of its children.

https://angular.io/api/forms/FormGroup#description



Git Resource

https://github.com/mkjitsolution/Reactive_Forms

Self Learning

Form Builder & Custom Validation

The FormBuilder is the helper API to build forms in Angular. It provides shortcuts to create the instance of the FormControl, FormGroup or FormArray. It reduces the code required to write the complex forms.

https://github.com/mkjitsolution/Reactive_Forms

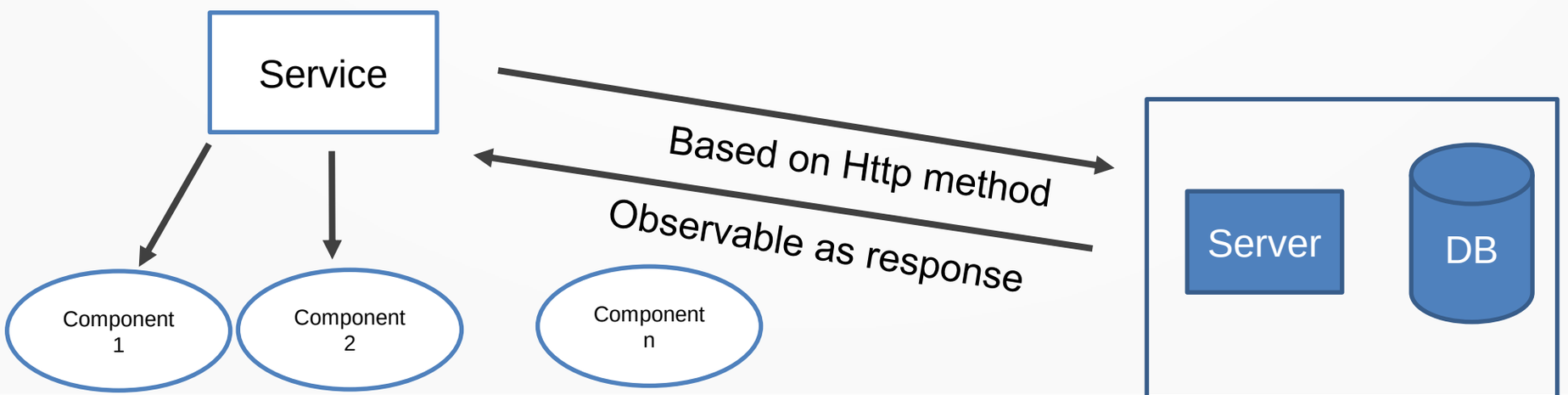
Http Observable

Http Observable use to fetch data from Rest endpoints

The **HttpClient** in @angular/common/Http offers the simplified client HTTP API for Angular applications that rests on an **XMLHttpRequest** interface exposed by browsers.

The Observable isn't an Angular specific feature, but a new standard for managing async data that will be included in the ES7 release.

1.Observables are lazy
You could think of lazy observables as newsletters. For each subscriber a new newsletter is created. They are then only send to those people, and not to anyone else.
2.Observables can have multiple values over time
Now if you keep that subscription to the newsletter open, you will get a new one every once and a while. The sender decides when you get it but all you have to do is just wait until it comes straight into your inbox.



Managing Subscription

We subscribe to the observable ourselves using the actual subscribe() method.

```
componentProperty: ModelClass;

ngOnInit() {
    //we've to  manually subscribe to this method and take the data
    // in our callback
    this. __studentService.callServiceMethod()
      .subscribe((feed)=>
      {
        this.componentProperty = feed ;
      })
      console.log(" ---- inside http observable component "+this.students.length);
  }
```

Code-Step 1 Adding HttpClientModule in App module

```
8   import { MyComponentComponent } from './my-component/my-comp
9   import {HttpClientModule} from '@angular/common/http';
10
11
12  @NgModule({
13    declarations: [
14      AppComponent,
15      AccountsNameComponentComponent,
16      AccountDetailsComponentComponent,
17      MyComponentComponent
18    ],
19    imports: [
20      BrowserModule,
21      HttpClientModule
22    ],
23    providers: [AccountsServiceService],
24    bootstrap: [AppComponent]
```

Step 2 – Updating Service

```
import { HttpClient } from '@angular/common/http';
import { Observable } from 'rxjs';

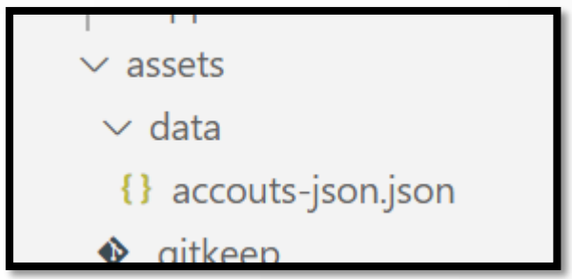
@Injectable({
  providedIn: 'root'
})
export class AccountsServiceService {

  private endpoint = "/assets/data/accounts-json.json";

  constructor(private http:HttpClient) { }

  getAllAccountsFromServer():Observable<AccountsServiceService[]>
  { // this.http.get(endpoint);
    return this.http.get<AccountsServiceService[]>(this.endpoint);

  }
```



Step 3 : Updating Component & HTML template

```
import { Component, OnInit } from '@angular/core';
import { AccountsServiceService } from '../accounts-service.service';
@Component({
  selector: 'app-accounts-http',
  templateUrl: './accounts-http.component.html',
  styleUrls: ['./accounts-http.component.css']
})
export class AccountsHttpComponent implements OnInit {
  accounts = [];
  private __accountsServiceService: AccountsServiceService;
  constructor(__accountsServiceService:AccountsServiceService) {
    this.__accountsServiceService = __accountsServiceService;
   }
  ngOnInit() {
    this.__accountsServiceService.getAllAccountsFromServer()
      .subscribe(data=>this.accounts = data);
  }
}
```

Http Template

```
<ul *ngFor="let account of accounts">
    <li>{{account.name}} - {{account.id}} - {{account.balance}}</li>
</ul>
```

Reading Data from JSON

accounts-http works!

- mike - 777 - 3000
- jenny - 778 - 2000
- cinthiya - 779 - 2500

Assignment

Implement error handling messaging while any error occurs during server call.
Such as , Server 404, 500 errors , bad json error etc.

So in case we change file name

from

```
private endpoint = "/assets/data/accounts-json.json";
```

to

```
private endpoint = "/assets/data/accounts-json1.json";
```

We are not getting any output , instead we should get proper error message like “bad file name”

Reading Data from JSON

accounts-http works!

Hint : Read rxjs/add/operators/catchError & throwError

Solution of the problem

Git Resource

https://github.com/mkjitsolution/HttpObservable

https://blog.angular-university.io/rxjs-error-handling/

https://www.concretepage.com/angular/angular-catcherror

Routing & Navigation

https://angular.io/guide/router https://angular.io/api/router/Route

The Angular router is an essential element of the Angular platform.

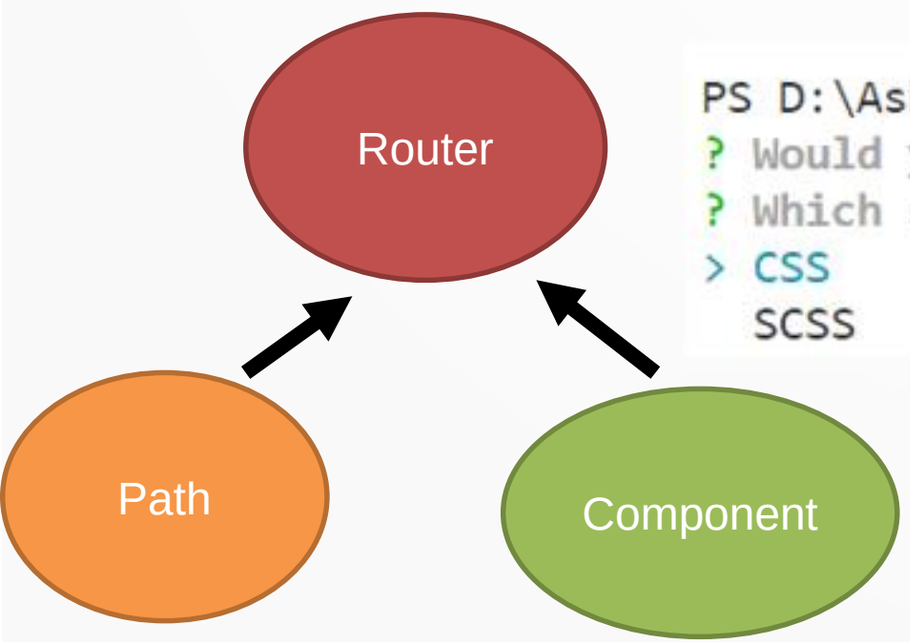
The Angular Router enables navigation from one view to the next as users perform application tasks.

So ,
In Angular we have components, each component can have a different task,
for example in Accounts Application there can be a Profile, Balance, Policies , Investment , Insurance views.

- Routing enables a user to visit these pages or components with each one having a specified URL path.
- These URL's or RouterLinks can be accessed by a user through hyperlinks in HTML templates, javascript's navigate methods or by simply pasting in browser's address bar.
- It's contained in the @angular/router package.
- Through routing we can use the browser's URL to navigate between Angular components in the same way you can use the usual server side navigation.

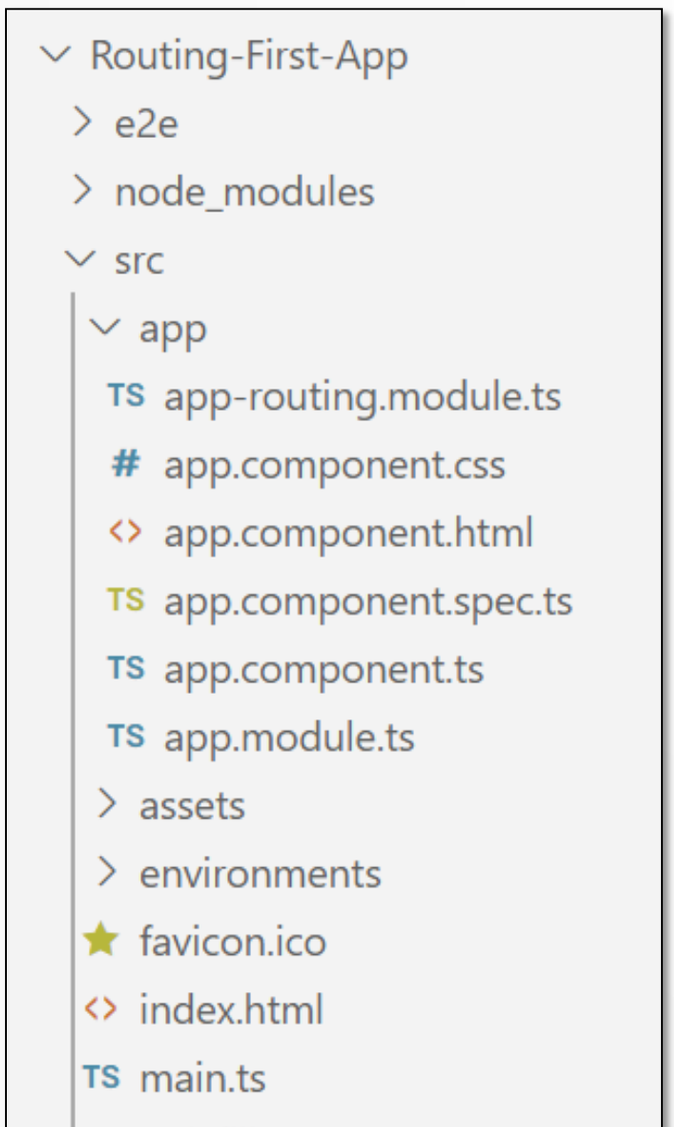
Configuration of Router

- A routed Angular application has one singleton instance of the *Router* service.
- When the browser's URL changes, that router looks for a corresponding Route from which it can determine the component to display
- A router has no routes until you configure it.




```
PS D:\Ashish\angular-apps> ng new Routing-First-App
? Would you like to add Angular routing? Yes
? Which stylesheet format would you like to use? (Use arrow keys)
> CSS
  SCSS   [ https://sass-lang.com/documentation/syntax#scss
```

What's new by choosing Routing



By opting Routing option we will get

1) app-routing.module.ts
2) Updated app-module.ts with AppRoutingModule
3) And updated index.html with <base href="/">
4) Updated app.component.html with <router-outlet/>

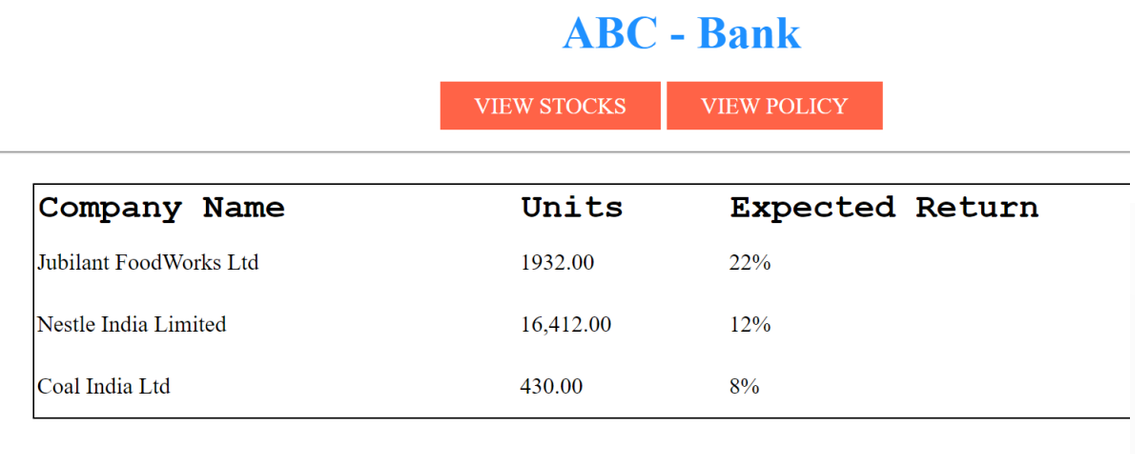
Understanding

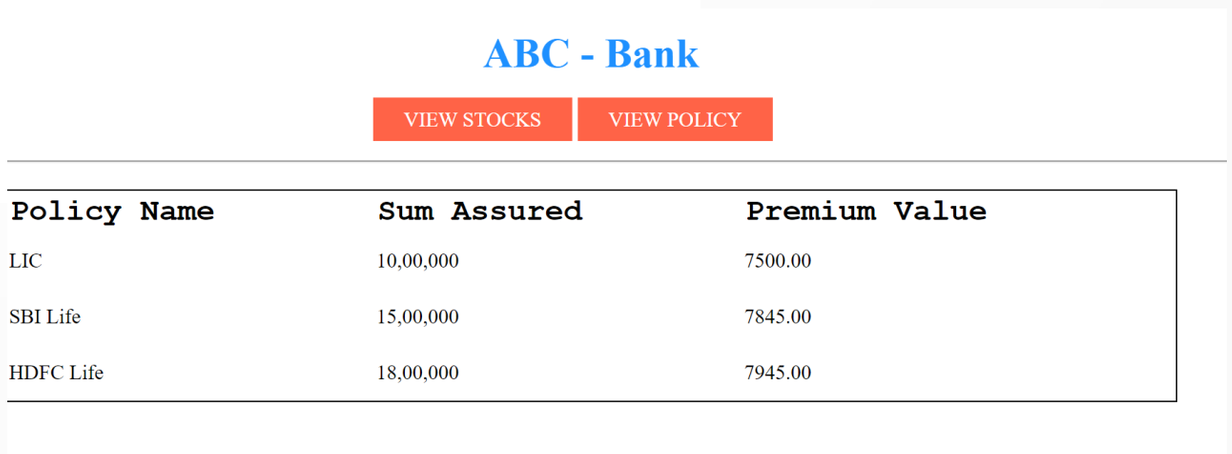
Router-Outlet	The <router-outlet> is a directive that's available from the router library where the Router inserts the component that gets matched based on the current browser's URL. Available at the end of app.component.html https://angular.io/api/router/RouterOutlet
routerLink attribute	The routerLink attribute can be used on any element. It makes that element clickable in order to activate the specified route. It can be used in a similar way to the href attribute on links. https://angular.io/api/router/RouterLink#description For example Click Here <a routerLink="/component 2 "> View This
routerLinkActive	In order to style router links to the currently active route, the routerLinkActive attribute is provided. It accepts one or more class names, that will be toggled on the element when its routerLink points to the active route.

Development Process

1. While Creating the project choose Routing.
2. Configure Routes/Links with Components
3. Provide navigation controls

Application





For css of links

https://css-tricks.com/

Step 1 : Basic Requirements

```ts
import { BrowserModule } from '@angular/platform-browser';
import { NgModule } from '@angular/core';

import { AppRoutingModule } from './app-routing.module';
import { AppComponent } from './app.component';

@NgModule({
  declarations: [
    AppComponent
  ],
  imports: [
    BrowserModule,
    AppRoutingModule
  ],
  providers: [],
  bootstrap: [AppComponent]
})
export class AppModule { }
```

TS app.module.ts ● | index.html × | TS app-routing.module.ts

Routing-First-App > src > index.html > ...

```html
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>RoutingFirstApp</title>
  <base href="/">
  <meta name="viewport" content="width=device-wid
  <link rel="icon" type="image/x-icon" href="favi
</head>
```

TS app.module.ts ● | app.component.html ● | TS app-

Routing-First-App > src > app > app.component.html > ...

```html

<router-outlet></router-outlet>
```

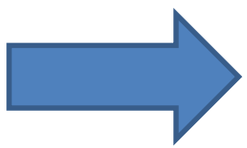
Step 2 : Configure Routes

```
import { NgModule } from '@angular/core';
import { Routes, RouterModule } from '@angular/router';
import { StockComponent } from './stock/stock.component';
import { PolicyComponent } from './policy/policy.component';



const routes: Routes = [
  {path:"stocks",component:StockComponent},
  {path:"policy",component:PolicyComponent}
];

@NgModule({
  imports: [RouterModule.forRoot(routes)],
  exports: [RouterModule]
})
export class AppRoutingModule { }
```



https://angular.io/api/router/Routes

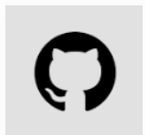
https://angular.io/api/router/Route

Step 3 : Navigation Controls

app.module.ts ● | app.component.html × | app-routing.module.ts

Routing-First-App > src > app > app.component.html > router-outlet

```
1
2   <h1 style="color: dodgerblue; text-align: center;"> ABC -
3
4   <table style="margin-left: 33%;">
5     <tr>
6       <td> <a routerLink="/stocks"> View Stocks</a>   </td>
7       <td> <a routerLink="/policy"> View Policy</a>   </td>
8     </tr>
9   </table>
10  <hr style="margin-top: 2%;margin-bottom: 2%;"/>
11  <router-outlet></router-outlet>
```



Git Resource

https://github.com/mkjitsolution/Angular_Routing

Assignment : add component in case of wrong endpoint

Route With Parameter

Business applications usually contains parameters endpoints.
For exp:

www.abc-bank/accounts/101

www.amazon.com/watch/man/analogwatch/101

In Order to read parameters we should relay on an interface ActivatedRoue

https://angular.io/api/router/ActivatedRoute & https://angular.io/guide/router#activated-route

Activated route

The route path and parameters are available through an injected router service called the ActivatedRoute. It has a great deal of useful information including:

Property	Description
`url`	An `Observable` of the route path(s), represented as an array of strings for each part of the route path.
`data`	An `Observable` that contains the `data` object provided for the route. Also contains any resolved values from the resolve guard.

Reading Parameter Values

https://angular.io/api/router/ActivatedRoute#snapshot

Property	Description
`snapshot: ActivatedRouteSnapshot`	The current snapshot of this route

```
19
20    ngOnInit() {
21      this.stockName = this.currentroute.snapshot.paramMap.get("stockName");
22      console.log("--->> Stock details "+this.stockName);
23
24    }
```

Note : The currentRoute is the instance of ActivatedRoute

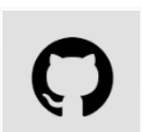
Application

```
PS D:\Ashish\angular-apps\AmazonUI> ng build --prod --base-href "http://AmazonUI.mkj"
92% chunk asset optimization TerserPlugin
```

ABC - Bank

VIEW STOCKS | VIEW POLICY

Stock Name	Compnay Name	Unit Price	Company Market Capital	P/E Ratio
JUBFOOD	Jubliant FoodWorks	₹1,378.00	181.17 Billion USD	056.8%
ITCLtd	ITC Ltd	₹166.00	2004.41 Billion USD	013.7%
HDFBAN	HDFC Bank	₹1,150.00	4550.41 Billion USD	017.34%
INTAVI	Indigo	₹1,354.00	378.41 Billion USD	031.53%
RELIND	Reliance Industries Ltd.	₹1,012.00	6860.41 Billion USD	015.63%



Git Resource https://github.com/mkjitsolution/Angular_Routing

Thanks for Choosing us

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Clients such as GOSI – Saudi Arabia , Noor Bank , UAE , Citi Bank-USA , Oracle University

Kirti Sharma : Global Machine Learning and Data Science Instructor
Clients such as HSBC Bank- London, Voya Financials- USA

Prabhjeet Saini : Global CCNP Trainers .
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Jitin Guglani , Jai Sapra , Chinthiya Somes , Robert