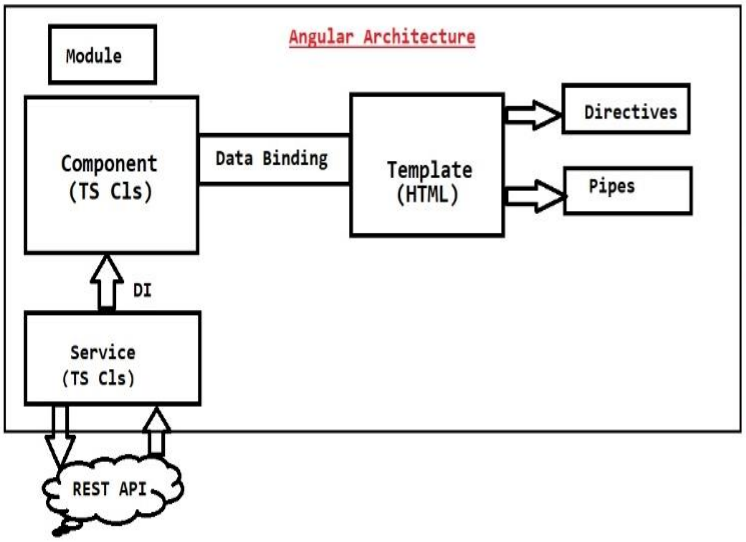
Angular Short Notes



-> Module means collection of components, templates and services

-> Component contains logic to send and recieve data (It is type script class)

-> Template is a HTML file which contains presentation logic

-> Databinding is used to send and recieve data between Component and Template

-> Service contains business logic (It is TS class)

-> Dependency injection means injecting one obj into another object

-> Directive are used to manipulate DOM elements

-> Pipes are used to transform the data before display

- Angular application is collection of components. In components we will write logic to send data to template and capture data from template. Components are TypeScript classes.
- Metadata nothing but data about the data. It provides information about components and templates.
- Template is a view where we will write our presentation logic. In Angular application template is a HTML file. Every Component contains its own Template.
- Data Binding is the process of binding data between component property and view element in template file.
- Module is a collection of components, directives and pipes
- Service means it contains re-usable business logic. Service classes we will inject into Components using Depdency Injection.
- Dependency Injection is the process of injecting dependent object into target object. In Angular applications services will be injected into components using DI.
- Directives are used to manipulate DOM elements in the Template.

(We can execute presentation logic based on conditions like if-else , loops etc... using directives)

- Pipes are used to transform the data before displaying

(lower case to upper case, INR to USD, dd/mm/yyyy to DD-MMM-YYYY)

- In angular application we can have any no.of modules
- When we run angular application, it starts execution from startup module i.e app-module
- Angular application boot strapping will begin from app module
- AppModule will bootstrap AppComponent
- AppComponent is the default component in Angular application
- In Angular application "index.html" file will act as wecome file
- When we access Angular application URL in Browser it will load index.html file
- In index.html file we are using AppComponent selector to invoke AppComponent.

```
<app-root></app-root>
```

❖ Components:

- The component class includes "properties" to store the data, "methods" to manipulate the data.

```
import {Component} from "@angular/core"
@Component (meta-data)
class ClassName{
   property:dataType = value;
   method(args) : returnType {
      //logic
   }
}
```

- selector : represents tag which is used to invoke the component
- templateUrl : represents the html file that has to be rendered when the component is invoked
- template represents content of content
- styleUrls : Represents the list of styles (css) that have to be loaded for the component.
- providers : Represents list of services to be imported into the component
- animations : Represents list of animations to be performed in the component.

Data Bindings

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1) Interpolation :
    - It is used to display the value of property in template
    - If the property value is changed then automatically it will be updated in template
    - syntax : {{propertyName}}

2) Property Binding
   - •Property Binding is used to send the data from component to template and assign the same into an attribute of tag.
   - •If the property value is changed then automatically it will be updated in template
     Syntax: [attribute]=*property
3) Event Binding :
   - It is used to pass event notifications from template to component

     Syntax : <tag (event) = "method()" > </tag>
4) Two Way Binding:
   - **"ngModel"** is the pre-defined directive which is used to achieve two-way data binding.
   - Two data binding is applicable **only for <input/> and <select/> tags.**
   - **FormsModule must be imported** in order to use Two Way Data Binding

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Directives

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style

- It is used to set CSS property value dynamically at runtime.
- When Component property value changed then CSS property value will be changed automatically.

  Syntax : <tagname [style.cssproperty]="component-property">

ngClass

- IT is used to CSS classname dynamically at run time
- Use this directive to set styles with multiple properties conditionally.

Css file :

```
.class1{
color:green;
font-size:30px;
```

html file:

```
<div [ngClass]="myclass">{{marks}}</div>
```

Ts file :

```
myclass:string="";
this.myclass="class1";
```

ngIf

➔ The ngIf displays the element if condition is true otherwise it will remove element from DOM.

<tag *ngIf="condition"> </tag>

Note: The ngIf directive must prefix with *

Ts file :

b:boolean;

html file :

<div *ngIf="b" style="background-color:blue;">Congratulations...!!

<div *ngIf="!b" style="background-color: red;">Better luck next time..!!

ngIf and else

- The "ngIf and else" displays one element if it is "true" otherwise it displays other element.

syntax: <tag *ngIf="condition; then template1;else template2"> </tag>

<ng-template #template1>

...

</ng-template>

<ng-template #template2>

...

</ng-template>

ngSwitch

➔ The "ngSwitch" checks the value of a variable, weather it matches with any one of the cases and displays element when it matches with anyone.

➔ Use "ngSwitch" if you want to display some content for every possible value in a variable.

Syntax:

<tag [ngSwitch]="property">

<tag *ngSwitchCase="'value'"></tag>

<tag *ngSwitchCase="'value'"></tag>

<tag *ngSwitchCase="'value'"></tag>

```
        <tag *ngSwitchDefault></tag>
</tag>
```

ngFor

- ➔ It is used to repeat the tag once for each element in the array. It generates (repeats) the given content once for one element of the array.
- ➔ We have to use use prefix '*' before "ngFor"

Usecase: Displaying all products available in shopping cart.

Syntax: <tag *ngFor="let variable of arrayname"> </tag>

ngFor with Object Array

- ➔ Using this technique we can print array of object values in web page.
- ➔ First we have to store set of objects inside array then read objects one-by-one using "ngFor" and display the data in table format.

Usecase: Reading Product details (name & price) and displaying them.

syntax to create object array

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arrayRefVariable:classname[] = [

```
  new ClassName(),  //        new Employee(101, "John", 5000),
  new ClassName(),   //        new Employee(102, "Smith", 5000),
  new ClassName()    //        new Employee(103, "Nick", 6000)
  ];
```

syntax to use object array using ngFor

<tag *ngFor="**let variable of arrayRefVariable**">

```
    variable.property1
    variable.property2
</tag>
```

ngFor directive with Add and Remove functionality

➔ We can allow the user to add new records (objects) to existing array. User can also delete existing records.

Adding element to array

arrayVariable.push(value);

Removing element from array

arrayVariable.splice(index, count);

Services

➔ The service is a class which contains re-usable business logic (encryption, de-cryption, validations, calculations etc.)
➔ Service class logics we can access in one or more components
➔ **If we keep re-usable set of properties and methods as part of service class, then we can access them from any component and from any other service available in the application.**
➔ We must declare **service class with "@Injectable()" decorator**, to make the service can be accessed from any component.
➔ We need to import "@Injectable()" decorator from "@angular/core" package.
➔ We must use **"@Inject()" decorator**, **to request angular to create an object for the service class. Then angular framework will automatically creates an object for the service class and passes the object as an argument for our Component class Constructor.**

Note: Realtime applications contains logic to access Backend Rest APIs in Service classes.

Syntax -------

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

@Injectable()

class ServiceClassName {

    //methods here

}
```

Add Service as a Provider in the Component

```
@Component({..., providers : [ServieClassName] })

class ComponentClassName {
```

}

Get the Instance of Service using Dependency Injection

```
import {Inject} from "@angular/core";
@Component( { } )
class ComponentClassName{

  constructor(@Inject(ServiceClassName) variable:ServiceClsName ){
  }
}
```

Pipes

Pipes are used to transform the value into user-expected-format Pipes are inovked in expresssion (**interpolation binding**), **through pipe (|) symbol.**

List of built-in pipes in Angular 2+

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1. uppercase 2. Lowercase 3. Slice 4. number 5. currency 6. percent

7. date 8. json etc.

Eg

```
 City In Uppercase:: {{city | uppercase}} <br/>
   City In Lowercase : {{city | lowercase}} <br/>
   Slice : {{city | slice : 2:6}}<br/>
   Currency in USD: {{salary | currency:"USD"}} <br/>
   Currency in INR : {{salary | currency:"INR"}} <br/>
   Short Date : {{dt | date : "shortDate"}} <br/>
   Medium Date: {{dt | date: "mediumDate"}} <br/>
   Medium: {{dt | date: "medium"}} > <br/>
   Formatted Date : {{dt | date:"d/M/y"}}
```

Forms and Validations

In Angular we can develop forms in 2 ways

1) Reactive Forms

2) Template-Driven Forms

Template Driven Forms

- Template driven forms are suitable for development of Simple forms with limited no.of fields and simple validations.
- In these forms, each field is represented as a property in the component class.
- Validation rules are defined in the template using "html5" attributes. Validation messages are displayed using "validation properties" of angular.
- "FormsModule" should be imported from "@angular/forms" package.

HTML5 attributes for Validation

required="required" : This field is mandatory

minlength="n" : Minimum no.of characters

pattern="regexp" : Regular expression

Reactive Forms

- Reactive Forms are also called as Model Driven Forms
- Reactive forms are new types of forms in angular which are suitable for creating large forms with many fields and complex validations
- **In these forms, each field is represented as "FormControl" and group of controls is represented as "FormGroup"**
- "**ReactiveFormsModule**" should be imported from "@angular/forms" package.
- Validation rules are defined in the component using "**Validators**" object of angular and **validation messages are displayed in the template using "validation properties" of angular.**

Validations in Reactive Forms

- Validators.required
- Validators.minLength
- Validators.maxLength
- Validators.pattern

Validation Properties

- untouched
- touched
- pristine
- dirty

- valid
- invalid
- errors

Routing

- The routing concept is used to create page navigations in angular2+ applications
- "Routing" is the process of mapping between the "route(url)" and corresponding component

Angular2+ supports two types of routing

1. Hash-less routing Ex : /home
2. Hash routing Ex : #/home

Steps for working with Routing

Import "@angular/router" package in "package.json" file

```
"dependencies":{
 "@angular/router": "latest"
}
```

- Set the base location of the application on server:

```
<base href="/">
```

Import "Router" from "@angular/router" package

```
import {Router} from "@angular/router";
```

- Create Routes

```
var variable1: Routes = [
 {path:"path-here", component:ComponentClsName},
 {path:"path-here", component:ComponentClsName}
]
```

Import "RouterModule" from "@angular/router" package

```
import {RoutesModule} from "@angular/router"
```

Combine Your Routes & RouterModule

```
var variable2 =
 RouterModule.forRoot(variable1,useHash:true/false});
```

Import both "routes" and "RouterModule" in AppModule

```
@NgModule({..., imports : [..., variable2]})
class AppModule{
}
```

Create Hyperlink to route

```
<a routerLink="/path">Link Here</a>
```

Create Place Holder to display route content

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

AJAX

- AJAX stands for Asynchronus Java Script and XML
- AJAX is not a language but it is a concept which is used to send request from browser to server and also get response from server to browser without refreshing(reloading) the web page in browser.
- AJAX allows us to interact with the server and get some data from server without refreshing full web page.

Types of Ajax Requests

GET : Used to retrieve/search data from server

POST : Used to insert data to server

PUT : Used to update data on server

DELETE : Used to delete data from server

- '@angular/common/http' package provided necessary services to send AJAX request to server and get AJAX response from server
- If we want to send AJAX request we will import and inject HttpClient. Using this HttpClient we can send AJAX request to server.

Sending GET request to server

```
this.http.get<ModelClsname>(
    "url",
    {responseType: "json|text"})
   .subscribe(this.successCallbackFunction, this.errorCallBackFunction);
```

Sending POST request to server

```
this.http.post(
  "url",
       {data},
  {responseType:"json|text"}).
  subscribe(this.successCallBack, this.errorCallBack);
```

Sending PUT request to server

```
this.http.put(
  "url",
       {data},
  {responseType:"json|text"}).
  subscribe(this.successCallBack, this.errorCallBack);
```

Sending DELETE request to server

```
this.http.delete(
  "url",
  {responseType:"json|text"}).
  subscribe(this.successCallBack, this.errorCallBack);
```

Define Success Callback function

```
successcallback = (response) =>
{
   //do action with response
}
```

Define error callback function

```
errorcallback = (error) =>
{
  //do action with error
}
```