Session 3

Directives, Filters, and Routes

Session Objectives

✓ Describe the directives in AngularJS

✓ List and explain the important built-in filters

✓ Describe routes in AngularJS applications

Introduction to Directives

What are Directives?

- Important components of AngularJS
- Extend HTML Elements
- Create reusable and testable code

Examples

`ng-app`	Initializes an AngularJS application
`ng-init`	Initializes application data
`ng-model`	Binds the value of HTML controls (input, select, textarea) to application data

Introduction to Directives

```
<!DOCTYPE html>
<html>
<head>
<title>AngularJS Directives</title>
<script src = "https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
</head>
<body>
<h1>Sample AngularJS Application</h1>
<div ng-app = "" ng-init = "countries = [{locale:'en-US',name:'United States'},
{locale:'en-GB',name:'United Kingdom'}, {locale:'en-FR',name:'France'}]">
<p>Enter Your Name: <input type = "text" ng-model = "name"></p>
<p>Hello <span ng-bind = "name"></span>!</p>
<p>List of Countries with locale code:</p>
<ol>
<li ng-repeat = "country in countries">
{{ 'Country Name: ' + country.name + ', Locale Code: ' + country.locale }}
</li>
</ol>
</div>
</body>
</html>
```

Directives

Common Directives

ng-init

ng-repeat

ng-include

ng-app

ng-model

ng-hide

ng-show

ng-app

- Defines root element where application lives.

- Initializes application when Web page is loaded.

- Also loads various AngularJS modules in the application.

```
<!DOCTYPE html>
<html>
<head>
 <title>ng-app Directive Test</title>
 <script src =
"https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js">
</script>
</head>
<body>
 <div> {{4/2}} </div>
 <div id="myDivTag" ng-app>
{{10/7}}
<div>
 {{10/2}}
 </div>
 </div>
 <div>
 {{6/2}}
 </div>
</body>
</html>
```

ng-init

- Used for initializing AngularJS Application data in HTML.

- Used to assign values to variables to be used in the application.

```html
<!DOCTYPE html>
<html >
<head>
 <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.
7.9/angular.min.js"></script>
</head>
<body >
 <div ng-app ng-init="greet='Hello '; amount= 100;
myArr = [200, 300]; person = { firstName:'Bill',
lastName :'Gates'}">
 {{greet}}
 {{person.firstName}} <br/>
                {{amount}}
<br />
 {{myArr[1]}}
 </div>
</body>
</html>
```

ng-model

Used to bind value obtained from user via HTML inputs to application data.

Provides type validation for application data.

Provides status for application data.

Provides CSS classes for HTML elements.

Binds HTML elements to HTML forms.

ng-model

```
<!DOCTYPE html>
<html>
<head>
 <script src =
"https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js">
</script>
</head>
<body ng-app>
 Enter Your Name <input type="text" ng-model="name" />
 <div>
 Hello {{name}}
 </div>
</body>
</html>
```

ng-repeat

1-2

- Is used to repeat HTML elements for each item in a collection, which could be an array or an object.

- Is a powerful directive that can iterate over thousands of data with a single line of code.

ng-repeat

```
<!DOCTYPE html>
<html>
<head>
<script
src =
"https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js">
</script>
 <style>
 div {
 border: 1px solid green;
 width: 100%;
 height: 50px;
 display: block;
 margin-bottom: 10px;
 text-align:center;
 background-color:yellow;
 }
 </style>
</head>
```

```
<body ng-app="" ng-init = "owners =
['Bill','Steve','Jack']" >
 <ol>
 <li ng-repeat="name in owners">
 {{name}}
 </li>
 </ol>
 <div ng-repeat="name in owners">
 {{name}}
 </div>
</body>
</html>
```

ng-hide

- Is used to hide an element depending on some condition.

- Hides specified HTML element if the expression evaluates to true.

```
<!DOCTYPE html>
 <html lang="en">
 <head>
<meta charset="UTF-8">
<title>Demo for ng-show and ng-hide</title>
<script
src="https://ajax.googleapis.com/ajax/libs/angul
arjs/1.7.9/angular.min.js"></script>
 </head>
 <body ng-app="">
        <p>Do you want to hide the list of
cities?</p>
        <input type="checkbox" ng-model="myVar">
        <ul ng-hide = "myVar">
<li>Nairobi</li>
<li>London</li>
<li>Paris</li></ul>
 </body>
</html>
```

ng-show

- Shows HTML elements if expression evaluates to true.

```
<!DOCTYPE html>
<html>
<script
src="https://ajax.googleapis.com/ajax/libs/angul
arjs/1.7.9/angular.min.js"></script>
<body ng-app="">
Show HTML element: <input type="checkbox" ng-
model="myVar">
<div ng-show="myVar">
<h1>Welcome to ng-show directive example</h1>
<p>A solution of ng-show directive.</p>
</div>
</body>
</html>
```

ng-include

- Is used to embed another HTML page in our application's HTML page.

- Generally, the embedded HTML page is from the same server.

```
<!DOCTYPE html>
<html>
 <head>
 <script src =
"http://ajax.googleapis.com/ajax/libs/angularjs/1.4.1/angular.min.js">
</script>
 </head>
 <body ng-app="spApp">
 <h1>ng-include directive</h1>
 <div ng-controller="SPController" class="container">
 <div ng-include="'mainContent.html'"></div>
 <div ng-include="'sideBar.html'"></div>
 </div>
 </body>
 <script>
 var MyApp = angular.module('spApp', []);
 MyApp.controller("SPController", function($scope) {
 $scope.quantity = 1;
 $scope.price = 9.99;
 });
 </script>
</html>
```

Filters

They format value of an expression for displaying to end user.

They are added to expressions by using the pipe character |, followed by a filter.

They can be used in view templates as well as in controllers.

More than one filter can be used in an expression.

Built-in Filters

Currency

Uppercase

Date

Lowercase

Search

Built-in Filters - Number

```
<!DOCTYPE html>
<html>
<head>
 <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
</head>
<body ng-app >
<h1>AngularJS Number Filter</h1>
 Enter the amount to format: <input type="number" ng-model="amount" /> <br />
  100000 | number = {{100000 | number}} <br />
 amount | number = {{amount | number}} <br />
 amount | number:2 = {{amount | number:2}} <br />
 amount | number:4 = {{amount | number:4}} <br />
 amount | number = <span ng-bind="amount | number"></span>
</body>
</html>
```

Number Filter Example

Built-in Filters - Currency

```
<!DOCTYPE html>
<html>
<head>
 <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
</head>
<body ng-app="myApp" >
<h1>AngularJS Currency Filter</h1>
 <div ng-controller="myController">
 Default Currency: {{person.salary | currency}} <br />
 Custom Currency Identifier: {{person.salary | currency:'Euro.'}} <br />
 Without Fraction: {{person.salary | currency:'Euro':0}} <br />
 Two Decimal Fraction: <span ng-bind="person.salary| currency:'GBP':2"></span>
 </div>
 <script>
 var myApp = angular.module('myApp', []);

 myApp.controller("myController", function ($scope) {
 $scope.person = { salary: 100000}
 });
 </script>
</body>
</html>
```

Currency Filter Example

Built-in Filters - Date

```
<!DOCTYPE html>
<html>
 <head>
 <title>Date Filter</title>
 <script src =
"https://ajax.googleapis.com/ajax/libs/angularjs/1.7
.9/angular.min.js"></script>
 </head>
  <body>
<h1>AngularJS Date Filter</h1>
<div ng-app="gfgApp" ng-controller="dateCntrl">
Default Date: {{ today| date }}<br/>
Short: {{ today| date:'short' }}<br/>
Medium: {{ today| date:'medium' }}<br/>
Short Date: {{ today | date:'shortDate' }}<br/>
Long Date: {{ today| date:'longDate'}}<br/>
Medium Date: {{ today| date:'mediumDate'}}<br/>
Full Date: {{ today| date:'fullDate'}}<br/>
Year: {{today | date:'yyyy'}} <br/>
```

```
Short Time: {{ today|
date:'shortTime'}}<br/>
 Medium Time: {{ today|
date:'mediumTime'}}<br/>
</div>
 <script>
 var app = angular.module('gfgApp',
[]);
 app.controller('dateCntrl',
function($scope) {
 $scope.today = new Date();
 });
 </script>
 </body>
</html>
```

Date Filter Example

Built-in Filters - Lowercase

The lowercase filter is used to display in small caps.

```
{{firstName | lowercase }}
```

It is useful when the data is in uppercase or in titlecase

Built-in Filters - Uppercase

The uppercase filter is used to display in uppercase.

```
{{firstName | uppercase }}
```

It is useful when the data is in lowercase or in titlecase.

Built-in Filters - Filter

We use 'filter' to search and filter from a collection data.

For example, {{ name | filter:Rob' }}

```
<!DOCTYPE html>
<html>
<head>
 <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
</head>
<body ng-app="myApp" >
<h1>AngularJS Filter</h1>
 <div ng-controller="myController">
 Enter name to search in array: <input type="text" ng-model="searchCriteria" /> <br />
 Result: {{myArr | filter:searchCriteria}}
 </div>
 <script>
 var myApp = angular.module('myApp', []);
  myApp.controller("myController", function ($scope) {
 $scope.myArr = ['Steve', 'Bill', 'James', 'Rob', 'Ram', 'Moin']
 });
 </script>
</body>
</html>
```

Custom Filters

AngularJS gives us an API for creating a custom filter.

Just as controller can be defined as follows:

```
app.controller('myCtrl', function(){});
```

Similarly, a custom filter can be created by using 'filter':

```
app.filter('filterName', function(){});
```

Custom Filters

```
<!DOCTYPE html>
<html>
<script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
<body>
<h1>Custom Filter</h1>
<ul ng-app="myApp" ng-controller="namesCtrl">
<li ng-repeat="x in names">  {{x | myFilter}} </li>
</ul>
<script>
var app = angular.module('myApp', []);
app.filter('myFilter', function() {
 return function(x) {
 var i, c, txt = "";
 for (i = 0; i < x.length; i++) {
 c = x[i];
if (i % 2 == 0) {
 c = c.toUpperCase();
 }
txt += c;
```
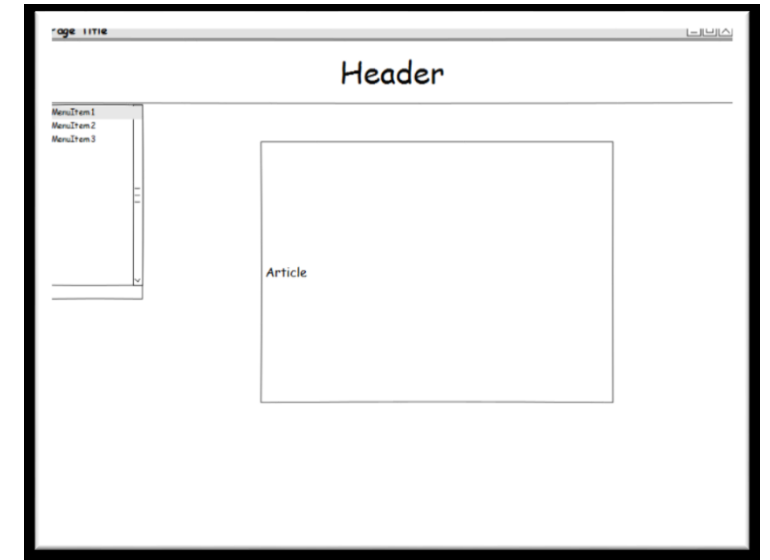
```
}
 return txt;
 };
});
app.controller('namesCtrl', function($scope) {
 $scope.names = [
 'Jani',
 'Carl',
 'Margareth',
 'Hege',
 'Joe',
 'Gustav',
 'Birgit',
 'Mary',
 'Kai'
 ];
});
</script>
<p> This filter, called 'myFilter', will capitalize every other character. </p>
</body>
</html>
```

Routes

- When creating single page applications, routing is very important.

- The **ngRoute** module helps our application to become a Single Page Application.

- It routes our application to different pages without reloading the entire application.

A wireframe of a Web page

Routes

```
<!DOCTYPE html>
<html>
<script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular.min.js"></script>
<script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.7.9/angular-route.js">
</script>
<body ng-app="myApp" bgcolor="lightyellow">
<p><a href="#/!">UK Tourism</a></p>
<a href="#!Dorset">Dorset</a>
<a href="#!Leeds">Leeds</a>
<a href="#!Cardiff">Cardiff</a>
<p>Click links to read about Dorset, Cardiff, and Leeds.</p>
<div ng-view style="background-color: lightblue"></div>
<script>
var app = angular.module("myApp", ["ngRoute"]);
app.config(function($routeProvider) {
$routeProvider
.when("/",{
templateUrl : "UKTourism.html"
})
```

Routing Code Example

Routes

```
.when("/Dorset", {
templateUrl : "dorset.html"
})
.when("/Leeds", {
templateUrl : "leeds.html"
})
.when("/Cardiff", {
templateUrl : "cardiff.html"
});
});
</script>
</body>
</html>
```

Routing Code Example

Routes

UK Tourism

Dorset Leeds Cardiff

Click links to read about Dorset, Cardiff, and Leeds.

Dorset Tourism

Dorsett City is situated at the gateway to East London, close to the vibrancy of Shoreditch and its array of galleries, boutiques and timeless markets.

UK Tourism

Dorset Leeds Cardiff

Click links to read about Dorset, Cardiff, and Leeds.

Leeds Tourism

Leeds is a city in the northern English county of Yorkshire. On the south bank of the River Aire, the Royal Armouries houses the national collection of arms and artillery. Across the river, the redeveloped industrial area around Call Lane is famed for bars and live music venues under converted railway arches. Leeds Kirkgate Market features hundreds of indoor and outdoor stalls.

Summary

➢ Directives are one of the most important components of AngularJS that help us extend basic HTML elements.

➢ The starting point of any AngularJS application is the element where ng-app directive is provided.

➢ The ng-model directive is used to bind the value obtained from the user HTML inputs to model data.

➢ The ng-repeat is a powerful directive that can iterate over thousands of data with a single line of code.

➢ The ng-hide directive hides the specified HTML element if the given expression evaluates to true.

➢ The ng-show directive shows the specified HTML element if the given expression evaluates to true.

➢ The ng-include directive is used to embed one HTML page into another HTML page.

➢ Filters do not change the underlying data in the database. They only do the formatting for display and $routeProvider is used to configure different routes in our application.