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1. Installation and Setup

CDN (Quick Start)

Add AngularJS to your HTML:

```
<script  
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min
```

```
.js"></script>
```

2. Basic AngularJS Application

```
<!DOCTYPE html>
<html ng-app="myApp">
<head>
  <title>AngularJS App</title>
</head>
<body>
  <div ng-controller="MainController">
    <h1>{{ message }}</h1>
  </div>

  <script>
    const app = angular.module('myApp', []);
    app.controller('MainController', function($scope) {
      $scope.message = 'Hello, AngularJS!';
    });
  </script>
</body>
</html>
```

3. Key Directives

ng-app - Declares the AngularJS application.

```
<div ng-app="myApp"></div>
```

ng-controller - Binds controller to a view.

```
<div ng-controller="MainController"></div>
```

ng-model - Two-way data binding for forms/inputs.

```
<input ng-model="username" placeholder="Enter your name">
<p>Hello, {{ username }}</p>
```

ng-repeat - Loops through arrays.

```
<ul>
  <li ng-repeat="item in items">{{ item }}</li>
</ul>
```

ng-bind - Binds content to HTML elements.

```
<h1 ng-bind="message"></h1>
```

ng-show / ng-hide - Conditional rendering.

```
<p ng-show="isLoggedIn">Welcome back!</p>
<p ng-hide="isLoggedIn">Please log in.</p>
```

ng-if - Conditionally includes/excludes elements.

```
<div ng-if="user.isAdmin">
  <p>Admin Access Granted</p>
</div>
```

4. Expressions

AngularJS expressions are written in double curly braces {{ }}.

```
<p>{{ 5 + 5 }}</p>  <!-- Outputs 10 -->
<p>{{ username }}</p>  <!-- Displays scope value -->
```

5. Controllers

Define application logic using controllers.

```
<div ng-controller="ExampleController">
  <h1>{{ title }}</h1>
</div>

<script>
  app.controller('ExampleController', function($scope) {
    $scope.title = 'AngularJS Controllers';
  });
</script>
```

6. Data Binding

Two-way data binding:

```
<input type="text" ng-model="name">
<p>Hello, {{ name }}</p>
```

One-way data binding (ng-bind):

```
<p ng-bind="name"></p>
```

7. Filters

Filters format data displayed to users.

```
<p>{{ message | uppercase }}</p>
<p>{{ price | currency }}</p>
<p>{{ date | date:'fullDate' }}</p>
```

- Common Filters:
 - uppercase - Converts to uppercase.

- lowercase - Converts to lowercase.
 - currency - Formats as currency.
 - date - Formats date.
 - filter - Filters an array based on criteria.
-

8. Forms and Validation

```
<form name="userForm">
  <input type="text" ng-model="user.name" required>
  <span ng-show="userForm.$submitted && userForm.name.$invalid">Name
is required.</span>
  <button type="submit">Submit</button>
</form>
```

9. ng-click (Event Handling)

```
<button ng-click="increment()">Increase</button>
<p>{{ count }}</p>

<script>
  app.controller('CounterController', function($scope) {
    $scope.count = 0;
    $scope.increment = function() {
      $scope.count++;
    };
  });
</script>
```

10. ng-repeat (Looping Through Data)

```
<ul>
  <li ng-repeat="user in users">
```

```
        {{ user.name }} - {{ user.email }}
    </li>
</ul>

<script>
    app.controller('UserController', function($scope) {
        $scope.users = [
            { name: 'Alice', email: 'alice@example.com' },
            { name: 'Bob', email: 'bob@example.com' }
        ];
    });
</script>
```

11. Services

Services are used to share data and logic across controllers.

```
app.service('MathService', function() {
    this.square = function(x) {
        return x * x;
    };
});

app.controller('MathController', function($scope, MathService) {
    $scope.result = MathService.square(4); // Outputs 16
});
```

12. Custom Directives

Directives extend HTML functionality.

```
<div hello></div>
```

```
<script>
```

```
    app.directive('hello', function() {
      return {
        template: '<h1>Hello, Custom Directive!</h1>'
      };
    });
  </script>
```

13. Dependency Injection

AngularJS uses dependency injection to manage services and components.

```
app.controller('MainController', function($scope, $http) {
  $http.get('/api/data').then(function(response) {
    $scope.data = response.data;
  });
});
```

14. HTTP Requests (\$http Service)

```
<div ng-controller="ApiController">
  <p>{{ data }}</p>
</div>

<script>
  app.controller('ApiController', function($scope, $http) {
    $http.get('https://api.example.com/info')
      .then(function(response) {
        $scope.data = response.data;
      });
  });
</script>
```

15. Routing (ngRoute)

Install AngularJS route module:

```
<script  
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular-route.min.js"></script>
```

Set up routing:

```
app.config(function($routeProvider) {  
    $routeProvider  
        .when('/', {  
            templateUrl: 'home.html',  
            controller: 'HomeController'  
        })  
        .when('/about', {  
            templateUrl: 'about.html',  
            controller: 'AboutController'  
        })  
        .otherwise({  
            redirectTo: '/'  
        });  
});
```

16. Single Page Application (SPA) Example

```
<div ng-view></div>
```

```
<script>  
    app.config(function($routeProvider) {  
        $routeProvider  
            .when('/', {  
                template: '<h1>Home Page</h1>'  
            })  
            .when('/about', {
```

```
        template: '<h1>About Page</h1>'
    })
    .otherwise({
        redirectTo: '/'
    });
});
</script>
```

17. Useful AngularJS CLI Commands

<code>npm install -g angular-cli</code>	<code># Install CLI globally</code>
<code>ng serve</code>	<code># Run Angular app</code>
<code>ng generate component my-comp</code>	<code># Generate component</code>
<code>ng generate service my-service</code>	<code># Generate service</code>