100 AngularJS interview questions Answers

Basic Level (1-25)

1. What is AngularJS?

 AngularJS is a JavaScript framework developed by Google to build dynamic web applications. It extends HTML with new attributes and uses a two-way data binding feature.

2. What are the key features of AngularJS?

- Two-way data binding
- Dependency injection
- MVC (Model-View-Controller) architecture
- Directives
- Filters
- Templates
- Routing

3. What is two-way data binding in AngularJS?

• Two-way data binding means that any changes in the UI are immediately reflected in the model and vice versa, eliminating the need for manual DOM manipulation.

4. What is an AngularJS directive? GUIDE'S FOR PERFECT CAREER PATHWAY

• Directives are markers on DOM elements that tell AngularJS to attach specific behaviors to elements. Example: ng-model, ng-bind, ng-repeat, etc.

5. What are the types of directives in AngularJS?

- Attribute directives (e.g., ng-model)
- Element directives (e.g., <my-directive>)
- **Comment directives** (e.g., <!-- directive: myDirective -->)

6. What is the difference between \$scope and controller in AngularJS?

• \$scope is an object that binds the view and controller, while the controller defines the business logic of an application.

7. What is an AngularJS module?

• A module in AngularJS is a container for different parts of an application, such as controllers, services, directives, and filters.

How do you define an AngularJS module?

var app = angular.module('myApp', []);

8.

9. What is an AngularJS controller?

• A controller is a JavaScript function that controls the application's data and behavior. It is defined inside a module.

How do you define a controller in AngularJS?

app.controller('myCtrl', function(\$scope) {
 \$scope.message = "Hello, AngularJS!";

});

10.

11. What is \$scope in AngularJS?

 \$scope is an object that binds the view (HTML) and the controller. It acts as a bridge between the model and the view.

12. What is \$rootScope in AngularJS?

 \$rootScope is a global scope object that is available across all controllers in an AngularJS application.

13. What is a filter in AngularJS?

• A filter is used to format data displayed to the user. Example: uppercase, lowercase, currency, date, etc.

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How do you apply a filter in AngularJS?

```
{{ name | uppercase }}
```

14.

15. What is ng-repeat in AngularJS?

 ng-repeat is a directive used to iterate over an array and display data dynamically.

ng-repeat="item in items">{{ item }}

16.

17. What is ng-if in AngularJS?

 \circ $\$ ng-if conditionally renders an element based on a boolean expression.

18. What is ng-show and ng-hide?

ng-show and ng-hide control the visibility of elements based on a condition.

19. What is \$http in AngularJS?

\$http is a service that allows communication with a remote server via HTTP requests.

How do you make an HTTP GET request in AngularJS?

```
$http.get('/api/data').then(function(response) {
```

```
$scope.data = response.data;
```

```
});
```

20.

21. What is \$q in AngularJS?

• \$q is a service used for handling asynchronous operations (Promises).

22. What is dependency injection in AngularJS?

- Dependency injection (DI) is a design pattern used to inject dependencies (services) into components.
- 23. What is ng-model in AngularJS?
 - ong-model binds input, select, textarea elements to a property on the \$scope object.
- 24. What is ng-class in AngularJS?

 ng-class dynamically assigns CSS classes to elements based on expressions.

- 25. What is \$watch in AngularJS?
 - \$watch monitors changes in variables and executes a function when changes occur.

26. How do you define a custom directive in AngularJS?

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

Here are the AngularJS Intermediate (27-50) and Advanced (51-100) interview questions along with their answers:

Intermediate Level (27-50)

27. What is \$timeout and \$interval in AngularJS?

- \$timeout is a wrapper around setTimeout used to execute a function after a specified delay.
- \$interval is a wrapper around setInterval used to execute a function repeatedly at a fixed time interval.

```
$timeout(function() {
```

console.log('Executed after 3 seconds');

}, 3000);

\$interval(function() {

console.log('Executed every 2 seconds');

}, 2000);

28. What are AngularJS services?

- Services in AngularJS are reusable singleton objects used to share common functionality across controllers, directives, and filters.
- Example: \$http, \$location, \$route, \$timeout.

29. Explain the digest cycle in AngularJS.

- The digest cycle is a process in which AngularJS checks for changes in variables (\$scope) and updates the DOM.
- It is triggered automatically but can also be manually invoked using <code>\$apply()</code>.

30. What are the different types of scopes in AngularJS?

- 1. Global Scope (\$rootScope) Accessible throughout the application.
- 2. Controller Scope (\$scope) Available only within the controller.
- 3. **Isolated Scope** Used in directives to prevent scope pollution.

31. How do you create a factory in AngularJS?

• Factories in AngularJS return an object that contains methods and properties.

```
app.factory('myFactory', function() {
```

```
return {
   greet: function() {
      return "Hello from Factory";
   }
};
```

```
});
```

32. What is a singleton service in AngularJS?

 A singleton service is instantiated only once and shared across different components in an application.

33. What is ngRoute in AngularJS?

• ngRoute is a module that allows navigation between views based on URLs.

34. How do you implement routing in AngularJS?

• Use \$routeProvider to configure routes.

```
app.config(function($routeProvider) {
```

```
$routeProvider
```

.when('/home', {

templateUrl: 'home.html',

```
controller: 'HomeController'
```

})

.otherwise({ redirectTo: '/home' });

});

35. What is resolve in AngularJS routing?

• resolve ensures that data is loaded before a route is activated.

36. How does \$location service work in AngularJS?

• \$location allows manipulation of the browser URL within an AngularJS app.

```
$scope.changeURL = function() {
```

```
$location.path('/newRoute');
```



37. What is lazy loading in AngularJS?

• Lazy loading allows modules, components, and dependencies to be loaded only when required, improving performance.

38. What are AngularJS animations?

• Animations are created using the ngAnimate module and can be applied to elements using ng-show, ng-hide, and ng-class.

39. How do you handle exceptions in AngularJS?

• Using \$exceptionHandler to catch and log errors.

app.factory('\$exceptionHandler', function() {

```
return function(exception, cause) {
```

```
console.error(exception.message);
```

}; });

40. What is the purpose of \$on, \$emit, and \$broadcast?

- \$on Listens for events.
- \$emit Sends an event upwards (parent scopes).
- \$broadcast Sends an event downwards (child scopes).

41. What are interceptors in AngularJS?

• Interceptors modify HTTP requests/responses globally.

```
app.factory('authInterceptor', function() {
    return {
        request: function(config) {
            config.headers.Authorization = 'Bearer token';
            return config;
        }
    };
}
```

42. How does \$compile work in AngularJS?

• \$compile is used to manually compile and link HTML templates dynamically.

43. What is \$resource in AngularJS?

• \$resource simplifies communication with RESTful APIs.

44. How do you share data between controllers in AngularJS?

• Using services or \$rootScope.

45. What is ngSanitize in AngularJS?

• A module that prevents XSS (cross-site scripting) by sanitizing HTML input.

46. How does AngularJS handle security vulnerabilities?

• By using \$sanitize, escaping input, and avoiding direct DOM manipulation.

47. How do you optimize an AngularJS application?

Minify scripts, enable caching, use \$watch efficiently, lazy load modules.

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48. What are AngularJS decorators?

• Functions that modify the behavior of services.

49. What is \$parse in AngularJS?

• \$parse compiles expressions into functions that can be executed dynamically.

50. What is the difference between AngularJS and Angular (2+)?

Feature AngularJS Angular (2+)

| Architecture | MVC | Component-base d |
|----------------|------------|---------------------|
| Language | JavaScript | TypeScript |
| Data Binding | Two-way | One-way (default) |
| Performance | Slower | Faster |
| Mobile Support | No | Yes |

Advanced Level (51-100)

51. How do you use \$watchGroup in AngularJS?

\$watchGroup watches multiple scope variables at once.
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\$scope.\$watchGroup(['var1', 'var2'], function(newValues, oldValues) {

console.log(newValues);

});

52. Explain \$evalAsync in AngularJS.

• \$evalAsync schedules a task to be executed at the end of the current digest cycle.

53. What is \$exceptionHandler in AngularJS?

• A service to handle errors globally.

54. How do you test an AngularJS application?

• Using Karma and Jasmine for unit testing.

55. What is ng-messages in AngularJS?

• Used for form validation messages.

56. How do you handle memory leaks in AngularJS?

 Unsubscribe from \$on events and remove DOM elements when they are no longer needed.

-CHPARK

57. What is \$cacheFactory in AngularJS?

• Used for caching data to improve performance.

58. Explain \$animate in AngularJS.

• \$animate module adds CSS-based animations to elements.

Here are the in-depth answers for AngularJS concepts (59-100), including migration, performance tuning, testing, promises, third-party libraries, and best practices.

59. Migration from AngularJS to Angular (2+)

Migrating from AngularJS to Angular (2+) is a multi-step process:

1. Prepare AngularJS Codebase

- Remove unnecessary \$scope dependencies.
- Convert AngularJS controllers to components.

2. Use ngUpgrade

• Use ngUpgrade to run both AngularJS and Angular code simultaneously.

import { UpgradeModule } from '@angular/upgrade/static';

- 3.
- 4. Migrate Services
 - Convert AngularJS services to Angular services and use dependency injection.
- 5. Convert Directives
 - Rewrite AngularJS directives as Angular components.
- 6. Remove AngularJS Code
 - Fully transition to Angular and remove AngularJS dependencies.

60. Performance Tuning in AngularJS

1. Use \$watch efficiently

• Minimize the number of watched variables.

\$scope.\$watch('variable', function(newValue) { /* Code */ });

2.

- 3. Use One-Time Binding
 - Improve performance by using :: for static values.
- <h1>{{ ::title }}</h1>
 - 4.
 - 5. Lazy Load Modules
 - Load AngularJS modules only when needed.

6. Optimize DOM Manipulation

• Avoid heavy DOM manipulations inside controllers.

61. Unit Testing in AngularJS

Unit testing in AngularJS is done using **Karma (test runner)** and **Jasmine (test framework)**.

Install Karma and Jasmine

npm install -g karma jasmine

1.

Write a simple test
describe('TestController', function() {

beforeEach(module('myApp'));

```
var $controller;
```

```
beforeEach(inject(function(_$controller_) {
```

```
$controller = _$controller_;
```

}));

```
it('should define a message', function() {
```

var \$scope = {};

```
var controller = $controller('MyCtrl', { $scope: $scope });
```

```
expect($scope.message).toBeDefined();
```

});

});

```
2.
```

Run tests

3.

karma start



62. Using \$q and defer for Promises in AngularJS

- \$q is used for handling asynchronous operations.
- \$q.defer() creates a deferred object that can be resolved or rejected later.

```
app.service('dataService', function($q, $http) {
```

```
this.getData = function() {
```

```
var deferred = $q.defer();
```

\$http.get('/api/data')

.then(function(response) {

deferred.resolve(response.data);

})

```
.catch(function(error) {
    deferred.reject(error);
  });
return deferred.promise;
```

};

});

63. Working with Third-Party Libraries in AngularJS

1. Include the library

 \circ $\;$ Use CDN or npm to include third-party libraries.

<script src="https://cdnjs.cloudflare.com/ajax/libs/moment.js/2.29.1/moment.min.js"></script>

2.

3. Use \$window or Services

• Inject the library in a service for better modularity.

app.factory('momentService', function(\$window) {

return \$window.moment;

});

4.

- 5. Use AngularJS Wrappers
 - Some libraries provide AngularJS-specific wrappers.

64. Custom Directive Best Practices in AngularJS

Use Isolated Scope

app.directive('myDirective', function() {

return {

scope: { title: '@' },

template: '<h1>{{ title }}</h1>'

};

});

1.

```
Use Controller Instead of Link Function

app.directive('myDirective', function() {

return {

scope: {},

controller: function($scope) {

$scope.message = "Hello from directive!";

},

template: '<h1>{{ message }}</h1>'

};

});

2.

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Restrict Directives Properly (E, A, C, M)

restrict: 'E' // Element only

3.
```

65-100. Additional AngularJS In-Depth Concepts

65. Difference between \$broadcast and \$emit

- \$broadcast sends an event downward to child scopes.
- \$emit sends an event upward to parent scopes.

\$scope.\$broadcast('customEvent', { data: 'test' });

\$scope.\$emit('customEvent', { data: 'test' });

- 1. Use .then() instead of success/error callbacks.
- 2. Enable caching to reduce redundant API calls.
- 3. Use interceptors for global request modifications.

\$http.get('/api/data').then(response => console.log(response.data));

67. Managing \$digest Cycle Efficiently

- 1. Reduce the number of \$watch functions.
- 2. Use one-time binding where possible.
- 3. Manually trigger digest using <code>\$apply()</code> only when needed.

68. Optimizing Directives for Performance

- 1. Avoid deep-watching objects (\$watch with true).
- 2. Use bindToController instead of \$scope.
- 3. Use the controllerAs syntax for cleaner code.
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69. Implementing Caching in AngularJS

• Use \$cacheFactory to store data in memory.

var cache = \$cacheFactory('myCache');

cache.put('key', 'value');

console.log(cache.get('key')); // Output: value

70. AngularJS Memory Management and Preventing Leaks

Remove event listeners when scope is destroyed. \$scope.\$on('\$destroy', function() {

element.off();

- 1.
- 2. Avoid excessive \$watch usage.

71. Best Practices for AngularJS Security

- 1. Enable CSP (Content Security Policy).
- 2. Sanitize user inputs using \$sanitize.
- 3. Prevent CSRF (Cross-Site Request Forgery) by adding CSRF tokens in headers.

Here are the AngularJS interview questions and answers (72-100) covering debugging, performance, server-side rendering, authentication, internationalization, and large-scale application structuring.

72. How to Debug AngularJS Applications Efficiently?

- 1. Enable Debug Data
 - Use angular.reloadWithDebugInfo() in the console.

Use console.log() and Breakpoints

console.log(\$scope.variable);

2.

- 3. Use Batarang (Chrome DevTool Extension)
 - Debug \$scope variables, performance, and directives.

Enable Strict Dependency Injection

angular.module('myApp', []).config(['\$provide', function(\$provide) {

// Code here

}]);

4.

Use \$exceptionHandler for Error Logging

```
app.factory('$exceptionHandler', function() {
  return function(exception, cause) {
     console.error(exception.message);
  };
});
```

5.

73. Using ngModelOptions to Optimize Form Input Handling

- **Problem**: By default, ngModel updates \$scope on every keystroke, causing unnecessary digest cycles.
- Solution: Use ngModelOptions to control update behavior.

<input type="text" ng-model="username" ng-model-options="{ updateOn: 'blur' }">

• This updates the model only when the input loses focus.

74. Implementing Server-Side Rendering in AngularJS Apps

- **Problem**: AngularJS applications render content on the client-side, which can hurt SEO and performance.
- Solution: Use tools like Prerender.io or PhantomJS to generate static content on the server.

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Example using Prerender.io:

app.config(['\$httpProvider', function(\$httpProvider) {

\$httpProvider.interceptors.push('prerenderInterceptor');

}]);

•

75. How to Use **\$timeout** Properly to Handle Asynchronous Actions?

• \$timeout ensures that changes are applied after a delay.

Example:

```
$timeout(function() {
```

```
$scope.message = "Updated after 3 seconds";
}, 3000);
```

```
}, 3000
```

•

```
Best Practice: Always cancel timeouts when scope is destroyed.
var timer = $timeout(function() { /* Action */ }, 5000);
$scope.$on('$destroy', function() {
    $timeout.cancel(timer);
});
```

•

76. Structuring Large-Scale AngularJS Applications

```
1. Use Modules
```

• Split the app into feature-based modules.

angular.module('app.users', []);
angular.module('app.products', []);

2.

Use the controllerAs Syntax

```
app.controller('UserController', function() {
```

var vm = this; vm.name = "John";

});

3.

- 4. Avoid \$scope in Controllers
 - Use services for shared data.
- 5. Lazy Load Components
 - Use ocLazyLoad for on-demand loading.

77. How to Migrate Legacy AngularJS Projects with Minimal Risk?

- 1. Hybrid Approach with ngUpgrade
 - Run AngularJS and Angular together.
- 2. Convert Services First
 - Migrate \$http-based services to Angular.
- 3. Gradually Replace Components
 - Move from AngularJS controllers to Angular components.
- 4. Rewrite Directives as Components
 - Use Angular's component-based architecture.

78. Best Practices for Using Third-Party Authentication Libraries

1. Use OAuth-based authentication

• Firebase, Auth0, Okta, or Passport.js.

Use JWT (JSON Web Token) for Secure Authentication

\$http.defaults.headers.common.Authorization = 'Bearer ' + token;

- 2.
- 3. Store Tokens Securely
 - Use sessionStorage or HttpOnly Cookies, never localStorage.

79. How to Use **\$locale** for Internationalization in AngularJS?

Load Locale-Specific Files angular.module('myApp', ['ngLocale']);

1.

Use \$locale Service

app.controller('LocaleController', function(\$scope, \$locale) { \$scope.currency = \$locale.NUMBER_FORMATS.CURRENCY_SYM;

});

2.

Use angular-translate for Language Switching

\$translate.use('fr');

3.

80-100. Other Advanced AngularJS Topics

80. How to Prevent XSS (Cross-Site Scripting) in AngularJS?

Use \$sanitize module:

<div ng-bind-html="trustedHTML | sanitize"></div>

•

81. How to Optimize Filters for Performance?

- Avoid filtering large datasets inside the template.
- Use pagination instead of filtering everything.

82. What is the Best Way to Handle Large Lists in AngularJS?

• Use virtual scrolling with third-party libraries like angular-virtual-scroll.

Use limitTo filter:

ng-repeat="item in items | limitTo:50">

•

83. How to Implement WebSockets in AngularJS?

Use \$websocket Service

```
var ws = $websocket('wss://example.com/socket');
ws.onMessage(function(event) {
    console.log(event.data);
}
```

});

1.

2. Use socket. io for real-time communication.

84. How to Improve Routing Performance in AngularJS?

Use resolve property to **preload** data before rendering a route.

```
$routeProvider.when('/dashboard', {
   templateUrl: 'dashboard.html',
   resolve: {
      data: function(DataService) {
      return DataService.getData();
      }
   }
});
```

85. How to Secure AngularJS API Calls?

• Always use HTTPS.

- Implement token-based authentication.
- Use CSRF protection (XSRF-TOKEN).

86. What is \$templateCache in AngularJS?

Stores templates in memory to reduce HTTP requests. \$templateCache.put('template.html', '<div>Hello</div>');

•

87. How to Minimize Digest Cycle Execution Time?

```
Use $applyAsync() instead of $apply().
$scope.$applyAsync(function() {
    $scope.data = newData;
```

});

•

88. How to Prevent Memory Leaks in AngularJS?

Use \$destroy event to clean up resources. DE'S FOR PERFECT CAREER PATHWAY

• Unbind event listeners.

89. How to Integrate AngularJS with React?

• Use AngularJS directives to wrap React components.

90. How to Enable Debugging Mode in AngularJS?

• Use angular.reloadWithDebugInfo().

Here are **questions 91-100** with detailed answers on **advanced AngularJS topics**, including testing, infinite scrolling, scope management, drag-and-drop, and state management. **%**

91. Using \$httpBackend for Mocking API Calls in Tests

In **unit testing**, \$httpBackend allows you to **mock HTTP requests** instead of making real API calls.

Example: Mocking an API Response

```
describe('DataService Test', function() {
  var $httpBackend, DataService;
  beforeEach(module('myApp'));
  beforeEach(inject(function(_$httpBackend_, _DataService_) {
    $httpBackend = $httpBackend ;
    DataService = _DataService_;
  }));
  it('should return mocked data', function() {
    var mockResponse = { name: 'John Doe' };
    $httpBackend.whenGET('/api/user').respond(mockResponse);
    DataService.getUser().then(function(response) {
       expect(response.data).toEqual(mockResponse);
    });
    $httpBackend.flush(); // Triggers the response
  });
  afterEach(function() {
    $httpBackend.verifyNoOutstandingExpectation();
    $httpBackend.verifyNoOutstandingRequest();
  });
});
```

\$httpBackend.flush() ensures all mocked requests are processed.
 Helps in unit testing without actual API calls.

92. Implementing Infinite Scrolling in AngularJS

Infinite scrolling loads more data as the user scrolls down.

Example: Using ngInfiniteScroll

```
Install ngInfiniteScroll
```

npm install ng-infinite-scroll

1.

```
Add it to your module
```

```
angular.module('myApp', ['infinite-scroll']);
```

2.

Use it in the template

```
<div ng-repeat="item in items" infinite-scroll="loadMore()">
{{ item.name }}
</div>
```

3.

Define loadMore() in Controller

```
$scope.items = [...]; // Initial data
$scope.loadMore = function() {
    DataService.getMoreItems().then(function(newItems) {
        $scope.items = $scope.items.concat(newItems);
    });
};
4.
```

Ensures a **smooth user experience** without reloading the page.

93. Differences Between \$timeout, \$interval, and \$\$

| Feature | \$timeout | \$interval | \$digest |
|-------------|-------------------------------------|---|---------------------------------------|
| Purpos e | Executes a function after a delay | Executes repeatedly at a fixed interval | Manually triggers the digest cycle |
| Use Case | Delayed execution (like setTimeout) | Periodic execution (like setInterval) | When Angular does not detect changes |
| Exampl e | \$timeout(fn, 2000); | \$interval(fn, 1000); | <pre>\$scope.\$digest();</pre> |

Example Usage

\$timeout(function() {
 console.log("Executed after 2 seconds");
}, 2000);

var interval = \$interval(function() {
 console.log("Repeats every 1 second");

}, 1000);

```
$scope.$watch('variable', function(newValue) {
    console.log("Manually triggered digest cycle");
    $scope.$digest();
});
```

🗹 \$timeout and \$interval schedule execution, while \$digest forces updates.

94. How to Avoid Scope Pollution in Large Applications?

Scope pollution happens when **too many variables are stored in \$scope**, causing **memory leaks**.

Best Practices to Prevent Scope Pollution

```
Use controllerAs syntax instead of $scope
```

```
app.controller('MainController', function() {
   var vm = this;
   vm.title = "Hello, World!";
});
<h1>{{ ctrl.title }}</h1>
```

1.

Use Services for Shared Data

```
app.service('UserService', function() {
   this.user = { name: "John Doe" };
});
app.controller('UserCtrl', function(UserService) {
   this.user = UserService.user;
});
2.
```

Destroy \$scope when Controller Unloads

```
$scope.$on('$destroy', function() {
    $scope.variable = null;
});
```

3.

These practices improve performance and reduce memory leaks.

95. Implementing Drag-and-Drop Features in AngularJS

You can use ngDragDrop or HTML5's native Drag-and-Drop API.



96. Using Redux-Like State Management in AngularJS

AngularJS doesn't have built-in state management, but you can use Redux-like patterns.

Example: Using angular-redux

```
Install Redux for AngularJS
npm install @angular-redux/store
```

1.

Create a Store

```
app.factory('store', function() {
  var state = { count: 0 };
  return {
    getState: function() { return state; },
    dispatch: function(action) {
```

```
if (action.type === 'INCREMENT') {
    state.count++;
    }
    };
};
2.
```

Use Store in a Controller

```
app.controller('CounterCtrl', function($scope, store) {
    $scope.count = store.getState().count;
    $scope.increment = function() {
        store.dispatch({ type: 'INCREMENT' });
        $scope.count = store.getState().count;
    };
});
3.
```

Use in HTML

4.

```
<br/>
```

Manages state globally like Redux in React.

97-100. Other Advanced Topics

97. How to Handle Large Data Sets Efficiently in AngularJS?

- Use pagination instead of loading everything at once.
- Optimize \$watch and use track by in ng-repeat.

98. What is the Best Way to Handle User Authentication in AngularJS?

• Use JWT (JSON Web Tokens) and store tokens securely in HttpOnly cookies.

99. How to Optimize AngularJS for Mobile Performance?

- Avoid heavy DOM manipulations.
- Use CSS animations instead of JavaScript.

100. How to Integrate AngularJS with Modern Frameworks?

- Use **ngUpgrade** for migrating to Angular.
- Wrap AngularJS components inside React/Angular Elements.

