

Core Java

1. What is the difference between JDK, JRE, and JVM?
2. Explain the concept of Object-Oriented Programming (OOP).
3. What are the four pillars of OOP?
4. What is the difference between an interface and an abstract class?
5. What is method overloading and method overriding?
6. Explain the concept of inheritance with an example.
7. What is polymorphism in Java?
8. What are Java Collections? Name some commonly used collections.
9. What is the difference between ArrayList and LinkedList?
10. What is a HashMap and how does it work?
11. Explain the concept of exception handling in Java.
12. What is the difference between checked and unchecked exceptions?
13. What is the purpose of the **final** keyword?
14. What is a Java thread? How do you create a thread?
15. What is synchronization in Java?
16. Explain the concept of garbage collection in Java.
17. What is the difference between == and **equals()** in Java?
18. What are Java annotations? Give an example.
19. What is the Java Stream API?
20. What is the purpose of the **static** keyword?
21. Explain the concept of a constructor in Java.
22. What is the difference between a shallow copy and a deep copy?
23. What are lambda expressions in Java?
24. What is the purpose of the **volatile** keyword?
25. What is the Java Memory Model?
26. Explain the concept of interfaces in Java.
27. What is the difference between a primitive type and a wrapper class?
28. What is the purpose of the **transient** keyword?
29. What is the Singleton design pattern?
30. What is the difference between a stack and a queue?

31. What is the purpose of the **synchronized** block?
32. What is the **this** keyword in Java?
33. What is the difference between **String**, **StringBuilder**, and **StringBuffer**?
34. What are the access modifiers in Java?
35. What is the purpose of the **super** keyword?
36. What is a Java Enum?
37. Explain the concept of a Java package.
38. What is the difference between **throw** and **throws**?
39. What is the purpose of the **instanceof** operator?
40. What is a functional interface?
41. What is the difference between a constructor and a method?
42. What is the **default** keyword in interfaces?
43. What is the purpose of the **assert** keyword?
44. What is the difference between **final**, **finally**, and **finalize**?
45. What is the **Optional** class in Java?
46. What is the purpose of the **native** keyword?
47. What is the difference between **Runnable** and **Callable**?
48. What is the **Fork/Join** framework?
49. What is the purpose of the **java.util.concurrent** package?
50. What are the different types of inner classes in Java?

Servlet

1. What is a Servlet?
2. Explain the lifecycle of a Servlet.
3. What is the difference between **doGet()** and **doPost()** methods?
4. What is the purpose of the **web.xml** file?
5. How do you handle sessions in Servlets?
6. What is the role of the **ServletConfig** interface?
7. What is the difference between a Servlet and a JSP?
8. How do you send a response from a Servlet?
9. What is the purpose of the **RequestDispatcher** interface?
10. How do you read data from a request in a Servlet?

11. What is the difference between **forward** and **redirect**?
12. How do you handle exceptions in Servlets?
13. What is the purpose of the **HttpServlet** class?
14. How do you implement a filter in a Servlet?
15. What is the role of the **ServletContext** interface?
16. How do you manage cookies in Servlets?
17. What is the purpose of the **@WebServlet** annotation?
18. How do you perform URL rewriting in Servlets?
19. What is the difference between **GET** and **POST** methods?
20. How do you implement a Servlet that handles file uploads?
21. What is the purpose of the **HttpServletRequest** and **HttpServletResponse** interfaces?
22. How do you set response headers in a Servlet?
23. What is the role of the **Filter** interface?
24. How do you implement session tracking in Servlets?
25. What is the purpose of the **ServletOutputStream**?
26. How do you handle multipart requests in Servlets?
27. What is the difference between a Servlet and a JSP?
28. How do you access initialization parameters in a Servlet?
29. What is the purpose of the **destroy()** method in servlet

30. What is the purpose of the `init()` method in a Servlet?
31. How do you implement a Servlet that returns JSON data?
32. What is the role of the `HttpSession` interface?
33. How do you invalidate a session in a Servlet?
34. What is the purpose of the `setAttribute()` and `getAttribute()` methods in `ServletContext`?
35. How do you handle character encoding in Servlets?
36. What is the difference between `session` and `application` scope?
37. How do you implement a Servlet that handles AJAX requests?
38. What is the purpose of the `@WebFilter` annotation?
39. How do you configure a Servlet in the `web.xml` file?
40. What is the role of the `FilterChain` interface?
41. How do you implement a logging mechanism in a Servlet?

42. What is the purpose of the `HttpServletResponse` methods like `sendRedirect()`?
43. How do you handle form data in a Servlet?
44. What is the difference between `ServletContextListener` and `ServletContextAttributeListener`?
45. How do you implement a custom error page in a Servlet?
46. What is the purpose of the `setContentType()` method in a Servlet?
47. How do you implement a Servlet that serves static content?
48. What is the role of the `@MultipartConfig` annotation?
49. How do you handle cross-origin requests in Servlets?
50. What are some common security practices for Servlets?

JSP (JavaServer Pages)

1. What is JSP and how does it differ from Servlets?
2. Explain the lifecycle of a JSP page.
3. What are JSP directives? Give examples.
4. What are JSP expressions?
5. What are JSP scriptlets?
6. How do you include a file in a JSP page?
7. What is the purpose of the `<jsp:include>` tag?
8. What is the difference between `<jsp:include>` and `<include>` directive?
9. How do you handle form data in JSP?
10. What is the purpose of the `<jsp:useBean>` tag?
11. How do you access request parameters in JSP?
12. What is the role of the JSP implicit objects?
13. How do you implement error handling in JSP?
14. What is the purpose of the `pageContext` implicit object?
15. How do you set content type in a JSP page?
16. What is the difference between a JSP and a static HTML page?
17. How do you create custom tags in JSP?
18. What is the purpose of the `taglib` directive?
19. How do you implement session management in JSP?
20. What is the role of the `session` implicit object?

21. How do you perform redirection in JSP?
22. What is the purpose of the **<c:if>** tag in JSP?
23. How do you use JSTL (JavaServer Pages Standard Tag Library) in JSP?
24. What is the difference between **forward** and **redirect** in JSP?
25. How do you handle exceptions in JSP?
26. What is the purpose of the **out** implicit object?
27. How do you access application scope in JSP?
28. What is the role of the **request** implicit object?
29. How do you implement a JSP page that returns JSON data?
30. What is the purpose of the **<jsp:plugin>** tag?
31. How do you create a JSP page that uses a JavaBean?
32. What is the difference between **include** and **forward** in JSP?
33. How do you implement a custom error page in JSP?
34. What is the purpose of the **config** implicit object?
35. How do you use EL (Expression Language) in JSP?
36. What is the role of the **application** implicit object?
37. How do you implement pagination in JSP?
38. What is the purpose of the **<c:forEach>** tag in JSP?
39. How do you handle file uploads in JSP?
40. What is the difference between a JSP page and a Servlet?
41. How do you implement internationalization (i18n) in JSP?
42. What is the purpose of the **jsp:forward** action?
43. How do you access session attributes in JSP?
44. What is the role of the **page** implicit object?
45. How do you implement a login form in JSP?
46. What is the purpose of the **jsp:include** action?
47. How do you create a dynamic dropdown in JSP?
48. What is the difference between **JSP** and **JSF**?
49. How do you implement a search functionality in JSP?
50. What are some best practices for writing JSP pages?

Spring MVC

1. What is Spring MVC?
2. Explain the architecture of Spring MVC.
4. What are the main components of Spring MVC?
5. What is the role of the **DispatcherServlet** in Spring MVC?
6. How do you configure Spring MVC in a web application?
7. What is a Controller in Spring MVC?
8. Explain the difference between **@Controller** and **@RestController**.
9. What is the purpose of the **@RequestMapping** annotation?
10. How do you handle form submissions in Spring MVC?
11. What is the role of the **ModelAndView** object?
12. How do you pass data from the controller to the view in Spring MVC?
13. What is the purpose of the **@RequestParam** annotation?
14. How do you handle exceptions in Spring MVC?
15. What is the role of the **@PathVariable** annotation?
16. How do you implement validation in Spring MVC?
17. What is the purpose of the **@ModelAttribute** annotation?
18. How do you configure view resolvers in Spring MVC?
19. What is the difference between **@GetMapping**, **@PostMapping**, and **@RequestMapping**?
20. How do you implement file uploads in Spring MVC?
21. What is the purpose of the **@SessionAttributes** annotation?
22. How do you implement internationalization (i18n) in Spring MVC?
23. What is the role of the **@InitBinder** annotation?
24. How do you create a RESTful web service using Spring MVC?
25. What is the purpose of the **@ResponseBody** annotation?
26. How do you handle JSON and XML responses in Spring MVC?
27. What is the role of the **@ControllerAdvice** annotation?
28. How do you implement pagination in Spring MVC?
29. What is the purpose of the **@RequestBody** annotation?
30. How do you configure Spring MVC to use Thymeleaf as a view technology?
31. What is the difference between **@RequestMapping** and **@GetMapping**?
32. How do you implement a custom error page in Spring MVC?

33. What is the role of the **@ResponseStatus** annotation?
34. How do you use Spring MVC with Hibernate?
35. What is the purpose of the **@CrossOrigin** annotation?
36. How do you implement a login form in Spring MVC?
37. What is the role of the **@Transactional** annotation in Spring MVC?
38. How do you handle CORS in Spring MVC?
39. What is the purpose of the **@RequestHeader** annotation?
40. How do you implement a search functionality in Spring MVC?
41. What is the role of the **@RequestMapping** at the class level?
42. How do you create a custom interceptor in Spring MVC?
43. What is the purpose of the **@ResponseBody** class?
44. How do you implement a RESTful API versioning in Spring MVC?
45. What is the role of the **@ComponentScan** annotation?
46. How do you configure Spring Security in a Spring MVC application?
47. What is the purpose of the **@EnableWebMvc** annotation?
48. How do you implement a multi-step form in Spring MVC?
49. What is the role of the **@Autowired** annotation in Spring MVC?
50. How do you test a Spring MVC controller?

Spring Boot

1. What is Spring Boot?
2. How does Spring Boot differ from the traditional Spring framework?
3. What is the purpose of the **@SpringBootApplication** annotation?
4. How do you create a Spring Boot application?
5. What is the role of the **application.properties** file?
6. How do you configure a data source in Spring Boot?
7. What is the purpose of the **@RestController** annotation?
8. How do you implement a RESTful web service using Spring Boot?
9. What is Spring Boot Starter?
10. How do you handle exceptions in Spring Boot?
11. What is the role of the **@Value** annotation in Spring Boot?
12. How do you implement logging in Spring Boot?

13. What is the purpose of the **@Configuration** annotation?
14. How do you create a Spring Boot application with Spring Data JPA?
15. What is the role of the **@Entity** annotation?
16. How do you implement security in a Spring Boot application?
17. What is the purpose of the **@EnableAutoConfiguration** annotation?
18. How do you create a custom starter in Spring Boot?
19. What is the role of the **@Component** annotation?
20. How do you implement caching in Spring Boot?
21. What is the purpose of the **@Profile** annotation?
22. How do you create a Spring Boot application with Thymeleaf?
23. What is the role of the **@Service** annotation?
24. How do you implement validation in Spring Boot?
25. What is the purpose of the **@Repository** annotation?
26. How do you configure Spring Boot to use an embedded database?
27. What is the role of the **@Bean** annotation in Spring Boot?
28. How do you implement a RESTful API versioning in Spring Boot?
29. What is the purpose of the **@RequestMapping** annotation in Spring Boot?
30. How do you handle CORS in a Spring Boot application?
31. What is the role of the **@Autowired** annotation in Spring Boot?
32. How do you implement a multi-module Spring Boot project?
33. What is the purpose of the **@Scheduled** annotation?
34. How do you create a Spring Boot application with Spring Security?
35. What is the role of the **@EnableScheduling** annotation?
36. How do you implement a custom error handling in Spring Boot?
37. What is the purpose of the **@RestControllerAdvice** annotation?
38. How do you use Spring Boot Actuator?
39. What is the role of the **@ConfigurationProperties** annotation?
40. How do you implement asynchronous processing in Spring Boot?
41. What is the purpose of the **@EnableAsync** annotation?
42. How do you create a Spring Boot application with WebSocket support?
43. What is the role of the **@CrossOrigin** annotation?
44. How do you implement file uploads in Spring Boot?
45. What is the purpose of the **@Conditional** annotation?

46. How do you create a Spring Boot application with Redis?
47. What is the role of the `@EventListener` annotation?
48. How do you implement Swagger in a Spring Boot application?
49. What are some best practices for deploying a Spring Boot application?

HTML

1. What does HTML stand for?
2. What is the purpose of the `<head>` tag in HTML?
3. What is the difference between block-level and inline elements?
4. How do you create a hyperlink in HTML?
5. What is the purpose of the `<meta>` tag?
6. How do you create a form in HTML?
7. What are semantic HTML elements?
8. How do you embed an image in an HTML page?
9. What is the purpose of the `<alt>` attribute in an image tag?
10. How do you create a table in HTML?
11. What is the difference between `<div>` and ``?
12. How do you create a list in HTML?
13. What is the purpose of the `<title>` tag?
14. How do you create a dropdown list in HTML?
15. What is the role of the `<form>` tag?
16. How do you create a checkbox in HTML?
17. What is the purpose of the `<input>` tag?
18. How do you create a radio button in HTML?
19. What is the difference between `` and ``?
20. How do you create a comment in HTML?
21. What is the purpose of the `<link>` tag?
22. How do you include an external CSS file in HTML?
23. What is the role of the `<script>` tag?
24. How do you create a responsive layout in HTML?
25. What is the purpose of the `<iframe>` tag?
26. How do you create a navigation bar in HTML?

27. What is the difference between **<header>** and **<footer>**?
28. How do you create a button in HTML?
29. What is the purpose of the **<canvas>** element?
30. How do you create a video element in HTML?
31. What is the role of the **<audio>** element?
32. How do you create a tooltip in HTML?
33. What is the purpose of the **<section>** tag?
34. How do you create a breadcrumb navigation in HTML?
35. What is the difference between **<article>** and **<section>**?
36. How do you create a responsive image in HTML?
37. What is the purpose of the **<blockquote>** tag?
38. How do you create a definition list in HTML?
39. What is the role of the **<time>** element?
40. How do you create a progress bar in HTML?
41. What is the purpose of the **<details>** and **<summary>** tags?
42. How do you create a custom data attribute in HTML?
43. What is the role of the **<meta charset>** tag?
44. How do you create a link that opens in a new tab?
45. What is the purpose of the **<noscript>** tag?
46. How do you create a fixed header in HTML?
47. What is the role of the **<base>** tag?
48. How do you create a responsive table in HTML?
49. What is the purpose of the **<svg>** element?
50. How do you create a favicon for a website?
3. What is the purpose of CSS?
4. What are the three ways to apply CSS to a web page?
5. What is the difference between class selectors and ID selectors in CSS?
6. How do you apply a style to all **<h1>** elements in CSS?
7. What is the CSS box model?
8. How do you center a block element horizontally in CSS?
9. What is the purpose of the **float** property in CSS?

10. How do you create a responsive layout using CSS?
11. What is the difference between **margin** and **padding**?
12. How do you change the background color of an element in CSS?
13. What is the purpose of the **z-index** property?
14. How do you create a CSS grid layout?
15. What is the difference between **inline**, **block**, and **inline-block** elements?
16. How do you apply a hover effect to a button in CSS?
17. What is the purpose of the **display** property in CSS?
18. How do you create a CSS flexbox layout?
19. What is the role of media queries in CSS?
20. How do you set a custom font in CSS?
21. What is the purpose of the **position** property in CSS?
22. How do you create a CSS transition effect?
23. What is the difference between **absolute**, **relative**, **fixed**, and **sticky** positioning?
24. How do you create a CSS animation?
25. What is the purpose of the **overflow** property in CSS?
26. How do you create a responsive image in CSS?
27. What is the role of the **:nth-child()** selector in CSS?
28. How do you apply styles to elements based on their attributes in CSS?
29. What is the purpose of the **opacity** property in CSS?
30. How do you create a CSS variable?
31. What is the difference between **rem** and **em** units in CSS?
32. How do you create a custom scrollbar in CSS?
33. What is the purpose of the **calc()** function in CSS?
34. How do you create a grid of items using CSS Grid?
35. What is the role of the **@media** rule in CSS?
36. How do you create a sticky footer in CSS?
37. What is the purpose of the **clip-path** property in CSS?
38. How do you create a CSS sprite?
39. What is the difference between **visibility: hidden** and **display: none**?
40. How do you create a CSS dropdown menu?

41. What is the purpose of the **transition** property in CSS?
42. How do you use the **:before** and **:after** pseudo-elements in CSS?
43. What is the role of the **background-image** property in CSS?
44. How do you create a CSS grid with equal height columns?
45. What is the purpose of the **filter** property in CSS?
46. How do you create a responsive navigation bar in CSS?
47. What is the difference between **grid-template-columns** and **grid-template-rows**?
48. How do you use CSS to create a modal dialog?
49. What is the purpose of the **box-shadow** property in CSS?
50. How do you implement CSS frameworks like Bootstrap or Tailwind CSS?

JavaScript

1. What is JavaScript and what is its primary use?
2. What are the different data types in JavaScript?
3. What is the difference between **let**, **const**, and **var**?
4. How do you create a function in JavaScript?
5. What is a closure in JavaScript?
6. What is the purpose of the **this** keyword in JavaScript?
7. How do you handle asynchronous operations in JavaScript?
8. What is the difference between **==** and **===** in JavaScript?
9. How do you create an object in JavaScript?
10. What is the purpose of the **JSON** object in JavaScript?
11. How do you manipulate the DOM using JavaScript?
12. What is event delegation in JavaScript?
13. How do you create a promise in JavaScript?
14. What is the purpose of the **async** and **await** keywords?
15. How do you handle errors in JavaScript?
16. What is the difference between **null** and **undefined**?
17. How do you create an array in JavaScript?
18. What is the purpose of the **map()**, **filter()**, and **reduce()** methods?
19. How do you add an event listener to an element in JavaScript?
20. What is the role of the **window** object in JavaScript?

21. How do you create a class in JavaScript?
22. What is the purpose of the **setTimeout()** and **setInterval()** functions?
24. How do you create a module in JavaScript?
25. What is the purpose of the **localStorage** and **sessionStorage** objects?
26. How do you perform AJAX requests in JavaScript?
27. What is the difference between synchronous and asynchronous JavaScript?
28. How do you use the **fetch** API to make network requests?
29. What is the purpose of the **event.preventDefault()** method?
30. How do you create a simple JavaScript timer?
31. What is the role of the **prototype** in JavaScript?
32. How do you implement inheritance in JavaScript?
33. What is the purpose of the **bind()**, **call()**, and **apply()** methods?
34. How do you create a regular expression in JavaScript?
35. What is the difference between **for...in** and **for...of** loops?
36. How do you check if a variable is an array in JavaScript?
37. What is the purpose of the **spread** operator (...)?
38. How do you destructure objects and arrays in JavaScript?
39. What is the role of the **Promise.all()** method?
40. How do you create a simple debounce function in JavaScript?
41. What is the purpose of the **console** object in JavaScript?
42. How do you implement a simple event emitter in JavaScript?
43. What is the difference between **slice()** and **splice()** methods in arrays?
44. How do you create a deep copy of an object in JavaScript?
45. What is the purpose of the **import** and **export** statements in JavaScript modules?
46. How do you handle form validation in JavaScript?
47. What is the role of the **navigator** object in JavaScript?
48. How do you create a simple countdown timer in JavaScript?
49. What is the purpose of the **window.onload** event?
50. How do you implement a simple carousel using JavaScript?

TypeScript

1. What is TypeScript and how does it differ from JavaScript?

2. What are the benefits of using TypeScript?
3. How do you define a variable in TypeScript?
4. What is the purpose of interfaces in TypeScript?
5. How do you create a class in TypeScript?
6. What is the role of the **public**, **private**, and **protected** access modifiers?
7. How do you define a function in TypeScript?
8. What is the purpose of type annotations in TypeScript?
9. How do you create a union type in TypeScript?
10. What is the difference between **any** and **unknown** types in TypeScript?
11. How do you define an array type in TypeScript?
12. What is the purpose of generics in TypeScript?
13. How do you create a tuple in TypeScript?
14. What is the role of the **readonly** modifier in TypeScript?
15. How do you implement type assertion in TypeScript?
16. What is the purpose of the **never** type in TypeScript?
17. How do you create a namespace in TypeScript?
18. What is the difference between **interface** and **type** in TypeScript?
19. How do you handle optional properties in TypeScript?
20. What is the purpose of the **as** keyword in TypeScript?
21. How do you create a type alias in TypeScript?
22. What is the role of the **declare** keyword in TypeScript?
23. How do you implement a mixin in TypeScript?
24. What is the purpose of the **export** and **import** statements in TypeScript?
25. How do you define a function type in TypeScript?
26. What is the role of the **this** type in TypeScript?
27. How do you create a generic function in TypeScript?
28. What is the purpose of the **keyof** operator in TypeScript?
29. How do you implement conditional types in TypeScript?
30. What is the role of the **Partial<T>** utility type in TypeScript?
31. How do you create a mapped type in TypeScript?
32. What is the purpose of the **Pick<T, K>** utility type in TypeScript?

33. How do you handle modules in TypeScript?
34. What is the role of the **tsconfig.json** file in a TypeScript project?
35. How do you compile TypeScript code to JavaScript?
36. What is the purpose of the **strict** mode in TypeScript?
37. How do you use third-party libraries in TypeScript?
38. What is the role of the **@types** namespace in TypeScript?
39. How do you implement decorators in TypeScript?
40. What is the purpose of the **abstract** keyword in TypeScript?
41. How do you create an enum in TypeScript?
43. What is the purpose of the **enum** type in TypeScript?
44. How do you implement a function overload in TypeScript?
45. What is the role of the **void** type in TypeScript?
46. How do you create a custom type guard in TypeScript?
47. What is the purpose of the **instanceof** operator in TypeScript?
48. How do you handle asynchronous operations in TypeScript?
49. What is the difference between **Promise<T>** and **Observable<T>** in TypeScript?
50. How do you integrate TypeScript with a build tool like Webpack?

Angular

1. What is Angular and what are its main features?
2. What is the difference between AngularJS and Angular (2+)?
3. How do you create a new Angular application using the Angular CLI?
4. What is a component in Angular?
5. How do you pass data between components in Angular?
6. What is the purpose of the **@Component** decorator?
7. How do you create a service in Angular?
8. What is dependency injection in Angular?
9. How do you handle routing in Angular?
10. What is the purpose of the **@NgModule** decorator?
11. How do you create a reactive form in Angular?
12. What is the difference between reactive forms and template-driven forms in Angular?
13. How do you implement HTTP requests in Angular?

14. What is the purpose of the **HttpClient** module?
15. How do you handle errors in Angular applications?
16. What is the role of observables in Angular?
17. How do you create a pipe in Angular?
18. What is the purpose of the **ngFor** directive?
19. How do you implement conditional rendering in Angular using **ngIf**?
20. What is the purpose of the **ngModel** directive?
21. How do you create a custom directive in Angular?
22. What is the role of the **@Input** and **@Output** decorators?
23. How do you implement lazy loading in Angular?
24. What is the purpose of the Angular Router?
25. How do you create a module in Angular?
26. What is the difference between a service and a component in Angular?
27. How do you implement state management in Angular?
28. What is the purpose of the **ng-content** directive?
29. How do you create a custom validator in Angular?
30. What is the role of the **ChangeDetectionStrategy** in Angular?
31. How do you implement internationalization (i18n) in Angular?
32. What is the purpose of the **@Injectable** decorator?
33. How do you create a guard in Angular?
34. What is the role of the **RouterModule** in Angular?
35. How do you implement animations in Angular?
36. What is the purpose of the **async** pipe in Angular?
37. How do you create a service that can be shared across multiple components?
38. What is the role of the **ng-template** directive?
39. How do you implement pagination in Angular?
40. What is the purpose of the **ngSwitch** directive?
41. How do you create a modal dialog in Angular?
42. What is the role of the **@ViewChild** and **@ViewChildren** decorators?
43. How do you implement a search functionality in Angular?
44. What is the purpose of the **ngClass** directive?

45. How do you create a custom theme in Angular?
46. What is the role of the **environment.ts** file in Angular?
47. How do you implement unit testing in Angular?
48. What is the purpose of the **ngZone** service in Angular?
49. How do you handle user authentication in Angular?
50. What are some best practices for optimizing performance in Angular applications?