**Spring Fundamentals:**

1. What is Spring Framework primarily used for?

a) Building Android applications

b) Developing enterprise Java applications

c) Creating desktop applications

d) Web scraping

b) Developing enterprise Java applications

2. Which of the following is not a core concept of the Spring Framework?

a) Dependency Injection

b) Aspect-Oriented Programming

c) Inversion of Control

d) Object-Relational Mapping

d) Object-Relational Mapping

3. Which module of Spring provides support for data access using JDBC?

a) Spring Boot

b) Spring MVC

c) Spring Data

d) Spring JDBC

d) Spring JDBC

4. What does ORM stand for in the context of Spring Framework?

a) Object-Relational Mapping

b) Object-Rendering Model

c) Object-Resource Management

d) Object-Relationship Mapping

a) Object-Relational Mapping

5. Which annotation is used for declaring a class as a Spring Bean?

a) @Component

b) @Bean

c) @Service

d) @Repository

e) a, c and d

f) b, c and d

**e) a, c, and d [@Component, @Service, @Repository]**

6. In Spring MVC, what is the role of the DispatcherServlet?

a) Handling HTTP requests

b) Rendering web pages

c) Managing database connections

d) Managing session data

a) Handling HTTP requests

7. Which file can be used for configuring Spring beans using XML?

a) applicationContext.xml

b) web.xml

c) dispatcher-servlet.xml

d) beans.xml

e) All of the above

e) All of the above

8. What is the purpose of the @Autowired annotation in Spring?

a) Defining bean scopes

b) Injecting dependencies

c) Handling exceptions

d) Mapping request URLs

b) Injecting dependencies

9. Which Spring module provides support for building RESTful web services?

a) Spring Security

b) Spring Boot

c) Spring Web

d) Spring REST

c) Spring Web

10. Which Spring feature enables easier testing of components by replacing actual dependencies with mock objects?

a) Aspect-Oriented Programming (AOP)

b) Inversion of Control (IoC)

c) Dependency Injection (DI)

d) TestContext framework

c) Dependency Injection (DI)

11. Which of the following is a stereotype annotation used in Spring for declaring service components?

a) @Component

b) @Service

c) @Repository

d) @Controller

b) @Service

12. Which Spring annotation is used for transaction management?

a) @Transactional

b) @TransactionManager

c) @Transaction

d) @ManagedTransaction

a) @Transactional

13. What does AOP stand for in the context of Spring Framework?

a) Aspect-Oriented Programming

b) Advanced Object Programming

c) Asynchronous Object Processing

d) Automated Object Provisioning

a) Aspect-Oriented Programming

14. Which module of Spring Framework provides support for scheduling tasks?

a) Spring Batch

b) Spring Boot

c) Spring Schedule

d) Spring Task

d) Spring Task

15. What is the default scope of a Spring Bean?

a) Prototype

b) Singleton

c) Request

d) Session

b) Singleton

16. Which of the following is not a valid advice type in Spring AOP?

a) Before advice

b) After advice

c) Around advice

d) Through advice

d) Through advice

17. What does the term "Inversion of Control" (IoC) refer to in the context of Spring Framework?

a) Centralized configuration of application components

b) The framework managing the lifecycle of objects

c) Objects managing their own dependencies

d) Outsourcing the control of object creation and management to the framework

d) Outsourcing the control of object creation and management to the framework

18. Which Spring module provides support for managing security in applications?

a) Spring Security

b) Spring Web

c) Spring Core

d) Spring Data

a) Spring Security

19. Which annotation is used to mark a method as handling HTTP requests in Spring MVC?

a) @RequestMapping

b) @Controller

c) @GetMapping

d) @ResponseBody

a) @RequestMapping

20. What is the purpose of the @Value annotation in Spring?

a) Injecting values into bean properties

b) Specifying bean initialization methods

c) Defining aspect-oriented programming advice

d) Mapping request parameters to method parameters

a) Injecting values into bean properties

21. Which Spring annotation is used to configure logging in applications?

a) @Log4j

b) @Slf4j

c) @Logger

d) @Log

b) @Slf4j

22. What is the primary function of the ApplicationContext in Spring?

a) Creating instances of beans

b) Loading bean definitions and wiring dependencies

c) Handling HTTP requests

d) Managing database transactions

b) Loading bean definitions and wiring dependencies

23. Which Spring feature allows for the separation of configuration details from application code?

a) Inversion of Control (IoC)

b) Aspect-Oriented Programming (AOP)

c) Dependency Injection (DI)

d) Java Configuration

d) Java Configuration

24. Which of the following is not a valid stereotype annotation in Spring?

a) @Component

b) @Service

c) @Entity

d) @Repository

c) @Entity

25. Which Spring module provides support for sending emails?

a) Spring Boot

b) Spring Web

c) Spring Mail

d) Spring Security

c) Spring Mail

**Spring Boot:**

1. What is Spring Boot primarily used for?

a) Building Android applications

b) Developing web applications with Spring Framework

c) Managing container orchestration

d) Implementing machine learning algorithms

b) Developing web applications with Spring Framework

2. Which of the following annotations is used to mark the main class in a Spring Boot application?

a) @SpringBootApplication

b) @MainClass

c) @SpringMain

d) @SpringApp

a) @SpringBootApplication

3. Which of the following features is NOT provided by Spring Boot?

a) Auto-configuration

b) Dependency injection

c) Embedded servlet container

d) Aspect-oriented programming

d) Aspect-oriented programming

4. In Spring Boot, what is the default embedded servlet container?

a) Apache Tomcat

b) Jetty

c) Undertow

d) GlassFish

a) Apache Tomcat

5. Which of the following configuration file formats is supported by Spring Boot for external configuration?

a) YAML

b) XML

c) JSON

d) All of the above

d) All of the above

6. What is the purpose of Spring Boot Actuator?

a) Generating documentation for RESTful APIs

b) Monitoring and managing Spring Boot applications

c) Implementing security features

d) Enabling distributed tracing

b) Monitoring and managing Spring Boot applications

7. Which annotation is used to declare a Spring Bean in a Spring Boot application?

a) @Bean

b) @Component

c) @Service

d) @Repository

b) @Component

8. Which dependency management tool is commonly used with Spring Boot?

a) Apache Maven

b) Apache Ant

c) Gradle

d) Ivy

a) Apache Maven

9. How does Spring Boot simplify the development of RESTful web services?

a) By providing annotations like @RestController and @RequestMapping

b) By automatically generating API documentation

c) By integrating with third-party API management platforms

d) By implementing advanced security features

a) By providing annotations like @RestController and @RequestMapping

10. Which of the following Spring Boot starters is used for building web applications with Spring MVC?

a) spring-boot-starter-web

b) spring-boot-starter-data-jpa

c) spring-boot-starter-actuator

d) spring-boot-starter-test

a) spring-boot-starter-web

11. Which annotation in Spring Boot is used to specify the location of properties files for externalized configuration?

a) @Value

b) @PropertySource

c) @ConfigurationProperties

d) @Configuration

b) @PropertySource

12. Which Spring Boot starter is commonly used for integrating with relational databases using Spring Data JPA?

a) spring-boot-starter-jdbc

b) spring-boot-starter-data-jpa

c) spring-boot-starter-web

d) spring-boot-starter-test

b) spring-boot-starter-data-jpa

13. What is the purpose of Spring Boot Actuator's "/health" endpoint?

a) To expose information about the application's health status

b) To provide access to the application's logging system

c) To manage the application's security configuration

d) To handle authentication and authorization

a) To expose information about the application's health status

14. Which of the following annotations is used to enable caching in a Spring Boot application?

a) @EnableCache

b) @EnableCaching

c) @EnableCacheable

d) @EnableCacheManager

b) @EnableCaching

15. What does Spring Boot's @SpringBootTest annotation do?

a) Loads the Spring application context for integration testing

b) Marks a class as a Spring Boot test class

c) Enables auto-configuration for test environments

d) Mocks external dependencies for unit testing

a) Loads the Spring application context for integration testing

16. Which of the following is NOT a valid method for configuring logging in Spring Boot?

a) Using application.properties or application.yml files

b) Programmatically configuring logging in the main class

c) Using the @Log4j or @Slf4j annotations

d) Configuring logging through the Spring Boot Admin dashboard

d) Configuring logging through the Spring Boot Admin dashboard

17. Which Spring Boot starter is used for building microservices?

a) spring-boot-starter-web

b) spring-boot-starter-actuator

c) spring-boot-starter-parent

d) spring-boot-starter-cloud

d) spring-boot-starter-cloud

18. What is the purpose of Spring Boot's embedded servlet container?

a) To deploy applications on cloud platforms

b) To simplify the deployment process by bundling the servlet container with the application

c) To provide a lightweight alternative to traditional servlet containers

d) To manage external dependencies in the application

b) To simplify the deployment process by bundling the servlet container with the application

19. How does Spring Boot simplify the configuration of Spring Security?

a) By providing default security configurations based on best practices

b) By automatically generating secure passwords for users

c) By integrating with third-party authentication providers

d) By exposing security settings through RESTful endpoints

a) By providing default security configurations based on best practices

20. Which of the following annotations is used to define the base package for component scanning in a Spring Boot application?

a) @ComponentScan

b) @SpringBootApplication

c) @Configuration

d) @EnableAutoConfiguration

a) @ComponentScan

21. Which Spring Boot starter is commonly used for building RESTful web services?

a) spring-boot-starter-web

b) spring-boot-starter-data-rest

c) spring-boot-starter-jdbc

d) spring-boot-starter-actuator

a) spring-boot-starter-web

22. Which Spring Boot starter is used for integrating with Thymeleaf for server-side templating?

a) spring-boot-starter-velocity

b) spring-boot-starter-freemarker

c) spring-boot-starter-thymeleaf

d) spring-boot-starter-mustache

c) spring-boot-starter-thymeleaf

23. Which Spring Boot starter is used for interacting with relational databases using JDBC?

a) spring-boot-starter-jpa

b) spring-boot-starter-data-jpa

c) spring-boot-starter-data-jdbc

d) spring-boot-starter-data-rest

c) spring-boot-starter-data-jdbc

24. Which Spring Boot starter is used for implementing scheduled tasks?

a) spring-boot-starter-quartz

b) spring-boot-starter-scheduling

c) spring-boot-starter-batch

d) spring-boot-starter-actuator

b) spring-boot-starter-scheduling

25. Which Spring Boot starter is used for securing web applications for authentication?

a) spring-boot-starter-security

b) spring-boot-starter-authentication

c) spring-boot-starter-oauth2

d) spring-boot-starter-jwt

a) spring-boot-starter-security

26. Which Spring Boot starter is used for testing Spring Boot applications?

a) spring-boot-starter-test

b) spring-boot-starter-validation

c) spring-boot-starter-mockmvc

d) spring-boot-starter-integration

1. spring-boot-starter-test

**Spring Security:**

1. What is the primary purpose of Spring Security?

a) Managing database connections

b) Implementing object-relational mapping

c) Securing Java web applications

d) Generating RESTful API documentation

c) Securing Java web applications

2. Which authentication mechanism does Spring Security support out of the box?

a) Basic Authentication

b) OAuth2

c) JSON Web Tokens (JWT)

d) All of the above

d) All of the above

3. Which annotation is commonly used to secure methods or endpoints in Spring Security?

a) @Secured

b) @Authorized

c) @Secure

d) @Protected

a) @Secured

4. Which interface represents the core security object in Spring Security?

a) SecurityManager

b) AuthenticationManager

c) AuthorizationManager

d) UserManager

b) AuthenticationManager

5. What is the purpose of the UserDetails interface in Spring Security?

a) Representing user authentication credentials

b) Defining user roles and authorities

c) Storing user profile information

d) Generating password hashes

c) Storing user profile information

6. Which Spring Security filter is responsible for handling authentication requests?

a) UsernamePasswordAuthenticationFilter

b) BasicAuthenticationFilter

c) AuthenticationFilter

d) JwtAuthenticationFilter

a) UsernamePasswordAuthenticationFilter

7. Which Spring Security filter is responsible for handling authorization checks?

a) AuthorizationFilter

b) RoleBasedAuthorizationFilter

c) AccessDecisionManager

d) FilterSecurityInterceptor

d) FilterSecurityInterceptor

8. What is the purpose of the @EnableWebSecurity annotation in Spring Security?

a) Enabling security features for web applications

b) Enabling LDAP authentication

c) Enabling OAuth2 authentication

d) Enabling role-based access control

a) Enabling security features for web applications

9. Which class represents an authentication token in Spring Security?

a) AuthenticationToken

b) AuthorizationToken

c) SecurityToken

d) GrantedAuthorityToken

a) AuthenticationToken

10. What is the default behavior of Spring Security when no access control rules are defined?

a) Deny all access

b) Allow all access

c) Prompt for user authentication

d) Redirect to a login page

b) Allow all access

11. Which Spring Security configuration class is commonly used for customizing security settings?

a) WebSecurityConfigurerAdapter

b) SecurityConfig

c) AuthenticationConfig

d) AuthorizationConfig

a) WebSecurityConfigurerAdapter

12. What is the purpose of the AntMatcher in Spring Security configuration?

a) Specifying URL patterns to be ignored by security filters

b) Defining access control rules based on request paths

c) Configuring authentication providers

d) Enabling Cross-Origin Resource Sharing (CORS)

b) Defining access control rules based on request paths

13. Which method is commonly overridden in Spring Security configuration to define authentication mechanisms?

a) configureGlobal(AuthenticationManagerBuilder auth)

b) configure(HttpSecurity http)

c) configure(AuthenticationManagerBuilder auth)

d) authenticate(Authentication authentication)

a) configureGlobal(AuthenticationManagerBuilder auth) **configure(HttpSecurity http)**

14. Which authentication provider is commonly used for integrating with a database in Spring Security?

a) DaoAuthenticationProvider

b) LdapAuthenticationProvider

c) JwtAuthenticationProvider

d) OAuth2AuthenticationProvider

a) DaoAuthenticationProvide

15. What is the purpose of the remember-me authentication feature in Spring Security?

a) Storing user credentials in plaintext

b) Automatically logging in users based on a persistent token

c) Generating access tokens for OAuth2 authentication

d) Implementing multi-factor authentication

b) Automatically logging in users based on a persistent token

**Spring Micro Services**

1. What is the primary goal of microservices architecture?

a) To reduce development time

b) To decompose monolithic applications into smaller, independent services

c) To increase code complexity

d) To eliminate the need for version control

b) To decompose monolithic applications into smaller, independent services

2. Which Spring Cloud project provides centralized configuration management for microservices?

a) Spring Cloud Netflix

b) Spring Cloud Config

c) Spring Cloud Stream

d) Spring Cloud Eureka

b) Spring Cloud Config

3. Which of the following is NOT a characteristic of microservices architecture?

a) Independent deployability

b) Tight coupling between services

c) Polyglot persistence

d) Decentralized data management

b) Tight coupling between services

4. Which Spring Boot starter is commonly used for building RESTful microservices?

a) spring-boot-starter-web

b) spring-boot-starter-data-rest

c) spring-boot-starter-actuator

d) spring-boot-starter-cloud

a) spring-boot-starter-web

5. What is the purpose of service discovery in microservices architecture?

a) To authenticate users

b) To monitor service health

c) To dynamically locate and communicate with services

d) To manage distributed transactions

c) To dynamically locate and communicate with services

6. Which Spring Cloud component provides client-side load balancing for microservices?

a) Spring Cloud Config

b) Spring Cloud Gateway

c) Spring Cloud Ribbon

d) Spring Cloud Stream

c) Spring Cloud Ribbon

7. What is the role of Spring Cloud Sleuth in microservices architecture?

a) Service registration and discovery

b) Distributed tracing and logging

c) Circuit breaking and fault tolerance

d) Configuration management

b) Distributed tracing and logging

8. Which messaging system is commonly used for communication between microservices in Spring Cloud?

a) Apache Kafka

b) RabbitMQ

c) Apache ActiveMQ

d) All of the above

d) All of the above

9. What is the purpose of the Circuit Breaker pattern in microservices architecture?

a) To improve network latency

b) To prevent cascading failures

c) To distribute load evenly across services

d) To manage database connections

b) To prevent cascading failures

10. Which Spring Cloud component provides centralized logging for microservices?

a) Spring Cloud Config

b) Spring Cloud Stream

c) Spring Cloud Sleuth

d) Spring Cloud Data Flow

c) Spring Cloud Sleuth

11. Which of the following is NOT a benefit of using microservices architecture?

a) Improved scalability

b) Easier debugging and troubleshooting

c) Higher development costs

d) Greater flexibility and agility

c) Higher development costs

12. Which Spring Cloud component provides distributed messaging capabilities for microservices?

a) Spring Cloud Bus

b) Spring Cloud Stream

c) Spring Cloud Config

d) Spring Cloud Gateway

b) Spring Cloud Stream

13. What is the purpose of the API Gateway in microservices architecture?

a) To authenticate users

b) To provide a single entry point for clients

c) To manage service discovery

d) To implement service composition

b) To provide a single entry point for clients

14. Which Spring Cloud component provides distributed tracing capabilities for microservices?

a) Spring Cloud Sleuth

b) Spring Cloud Config

c) Spring Cloud Gateway

d) Spring Cloud Eureka

a) Spring Cloud Sleuth

15. Which Spring Cloud component provides support for event-driven microservices?

a) Spring Cloud Stream

b) Spring Cloud Netflix

c) Spring Cloud Config

d) Spring Cloud Security

a) Spring Cloud Stream

16. What is the purpose of API versioning in microservices architecture?

a) To increase performance

b) To ensure backward compatibility

c) To eliminate the need for documentation

d) To reduce network latency

b) To ensure backward compatibility

17. Which Spring Cloud component is used for centralized configuration management using Git repositories?

a) Spring Cloud Config

b) Spring Cloud Netflix

c) Spring Cloud Eureka

d) Spring Cloud Sleuth

a) Spring Cloud Config

18. Which architectural pattern is commonly used for inter-service communication in microservices architecture?

a) Remote Procedure Call (RPC)

b) Representational State Transfer (REST)

c) Simple Object Access Protocol (SOAP)

d) Java Messaging Service (JMS)

b) Representational State Transfer (REST)

19. What is the purpose of the Spring Cloud Circuit Breaker project?

a) To provide centralized logging

b) To implement fault tolerance and resilience

c) To manage distributed transactions

d) To enable centralized configuration management

b) To implement fault tolerance and resilience

20. Which Spring Boot starter is commonly used for building microservices with Spring Cloud?

a) spring-boot-starter-web

b) spring-boot-starter-cloud

c) spring-boot-starter-data-jpa

d) spring-boot-starter-actuator

b) spring-boot-starter-cloud

21. Which Spring Cloud component provides service registration and discovery capabilities?

a) Spring Cloud Netflix Eureka

b) Spring Cloud Config

c) Spring Cloud Sleuth

d) Spring Cloud Stream

a) Spring Cloud Netflix Eureka

22. What is the purpose of the Gateway Aggregation pattern in microservices architecture?

a) To authenticate users

b) To combine multiple requests into a single response

c) To manage service discovery

d) To implement service composition

b) To combine multiple requests into a single response

23. Which Spring Cloud component provides support for creating and managing microservices-based data pipelines?

a) Spring Cloud Stream

b) Spring Cloud Data Flow

c) Spring Cloud Config

d) Spring Cloud Security

b) Spring Cloud Data Flow

24. What is the primary advantage of using containers, such as Docker, in microservices architecture?

a) Improved performance

b) Enhanced security

c) Simplified deployment and scalability

d) Reduced development costs

c) Simplified deployment and scalability

25. Which design principle is fundamental to microservices architecture?

a) Monolithic design

b) Loose coupling

c) Tight coupling

d) Single-tier architecture

b) Loose coupling