1. Internal Working of Hash Map
2. What is Load Factor & Rehashing in Hash Map
3. What is Collision in Hash Map

4>Different techniques to Handle Collisions Like Separate Chaining & Open Addressing( Linear Probing , Quadratic Probing & Double Hashing).

5> Internal working of Set

6>Internal working of Array List (<https://www.youtube.com/watch?v=jSlmXcE7g7A>)

7>Internal working of Concurrent Hash Map

8>Difference between Hash Table / Hash Map / Concurrent Hash Map

9>What is copyOnWriteArrayList

10>Difference between Array List and copyOnWriteArrayList

11> Difference between synchronized ArrayList and copyOnWriteArrayList

**Questions 1 to 11: Refer Geeks for Geeks**

13> What is Type Erasure (https://www.baeldung.com/java-type-erasure)

14> Inner classes in java -> Member Inner class, Local inner class, Anonymous class, Static nested class (<https://www.geeksforgeeks.org/inner-class-java/>)

15>What is Class Loader & its types and its principles (<https://www.geeksforgeeks.org/classloader-in-java/>)

16>JVM Architecture & Explain Java memory Model

(<https://medium.com/platform-engineer/understanding-java-memory-model-1d0863f6d973>)

17>How Garbage Collection works ? Type of Garbage Collector ?

<https://www.geeksforgeeks.org/garbage-collection-java/>

<https://www.geeksforgeeks.org/types-of-jvm-garbage-collectors-in-java-with-implementation-details/>

<https://opensource.com/article/22/7/garbage-collection-java>

18>What is Blocking queue and its types ?

<https://www.geeksforgeeks.org/blockingqueue-interface-in-java/>

Also refer multithreading workspace (Udemy Course)

19>Difference between take() & poll() method of Blocking queue?

20>Difference between add() & offer() method of Blocking queue?

21>Thread lifecycle & different states( <https://www.geeksforgeeks.org/lifecycle-and-states-of-a-thread-in-java/>)

22>Difference between wait() and sleep() method?

<https://www.geeksforgeeks.org/difference-between-wait-and-sleep-in-java/>

23>Difference between sleep(),yield() & join() methods

<https://www.geeksforgeeks.org/java-concurrency-yield-sleep-and-join-methods/>

<https://www.geeksforgeeks.org/difference-between-sleep-and-yield-method-in-java/?ref=ml_lbp>

24>Thread joining example :

<https://www.geeksforgeeks.org/joining-threads-in-java/>

25>How to interrupt a running thread ?

<https://www.geeksforgeeks.org/interrupting-a-thread-in-java/>

26>What is Executor Service & its different methods ?

awaitTermination ,shutdown , shutdownNow , isShutdown ,isTerminated

<https://www.geeksforgeeks.org/java-util-concurrent-executorservice-interface-with-examples/>

27>What different types of executors ?

<https://www.geeksforgeeks.org/what-is-java-executor-framework/>

also check multithreading eclipse workspace

28>volatile keyword in java? How its different from synchronize ?

<https://www.geeksforgeeks.org/volatile-keyword-in-java/>

29>Atomic variables in Java

<https://www.geeksforgeeks.org/atomic-variables-in-java-with-examples/>

its different methods like addAndGet() compareAndSet() etc

30>Difference between executor service execute and submit method

31>Difference between ForkJoinPool & executor Service

32>Difference between Runnable and callable

33>Why default/static methods are added in java8 .what is the use of it.

34>Java 8 – Abstract classes vs interfaces

<https://beginnersbook.com/2017/10/java-8-interface-changes-default-method-and-static-method/>

35>Time complexity of different collections :

<https://yogeshkkhichi.medium.com/time-and-space-complexity-of-collections-5a00c7b1d32b>

36>Time complexity comparison of ArrayList vs LinkedList

<https://www.youtube.com/watch?v=MrlpQZ4tpT4>

37>Difference between HashSet,LinkedHashSet & Treeset

<https://www.geeksforgeeks.org/difference-and-similarities-between-hashset-linkedhashset-and-treeset-in-java/>

38>How LinkedHashSet works internally ?

<https://javaconceptoftheday.com/how-linkedhashset-works-internally-in-java/>

39>How LinkedHashMap works internally?

<https://www.geeksforgeeks.org/linkedhashmap-class-in-java/>

40>Internal working of TreeMap & TreeSet?

<https://www.geeksforgeeks.org/internal-working-of-treemap-in-java/>

<https://javahungry.blogspot.com/2015/10/how-treeset-works-internally-in-java-interview-questions.html>

41>Time Complexity of different queue operations and internal working of Queue ?

<https://www.geeksforgeeks.org/time-and-space-complexity-analysis-of-queue-operations/>

42>Time complexity of different datastructures ?

<https://www.youtube.com/watch?v=1lqoJ-NSmDE>

43>Interning Java String : string->intern() method

<https://www.geeksforgeeks.org/interning-of-string/>

<https://www.scaler.com/topics/intern-in-java/>

44>String Literal vs String Object

<https://www.geeksforgeeks.org/string-initialization-java-string-literal-vs-string-object/>

45>Initialize and compare strings

<https://www.geeksforgeeks.org/how-to-initialize-and-compare-strings-in-java/>

46>Why String are immutable ?

<https://www.geeksforgeeks.org/java-string-is-immutable-what-exactly-is-the-meaning/>

47>String vs StringBuffer vs StringBuilder

<https://www.geeksforgeeks.org/string-vs-stringbuilder-vs-stringbuffer-in-java/>

48>Fail Safe vs Fail Fast Iterator

<https://www.geeksforgeeks.org/fail-fast-fail-safe-iterators-java/>

<https://javahungry.blogspot.com/2014/04/fail-fast-iterator-vs-fail-safe-iterator-difference-with-example-in-java.html>

49>Shallow Copy vs Deep Copy

<https://www.geeksforgeeks.org/deep-shallow-lazy-copy-java-examples/>

<https://javaconceptoftheday.com/difference-between-shallow-copy-vs-deep-copy-in-java/>

50>Record in java 16 .

<https://www.logicbig.com/tutorials/core-java-tutorial/java-16-changes/intro-to-java-records.html>

51>Memory management & Garbage collection & Memory leaks in java:

<https://medium.com/@kiranchowdhary/java-memory-management-and-garbage-collection-e29d3c313d05>

<https://medium.com/platform-engineer/understanding-java-garbage-collection-54fc9230659a>

Also refer document from Concept & Coding blog

<https://www.youtube.com/watch?v=vz6vSZRuS2M&t=1563s>

F:\Design Questions By Concept and Coding

52>Difference between stackOverflow error and OutOfMemory error:

<https://stackoverflow.com/questions/11435613/whats-the-difference-between-stackoverflowerror-and-outofmemoryerror#:~:text=StackOverflowError%20happens%20when%20you%20execute,are%20allocated%20on%20the%20heap>.

**SQL Server Interview Question:**

1>Follow SQL questions by Venkat -> there are around 25+ interview questions

<https://www.youtube.com/watch?v=fvPddKyHxpQ&list=PL6n9fhu94yhXcztdLO7i6mdyaegC8CJwR>

2>DB Index related questions (SQL Query Performance)

<https://www.youtube.com/watch?v=NGslt99VOCw>

Clustered / Non Clustered Index in depth

1. Other SQL concepts : Advanced Join ,CTE (Common Table Expression ,Self Join

Row Number , Rank ,Dense Rank, Group By

Different in build SQL functions like patindex , convert etc

Follow venkat tutorials for above questions

F:\SQL\_Interview\_topics

**Design Patterns / SOLID Principles & Microservices Design pattern**

**And other System Design related to microservices Interview Question**

1. SAGA Design Pattern :

<https://www.youtube.com/watch?v=Fe_qPM81hJ8>

<https://www.youtube.com/watch?v=69kqVIvp4p8>

2. Synchronous vs Asyn Communication in microservices

3>Explain SOLID Priciples

<https://www.youtube.com/watch?v=XI7zep97c-Y&t=103s>

<https://www.youtube.com/@ConceptandCoding/playlists>

4>Explain Design patterns with real life examples

Adapter

Bridge

Builder

Chain Of Responsibility

Decorator

Façade

Factory

Abstract Factory

Proxy

Strategy

5> Explain Kafka /Rabbit MQ with its architecture

6>Explain 2 phase and 3 phase commit

7>Explain Load balancing algorithms (used in microservices)

8>Explain Concurrency Control in microservices

(like

isolation levels ,

DB locking – shared/exclusive locks,

Dirty read , Non repeatable Read , Phantom read

Optimistic Concurrency Control & Pessimistic Concurrency Control

9> Explain Decomposition Pattern in Microservices

10>Explain Strangler pattern in MS

11>Data Management in MS (Shared DB , DB per service)

12>Explain CQRS pattern

13> What type of GIT branching strategy used in your project

For all above question related to low level and high level design of microservices

Design patterns / Design principle

Use below link

<https://www.youtube.com/@ConceptandCoding/playlists>

F:\Design Questions By Concept and Coding\Java Design Principles

JAVA 8 Coding interview questions

1. <https://www.youtube.com/watch?v=PMhrMDHFFW4&list=PLyHJZXNdCXsfcMboYwGoL6wKAFPxljz5W>

Use above link of Code Decode for reference

2>Also check Java8 Udemy Course :

<https://www.udemy.com/course/modern-java-learn-java-8-features-by-coding-it/>

3>Prepare below Concepts form Udemy Course:

All types of functional interfaces added in java8 with their methods

Concepts related to default and static method with code samples

Streams and parallel streams related conecpts

Lambda , Method reference

Optional

Intermediate / Terminal Operations

Collections vs Stream

Etc .

Follow UDEMY course link for this .

Microservices :

Study from below Udemy course in28Minutes :

<https://www.udemy.com/course/microservices-with-spring-boot-and-spring-cloud/>

Microservices with Spring cloud V2

Creating Currency Exchange / Curreny Conversion MS

Edureka

API Gateway

Feign Client

Load balancing

Spring cloud gateway

Retry fallback methods

Circuit Breaker

Rate Limiting

Bulkhead using resilience 4j

Use below code

F:\spring\_microservices\_in28Minutes\_udemy\spring-microservices-v2-main

PPT is also present at above location

What is consistent hashing ?

Video of concept and coding

<https://medium.com/must-know-computer-science/system-design-consistent-hashing-f66fa9b75f3f>

Spring Framework Interview questions :

Follow below Udemy Course by in28Minutes

<https://www.udemy.com/course/spring-interview-questions-and-answers/>

<file:///F:/master-spring-and-spring-boot-main/master-spring-and-spring-boot-main>

F:\spring-interview-guide-master

Spring interview questions from above course are listed

Spring IOC Container

Bean Factory vs Application Context

Autowiring and its types

@Primary vs @Qualifier

@Component vs @Bean

Lazy initialization vs eager initialization of Spring Bean

Spring Bean Scopes

Prototype vs Singleton scope

Example of Prototype inside singleton and vice varsa

Spring Sterotype annotations : Configuration , ComponentScan , Bean , Component , Service , Controller , Repository

Other imp annotations : Lazy , Primary , Qualifier , scope

Spring annotations-3 : PostConstruct , PreDestroy , Named , Inject

Spring Boot Questions (from in28Minutes )

1.Explain different annotation related to Spring Boot :

@SpringBootApplication

@EnableAutoConfiguration

@ComponentScan

2.Configuration using Profiles

3. Spring Boot Actuator

SPRING MVC Questions;

Spring MVC Front Controller - Dispatcher Servlet

Session vs Request Scopes

Spring Security Questions :

**Spring Boot Interview Question (Medium.com $& GreenLearner):**

Also read from document at location :

F:\Spring-Boot-Inside\_GreeLearner

GreeLearner channel : <https://www.youtube.com/watch?v=YdWQFpO9tIA>

Medium.com important blogs:

<https://medium.com/javarevisited/50-key-spring-boot-interview-questions-for-programmers-and-software-engineers-in-2023-f56da1d05b16>

<https://rathod-ajay.medium.com/experienced-spring-spring-boot-interview-questions-for-java-developers-2023-5-10-years-157c22c85e04>

<https://vishalgarg-75895.medium.com/springboot-latest-interview-questions-42a66cf41371>

1. Difference between @Component @Service @Controller @Repository class ;

<https://javarevisited.blogspot.com/2017/11/difference-between-component-service.html?source=post_page-----7253402c671--------------------------------#axzz8Fzn3YU6L>

<https://www.baeldung.com/spring-component-repository-service#:~:text=%40Component%20is%20a%20generic%20stereotype,act%20as%20a%20database%20repository>.

DispatcherServlet will look for @RequestMapping on classes that are annotated using @Controller but not with @Component.DispatcherServlet will look for @RequestMapping on classes that are annotated using @Controller but not with @Component.

@Repository's not only helping in annotation based configure but also catch Platform-specific exceptions and re-throw them as one of Spring’s unified unchecked exception.

1. Difference Between Controller & Rest Controller ?

<https://medium.com/javarevisited/difference-between-controller-and-restcontroller-in-spring-boot-and-spring-mvc-216578ad445f?source=post_page-----7253402c671-------------------------------->

1. Spring Actuator and its advantages:
2. All Spring and SpringBoot annotations :

<https://medium.com/adessoturkey/basic-spring-spring-boot-annotations-6fd44b1de853>

[5.@Value](mailto:5.@Value) and @ConfigProperties annotation

6>@SpringBootAnnotation internal working VVIMP

7> AutoConfiguration -> How it detects the classes -> @Condional annotation

<https://medium.com/@iamssrofficial/how-spring-boot-works-under-the-hood-1e49e4d5bfb3>

<https://medium.com/empathyco/how-spring-boot-autoconfiguration-works-6e09f911c5ce>

8>SpringApplication.run method internal working

<https://medium.com/javarevisited/what-happens-internally-when-you-start-a-spring-boot-application-part1-a683a64c1be8#:~:text=refreshContext(context)%20method%20in%20the,required%20to%20run%20the%20application>.

9> How to override and replace Tomcat embedded server?

<https://rathod-ajay.medium.com/10-new-java-spring-boot-interview-questions-for-developers-series-23-529d834ce620>

10> How to implement interceptors in Springboot?

11> How to implement exception handling in Springboot?

12>How to disable Auto-Confguration for a specific class?

<https://rathod-ajay.medium.com/12-spring-boot-interview-questions-for-java-developers-series-22-1e815ce4785c>

Spring Interview Questions Medium.com

<https://medium.com/javarevisited/50-key-spring-boot-interview-questions-for-programmers-and-software-engineers-in-2023-f56da1d05b16>

<https://medium.com/interviewhackingninja/20-spring-interview-questions-3-d883d8549c0a>

1. Spring IOC Container responsibilities

2. Difference between Bean Factory and Application Context

<https://medium.com/@maminiraja.0904/spring-framework-part2-6372b8401741>

<https://stackoverflow.com/questions/243385/beanfactory-vs-applicationcontext>

3>What do you mean by Auto Wiring?

<https://medium.com/interviewhackingninja/20-spring-interview-questions-3-d883d8549c0a>

4>What are the differences between @RequestParam and @PathVariable?

<https://medium.com/interviewhackingninja/20-spring-interview-questions-3-d883d8549c0a>

optional vs required / default values / path or query param

5>What is the purpose of the session scope? (refer same URL as above)

6>Is the DispatcherServlet instantiated via an application context?(URL same as above\_

7>What are different Modes of auto wiring?

autowiring enables the container to automatically resolve bean dependencies by inspecting the beans defined in the Spring application context. This helps in reducing explicit wiring in the configuration files.

8>What bean scopes does Spring support? Explain them.

9>What happens if we inject autowired prototype inside singleton? ->Prototype will loose its behavior . we have to use @lookup annotated method.

<https://medium.com/@mpavani667/prototype-inside-singleton-1c39273bbfd2>

also check below project

F:\master-spring-and-spring-boot-main\master-spring-and-spring-boot-main\01-spring\learn-spring-framework-02

10>Difference between Constructor injection and setter injection (refer examples in above workspace F:\master-spring-and-spring-boot-main\master-spring-and-spring-boot-main

11>Spring Transaction management

Check out below projects

F:\Spring-Transaction-Management\_SeleniumExpress\SpringTransactionPropogation &

F:\Spring-Transaction-Management\_SeleniumExpress\SpringTxnManagement

Also read from document present at F:\Spring-Transaction-Management\_SeleniumExpress

12>Dynamic Proxy use in Spring AOP and Transaction management

<https://medium.com/@spac.valentin/java-dynamic-proxy-mechanism-and-how-spring-is-using-it-93756fc707d5>

13>What are the different Isolation levels :

<https://www.youtube.com/watch?v=7rNiIavYB2w&list=PL3NrzZBjk6m_oHmPUnmqRC9X-ZDeV5Nq1&index=4>

Read document from below path

F:\Spring-Transaction-Management\_SeleniumExpress\Transaction Isolation levels.doc

**Hibernate Questions :** (check javabrains workspace)

F:\Hibernate Java Brains

1.Differenence between session.get vssession.load

2.Embedded / Embeddable / Attribute Overrides / Attribute Override annotation

[3.@ElementCollection](mailto:3.@ElementCollection) , @CollectionId annotation for collections in hibernate

4. Difference between Element Collection and one to many relationship

<https://medium.com/nerd-for-tech/elementcollection-vs-onetomany-in-hibernate-7fb7d2ac00ea>

target objects cannot be queried, persisted, merged independently of their parent object

There is no cascade option on an ElementCollection, the target objects are always persisted, merged, removed with their parent

5.One to many Unidirectional / Bidirectional and different Cascade types

<https://medium.com/@burakkocakeu/in-spring-data-jpa-onetomany-what-are-these-fields-mappedby-fetch-cascade-and-orphanremoval-2655f4027c4f>

6. Difference between save(), saveOrUpdate() , merge() , persist() , update()

<https://medium.com/javarevisited/hibernate-methods-save-persist-update-merge-and-saveorupdate-19d21511dea2>

also check javabrain hibernate eclipse workspace

7.Difference between merge() and update() method

<http://javainsimpleway.com/merge-vs-update-in-hibernate-with-example/>

8> Difference between save() and SaveOrUpdate()

<https://www.java67.com/2016/01/difference-between-save-saveorupdate-and-persist-in-Hibernate.html>

9> Cascade Type REMOVE vs Orphan Removal

<https://www.baeldung.com/jpa-cascade-remove-vs-orphanremoval>

10>Session ,Ehcache , Query Cache in hibernate (Check javabrains\_Hibernate workspace also\_

<https://examples.javacodegeeks.com/java-development/enterprise-java/hibernate/second-level-cache-hibernate-example/>

<https://www.baeldung.com/hibernate-second-level-cache>

11>What are different types of Inheritance strategies in Hibernate i.e Single Table

Table per class , Joined , (Hibernate Java brains)

12> What is N+1 Problem in Hibernate ? **VVIMP**

<https://www.youtube.com/watch?v=_6Ni_wxfoyI&list=PLyHJZXNdCXsdC-p2186C6NO4FpadnCC_q&index=10>

Video by codedecode and screenshots at the end of Document placed at below path

F:\Hibernate Java Brains\Hibernate\_JavaCodeDecode.doc

13> HQL Queries -> where clause , named Query , named Native query etc

14>Criteria Queries -> Use of Restrictions, combining restrictions and/or ,

Use of Order , Projections

15>Difference between HQL and Criteria Queries

<https://stackoverflow.com/questions/4401240/hibernate-criteria-vs-hql-which-is-faster>

16>Hibernate Multitenancy :

<https://www.baeldung.com/hibernate-6-multitenancy>

<https://medium.com/deviniti-technology-driven-blog/implementing-multitenancy-architecture-spring-boot-jpa-hibernate-flyway-8fb19b312a10>

<https://medium.com/swlh/multi-tenancy-implementation-using-spring-boot-hibernate-6a8e3ecb251a>

**SPRING AOP:**

1.What is Aspect , PointCut , Advice , JoinPoint ?

2.Aspect J vs Spring AOP

3.Proceesing Join Point and @Around Advice

[4.@Before](mailto:4.@Before) @After @AfterReturning @AfterThrowing

Refer <file:///F:/master-spring-and-spring-boot-main/master-spring-and-spring-boot-main/course-presentation-master-spring-and-spring-boot.pdf>

Also refer Code Decode AOP tutorials

<https://www.youtube.com/watch?v=8u0CavOouo8>

and refer screenshots at F:\Spring AOP By CodeDecode