1. Internal Working of Hash Map

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

<https://stackoverflow.com/questions/10879302/hashmap-implementation-in-java-how-does-the-bucket-index-calculation-work>

<https://anmolsehgal.medium.com/java-hashmap-internal-implementation-21597e1efec3>

1. What is Load Factor & Rehashing in Hash Map

<https://www.geeksforgeeks.org/load-factor-in-hashmap-in-java-with-examples/?ref=ml_lbp>

1. What is Collision in Hash Map

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

<https://www.geeksforgeeks.org/separate-chaining-collision-handling-technique-in-hashing/?ref=lbp>

<https://www.geeksforgeeks.org/open-addressing-collision-handling-technique-in-hashing/?ref=lbp>

5> Internal working of Set

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

5.1>Internal Working of TreeMap:

<https://medium.com/art-of-coding/tree-map-implementation-and-its-internal-working-red-black-tree-insertion-d56b04a1f72c>

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

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

https://www.geeksforgeeks.org/internal-working-of-arraylist-in-java/

<https://jainniraj.medium.com/internal-working-of-arraylist-in-java-816d6bd76e18>

7>Internal working of Concurrent Hash Map . How it is different from HashTable ?

<https://medium.com/art-of-coding/hash-table-vs-concurrent-hashmap-and-its-internal-working-b28fc2725bdb>

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

9>What is copyOnWriteArrayList ? whether it throws concurrentModificationException or not ?

Adding an element to CopyOnWriteArrayList using add(E e) method

<https://medium.com/@reetesh043/the-copyonwritearraylist-internals-a-deep-dive-ff3ebad87697>

10>Difference between Array List and copyOnWriteArrayList

What is snapshot iterator in CopyOnWriteArrayList ? Can we remove element from iterator ?

<https://www.geeksforgeeks.org/difference-arraylist-copyonwritearraylist/>

11> Difference between synchronized ArrayList and copyOnWriteArrayList

<https://www.geeksforgeeks.org/difference-between-synchronized-arraylist-and-copyonwritearraylist-in-java-collection/>

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/>

<https://medium.com/platform-engineer/understanding-jvm-architecture-22c0ddf09722>

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>

<https://medium.com/@hasithalgamge/seven-types-of-java-garbage-collectors-6297a1418e82>

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?

<https://happilyblogging.wordpress.com/2013/11/12/java-blockingqueue-behaviour-with-take-and-poll-method/>

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

<https://www.geeksforgeeks.org/difference-between-add-and-offer-methods-in-queue-in-java/>

21>Thread lifecycle & different states

<https://notebook.zohopublic.in/public/notes/74tdo47dcfcf05e644cf192c411a6d78ec1dc>

<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

27.1> What is Executor , Executor Service and ThrealPool Executor ?

InvokeAny() & InvokeAll() with examples

<https://medium.com/javarevisited/a-complete-guide-on-executorservice-in-java-67528f1a535b>

28>What is difference between Deadlock , livelock and Starvation?

<https://www.baeldung.com/cs/deadlock-livelock-starvation#:~:text=Although%20similar%20in%20nature%2C%20deadlock,change%20their%20resource%20state%20continuously>.

29>What is Race Condition .Explain with example.

<https://www.baeldung.com/cs/race-conditions>

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

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

<https://medium.com/better-programming/a-deep-dive-into-the-java-volatile-keyword-7e1b9f9df604>

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

<https://javarevisited.blogspot.com/2016/04/difference-between-ExecutorServie-submit-vs-Executor-execute-method-in-Java.html#axzz8IvEg01uS>

31>Difference between ForkJoinPool & executor Service

<https://www.geeksforgeeks.org/difference-between-fork-join-framework-and-executorservice-in-java/>

<https://javarevisited.blogspot.com/2016/12/difference-between-executor-framework-and-ForkJoinPool-in-Java.html#axzz8IvEg01uS>

32>Difference between Runnable and callable?

<https://medium.com/@basecs101/runnable-vs-callable-in-java-multithreading-8500d806c65e>

33>What are different types of Concurrent Collections like

Delay Queue: Refer Multithread workspace and below Link

<https://howtodoinjava.com/java/multi-threading/java-delayqueue/>

Priority Queue: Refer Multithread workspace and below link

<https://www.freecodecamp.org/news/priority-queue-implementation-in-java/>

CountDownLatch : Refer Multithread workspace and below Link

Cyclic Barrier: Refer Multithread workspace and below Link

Exchanger: Refer Multithread workspace and below Link

34> What is Completable Future ?

<https://medium.com/swlh/completablefuture-a-simplified-guide-to-async-programming-41cecb162308>

https://medium.com/@joshikeyur/apply-compose-and-combine-futures-71b76b3a1aae

What are the usage of below method :

runAsync , supplyAsync ,thenApply , thenCompose , thenCombine

complete , completeExceptionally

35>Try-with-resources:

<https://levelup.gitconnected.com/try-with-resources-in-java-simplifying-resource-handling-updated-latest-blog-2023-c1fa1f50e5f5>

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://medium.com/swlh/navigating-java-maps-treemap-vs-hashmap-vs-linked-hashmap-c97e6d248ecf>

<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/>

<https://medium.com/@basecs101/complete-guide-on-linkedhashmap-in-java-latest-a923833afde0>

<https://anmolsehgal.medium.com/java-linkedhashmap-internal-implementation-44e2e2893036>

40>Internal working of TreeMap & TreeSet?

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

https://medium.com/xebia-engineering/treemap-internals-199e0e0050b5

<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/>

41.1>Internal working of Queue ?

<https://medium.com/nerd-for-tech/the-queue-data-structure-77be9054e67c>

41.2> Queue using LinkedList vs Queue using Array

<https://www.simplilearn.com/tutorials/data-structure-tutorial/queue-using-linked-list>

<https://rajagoyal815.medium.com/day4-queue-implementation-with-array-and-linked-list-100daysofcode-ddc2e29167aa>

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/>

How to compare StringBuffer,StringBuilder and String objects

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>.

53>Strong , Soft , weak and Phantom reference :

<https://medium.com/javarevisited/the-difference-between-strong-soft-weak-and-phantom-references-that-every-developer-should-know-eb4d6895b065>

<https://prateeknima.medium.com/strong-weak-soft-and-phantom-references-in-java-b4f9068e883e#:~:text=Soft%20references%20are%20similar%20to,immediately%20available%20for%20garbage%20collection>.

<https://www.baeldung.com/java-reference-types>

54>What is ThreadLocal ?

<https://medium.com/codimis/what-is-the-purpose-of-the-threadlocal-class-in-java-863ef2505e33>

Save user information in session when user has logged in

55>How to access Private Field and private method using Java Reflection API?

<https://www.geeksforgeeks.org/how-to-access-private-field-and-method-using-reflection-in-java/>

56>How to Create Immutable classes ?

<https://www.geeksforgeeks.org/create-immutable-class-java/>

57>Good Implementation of HashCode and equals for Custom class as key in hashmap

<https://howtodoinjava.com/java/collections/hashmap/design-good-key-for-hashmap/>

<https://www.baeldung.com/java-custom-class-map-key>

58>How to make Class Mutable? Focus on point “If we are making class as final why we make the instance variables final” ?

<https://medium.com/@cs.vivekgupta/everything-about-immutable-classes-in-java-9f5fe8e6ca54>

Read last 2 paragraphs (Why to make fields as final as we are already marking class final)

59> What are the enhancement in HashMap internal working in java8 (using BST instead of LinkedList to improve performance )

<https://ankitwasankar.medium.com/5-tricky-interview-questions-on-hashmap-java-8-a2c7185fd795>

60>Generics in depth ,Type eraser , bounds , WildCards -> Upper Bounded & Lower Bounded

unbounded

<https://beknazarsuranchiyev.medium.com/generics-in-java-364e09101128>

61>Object.hashCode() vs Objects.hashCode() vs Objects.hash() and Arrasys.hashcode()

<https://www.baeldung.com/java-objects-hash-vs-objects-hashcode>

Summary in last paragraph

62>Cyclic Barrier real life usecase :

<https://medium.com/@sainathbatthala/java-multi-threading-cyclicbarrier-use-case-and-example-6958d5a945a2#:~:text=Let's%20say%20there%20is%20a,implement%20this%20scenario%20using%20CyclicBarrier.&text=In%20the%20above%20example%2C%20there,point%20before%20resuming%20their%20journey>.

63>Real life example of CountDown latch

<https://blog.kishorek.dev/countdownlatch-java-concurrency-14b168be26ec>

64>Real world example of Linked List/Doubly linked List / Single Linked list / Circular Linked List?

<https://www.scaler.com/topics/application-of-linked-list/>

65>How to increase Heap memory in java ? exact paramters ?

<https://muratakkan.medium.com/java-memory-management-101-heap-memory-ca4060b10685>

66>How to increase metaspace size ?

<https://medium.com/@RamLakshmanan/chaos-engineering-metaspace-outofmemoryerror-c36ca807a6a7#:~:text=java.,-lang.&text=You%20can%20address%20%23a%20by,'%2DXX%3AMaxMetaspaceSize>.

67>Different types of exceptions in java?

<https://medium.com/thefreshwrites/the-most-common-java-runtime-errors-b6bc49a7716e#:~:text=A%20java.-,lang.,lang>.

68>Real world scenarios for HashMap ?

<https://betterprogramming.pub/the-importance-of-hash-maps-831884307806>

69>Real world example of Callable interface in java?

<https://coderanch.com/t/617951/java/Callable-Future-Real-world>

70>How to trouble shoot outofFmemory Error in metaspace ?

<https://blog.ycrash.io/2022/07/26/troubleshooting-microservices-outofmemoryerror-metaspace/>

<https://blog.heaphero.io/2018/03/27/how-to-diagnose-memory-leaks/>

71>How to capture and analyze thread dump and heap dump?

72>What is serialization and deserialization in java?

<https://medium.com/javarevisited/complete-guide-to-serialization-in-java-44b36032157>

<https://medium.com/@AlexanderObregon/a-deep-dive-into-java-serialization-e514346ac2b2#:~:text=Serialization%20provides%20a%20way%20to,Apache%20Hadoop%20and%20Apache%20Spark>.

What is the use of serial version UID?

<https://java2blog.com/serialversionuid-in-java-serialization/>

73>Why we are making deep copy of objects while creating Immutable class ?

<https://salithachathuranga94.medium.com/implement-immutable-classes-with-java-df5b5b66ffd9>

What happen if we have List,Map and other objects inside a class and we want to make that class immutable?

74>Future. Cancel method. Can we handle checked exception with future?

What will happen if we pass runnable task to executor.submit method

InvokeAny(listOfCallable) and invokeAll() methods

<https://jenkov.com/tutorials/java-util-concurrent/executorservice.html#:~:text=the%20following%20sections).-,Submit%20Runnable,the%20Runnable%20has%20finished%20executing>.

<https://medium.com/@pra4mesh/executorservice-execute-vs-submit-257f21d6db5a>

75>When to use volatile and synchronized?

<https://medium.com/@basecs101/how-to-properly-use-synchronized-and-volatile-in-your-java-application-updated-latest-60b882fba4a1>

76>What is difference in Atomic Variables and volatile ?

<https://medium.com/@basecs101/difference-between-atomic-volatile-and-synchronized-in-java-programming-14156c3c8f46>

<https://medium.com/@erayaraz10/understanding-atomic-volatile-and-synchronized-variables-in-java-differences-and-use-cases-b12f519a4c4b>

77>What is Reentrant lock ? how it’s different than Synchronized keyword?

<https://medium.com/@basecs101/reentrantlock-in-java-multi-threading-latest-latest-3e2f4f64811a>

78>Atomic Integer => CompareAndSwap method :

<https://jenkov.com/tutorials/java-concurrency/compare-and-swap.html>

79>Aggregation vs Composition vs Association in java

<https://medium.com/sfd-llp/composition-aggregation-and-association-in-java-565bd63a67ad>

80>New Features added in Java11?

<https://medium.com/javarevisited/java-11-features-and-highlights-ab4bed23058b>

81>Java 8 : FlatMap examples:

<https://bakii.medium.com/a-deep-dive-into-the-flatmap-operation-of-the-stream-api-in-java-with-examples-57c97224c01d>

82>Java 8 Date Time API :

<https://introvertreader.medium.com/understanding-java-8s-datetime-api-your-guide-to-simplified-date-and-time-handling-3188673c6e12>

<https://jdewapura.medium.com/understanding-date-and-time-api-in-java-8-378c28755b3f>

<https://medium.com/@moiz.mhb/new-java-8-date-time-api-155249df3e8>

Also refer examples from F:\eclipse\_workspaces\java8\java8\_samples\_udemy\src\com\learnJava\dates

83> introduction of “var” in java 10.

<https://medium.com/@kinjalpatel63/introducing-the-var-keyword-in-java-10-the-type-inference-65c5a6528200>

84>Can one functional interface extends another Functional interface? Yes or No with reason

85>How ThreadPoolExecutor works?

<https://medium.com/coding-becomes-easy/how-threadpool-works-internally-in-java-904f1e87fea>

86>How to analyse Heap dump ?

<https://medium.com/@chrishantha/basic-concepts-of-java-heap-dump-analysis-with-mat-e3615fd79eb>

<https://reflectoring.io/create-analyze-heapdump/>

<https://www.youtube.com/watch?v=gfOdYLVVTFs&list=PL2LOULP5LmUwpu5DtPlToktBTZ3Y5FNDA>

87>How to analyse Thread Dump?

<https://www.youtube.com/watch?v=gEVLsXj7q1U>

<https://reflectoring.io/analyzing-thread-dumps/>

<https://dzone.com/articles/how-analyze-java-thread-dumps>

<https://dzone.com/articles/how-to-read-a-thread-dump>

88>Refer notes from F:\Design Questions By Concept and Coding\Java and Multithreading

For Reflection API , Collections , Thread Pool Executor, Completable Future, Java Annotation,

Concurrency etc.

**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 & Micro-services Design pattern**

**And other System Design related to micro-services Interview Question**

1>Explain 5 SOLID Principles:

Check notes and screenshots at below location:

F:\Design Questions By Concept and Coding\Design and other topic\Design Principles.docsx

Also go through below 2 videos first.

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

<https://www.youtube.com/watch?v=129QkkXUHeQ&list=PL6W8uoQQ2c61X_9e6Net0WdYZidm7zooW&index=3>

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

2>Explain Design patterns with real life examples:

Refer channel Conecpt and coding LLD playlist

<https://www.youtube.com/watch?v=rliSgjoOFTs&list=PL6W8uoQQ2c61X_9e6Net0WdYZidm7zooW&pp=iAQB>

Go through Notes at below location:

F:\Design Questions By Concept and Coding\Design and other topic

Also check programs in Design Pattern workspace

F:\eclipse\_workspaces\designPatterns\DesignPatterns\src

Factory --done

Abstract Factory --done

Adapter

Bridge --done

Builder --done

Chain Of Responsibility-done

Decorator--done

Façade --done

Observer --done

Proxy --done

Strategy –done

Prototype –done

Singleton --done

1. SAGA Design Pattern : ( Check Concept and coding HLD playlist)

https://www.youtube.com/watch?v=rliSgjoOFTs&list=PL6W8uoQQ2c63W58rpNFDwdrBnq5G3EfT7&index=1

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

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

SpringBoot Example:

<https://fullstackdeveloper.guru/2023/05/11/how-to-implement-saga-design-pattern-in-spring-boot/>

https://www.vinsguru.com/orchestration-saga-pattern-with-spring-boot/

4. Synchronous v/s Asynchronous Communication in micro-services

5>Explain Kafka /Rabbit MQ with its architecture (Check Concept and coding HLD playlist)

**6>Explain 2 phase and 3 phase commit (Check Concept and coding HLD playlist)**

7>Explain Load balancing algorithms (used in micro-services) ( Check Concept and coding HLD playlist)

**8>Explain Concurrency Control in micro-services ( Check Concept and coding HLD playlist)**

**(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 Micro-services

10>Explain Strangler pattern in MS -> ?????????????????? How to implement ask Amit M

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

12>Explain CQRS pattern ?( Check Concept and coding )

Also refer below example:

<https://fullstackdeveloper.guru/2023/05/04/how-to-implement-cqrs-design-pattern-in-spring-boot/>

<https://www.vinsguru.com/cqrs-pattern/>

13>What is 2 phase locking

(Basic 2PL and its problems like Deadlock & Cascading Aborts)

Deadlock Prevention Strategies -> timeout, WFG , Conservative 2 PL , timestamp based Deadlock detection

Cascading Abort prevention Strategy -> Strong Strict 2PL

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

For all above question related to low level and high level design of micro-services

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: and refer PDF at below location

F:\Java8\_Udemy

Concepts:

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 concepts

Lambda , Method reference, Constructor Reference

Optional, orElseGet , orElseThrow ,orElse

Intermediate / Terminal Operations

Collections vs Stream

Lambda & Local Variable related coding examples

Follow UDEMY course link for this .

4>CodingInterveiwQuestions package consists of different set of questions from

codeDecode ,javatechie , naveenAutomation labs channels

F:\eclipse\_workspaces\java8\java8\_samples\_udemy\src\codingInterviewQuestions

5>Why default and static methods are added in java 8?

<https://www.geeksforgeeks.org/default-methods-java/>

**Micro-services Interview Questions:**

1. 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

1. **Load Balancing :**

For below 2 points refer F:\Load Balancer\_CodeDecode\_SeleniumExpress\Load Balancer\_JavaCodeDecod.docx

And

F:\spring\_microservices\_in28Minutes\_udemy\spring-microservices-v2-main\03.microservices\currency-conversion-service

And

F:\Design Questions By Concept and Coding\Design and other topic\Microservices Load Balancer.docs

* Client side Load balancing
* Feign Client & Spring Cloud Gateway Custom Load balancer Configuration

1. **Circuit Breaker :**

For below 4 points related to resilience4j refer <https://www.vinsguru.com/circuit-breaker-pattern/> and <https://resilience4j.readme.io/docs/bulkhead>

And refer notes at location F:\resilience4j-master

For practical examples refer :

F:\spring\_microservices\_in28Minutes\_udemy\spring-microservices-v2-main\03.microservices\currency-exchange-service

And

F:\eclipse\_2023\_workspaces\Resilience4j-CircuitBreaker

* Retry fallback methods-> Read Document present at location: F:\resilience4j-master
* Circuit Breaker -> Read Document present at location: F:\resilience4j-master
* Rate Limiting-> Read Document present at location: F:\resilience4j-master
* Bulkhead using resilience 4j-> Read Document present at location: F:\resilience4j-master

1. **Consistent Hashing**

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>

**5>API Gateway:**

Check Notes at below path

F:\ApiGateway-GreeLearner

<https://haris-zujo.medium.com/spring-cloud-gateway-request-filtering-and-redirection-9e4b6d559d1a>

<https://lalverma.medium.com/spring-boot-microservices-api-gateway-e9dbcd4bb754>

https://www.javainuse.com/spring/cloud-gateway

<https://www.javainuse.com/spring/cloud-filter>

F:\spring\_microservices\_in28Minutes\_udemy\spring-microservices-v2-main\03.microservices\api-gateway

And CodeDecode links are as below

<https://www.youtube.com/watch?v=YK1XRvoXllE>

<https://www.youtube.com/watch?v=8FWzFnLpTc8&t=515s>

**6> Eureka Service discovery and registry:**

F:\Service-Registry-Discovery-Eureka-GreenLearner

F:\spring\_microservices\_in28Minutes\_udemy\spring-microservices-v2-main\03.microservices\naming-server

<https://www.javainuse.com/spring/spring_eurekaregister4>

<https://medium.com/@fahimfarookme/the-mystery-of-eureka-health-monitoring-fd05fe757928>

**7>spring cloud Config server:**

F:\spring-cloud-config-GreenLearner

<https://medium.com/@panigrahiritesh03/spring-cloud-config-part-1-533d6a9c3939>

<https://medium.com/@panigrahiritesh03/spring-cloud-config-part-2-1aebe7bdf32c>

8>Distributed tracing in Monolithic application :

<https://copyprogramming.com/howto/spring-cloud-sleuth-in-a-monolith-application>

9> How to implement Distributed Tracing ? Zipkin

<https://medium.com/cloud-native-daily/distributed-tracing-a-guide-for-2023-a40a1ee218b5>

10>What is Event Driver communication microservice?

<https://www.youtube.com/watch?v=bpP4GX8oxjk>

**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   
(<https://www.baeldung.com/spring-beanfactory-vs-applicationcontext>)

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 Bean Lifecycle :

https://medium.com/@TheTechDude/spring-bean-lifecycle-full-guide-f865966e89ce

<https://howtodoinjava.com/spring-core/spring-bean-life-cycle/>

https://vcfvct.wordpress.com/2012/12/03/init-method%E3%80%81postconstruct%E3%80%81afterpropertiesset/

<https://medium.com/swlh/the-lifecycle-of-spring-beans-b0edb8936189>

Refer :

F:\master-spring-and-spring-boot-main\master-spring-and-spring-boot-main\01-spring\learn-spring-framework-01\src\main\java\com\in28minutes\learnspringframework\BeanFactoryPostProcessor

<https://medium.com/@AlexanderObregon/understanding-the-lifecycle-of-a-bean-with-postconstruct-and-predestroy-7d76dbc3e5ed>

What is a java config file and What is it' s limitations?

What is internationalizationi18 feature in Application Context ?

<https://www.baeldung.com/spring-classpathxmlapplicationcontext#2-internationalization-with-messagesource>

<https://howtodoinjava.com/spring-mvc/spring-mvc-internationalization-i18n-and-localization-i10n-example/>

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 :**

**1.What happens if someone tampers JWT ?**

[**https://arielweinberger.medium.com/json-web-token-jwt-the-only-explanation-youll-ever-need-cf53f0822f50**](https://arielweinberger.medium.com/json-web-token-jwt-the-only-explanation-youll-ever-need-cf53f0822f50)

<https://stackoverflow.com/questions/34259248/what-if-jwt-is-stolen>

2.What is CSRF attack? How to prevent it using Spring Security?

<https://reflectoring.io/spring-csrf/>

<https://rathoreaparna678.medium.com/spring-security-advanced-techniques-for-csrf-protection-becddd2a3814>

https://www.youtube.com/watch?v=AHV9ThkRT9w

https://www.youtube.com/watch?v=Ub5TLow9GL4&t=53s

<https://www.youtube.com/playlist?list=PL5mjp3QjkuoIYOqnUtWl1K91Fg7O_p7QX>

3>What is the concept of Refresh Token?

<https://medium.com/@chauhanshubham19765/jwt-refresh-token-61823e888bc7>

4>What is basic flow of Spring Security ? what is SpringSecurityContext Holder and

How Spring make use of ThreadLocal to store usernamePassword?

**5>Spring Security Architecture ?**

<https://www.javainuse.com/webseries/spring-security-jwt/chap3>

<https://www.javainuse.com/webseries/spring-security-jwt/chap4>

F:\Spring-Transaction-Management\_SeleniumExpress\Selenium Express Mock Interview.docs

**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.

@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 -> @Conditional annotation

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

<https://codeahoy.com/questions/java/10/>

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?

And How to handle exceptions in Spring using Controller Advice and Exception Handler.

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

<https://medium.com/@jovannypcg/understanding-springs-controlleradvice-cd96a364033f>

10> How to implement interceptors in Springboot? And how interceptors are different from Filters ?

<https://notebook.zohopublic.in/public/notes/dcr5zfbbb4128be4a406682b6a13ff80ed8fa>

<https://notebook.zohopublic.in/public/notes/dcr5z502a3a0746974f36b75a50729b691d58>

11> How to implement exception handling in Springboot?

<https://notebook.zohopublic.in/public/notes/9wn9o7260a3af90164c31941f061955edb73d>

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

Search “How to disable Auto-Confguration for a specific class?” In below link

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

13.Difference between Dependecy injection and inversion of control:

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

Search for Inversion of Control vs Dependency Injection?

14 .How to connect to two databases in Spring Boot Application ?

<https://stackademic.com/blog/connecting-multiple-databases-in-spring-boot>

<https://stackoverflow.com/questions/30337582/spring-boot-configure-and-use-two-data-sources>

15>How to Deploy and run SpringBoot application on Jboss / Wildfly ?

<http://www.sgaemsolutions.com/2019/06/preparing-your-spring-boot-app-to.html>

**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?

Search below text “What are the differences between @RequestParam and @PathVariable?”

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

<https://naveen-metta.medium.com/understanding-requestparam-vs-pathvariable-in-spring-a-comprehensive-guide-41fb956e20f6#:~:text=Differences%20Between%20%40RequestParam%20and%20%40PathVariable%3A&text=%40RequestParam%20%3A%20Extracts%20data%20from%20query,templates%20in%20the%20URL%20path>.

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\_

Can we have multiple DispatcherServlets for a single application?

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

<https://medium.com/javarevisited/11-scenarios-where-spring-transactions-do-not-take-effect-b3a6b49f8887>

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

14>Creating multiple bean instances of the same class in Spring?

<https://sumitkumar30.medium.com/spring-creating-beans-of-same-type-using-spring-annotations-03a957a53712>

15>Spring Bean lifecycle:

<https://medium.com/@TheTechDude/spring-bean-lifecycle-full-guide-f865966e89ce>

16> What are different types of Spring Data Repository?

<https://javarevisited.blogspot.com/2021/10/what-is-spring-data-repository.html#axzz8MtwXeTT2>

17>What Is @NoRepositoryBean Annotation

<https://medium.com/@bubu.tripathy/tailoring-spring-data-repositories-a4a0c26e762d>

F:\Spring-Transaction-Management\_SeleniumExpress\Selenium Express Mock Interview.doc

18>What is Java Config file and what are the limitations?

19>How a CGLIB Proxy works with @Bean?

20>What is the different between @Component and @Bean

<https://medium.com/javarevisited/what-is-difference-between-component-and-bean-annotation-in-spring-bffdad0ab899>

21>How to handle Bad Gateway exception in Spring

Refer F:\Spring-Transaction-Management\_SeleniumExpress\Selenium Express Mock Interview.doc

21>What is BeanFactoryPostProcessor ? and BeanPostProcessor?

Refer F:\Spring-Transaction-Management\_SeleniumExpress\Selenium Express Mock Interview.doc

Or

<https://medium.com/@TheTechDude/spring-bean-lifecycle-full-guide-f865966e89ce>

23>What is use of ThreadLocal in Spring framework?

24>What is Context Loader Listener ? how it is different from Dispatcher Servlet ?

<https://howtodoinjava.com/spring-mvc/contextloaderlistener-vs-dispatcherservlet/>

25>Filter vs Dispatcher Servlet vs Interceptor vs Controller :

<https://medium.com/javarevisited/spring-framework-filter-vs-dispatcher-servlet-vs-interceptor-vs-controller-745aa34b08d8>

<https://javalaunchpad.com/dispatcherservlet-configuration/>

26>Spring MVC Configuration :

https://javalaunchpad.com/introduction-to-spring-mvc-architecture/

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

F:\Hibernate Java Brains

1.Differenence between session.get vssession.load

<https://recepinanc.medium.com/til-14-the-main-differences-between-hibernates-get-and-load-methods-90bf49aa2ef5>

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

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

Real life usecase for ehcache

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

**Kafka And kafka streams related topics**

Refer : F:\Kafka Notes

**Kafka Streams**

What is Kafka Stream API ? how it is different from Kafka Producer and Consumer ?

What are basic terminologies used in Kafka Streams e.g

KStream , KTable , GlobalKTable

Topology

State Stores

How to maintain Scalability and reliability

**Kafka**

Basic Terminologies

Topic

Kafka Cluster

Kafka Producer

Kafka Consumer

Broker and partition

Zookeeper

Advantages of Kafka

How Kafka is different from Rabbit MQ

**Coding Question :**

1>Check TCS NQT Sheet for

Array , String and Sorting problems

Check the workspace\_DataStrucres\_Algo\_udemy (old eclipse)

Link : <https://takeuforward.org/interviews/tcs-nqt-coding-sheet-tcs-coding-questions/#point_6>

2>Check Array problems using below link

<https://takeuforward.org/playlists/top-array-interview-questions-structured-path-with-video-solutions/>

**REST API :**

1.What is idem potency is REST Api?

<https://medium.com/nerd-for-tech/what-is-idempotency-in-rest-apis-and-why-should-you-care-8c0a550e345f>

2.Difference between PUT and PATCH ?

<https://www.baeldung.com/http-put-patch-difference-spring>

<https://medium.com/@pankaj_rawal/why-patch-is-considered-non-idempotent-1dfd4ca9a2> (Also check comment)

3>@RequestParam vs @PathVariable

<https://javarevisited.blogspot.com/2017/10/differences-between-requestparam-and-pathvariable-annotations-spring-mvc.html#axzz8JlE0CgFL>

<https://www.baeldung.com/spring-requestparam-vs-pathvariable>

<https://medium.com/javarevisited/difference-between-requestparam-and-pathvariable-in-spring-mvc-873bd6330bce#:~:text=By%20default%2C%20%40RequestParam%20parameters%20are,for%20the%20mapping%20to%20match>.

4>Head , Options and Trace HTTPS methods :

<https://testfully.io/blog/http-methods/#head-method>

<https://medium.com/@kumaraksi/using-http-methods-for-restful-services-e6671cf70d4d>

5>Difference between SOAP and REST?

6>Which Dependency is added to create Rest API client? -> Resteasy(check getpaid-web and getpaid rest project pom.xml)

14>What is CORS ? @CORS(origins=”” allowedHeader=””)

How to activate CORS on particular method and also globally?

<https://reflectoring.io/complete-guide-to-cors/>

<https://reflectoring.io/spring-cors/>

<https://anushadasari.medium.com/a-complete-guide-to-cors-9045069a7c5e>

15>Different HTTP Response Status codes?

<https://sagrawal003.medium.com/http-response-status-codes-client-error-400-499-grow-together-by-sharing-knowledge-739147a0920b>

16>Different between Rest Client and Web Client?

How can we make API calls asynchronously?

What is web Client ? benefits over RestTeamplate ?

What is Async Rest Template?

<https://medium.com/thefreshwrites/resttemplate-feignclient-webclient-with-spring-boot-f34979040b9e>

<https://medium.com/naukri-engineering/resttemplate-is-deprecated-use-webclient-a1dd7ca6394d>

<https://medium.com/@bubu.tripathy/resttemplate-tips-for-efficient-and-secure-communication-with-external-apis-3f323ac5b83f>

GIT :

1.Different GIT Commands:

<https://manoj777.medium.com/git-interview-questions-and-answers-for-devops-5d0b971f8fbb>

2.GIT Branching Strategy:

<https://www.youtube.com/watch?v=KKByv7JyzOw>

F:\Design Questions By Concept and Coding\Design and other topic\GIT Branchin Strategy.docs

**Docker :**

Read content from

F:\Docker Certified Associate -2022

Some important questions:

1.

<https://medium.com/@moein.moeinnia/understanding-docker-mounts-volumes-bind-mounts-and-tmpfs-f992185edc27#:~:text=Volume%20mounts%20are%20like%20bind,separately%20from%20the%20containers%20themselves>.

2.

<https://www.digitalocean.com/community/tutorials/how-to-use-docker-exec-to-run-commands-in-a-docker-container>

3.

<https://levelup.gitconnected.com/how-to-commit-changes-to-a-docker-image-with-examples-cca30faefc51>

4.

<https://yashodgayashan.medium.com/docker-build-and-docker-run-commands-9503aaa107b>

**Mock Interviews:**

<https://www.youtube.com/watch?v=0_rJnCM-Lf4&t=20s>

<https://www.youtube.com/watch?v=9grEmpRfK0Y>

<https://www.youtube.com/watch?v=ZzJ3qkPR9WA>