1. **OOPS & Core Java**

**Expectation:**

**Language fundamentals, Solid Principles, Standard lib(Jackson,JIB, etc)  
Adv libraries (RX Java, VAVAR, Tink, ANtlr4, Metrics, etc)**

**Sample QuestionS**

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* Immutable class: **Real time scenario | write a class to make imuutable class**
* Serialzation, De-Serialization & Externalization concept
* Wat is Serial Version UID? Create it once.
* What are different types of exceptions we have? Diff b/w Checked and unchecked exception: **Definition & Realtime Scenario**
* How do you create custom exception? **Might ask to write code**
* Wat is Cloning in Java? How do you make your class clonable? Deep cloning and shallow cloning: **Definition & Realtime Scenario**
* Method overloading and method overriding: **Definition & Realtime Scenario**
* Runtime & compile time Polyphorism
* is a relationship and has a relationship/ Diff b/w composition & Aggregation?- **Definition & Realtime Scenario**
* Try with resource
* **SOLID principles. Explain with Usecase ?**
* **Wat is Call Back method? How does it work ?**
* **What are Generics? When we use Wild Card? Can you write a code to create one Generic Class?**
* **Hash map internal working. What is Hash Collision In hash map ?**
* **What is Re-hashing & Double hashing ?**
* **Time & Space complexity of all collections?**
* Comparable VS comparetor : **Definition & Realtime Scenario and why do we have 2 interfaces in java?**
* Diff b/w hashset and tree set
* Diffe b/w **Hashmap and Hashtable**
* Experience working with **internal working of Linked HashSet & linked Hash map?**
* Wat is the contract between **equals method and hash code**: **Definition & Realtime Scenario**
* What is Load factor? What is Default size?- 0.75
* **How do you find bucket number in a hashcode?**
* **Concurrent hashmap?** Is it possible to read & write the same bucket Parllelly?
* How can we sort a hashmap based on key?
* What **is Race condition** and how to adress it?
* Diff b/w list/ set/ tree set?
* **Wat is fail fast and fail safe? What all collections are failfast?**
* Wat is Immuatabe list?
* Diff b/w **List.Remove(Fail Safe) & Iterator.Remove (Fail fast)?**

1. **JAVA-8 FEATURES**

**Expectation:**

**Generics,Lambda expr, Functional Interface,streams , predicate, Bi-predicate  
Completable future,optionals, Parallel ,Serial Stream, Lazy streams**

**Sample QuestionS**

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* **How does hash Map & Collections Differs from Java 7 & 8 ?**
* Wat is **Completable Future? How does it different from Future ? Wat is the usecase?**
* Wat is **BI-Function interface? Wat is the usecase?**
* **Wat are Intermediate and terminal operation? And difference between them?**
* Difference between **Map and Flat map?**
* **Diff b/w Sequential and parallel stream?**
* **What is Lazy evaluation of Stream?**
* **Memory changes in java 8?**
* **What is Optional?**
* Wat all Change are there in Date Api ?
* When to use abstract class in Java 8?
* What is the use of **default and static method** in functional interface?
* **What are predefined functional interface?**
* Benefits of streams over collection?
* **Can you Handle exception in Stream?**
* **Find first vs Find any diff?**

1. **DESIGN PATTERN:**

**Expectation**

“Any one type GOF Design Patterns creational/structural/behavioural)  
Singleton+Awareness to more than one design pattern categories listed above

**Sample QuestionS**

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* **Singleton**

1. **Diff ways to write** singleton class
2. **Diff ways to break** singleton
3. Remedy and overcome while breaking, eager and lazy instantiation,
4. How do you prevent **Singleton from reflection?**
5. **Create Singleton instance using Double check locking?**

* Factory design pattern
* Facade design pattern
* **Difference between** factory and abstract factory design pattern
* **How to avoid conditional Statement in Factory?**
* Front controller design pattern

1. **MULTITHREADING:**

**Expectation:**

**ReentrantLock,Fork & Join,Sync,Executor Framework, Volatile, Atomic Variable   
BlockingQueue, Latch, Barrier , Thread local, Semaphores**

**Sample QuestionS**

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* Wat is Executor framework?
* **Difference between submit and execute?**
* Wat is **Thread pool & types of threadpools? Fixed, cache, Scheduled, Single**
* **Wat is Blocking queue?**
* **Difference between cached thread pool and fixed thread pool?**
* **Inter thread communication?- Wait, notify, notify all methods?**
* **Wat is Thread local?**
* **Atomic variable, Reentrant Lock and Voltaile keyword?**
* Difference between **Cyclic Barrier and Countdown Latch?**
* **What is Fork Joins?**
* **Semaphores**
* I have 4 threads, I want 4th thread to be executed only after my successful execution of 1st

three threads

* Thread pool size is 10, task to be executed -20. Wat abt the remaining 10 tasks?

1. **Messaging:**

**Expectation:**

**Topic/queue, Subscriber durability, Schema,Protocols, Kafka,Configuration  
EDA, Command model, choreography**

**Sample QuestionS**

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**Rabbit/Active MQ/ kafka/ JMS/ Redis**

* Understanding the concept of Master & Slave In kafka?
* How the Master will be selected?
* Can anyone be a master or any priority to do that?
* Subscriber durability
* Kafka Stream API.

1. **DATABASE:**

**Expectation:**

**RDBMS/No SQL (SQL, Joins, Indexing), JPA  
DDD, Database Isolations, Sharding, CDC**

**Sample QuestionS**

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* **Join (All types of join)- left outer, right inner, full join,**
* **Indexing- Cluster index and non-clustered index?**
* Having and group by
* Emp table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | ID | Salary | Department | Manager |
|  |  |  |  |  |
|  |  |  |  |  |

**Sample queries**

* Write a query to find 2nd highest salary and 3rd highest salary from a table.
* Query to find out the all the dept. names consists more than 100 emp?
* Query to find out the Emp name whose salary is more than his manager?
* Query to find the max salary?
* Query to Find duplicate rows in a table? And delete the duplicate records?

1. **Performance Management:**

**Expectation:**

**Profiler, finalize, garbage collection basics, JVM Configuration   
GC Dump Analysis,GC algos,concurrent/ parallel/full/partial GC**

**Sample QuestionS**

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* **Thread dump**
* **Memory dump**
* **Memory management**
* **How GC will be invoked?**
* **Garbage collection- Minor & major**
* **G1 GC Algorithm**
* **Full & Partial GC**
* **Mark & Sweep?**
* **Young Gen & Old Gen?**
* **How to handle Out of memory error?**
* **J meter**
* JVM
* **Profiling/ configuration**

1. **Solution Arhitecture:**

**Expectation**

**Logical views, sequence views , Application Layering  
BCD, SCD,Technology and solution detailing, End to End view**

1. **Non Functional Requirements/ NFR:**

**Expectation**

**NFR (Data at REST / Motion / In use)  
Multi tenant**

**Scalability – Vertical & Horizontal**

**Maintainability**

**Data Integrity**

1. **Production Support:**

**Expectation**

**Bug fixing ,server side troubleshooting and monitoring, configurations  
Rollbacks & Release(canary/blue green), Feature -multi region**

1. **Testing:**

**Expectation**

**Unit Testing, Mocking, Tooling & Integration testing  
SIT or Security Test, automation tests**

1. **Devops:**

**Expectation**

**CI,build, Quality plugins,Docker, Basic kubernetes  
Advance docker and kubernates ,Terrform/ARM , Networking**

**Sample QuestionS**

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* Docker/ Kubernetes
* How to **create Docker Images?**
* Diff b/w **Docker file & Docker Compose?**
* **Diff b/w Docker Swarm & Kubernetes?**
* Diff b/w containerization & orchestration?
* Git
* JIRA or SNOW
* Maven
* **Jenkins. How do you configure pipeline? The whole running setup?**

1. **Log export and Monitoring Tools:**

**Expectation**

**Log export and Monitoring(exporting and usage of log tools.  
Configuration in any of ELK ,Jaeger,Kiali, Grafana,JDWP,COTS tools**

**POC, certifications, IC, execute Application end to end  
Req gatethering, Estimate (Track level), Lead & Mentor**