

Prepare below topics:

- Authentication and Authorization end to end: Apply Debug and see where the request is going like filter
- Rate limiting
- Retry
- Circuit Breaker
- How to publish messages to SNS and SQS and consume
- What is the drawback of keeping jwt in cache and in database if there are multiple pods?
- <https://leetcode.com/problems/trapping-rain-water/solutions/5126477/video-keep-max-height-on-the-both-side/>

No to : TechM, Coforge, Virtusa

Yes: Persistent, Mindtree, Infy, Wipro

1. DSA
  2. Design Pattern (Microservices)
  3. Multithreading
- <https://stackoverflow.com/questions/47504758/how-can-i-reverse-a-single-string-in-java-8-using-lambda-and-streams>
  - <https://medium.com/@mehar.chand.cloud/java-stream-coding-interview-questions-part-1-dc39e3575727>
  - <https://medium.com/@mehar.chand.cloud/low-level-design-interview-question-parking-system-a041bd1973d2>
  - <https://www.baeldung.com/spring-boot-migration>
  - [▶ How the Garbage Collector Works in Java, Python, and Go!](#)
  - [▶ System Design: Why Is Docker Important?](#)
  - [▶ Proxy vs Reverse Proxy vs Load Balancer | Simply Explained](#)
  - [▶ Proxy vs Reverse Proxy \(Real-world Examples\)](#)
  - [2 Java Language Changes](#)
  -

Java Stream API

LeetCode (Array and String questions)

Coding like Stack implementation using Generics

Authentication End to End including Authorization filter

Write down one request end to end

IS-A relationship : Inheritance

HAS-A relationship :

persistent : Architect : 3rd Party jar, how to call in spring boot

global logic : architect : CAP theorem, event driven architecture, how it works: database per microservice

@Resource

TCS: Saga, RestTemplate, API Gateway: exceptions, Authentication and authorization exception,

<https://www.geeksforgeeks.org/printing-triangle-pattern-in-java/>

=====Infosys 21-10-2023 (Technical Architect senior role) =====

Introduction

What are ACID properties (GitHub Database)

What is newCachedThreadPool (IntelliJ)

Multiple file processing while writing and reading (IntelliJ)

Solid Principles (IntelliJ)

How to stop memory leakage in code(GitHub Collections)

How many applications do you have in project

=====Online assessment test=====

**70 Questions in 90 minutes**

**15 – Core Java**

**15 – Rest API**

**15 – microservices**

**15 – Spring Boot + Hibernate + Spring Security**

**5 – Agile**

**5 – DevOps (especially Azure DevOps)**

**47 – Easy, 22 – Medium, 1 – Hard**

1. Programs and output
2. Stream API, sort((y,x) -> {x-y}) ; **Descending order** or ascending order
3. 4-questions on Design patterns
4. JPA
5. 2-question Profile annotation Spring Boot
6. Functional Interface
7. 2-questions Microservices benefits and drawback
8. Circuit breaker
9. Service discovery example: DNS
10. Team capacity question based on hours and week and resources based
11. Burndown chart (Sprint, Velocity)
12. 2 questions - Bitbucket/Subversion/TFVC/Git -> Azure DevOps
13. Pull Request
14. Functional interface
15. 2-question Spring Boot Exception handler
16. One-to-many association hibernate, bidirectional or unidirectional
17. BinaryOperator to deal with 2 variables
18. Java inheritance with interface without abstract method
19. Fault tolerance and Resilience – Hysterix
20. Synchronous and asynchronous communication – messaging queue

21. Deployment is easy in: Microservices or Monolith
22. Java 8 -> Parallel processing becomes easy why – reducing overhead of thread Synchronisation?
23. Java 8 -> Filter operation
24. 2-questions on Aspect Oriented programming with program and output
25. RequestParam
26. @DeleteMapping
27. RequestMapping
28. Custom CRUD method: JpaRepository or CrudRepository?
29. @Interface annotation: Program and output
30. Application.properties or environment.properties in Spring Boot
31. Actuator -> Exclude 'env' then include all in properties file, what will happen?
32. What is by default authentication in Spring Security, Basic or OAuth or Browser or LDAP?
33. What will happen if login failed in Spring Security
34. Assert unit testing
35. Fork/join in Executorservice
36. Logging pattern log4j2

=====Persistent L1 28-Oct-2023 at 11:00 AM for 1 hour=====

- 1. Introduction**
- 2. Design pattern in Microservices**
- 3. Stream has order data or unordered data**
- 4. Difference between Wait and Sleep**
5. Difference between Controller and RestController
6. Aspect Oriented programming?
- 7. What is functional interface**
- 8. HashMap code question**
- 9. Reverse Integer value from 1234 to 4321 and handle integer max value**
10. Stream API object-based comparison question
11. Comparable interface question
- 12. DispatcherServlet?**
- 13. HttpStatus code**
14. Do you know about Kafka

=====Cognizant 28-Oct-2023 at 11:00 AM for 40 minutes=====

1. Introduction
2. Why Spring Boot over Spring
3. Why Java 8 over Java 7
4. What is latest challenge you are facing in project
5. How routing work and where that settings are done
6. How to configure deployment on multiple instances
7. What is circuit breaker
8. Do you know anything what is not mentioned in resume
9. What is marker Interface?

=====Adeptia 03-11-2023 at 3:30 PM for 40 minutes=====

What is Abstraction?

What is Abstract Class?

**Can an Abstract class have constructor?**

What is concurrentHashMap?

What is synchornisedHashMap?

When to choose synchronizedHashMap and when to concurrentHashMap?

**What is Marker Interface and how to write custom Marker Interface?**

What is difference between Checked Exception and Unchecked Exception?

How to write custom Checked Exception?

**Write a producer which produces the objects and Consumer which consumes object produced by Producer?**

**Difference between Authentication and Authorization?**

**What is primary Key?**

**What is Composite Key?**

**How to represent Composite Key in JPA?**

**If a running monolith application has High CPU utilization, then what is cause?**

What is Thread Pool? Thread Core Pool?

What is connection Pool?

If a thread getting connection not available, what does it mean?

What is Restful Webservice and how it is different from servlet?

What is try with resource in Exception handling?

What is internal working of try with resources?

What is Patch in HTTP Method?

=====Infosys MR round 03-11-2023 at 6:00 PM for 40 minutes=====

How many sessions are there in the project?

=====Persistent 03-11-2023 at 3:30 PM for 40 minutes=====

Double comparing

Postconstruct

How to secure rest end point

Central configuration applicable to all microservices

How to load some properties at the startup of spring boot application before everything

Spring Annotation

=====Citi 24-Nov for 45 mins=====

Stream API(Top 3 on basis of one field, sort map inside a list)

**Authentication vs Authorization**

**Which is more secure http verbs?**

**What is clustered and non-clustered index?**

**What is caching in microservices?**

**How to tune Select statement if there are millions of records in a table? (Hint: indexing)**

=====Citi (2<sup>nd</sup> round) 01-Dec 40 min=====

**How to create different connection pool?**

**Tech stack of project**

**Project Architecture**

How services communicate with each other

How service mesh works

How to communicate without service mesh

Have you used ExecutorService in your application

**If front end needs in JSON format then how output from controller (hint Produces)**

How to read millions of records from a file using java 8 stream and is there any impact on performance

```
/*  
"long long long time story book"  
Get word whose length is 4 and it is count  
list = File.lines(Path.getName(" "))  
  
list.stream().map(obj -> obj.split(" ")).flatMap(arr -> Arrays.stream(arr))  
.filter(word -> word.length() == 4).collect(Collectors.toList(Collectors.groupingBy(word , Collectors.counting())))  
.forEach(System.out::println);  
*****/
```

=====Go Digit 29-11-2023 for 45 minutes=====

Microservices Pattern

How microservices communicate

How to configure 2 databases in application

**Authentication between two microservices**

How to map resources in API Gateway

Spring Cloud Config

Where to keep external configuration

How to iterate hashmap in java 8

Find uncommon letter between two strings

Collect and Map difference

How to handle global exceptions in spring boot

How to manage transaction in microservices

Get Mapping vs Post Mapping

=====Mphasis 1-round 02-Dec (disconnected)=====

Singleton class

How to create immutable class

Internal working of HashMap

How to handle exception

Exception Hierarchy

How to handle resource closing automatically (Try with resources)

How to get number greater than a specific number out of array using stream api

There is a string "aabbcddef", remove duplicate letter and print distinct letter

=====Go Digit 04-12-2023 for 1:45 Hours=====

If @Service annotation is missed then how to debug the code

Sort a list of object on basis of salary and department id

Convert a list of object to map

What is type of function in Collectors.toMap()

```
//listofEmployee.stream().filter(obj -> obj.getSalary() > 5000 && obj.getDepartment()).collect(Collectors.toMap());
```

Default scope of Spring Framework

Which scope is when calling service from controller

Which design pattern is followed in @Service class

Design end points, database (follow normal form), JSON Payload, Number of Microservices

### System design :

HR Admin

Procurement Company

Vendor across India (Login as per role), acquire stationary item for day to day activity

End of month, all member can apply for procurement, HR admin can login and check procurement for present month

Pen : subcategory (ball pen(reynolds - 20, different brands), gel pen)

for every items

inventory

1 day of month to 29th of month vendor can place requirement

30th day HR login and vendor procurement freezes and again open on 1st of next month

HR create bulk requirement for ecommerce vendor (Amazon) \_ api call to place order

Ecommerce validate order in inventory and if 70 percent or greater order matches then fulfill the order

if items are not matched for 50% then ecommerce vendor communicate to HR to get confirmation for placing the order

50-70% require HR confirmation to place the order

if less than 50% then rejecting the order

### Requirement

Microservices upto order procurement

Database design

### Microservices

1) Authentication Service (Three roles

1) HR Admin

2) Vendor User

3) Ecommerce Stationary Supplier

2) Dashboard Service (HR Admin can see how many orders are placed by different Vendor category wise)

Fields on Dashboard

1) Pen (Gel Pen, Ball Pen etc)

Brands : Reynolds, Marker etc

2) Copy (Small, Medium, Large)

Brands : A, B, C etc

3) Vendor Order service (Vendor can place order for different stationary items)

Place Order

Logic to display freeze time (Open on 1st of Every Month and Freezes on 29th of that Month)

End point

/createorder

JSON Payload Request

Vendor id

item id

item name

ist<subitem name>

List<subitem quantity>

List<brands name>

List<brands price>

total price

order date

/orderplacedstatus

JSON Payload Response

order id

order status message

/orderallowed

JSON Payload Resonse

message

#### 4) Order Status service for Vendor

End point

/getorder

JSON Payload

Vendor ID

Recent 5 order

/getdetails/{orderid}

JSON Payload

order id

#### 5) Bulk Order Service (HR can place bulk service to Ecommerce from this service)

End point

/bulkorder

JSON Payload

HR ID

Item ID

quantity

Price

bulk order time

#### 6) Inventory Service

To populate all the inventory items from the Database to Vendor to select Stationary Item

## 7) Ecommerce service

Business Logic to check availability for stationary

- 1) Success for order when availability is greater than or equal to 70% or get validation for availability is less than 70%

Send Communication to HR Admin for confirmation

## 8) Confirmation Service

HR will get notification from Ecommerce and provide confirmation for order to be placed

## Database Design

### Tables

#### 1) Vendor Profile Table

First Name  
Last Name  
Email Address (Primary Key)  
Mobile Number  
Vendor Name  
Last Login  
Created Time  
Last Updated Time

#### 2) HR profile Table

First Name  
Last Name  
Email Address (Primary Key)  
Mobile Number  
Last Login  
Created Time  
Last Updated Time

#### 3) Order

Order ID (Primary Key)  
Item Name  
Item ID (Foreign Key references Item ID in Pen or Copy Item Table)  
Quantity  
Total Price  
Order Date

#### 4) Order Status

Order ID (Foreign Key references Order ID in Order Table)  
Status(In Progress, Completed, Rejected)  
Last Updated Time  
Created Time

#### 5) Stationary

Item ID(Primary Key)  
Item Name(book, pen, marker)



Item ID(Foreign Key)  
Item Category ID  
Brand Name

6) Copy Item

Item ID(Primary Key)  
Item Name  
Item Category  
Price  
Brand Name

@Query

```
select stationary id, stationary name, max(o.totalprice), orderplacemonth
from Stationary s join subcategory ss
on s.itemid = ss.itemid
join order o
on s.itemid = o.itemid
where o.orderplaced >= <<startOfMonth>> and o.orderplaced <=<<endOfMonth>>
```

=====Contata Solutions 07-Dec (60 mins) =====

1) Problem Description

You are given an array A of integers of size N.

Your task is to find the equilibrium index of the given array.

The equilibrium index of an array is an index such that the sum of elements at lower indexes is equal to the sum of elements at higher indexes.

If there are no elements that are at lower indexes or at higher indexes, then the corresponding sum of elements is considered as 0.

Note:

Array indexing starts from 0.

If there is no equilibrium index then return -1.

If there are more than one equilibrium indexes then return the minimum index.

Problem Constraints

$1 \leq N \leq 105$

$-105 \leq A[i] \leq 105$

Examples

Input 1:

A = [-7, 1, 5, 2, -4, 3, 0]

Output 1:

3

Input 2:

A = [1, 2, 3]

Output 2:

-1

- 2) There list of objects contains (roll number, course name, name) in unsorted manner, which will have better search performance between ArrayList and HashSet (Answer: HashSet on the basis of HashFunction and O(1) will be complexity)
- 3) What are main changes in Interface in Java8
- 4) What is use of @Autowired and what is its significance
- 5) What design pattern is being followed in @Autowired?
- 6) Difference between StringBuilder and StringBuffer
- 7) What is difference between Runnable and Thread and which way is better
- 8) What are two type of thread handling (ExecutorService and Thread Class)
- 9) Have you used reflection
- 10) What is benefit of creating view in SQL
- 11) Problem Solving - Query Formation

-Table Schema - Student <RollNo (PK), Name, Marks>

-Assume - Min 100 Records are available

-Form a query to fetch the name of a STUDENT that has 5th highest marks in the table

select Name from Student where Marks =

(Select top Marks from Student where marks =

(select top 5 marks, rollno from Student order by Marks desc) order by marks) ;

=====Citi 11-Dec-23 (30 min) =====

- 1) Tell me about yourself
- 2) Explain your project
- 3) What is difference between SCP and IAM in AWS
- 4) What is your strength and weakness
- 5) How do you motivate team member
- 6) What is main benefit of AWS

=====Contata Solutions 15-Dec-23(30 min) 2<sup>nd</sup> Round=====

- 1) Tell me about yourself
- 2) Difference between comparable and comparator
- 3) How microservice communicate each other
- 4) Why not use feignClient or WebClient in place of restTemplate
- 5) What is wait and notify
- 6) How to avoid circular dependency in Spring Boot
- 7) Difference between CrudRepository and JpaRepository

=====Mphasis 15-Dec-23 (50 min) 2<sup>nd</sup> Round=====

- 1) int arr []={1,2,3,4,98,78,65,6,5,4,3,2} print digit and their count/frequency  
Arrays.stream(arr).boxed().collect(Collectors.groupingBy(i -> i, Collectors.counting()));
- 2) Convert roman to integer algorithms
- 3) Employee (ID, Name, Salary, Location), Location (various location)  
Highest salary person of each location,  
Select Location, max(salary), ID from Employee

#### Grouping By Location

- 4) How to handle SQS queue
- 5) Why have you not used Rabbitmq or Kafka
- 6) What is Composite Key
- 7) How to define relationship between table one-to-one or many-to-one in hibernate
- 8) How many types of index are in SQL
- 9) What is functional interface
- 10) What is trigger and what are types of triggers
- 11) What is completable future
- 12) What is postconstruct annotation in spring
- 13) What is intermediary operation and what are terminal operations in stream API
- 14) What are important things to start an application (Hint: all dependency)

=====Citi 15-Dec-23 (45 min) 1st Round=====

- 1) Tell me about yourself technically
- 2) Array of int[] a = {12,23,11,65,93,77,95}; get the 2<sup>nd</sup> highest element, any other way to implement this in java (Hint: PriorityQueue)
- 3) What is Stream
- 4) What is the feature of Java8 have you used
- 5) What are design patterns have you used in Spring Boot
- 6) What is adapter design pattern
- 7) What is difference between volatile and transient keyword
- 8) Which microservices pattern you have used
- 9) Suppose microservice A->B->C->D, some read at B but transaction failed at D how to handle such read and transaction to avoid dirty reads (Hint: Consistency/2 PC/Saga)
- 10) Which spring boot annotation have you used mostly
- 11) How to increase performance of java application
- 12) Which collections you have used mostly
- 13) What is internal working of HashMap
- 14) Which is better and why Synchronised HashMap or ConcurrentHashMap
- 15) Select \* from A, B (It is cartesian product), how many rows it will return if A has 5 and B has 10(Answer: 50)
- 16) Employee (ID, Ename, managerid, Mname) : Get manager who is also a employee
- 17) What is profile annotation in Spring boot
- 18) What is ComponentScan annotation in SpringBoot
- 19) What is D in Solid Design principle and how it is different than 'I' in SOLID
- 20) How to design application using AWS from scratch
- 21) How ELK and Cloud watch work
- 22) Do you know CI/CD, have you worked on CI/CD
- 23) Explain the difference between map() and flatMap() operations in Stream.
- 24) What is a bifunction interface?

=====Citi 20-Dec-23 (45 min) 2<sup>nd</sup> Round=====

- 1) Tell me about yourself
- 2) Project Architecture
- 3) If you have been given unlimited budget and resources and what architecture you will focus
- 4) How to secure Data in database
- 5) How to secure data transmission over network
- 6) What will happen if someone will get credentials
- 7) How microservices communicate each other
- 8) What is docker file
- 9) How you propagate code from local to production
- 10) How to deploy code in production

- 11) Where you mentioned end point of server on which application to be deployed
- 12) How to secure microservices from end user
- 13) If a end user will enter into microservices network then what will happens
- 14) How to secure data over network transmission
- 15) list of pen (color, type, company name, price)  
`list.stream().filter(obj -> obj.getColor().equals("red"))`  
`.collect(Collectors.groupingBy(Pen::getType, Collectors.counting(p -> p.getPrice())));` – To  
get particular color pen and group by its type and get total price,  
**`(list.stream() .collect(Collectors.groupingBy(foo -> foo.id, Collectors.summingInt(foo->foo.targetCost)))`**  
**`.forEach((id,sumTargetCost)->System.out.println(id+"\t"+sumTargetCost))`**  
) counting should not be used. Where it can throw a null pointer exception. Where does the Equals method come  
from, String or object class?
- 16) how to validate JWT token

=====HCL 20-Dec-23 (30 min) 1st Round=====

- 1) How pipeline works till deployment
- 2) How maven works
- 3) Print the even number from a list of integer using stream api
- 4) Have you used Kafka
- 5) What are scope are available in Spring
- 6) How to handle exception in Spring Boot application
- 7) How to handle custom exception in application
- 8) How do you know the request is of SOAP or RESTful API
- 9) What is difference between SOAP and RESTful API
- 10) What is meaning of @Validated annotation in Spring and where does it use
- 11) How to use Singleton design pattern in multithreaded environment
- 12) How Kibana works internally and how to configure Kibana
- 13) How Git is different than SVN and VSS
- 14) What is central repository and decentralised repository
- 15) How many microservices are there in application
- 16) where does authentication take place
- 17) How to validate JWT token
- 18) How to ensure the JWT token is coming from valid source
- 19) What is public/private key concept
- 20) What does compiler do and what is role of it
- 21) Which java version you are using
- 22) Which format you are using in project XML or JSON

=====HCL 02-Jan-24 (30 min) 1st Round=====

- 1) What is singleton pattern
- 2) what is use of singleton pattern
- 3) How singleton pattern helps in Logger and database connection
- 4) what is serialization
- 5) how serialization helps and what is use of serialization
- 6) how authentication happens in S3 Bucket
- 7) how many design pattern of microservices you have used in microservices
- 8) what is difference between instance and object
- 9) what is concurrency
- 10) What is your role in application

===== TechM 03-Jan-24 (30 min) 1st Round=====

- 1) Sort an Array of String in ascending order {red, red, orange, blue, blue}
- 2) What is join in SQL
- 3) Have you used Kafka
- 4) If a Docker Image is too large in Size, then how to reduce the size without compromising Functionality
- 5) If there is any Security Vulnerability reported in application then how to handle with Security Feature introduced in Java 8
- 6) How to handle if there is any exception occurred while starting Spring Boot Application
- 7) How to handle runtime exception in Spring Boot
- 8) Have you used git
- 9) What Command can be used to see what files are committed or changed?
- 10) What is the jenkins pipeline?
- 11) What are the components of J2EE?
- 12) What is the connector design pattern?

=====Birlasoft 03-Jan-24 (45 min) 1st Round App Support=====

- 1) **What is difference between dependency injection and IoC**
- 2) **What is diff between Rest API and Microservices**
- 3) **How many have you handled as a lead? 6-15 Team member**
- 4) How do you provide support?
- 5) **Write a code to reverse String?**
- 6) **How to exclude particular dependency in Spring Boot**
- 7) **How to enable some end point in Actuator**
- 8) What is OAuth?
- 9) What is reflection in java?
- 10) How to handle exceptions in serialization?
- 11) What are wrapper classes?
- 12) What is Facade design pattern
- 13) What is multiple inheritance?
- 14) What is SLA in a project?
- 15) How to handle null pointer exceptions in code?
- 16) In how many ways Objects can be created
- 17) In how many ways thread can be created
- 18) **What is diff between throws and throw**
- 19) Can a catch block be empty?
- 20) What is difference between Iterator and Enumeration
- 21) What is Difference between HashMap and Hashtable
- 22) What is diff between HashMap and ConcurrentHashMap
- 23) New changes in HashMap in Java8
- 24) How many Scopes are in Spring
- 25) **How to handle exception**
- 26) **Exception propagation**
- 27) What are features introduced in Java8
- 28) Get 2nd min salary in SQL server
- 29) What are constraint in SQL Server
- 30) What is difference between Primary Key and Foreign Key
- 31) What is a composite key?
- 32) What is ArrayIndexOutOfBoundsException
- 33) What is NullPointerException
- 34) What is client certificate

=====HCL 04-Jan-24 (20 min) 2nd Round=====

1) `int[] a = { 6,9,12,21,28,35};`

Optional<Integer> number = list.stream().filter(i -> i%divisor==0).findFirst().orElse();

- 2) How you call other database in application
- 3) Explain more about your project
- 4) tell me about yourself
- 5) What is SOLID principle
- 6) Explain L in SOLID principle
- 7) Where you have used L principle in your application
- 8) Have you decode JWT and see the information
- 9) How to decode JWT

=====StraViso 05-Jan-24 (40 mins) 1st Round (Remote Job)=====

- 1.) Tell me about yourself
- 2.) What is project architecture
- 3.) Difference between checked and unchecked exception
- 4.) What is functional Interface
- 5.) Can one functional interface extend another functional interface?
- 6.) What is HashMap
- 7.) What will happen if hashCode will return only 1 every time
- 8.) How HashMap works
- 9.) Have you used HashMap in your project
- 10.) What is diff between ArrayList and LinkedList
- 11.) Have you used ExecutorService in your project
- 12.) What is diff b/w volatile and atomic in multithreading
- 13.) How to improve read operation if there are millions of records to be brought Database
- 14.) What is diff b/w load balancer and API Gateway
- 15.) What is caching
- 16.) What are functions of API Gateway
- 17.) What is diff b/w @Controller and @RestController
- 18.) What is fail-fast and fail-safe?
- 19.) What are ways of creating objects
- 20.) What is serialization and deserialization?
- 21.) How to break the singleton pattern?
- 22.) How to secure RestAPI endpoint
- 23.) What is authentication and authorization
- 24.) Have you used Hibernate
- 25.) Have you used Docker in your project
- 26.) Which Databases have you used?
- 27.) What is resilient application and how to make application resilient (Hint: Resilience4J)

=====Contata Solutions 08-Jan-24 (30 mins) 3rd MR Round =====

- 1) Tell me about yourself
- 2) What you have done
- 3) How many team members you handle
- 4) How many team members are sit at offshore and how many at onshore
- 5) How many team members are in your project
- 6) How you prioritise the task

- 7) How you help team members
- 8) What is the meaning of sizing in agile ?

=====StraViso 08-Jan-24 (30 mins) 2nd Round (Remote Job)=====

- 1) Tell me about yourself
- 2) There is a pool of 100 threads in the executor service and submit 100 tasks and get future objects for every submit. What will happen, will it be a serial call or something else?
- 3) How to intercept all the calls from one service to other service (Hint : AWS Api Gateway)
- 4) Appdynamics
- 5) Have you used threading concepts in the project
- 6) How you get the requirement

=====CitiBank 08-Jan-24 (16 mins) 2nd Round =====

- 1) Tell me about yourself
- 2) What is your role in project
- 3) What do you do on daily basis

=====Dataction 09-Jan-2024 (45 mins) 1st Round=====

- 4) Have you used an actuator?
- 5) Project architecture
- 6) What is springbootapplication annotation
- 7) What design pattern you have used in application
- 8) Double sorting using stream api
- 9) What are major changes in java 8
- 10) How to write an rest api
- 11) How rest api workflow works
- 12) How to stop multiple submissions of same form from server side
- 13) What is first line in docker file
- 14) What is solid principle
- 15) What is dependency inversion principle
- 16) What is kibana
- 17) What services of Aws you are using
- 18) Have you used S3
- 19) How to get which format of data user require like json or xml
- 20) How HashMap works
- 21) How to iterate HashMap
- 22) Which data structure hashmap internally use (array and LinkedList )
- 23) Can same key can be stored multiple time
- 24) Do you write unit test cases first or main business logic program first
- 25) How jenkins pipeline works
- 26) What is lambda expression
- 27) How to detect vulnerabilities in application
- 28) How to check test coverage
- 29) What is profiling or profilers
- 30) What is out of memory error
- 31) How to correct out of memory error

=====TechM 10-Jan-2024 (22 mins) 2nd Round=====

- 1) How to manage if main queue is down in messaging queue(hint : error queue)

- 2) What is your role
- 3) Why you want to join TechM
- 4) what is Synchronous and asynchronous call
- 5) which one you are using
- 6) How microservice communicate with each other
- 7) What is Kibana
- 8) Have you used S3
- 9) What is application architecture
- 10) How you deploy code

=====Mphasis 10-Jan-2024 (27 mins) 3rd Round(Client)=====

- 1) What is technical debt
- 2) What is your role
- 3) How to improve code quality(SonarQube)
- 4) What you look as a lead in code quality
- 5) How you manage if someone working on critical user story from other country and go off
- 6) What would be your approach to improve the quality of code
- 7) How to motivate the team who are very sad
- 8) Why you want to leave current organization
- 9) How you manage smooth transition to AWS
- 10) Why AWS Cloud is better

=====Hexaware 11-Jan-2024 (20 mins) 1st Round=====

- 1) **What are new feature in Java 8**
- 2) **What is functional interface**
- 3) **how many default and static method can be in functional interface**
- 4) **what is project architecture**
- 5) **How microservice communicate with each other**
- 6) **What is project flow**
- 7) What is profile
- 8) How you manage profile
- 9) what is starter parent dependency in spring boot
- 10) [how to convert spring to spring boot project](#)
- 11) **List of emp (id, age, name): get list of emp name whose age is greater than 30**
- 12) **Stream store any value**
- 13) what is return type of filter and map
- 14) **what will happen if we don't write terminal operator, will stream will be in memory forever (hint: no because it is lazy)**
- 15) have you used spring cloud config
- 16) what is saga pattern
- 17) **what microservice design pattern you have used in project**
- 18) what is api gateway and what is its functionality

=====Mphasis 12-Jan-2024 (40 mins) 4th Round=====

- 1) Explain project architecture
- 2) write down all the main microservices and how they communicate
- 3) Write down project workflow
- 4) Write down how you handle exception
- 5) Write down how you call other service



- 6) How SQS works
- 7) Which version of spring boot you use
- 8) What will happen if consumer fail to deliver message within visibility time of SQS queue
- 9) How you get user story
- 10) What tools you use for Agile methodology
- 11) How you track user stories and which tool you use
- 12) Which tool you use for vulnerability scanning
- 13) which aws services you use
- 14) How authentication works in your application
- 15) What are the layer a request goes from start to end
- 16) Tell me any situation where you have lead as a technical
- 17) How you divide work among team member

=====TechM 18-Jan(45 mins)=====

- 1) [There are m1,m2,m3 methods in a class. m1 & m2 are synchronised and m3 is non-synchronised. thread t1, t2. Can t1 access m1 and t2 access m2. \(Hint: No because synchronised works on object level\)](#)
- 2) `int[] a = {0,1,2,3,4,4};` How to get a duplicate number. (Hint: Array comparison, Set, HashMap)
- 3) Write a program to print fibonacci series
- 4) How services are secured between frontend and backend
- 5) Database are on on premises or on cloud
- 6) [How microservices communicate with each other](#)
- 7) [What are changes introduced in java 8](#)
- 8) [How many states are there in Hibernate?](#)
- 9) What is singleton design pattern
- 10) How to break singleton using cloneable and stop it
- 11) Have you used serialization and deserialization
- 12) Can be get many instances of a singleton class in multithreaded environment
- 13) [What thread level changes were introduced in Java 8 ?](#)
- 14) What is difference between singleton design pattern and singleton scope of beans in spring
- 15) How to maintain data consistency in Distributed application
- 16) [What is difference between EKS and ECS](#)
- 17) Which string operation will cause memory leak

=====NewGenSoft 18-Jan(45 mins)=====

- 1) Project Architecture
- 2) How to motivate a team member and a team
- 3) How to stop DoS attack
- 4) How to do project planning
- 5) How do you get requirement
- 6) How to do risk analysis
- 7) How to create technical documents
- 8) How to create requirement documents
- 9) How to create ER diagram
- 10) How to delete duplicate records from a table
 

```
DELETE FROM your_table
WHERE id NOT IN (
  SELECT MIN(id)
  FROM your_table
  GROUP BY duplicate_column
  HAVING COUNT(*) > 1
```
- 11) How to get max salary department wise from a employee table

- 12) [What is heap dumps and thread dumps and difference between these two](#)
- 13) What is availability of a application
- 14) How to do security testing
- 15) How to do performance testing
- 16) Have you prepared architect diagram
- 17) What is load balancer
- 18) [What is trigger](#)
- 19) What is stored procedure and how it is different than normal query
- 20) Which command in java is used to run stored procedure
- 21) What is foreign key and how it is different than Primary key, is it necessary to have foreign key

=====Coforge 22-Jan(45 mins)=====

- 1) Project Architecture
- 2) Have you configured the VM?
- 3) How you get requirement
- 4) If there are millions of request for transaction then how you manage at thread level
- 5) What is AOP and its uses
- 6) How Database performance can be improved
- 7) How you view explain plan of db query
- 8) Is index better for read or insert/update
- 9) What are major things you observe in Sonar Qube
- 10) Have you deployed code on Kubernetes
- 11) What are enterprise design pattern you have worked on

=====TechM 2nd Round=====

- 1) Why cloneable is called marker interface when we must override clone method if implementing cloneable marker interface but the same is not applicable for serializable
- 2) Why comparable and comparator are created separately when serving same purpose
- 3) How to handle exception

=====Bajaj finserv (1st and 2nd Round questions)=====

- 1) What is project architecture
- 2) Validate '((((()))' using algorithms (Hint: Stack)
- 3) Sort string '1111222113311'
- 4) How to limit number of request through java code
- 5) What is mockito in unit testing
- 6) What is singleton class
- 7) How to write custom design pattern
- 8) How to write LLD for project
- 9) How to identify duplicate character in a string (hint: lastIndexOf and firstIndexOf)
- 10) replace first 4 character with \* in any email address, write code
- 11) How to handle exception and what are types of exception
- 12) What is abstraction
- 13) What are drawbacks of SpringBoot(Hint: extra dependency)
- 14) What is difference between interface and abstract class
- 15) What is contract of abstract class
- 16) What are challenges of microservices
- 17) What is AOP in spring

What is latest technical challenges you faced recently (Performance issues in SQS and RDS)

How many experience in Junit 4

How many experience in Maven

How many experience in Spring Boot

How many experience in Java (10Years)

How many experience in Java 8 (6 years)

How many experience in team lead (3 years)

Docker (3 years)

SQL (6 years)

how many year experience in migration (2 years)

how to motivate a team or team member

How to do security checks

how to do code quality checks

how to do api testing in local and in integration environment

=====Epam 18-Jan-25 (40 mins) 1st Round=====

1. Why is the default method introduced in the interface?
2. What are new features in Java 8?
3. What is stream and parallelStream?
4. List<List<Integer>> input, Get SumOfSquareOfOddNumber  
(input.stream().flatMap(Collection::stream).filter(a->a%2==1).distinct().mapToInt(a->a\*a).sum());
5. <https://www.digitalocean.com/community/tutorials/java-8-stream>
6. Merge two sorted Arrays into a single array?
7. What is Dependency inversion?
8. What is Liskov substitution principle
9. What is loose coupling
10. What is the working of HashSet?
11. What is the complexity of adding two numbers from hashSet?

=====Kaiser 18-Jan-25 (25 mins) 1st Round=====

1. What is try-with-resources?
2. What is exception propagation?
3. What are best practices to handle exceptions?
4. How many types of transaction management in microservices?
5. What is service discovery in microservices?
6. What are functional interfaces in java8?
7. What is the saga pattern?
8. What is transaction management in microservices?
9. What is the Circuit Breaker pattern in microservices?
10. How to secure microservices?
11. How does authentication work?
12. What is immutability?
13. What is the difference between hashMap and hashtable?

=====Equifax 20-Jan-25 (55 mins) 1st Round=====

1. Spring Boot Async processing for asynchronous call
2. What is injectmocks and mock in junit
3. What are in Junit5
4. How to analyse performance issue using heap dumps
5. How to deal with complex API payload
6. How to handle exception in spring boot
7. What are annotation in JPA like @Entity
8. Program: Get even number out of an int array using stream api
9. Program: Implement stack using generics
10. How to secure Rest API endpoint
11. How to rate limit in microservices
12. Where do you store secrets of application hint : vault or AWS KMS
13. What is correlation id, span id etc
14. How do you get alerts of application like exceeding memory or performance
15. How do you configured alerts
16. What are optional classes in java 8?
17. How to do versioning of API?
18. What is encryption logic to store PII data in a database?

=====Autozone 21-Jan(45 mins) 1st Round=====

1. Program: Sort Employee Object(name, dept, salary) based on salary
2. Program: Get dept wise count of employee from above object using java8
3. Program: There is employee table(name, dept, salary) in database, need to get employee name for provided dept, write api, rest controller, service, repository class with annotation
4. Program: How to write dynamic query for above details in spring boot to get employee data based on either name, dept, salary
5. What is difference between filter and interceptor
6. How to call API exposed by other services
7. There are multiple RestController, how to remove header from request and pass to controller
8. Where we do keep filter or register filter
9. Do we need to keep token in database or in redis or in memory
10. Which java library is used to generate token
11. What is database Isolation level and what types are it, when to use what?

=====Kaiser 18-Jan (25 mins) 2nd Round=====

1. How to implement Circuit Breaker and what is circuit breaker?
2. There are 5 microservices and you have to return a response based on consolidated results from 5 microservices. If 2 microservices are down, how will you return the result to the customer?
3. What is the difference between throw and throws?
4. If you will be given the opportunity to learn something then you will be able to learn?
5. What are the steps to call a second service?
6. What is the saga design pattern in microservices?
7. How to ensure consistency across microservices in terms of transaction management?
8. How many design patterns of microservices have you used in your project?
9. What is the difference between Error and Exceptions?
10. What is the super class of Error and Exceptions?
11. What is the difference between SOAP and Restful API?

12. What is concurrentModification exception?
13. How to achieve concurrentModification without concurrentHashMap or thread?
14. How to ensure sequential operation without using thread concepts [Hint: Stream API]
15. When should we retry the mechanism?
16. What is the difference between OAuth1.0 and OAuth2.0?

=====Kaiser 23-Jan (30 mins) 3rd Round=====

1. How to implement Circuit Breaker
2. How to prioritise User Stories
3. How to mentor team members technically
4. How to motivate a team member who is not learning since last 2 months
5. How Security scan works in code
6. What are 12-Factor principle of microservices

=====Metlife 24-Jan (30 mins) 1st Round=====

1. List of Integer, print sum of all number till that particular index and keep on printing
2. List of integer, print separately sum of integer for odd and even
3. How to handle failure during communication between two microservices
4. How to resolve Bean Ambiguity [hints : Autowired and Qualifier]
5. What separate Functional Interface from Abstract Class
6. Why Default method was introduced
7. What is properties of Functional Interfaces

=====Metlife 5-Feb (15 mins) 2nd Round=====

1. How does the microservice know that the request is coming from APIGEE?
2. If connection pool size is not defined and creating new connections on every request then what will happen?
3. If there are 10 connection pools open and the database gets restarted then what will happen to 10 connections?
4. How to publish messages to SQS?
5. There are 5 requests to other microservice and 2 got a success response and 3 got failed then how to deal with this problem?
6. How messages flow from SQS to microservices?
7. How authorization works in microservices?
8. There is no rate limiting at APIGEE, and suddenly a lot of requests came. What will happen?

=====SBS 5-Feb (40 mins) 1st Round=====

1. How authentication and authorization works in application?
2. Especially how authorization works?
3. How to deal with microservice failure?
4. Explain internal working of HashMap?
5. What is consistent hashing?
6. Where to make changes so that all keys are mapped to the same bucket in hashMap?
7. Write a Singleton design pattern class which is thread safe?
8. How to write thread safe singleton design pattern without synchronization?
9. How to achieve database consistency if transactions span across multiple microservices?
10. How to analyse CPU and performance of application?
11. How do you decide for synchronous and asynchronous calls?
12. How to make microservices more resilient to failure?

13. What design patterns have you used in your application?
14. How to improve performance if there is heavy read request [hint: caching at Database and application layer]
15. Have you implemented any caching mechanism?

=====Volkswagen 08-Feb (60 min) 1st Round =====

1. What is difference between ArrayList and LinkedList
2. Difference between HashMap and HashSet
3. Difference between HashMap and Hashtable
4. Difference between HashMap and TreeMap
5. What is base tree behind TreeMap
6. How to create Microservices
7. How to maintain Microservices
8. Reverse "Hello World" using Stream API
9. What is circuit breaker
10. What is Dependency Injection
11. How to create RestAPI
12. What is difference between String and StringBuilder and which is thread safe
13. How many ways to create multithreading
14. What is SNS
15. How to handle failure in microservices
16. How to make microservice fault tolerant
17. What is API Gateway and what is function of API Gateway
18. How many services of AWS you have used
19. What is difference between rebase and merge
20. What are your life goals?
21. Who all are involved in Sprint Planning?
22. What is TDD?
23. How to write Junit test cases?
24. How does Pagination work in Spring Boot, how to pass pages?

=====Ciklum 09-Feb (60 min) 1st Round (Online assessment)=====

1. Coding question on Stack, to identify if there is correct order of parentheses if not then how many min swaps is required to make it correct order
2. List of integer, get list of median where each integer will be added, sorted and get the list of median and return
3. MySQL table joins, use of Limit and joins, order by
4. SOLID design pattern question
5. Spring Boot: Use of autowire
6. What is use of session.get(), and session.load()
7. How many static and default methods can be in functional interface
8. What are the ways to create threads in java?
9. What is dependency Injection in spring?
10. What is use of native query in Spring
11. What is the use of Transactional annotation, two methods are annotated with @Transactional and methods are called in each other, how many connections will be created.

=====UKG 12-Feb (30 min) 1st Round=====

1. What SOLID design pattern?
2. What is the benefit of the SOLID design pattern?
3. How to resolve conflict between solutions of two team members?
4. What are the design patterns of microservices you have used in your project?
5. How is the rate limit implemented in the project?
6. What is a singleton design pattern?
7. How to inject dependency
8. Which java design pattern have you used in a project?
9. What are joins and their purpose in Database

=====Ciklum 14-Feb (50 min) 2nd Round =====

1. What OAuth2.0
2. What is JWT
3. Why Base64 encoding required in JWT
4. What is signature in JWT
5. How to decide between Async and Sync communication between microservices
6. What is Indexes in Database
7. What is ACID properties
8. What is difference between clustered and non-clustered index
9. What is sharding and partitioning
10. What are isolation level in Database
11. What is difference between function and stored procedure
12. Which is better: Call database from java for each query or call stored procedure only once

=====BirlaSoft 19-Feb(21-Min) 1st Round (production support)=====

1. What is Authentication and Authorization
2. Have you worked on any APM tool
3. Have you worked on any Dashboard
4. How many years of experience you have in production support
5. Explain recent incident and resolution steps
6. Which message broker you have used, it is kafka or sns/sqs

=====Mahindra Finance 21-Feb(30-Min) 1st Round Tech Lead=====

1. What is the internal working of @Autowired?
2. To inject dependency, does spring scan all classes or not?
3. String str = "I am going for lunch"; Find out unique characters and their occurrence without using Stream and HashMap?
4. There is a scheduler and three pods, how to ensure that scheduler runs on one pod and not on another pod?
5. What do you do in a project, tell in a number of hours?
6. **Have you used any interceptor in your application anywhere? [GitHub: SpringBoot]**

=====HCL 22-Feb(40-Min) 1st Round Java Lead=====

1. What are the design patterns of microservices you have used in a project?
2. What are the properties of good microservice design?
3. What is the difference between HashMap and concurrentHashMap?
4. What is the internal working of HashMap?
5. What are annotations in SpringBoot?
6. What is the scope in Spring?
7. Given a String string = "Java8 world is cool", print reverse of individual reverse string:

```

a. String string = "java8 is cool";
b. Arrays.stream(string.split(" ")).forEach(word -> {
c.     String str = Arrays.stream(word.split("")).reduce("", (previous,
    present)->present+previous, (s1,s2)->s2+s1);
d.     System.out.print(str+" ");
e. });

```

8. Get the 10th highest salary of an employee from the employee table?

```

a. Select marks from Student order by marks desc limit 1 offset 9;

```

9. What is dependency injection?
10. What is a functional interface?
11. How many functional interfaces are there?
12. How is Java8 different from the previous version?
13. What is the saga design pattern?
14. What is the Jenkins pipeline and how does it work?
15. How does code move to production?
16. How do you cover exceptions in Junit?
17. Have you used PowerMockito?
18. What is application architecture?
19. Explain the 4 pillars of OOPs concept in java?
20. What is the difference between view and trigger?
21. What are the challenges you faced in microservice design?
22. What is the difference between @RestController and @Controller?

=====UST 28-Feb(80-Mins) 1st Round Senior java developer=====

1. What is encapsulation? Why are public variables not declared under encapsulation concept and private variables with public getter and setter is recommended?
2. If two programmers are working on a code, one programmer using a public variable and another programmer using a private variable with getter and setter, what is the impact?
3. Which design pattern in microservices you have used, intention was to tell hexagonal design pattern?
4. Difference between java 8, 9, 11 and 17?
5. Have you written your design pattern?
6. What is application context and bean factory in Spring and what is the difference between these two?
7. String string = "I am living in Pune"; Get distinct characters(case less like I and i should be considered same character) and their count, Next, find the duplicate word and their count?
8. How to create checked and unchecked exceptions?
9. Have you created a custom exception if yes then how?
10. What is the internal working of ConcurrentHashMap?
11. What is the difference between listIterator and iterator?
12. There is a list and iterator iterate and there is itr.remove(element), will it compile or runtime exception and what exception?
13. What is configuration required in API Gateway?
14. What is the SLA of API in API Gateway?
15. How to extend SLA of API responses in API Gateway?
16. How to do versioning of files in S3 bucket?
17. What are the configurations required to do in SNS/SQS?
18. What is a try with resources in exception handling?
19. What is the difference between throws and throw?



20. If a child class throws some exception then what will happen?
21. What is dynamic polymorphism and how to achieve it?
22. Can the main method be overloaded?
23. Can static methods be overloaded?
24. If a method's return type is String and an overriding method has return type Object, then is it overriding or not?
25. If a method's return type is String and an overloaded method has a return type Object, then is it overloading or not?
26. If the overriding method throws an exception and the parent method is not throwing any exception then it is overriding or not?
27. Which version of spring and spring boot are you using?
28. What is the bean lifecycle?
29. `class { m1(){try {sop("")} catch(FileNotFoundException | IOException e) {e.printStackTrace();}}` will it compile or not?
30. `String s1 ="abc"; String s2 = s1+"def"; String s3=s2; sop(s2==s3); sop(s2.equals(s3));` what will be output?
31. Where s1 and s2, s3 will be stored? Is it in the String constant pool?
32. How to create an immutable class?
33. String is immutable, should we use string to store password, if yes then if there are 1000 users then there will be 1000 string because of immutability then will it exhaust String Constant Pool? Because there will be a limit on size?
34. What is inheritance, could you give an example of inheritance from your project?
35. If variables in immutable classes are private and final then how to initialize those variables?
36. How to exclude a particular dependency in SprintBootApplication?
37. What does SpringBootTest do while writing junit test cases?
38. Which collections have you used?
39. What is the initial capacity of ArrayList?
40. What will happen if we store more elements than its capacity?
41. How capacity can be customized in ArrayList?
42. What is the difference between HashSet and TreeSet?
43. What is EC2 and how have you configured it in Project?
44. Have you written in Lambda and in which language? How to maintain a version of Lambda functions? Which approach is good between directly uploading lambda or using terragrunt?

=====UKG 28-Feb(40-Mins) 2nd Round Associate Manager=====

1. What is your project architecture?
2. What is your day to day activity?
3. What tech stacks do you use in a project?
4. What to inform customers that there is going to be some problem in a project using Splunk?
5. How to track particular requests in microservices?
6. How to give rating to team members of 30?
7. If a team member is not willing to do knowledge transfer then what approach would you follow?
8. If all team members have to give rating to other team members then which approach would you follow?

=====IRIS 01-Mar(50-Mins) 1st Round =====

1. serviceA depends on data from serviceB and serviceB is down, which mechanism should be used to communicate to user that service is currently down and try after some time [hint: Circuit breaker and fallback response]
2. There is one interface and two implementation class, how another class which autowired interface should know which class implementation should be used [hint: Qualifier, Primary for Spring Boot]

3. What is an exception name when there is an ambiguous exception? **NoUniqueBeanDefinitionException**
4. How to know dynamically which class implementation should be used [Hint: Factory design pattern]
5. What is switch enhancement in Java17 with a detailed example?
6. What is the return type of findAny() method in Stream API?
7. Will distinct() intermediary method of stream API remove duplicates from list of Objects?
8. There is a list of Person(id, name) object, print map which contains id, Person object of that id?
9. There is a list of Person(id, name, age, List.of(new Address("Agra"), new Address("Pune"))) where Address(city) object, provide list of person objects where age < 20 and city="Agra"?
10. What is the condition of an interface to be a functional interface?

=====IRIS 05-Mar(80-Mins) 2nd Round =====

1. Write Builder design pattern?
2. How many design patterns in Spring Boot have you used?
3. List<String> list = Arrays.asList("grapes", "apple", "banana", "orange"); Print length and then number of words of that length using StreamAPI?
4. Find the unique character in the above list using stream api?
5. What is API Proxy in APIGEE?
6. How is APIGEE different from API Gateway?
7. How Authentication works?
8. How to handle if serviceB is down and serviceA is trying to connect to ServiceB?
9. How does Sharding work in a database?
10. There is API GET /api/v1/employees, what are non-functional requirements ?
11. How to handle millions of records in get API [hint: Pagination and Asynchronous call, give options to download later]
12. What is CQRS and how to decide where to redirect requests based on read and write segregation?
13. What are the challenges you faced during microservice implementation?
14. How do you do code reviews?
15. What is your day to day activity?

=====IRIS 05-Mar(45-Mins) 3rd Round =====

1. What is the usage of API Gateway?
2. What is the saga design pattern?
3. What is API Proxy?
4. How does the end point matter in API Proxy?
5. There can be only Microservice as Target endpoint in API Proxy in APIGEE?
6. What is 2PC in the database?
7. What is the meaning of created\_by, created\_at, updated\_by, updated\_at in the database?
8. int[] array = {1,2,3,4,5,6,0,8,9,2,5} find triplet whose sum should be 6. There is one way by brute force but optimize that logic to improve time complexity?
9. Implement above using Stream API?
10. What are new features in java 17?
11. What is a preview feature in Java?
12. Implement ArrayList to store custom objects, implement add, remove, get method?
13. What have you done in your project?
14. What have you achieved in your project?

=====Citi 12-Mar-25(30 mins) 1st round Architect role=====

1. Have you worked with TDD, BDD, TBD
2. What is TBD
3. How TBD works
4. There are four developers, changes of two developers need to go to production and two developers changes will not go, how you manage these changes using TBD
5. <https://leetcode.com/problems/trapping-rain-water/solutions/5126477/video-keep-max-height-on-the-both-side/>
6. Solve above in linear order of complexity

=====HCL 13-Mar-25(20 mins) 2nd round=====

1. Tell me about yourself
2. What is difference between arraylist and linkedlist
3. Arraylist and linkedlist implement list interface and there is size() method in both implementation, which has faster response in terms of calculating size
4. How many ways a thread can be created

=====Citi 13-Mar-25(45 mins) 1st round=====

1. What is difference between hashset and linkedhashset
2. What is constructor chaining with example
3. What is hash collision
4. How to make collection thread safe
5. Find triplet whose sum is equals to zero, array contains both negative and positive number
6. Triplet should not include same number from array twice
7. There are two tables Employee(empId, name, deptId, salary) and Department(deptId, deptName), find second highest salary where deptName="Tech"
8. Consider class Employee(empId, name, salary, deptName), get department wise average salary using stream api
9. What is significance of annotations @component, @Service, @Repository
10. What inversion of control

=====Citi 13-Mar-25(45 mins) 2nd round=====

1. What is purpose of JVM
2. What is purpose of index in database
3. How index improves performance of query
4. What is stored procedure
5. How garbage collectors works
6. What is SQL Injection and how to prevent this.

=====Citi 14-Mar-25 (45 mins) 3rd round=====

1. How to make a collection thread safe
2. Write producer consumer problem without blocking queue, use collection and make it thread safe
3. How to identify which method is causing out of memory error even though you have heap dump
4. How to identify which object is causing out of memory error
5. There is a employee table, there is select query which has performance issue, what are causes and how to improve performance of query

6. If there is column which is being used in where clause has index even though that query is giving full table scan then what else can be reason

=====Citi 19-Mar-25 (54 mins) 1st round=====

1. Write singleton class
2. What is real world definition of singleton class (Laptop is a object and this object can be used for various functionalities like coding, video playing etc., Object can have three properties 1) Characteristics like size, name, id, color 2) Behaviour of object like play , cry 3) Event
3. Represent  $a^2+b^2+2ab$  in lambda expression (use BiFunction functional interface)
4. Implement TriFunction to represent  $a^2+b^2+c^2$  in lambda expression with same type of object (like either Integer or String)
5. Again modify TriFunction to represent "Hello World  $a^2+b^2+c^2$ " in lambda expression

=====Gemini Solutions 21-Mar-25 (64 mins) 1st round=====

1. <https://leetcode.com/problems/roman-to-integer/description/>
2. What is event sourcing
3. There are five microservices with synchronous calls, what will be your preference between single database or multiple database or two database (I answered as single database due to synchronous call)
4. What is internal working of hashmap
5. Which data structure is used in hashmap
6. What are the properties of Key in hashMap?
7. Write immutable class with (int id,String name fields)
- 8.

```
map.put(new ImmutableClass(1, "A"), "ABC");  
map.put(new ImmutableClass(1, "A"), "XYZ");  
what will be output of map.get(new ImmutableClass(1,"A"));
```

9.

```
String a = "abc";  
String b = new String("abc");  
What will be the output of a.equals(b) and a == b?
```

10.

```
map.put(a, "abc");  
map.put(b, "xyz");  
what will be the output of map.get("abc") and map.get(new String("abc"))
```

11. How circuitBreaker works
12. What is benefit of microservices over monolithic application
13. What is drawback of microservices over monolithic application
14. What is @Transactional annotation in spring boot
15. Is it possible to have operation on two database under single @Transactional annotation in spring boot
16. How to achieve availability in microservices?

=====Citi 21-Mar-25 (17 mins) 2nd round=====

1. What is SOLID principle
2. Why you want to switch
3. What is last working day
4. What is rate limiting and how to implement rate limiting?
5. What are algorithms for rate limiting like one is bucket based algorithm
6. There is a simple or complex query which is very slow, what are possible causes?
7. How to generate a Unique ID in a distributed system? Tell approach

=====Gemini Solutions 24-Mar-25 (17 mins) 2nd round=====

1. Explain Consumer Producer problem in Java?
2. What is the 12-Factor principle of microservices?

=====Virtusa 12-Apr-25 (45 mins) 1st round (AI Based)=====

1. Which java design pattern have you used in your project and in microservices architecture and what are the benefits of using that design pattern and how did it solve the problem?
2. Which J2EE Technologies will you use to build scalable applications?
3. Create a class BandAccount with methods deposit, withdraw and currentBalance so that multiple threads can access these methods. Use any synchronization methods.
4. In which Agile ceremonies you participated and what is your role?
5. How to handle fault tolerance and throughput problems?
6. How to achieve eventual consistency? and how to achieve transaction management in a distributed system?
7. How to achieve scalability and throughput using Kafka or any messaging system?