1. Describe in detail the architecture used in the given project and the decisions behind it.
2. How is a web socket server constructed?
3. Why web services exist?
4. Basic IQ questions like: There is a balance and 8 similar looking, same weight balls and only 1 is heavier. Find that using minimum tries...
5. software design patterns? Software design Patterns and Practices?
6. How to print a number in reverse without converting it into a string?
7. Explain how a command gets executed in a computer system.
8. Basics of Oauth2 flow?
9. Write a java program to create and reverse a Linked list.
10. What is a thread? How do you initialize a thread? And multi-thread programming?
11. Polymorphism in java JRE, JVM, JDK difference why java is platform independent?
12. How to use inheritance, problems in inheritance, what is the diamond problem? how to improve java performance? what are the familiar frameworks?

Multithreading , reusable code ,

Spring boot ,hibernate , postman and swagger,

1. **Core JAVA questions, SQL related questions SQL indexes, OOP concepts, Singleton design pattern (Types of singleton pattern and their usages) Multithreading in java, Deadlock handling, Exceptions handling and Design Patterns.**
2. Explain a recent project that you worked on? the approach, challenges, solutions, etc

Firstly used JMS but later on moved on GraphAPi

DevOPS opertation

1. Design patterns you have used previously, where and why did you select them?

All beans are singleton in nature , microservices design patterns

1. How do you document Restful web service APIs? Threads API Integration? past experiences in API testing?

Swagger (springdoc-openapi)

1. How to create memory leak in Java.

Creating a memory leak in Java intentionally is generally done for educational or testing purposes. Memory leaks in Java often occur due to improper handling of object references, where objects that are no longer needed are still referenced, preventing the garbage collector from reclaiming the memory. Here are some common ways to create memory leaks in Java:

1. **Static Collections**-- In this example, the list is static, and objects added to it will never be removed, causing a memory leak.
2. **Unintentional Object Retention**-- Here, the map retains references to all key-value pairs, leading to memory consumption that can never be reclaimed.
3. **Inner Classes--**Non-static inner classes implicitly hold a reference to their outer class, which can lead to memory leaks if the outer class is still referenced.
4. **Listeners and Callbacks--**When listeners or callbacks are registered but never unregistered. If the timer keeps running and the listener is not properly removed, it can lead to a memory leak.
5. What is the computer science related studies you've done in your degree programme?
6. ***Interviewer: You have 2 minutes. Explain the Garbage Collector in Java to me.  
     
   My answer: Challenge accepted, let’s go!  
     
   ➤ The Garbage Collector (GC) in Java is a crucial component for automatic memory management, ensuring efficient use of memory by reclaiming space occupied by objects that are no longer needed.  
     
   ➤ In Java, memory management is primarily handled through the Heap, where all object instances are allocated.  
     
   ➤ How Garbage Collection Works:  
   When an object is created, it occupies space in the Heap.  
   As long as there are references to an object, it remains "reachable" and is not collected by the GC.  
   Once there are no references to an object, it becomes "unreachable" and is eligible for garbage collection.  
     
   ➤ Example:  
   Copy code  
   class MyClass {  
    private String name;  
    public MyClass(String name) {*** [***this.name***](http://this.name/) ***= name;  
    }  
   }  
     
   public class Main {  
    public static void main(String[] args) {  
    MyClass obj1 = new MyClass("Object 1");  
    MyClass obj2 = new MyClass("Object 2");  
    obj1 = null; // obj1 is now eligible for GC  
    System.gc(); // Suggests JVM to perform GC  
    }  
   }  
      
   ➤ Benefits:  
   - Prevents memory leaks.  
   - Optimizes memory use.  
   - Simplifies memory management.  
   ➤ Limitations:  
   - GC pauses can affect performance.  
   - Timing of GC is unpredictable.  
   - GC is essential for efficient memory management in Java, making sure resources are used effectively without manual intervention.***

***HR Round--------------------------------------------***

1. Tell me about yourself ?

"Hi, I’m Rahul Yadav, currently a Graduate Software Development Engineer at Maveric Systems Limited in Bengaluru.

I specialize in Java, microservices, MySQL, and Spring Boot, with hands-on experience building REST APIs and implementing solutions like real-time email alerts using the Graph API. I manage projects efficiently using Docker and Jenkins.

I graduated with a bachelor’s in computer science and engineering from Alliance University in 2023, where I also served as Vice President of the Quantix club, organizing events and leading initiatives in statistics.

Outside of academics, I’ve represented my district in Badminton and Kho-Kho.

I’m looking forward to applying my skills and continuing to grow software development field.

1. What does WSO2 do?

WSO2 is an open-source technology company that specializes in middleware solutions to help businesses develop, deploy, and manage APIs, applications, and web services both on-premises and in the cloud. The company provides a range of products and services designed to address the integration, API management, identity and access management, and analytics needs of enterprises.

Here are the key areas WSO2 focuses on:

1. **API Management**:
   * **WSO2 API Manager**: A complete solution for designing, publishing, and managing APIs. It includes capabilities for API lifecycle management, API gateway, API analytics, and monetization.
2. **Integration**:
   * **WSO2 Enterprise Integrator**: A platform for integrating various services and applications. It supports ESB (Enterprise Service Bus) capabilities, data integration, service orchestration, messaging, and more.
3. **Identity and Access Management (IAM)**:
   * **WSO2 Identity Server**: A comprehensive IAM solution that provides Single Sign-On (SSO), identity federation, strong authentication, identity provisioning, and governance.
4. **Analytics**:
   * **WSO2 Stream Processor**: A real-time, high-performance, and open-source streaming analytics platform. It helps in monitoring and analyzing streaming data to make real-time decisions.
5. **Open Banking**:
   * **WSO2 Open Banking**: A specialized solution to help financial institutions comply with open banking regulations and standards, providing tools for API management, security, and compliance.
6. **Microservices**:
   * **WSO2 Micro Integrator**: Facilitates the deployment and management of microservices, enabling enterprises to adopt a microservices architecture with ease.

WSO2 also offers support, consultancy, and training services to help organizations effectively implement and utilize their solutions. Their products are known for being open-source, which allows for flexibility, customization, and integration into existing systems without the burden of high licensing costs.

1. Why did you select WSO2? What is the reason.

WSO2 continually updates and innovates its products, incorporating the latest technologies and trends, such as microservices architecture and cloud-native solutions.

1. As Lead, how do you interview peers and subordinates?

As a Lead, interviewing peers and subordinates effectively involves a structured approach that balances technical skills and cultural fit. Start by clearly defining the role and reviewing resumes to prepare relevant questions. During the interview, introduce yourself and the team, explain the role, and then assess technical skills through specific questions, real-world problem-solving scenarios, and, if applicable, technical exercises. Evaluate behavioral and soft skills by discussing cultural fit, communication, leadership, and past experiences using the STAR method. Allow candidates to ask questions to understand their priorities. Conclude by outlining the next steps and providing feedback. Finally, collaborate with the team to discuss the candidate's performance and make a balanced decision considering both their technical abilities and how well they align with the company culture. This thorough approach ensures fair assessments and better hiring decisions, benefiting the team and organization.

1. Why should we hire you?

"You should hire me because my strong background in Java and Spring Boot, combined with hands-on experience at Maveric Systems Limited, has equipped me with the skills to design and implement high-performance applications. I’ve successfully developed REST APIs, improved system stability with the ELK Stack, and enhanced code quality using SonarQube. My leadership role as Vice President of Quantix at Alliance University demonstrates my organizational skills and ability to manage projects effectively. I am passionate about continuous learning and innovation, and I am eager to contribute to WSO2's cutting-edge technology and drive successful projects."

**Technical Expertise and Experience**: I have a robust foundation in Java and Spring Boot, which I have utilized extensively in my current role at Maveric Systems Limited. I have designed and implemented REST APIs, facilitated seamless communication between application components, and developed comprehensive unit test cases, achieving over 85% code coverage. My experience with microservices architecture, as demonstrated in my Talent Share Portal project, showcases my ability to develop high-performance applications that handle complex functionalities efficiently.

**Problem-Solving and Innovation**: At Maveric Systems, I implemented a mail notification system using the Graph API, which enhanced real-time email alerts and improved user engagement. I also developed an ELK Stack to monitor system logs, reducing the mean time to resolution by 30% and increasing application performance by 15%. These achievements highlight my ability to identify problems, innovate solutions, and improve system efficiency.

**Commitment to Quality**: I am dedicated to maintaining high code quality and improving system performance. Implementing SonarQube for code quality and coverage analysis has been a key part of my approach, ensuring that the software I develop is reliable and maintainable.

**Soft Skills and Leadership**: As the Vice President of Quantix, the Mathematics and Statistics Club at Alliance University, I organized several educational events, including World Statistical Week, engaging over 150 college students. This experience honed my organizational and leadership skills, demonstrating my ability to manage teams and projects effectively.

**Passion for Continuous Learning**: My projects, such as the Talent Share Portal and Blockchain with Java, reflect my passion for continuous learning and exploring new technologies. I am eager to bring this enthusiasm to your team and contribute to innovative projects.

**Alignment with Your Values**: Your company's commitment to innovation and excellence aligns with my professional values. I am particularly excited about the opportunity to work with WSO2's cutting-edge technology and contribute to developing robust, scalable solutions.

In summary, my technical skills, proven track record of delivering successful projects, commitment to quality, leadership experience, and enthusiasm for continuous learning make me a great fit for this position. I am confident that I can bring value to your team and help drive your projects to success."

1. how do you keep yourself updated on the latest technologies?

To stay current with the latest technologies, I regularly read tech blogs, follow industry experts on social media, and participate in online courses and webinars. Additionally, I engage in hands-on experimentation with new tools and frameworks. This proactive approach helps me stay informed and continuously expand my knowledge in the rapidly evolving tech landscape.

1. Where do you see yourself in another 5 years

In five years, I see myself growing as a software developer, possibly in a leadership role. I want to mentor others and expand my skills in new technologies like cloud computing and AI. My goal is to have a positive impact on software development and keep advancing in my career.

1. What is a major challenge you faced on your previous job?

One major challenge I faced in my previous job was managing a complex integration project with tight deadlines. The project required coordinating multiple teams and stakeholders, each with different priorities and timelines. To overcome this challenge, I focused on clear communication, regular progress updates.

1. Quantix club ------Quiz competition (Azadi ka Amrit Mahotsav and Mathematics)

------Workshop on (Power BI and Business Analytics using MS Excel)

-------World Statistical Week (Quiz, Sudoku Solver, poster making)

1. Blockchain Project----

This project aims to create a basic blockchain using Java, illustrating the fundamental concepts of blockchain technology. In this project, each block in the blockchain contains data (like transactions), a timestamp, and a unique digital signature (hash) calculated using the SHA-256 algorithm. Blocks are linked together by including the hash of the previous block, creating a chain that ensures data integrity—if any information in a block is altered, it changes the block's hash and consequently affects all subsequent blocks, making the blockchain invalid. To secure the blockchain, a proof-of-work system (mining) is implemented where miners solve computational puzzles to find a hash with a specific number of leading zeros. This project also includes methods to validate the blockchain's integrity by comparing hashes and ensuring each block's mining status.

1:30 – 2:30

<https://meet.google.com/cwx-zixu-eb?hs=224>

3:00 – 4:00

<https://meet.google.com/cwx-zixu-veb?hs=224>