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(This is just a subset of what you can expect to be asked in an interview)

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**Top 10 Technical Interview Questions for Developer Roles**

1. **What is the difference between a Class and an Object in Object-Oriented Programming?**

*Expected Answer*: A Class is a blueprint or template for creating objects, while an Object is an instance of a class with defined attributes and behaviors.

1. **Explain the concept of RESTful APIs and how you would implement one in your preferred programming language.**

*Expected Answer*: RESTful APIs adhere to REST architecture principles, using HTTP methods (GET, POST, PUT, DELETE) to perform CRUD operations on resources. Implementation involves setting up routes, defining controllers, and handling data exchanges typically in JSON format.

1. **How do you optimize SQL queries for performance?**

*Expected Answer*: Optimizations include using indexing, avoiding SELECT \*, optimizing JOINs, analyzing query plans, and reducing subqueries or complex conditions where possible.

1. **What is the difference between synchronous and asynchronous programming, and how do you handle asynchronous operations in JavaScript?**

*Expected Answer*: Synchronous programming executes tasks sequentially, blocking subsequent tasks until the current one is complete. Asynchronous programming allows tasks to be executed concurrently, often using callbacks, Promises, or async/await in JavaScript.

1. **Describe the MVC architecture and its components.**

*Expected Answer*: MVC stands for Model-View-Controller. The Model represents the data and business logic, the View displays data, and the Controller handles user input and updates the Model.

1. **How do you manage dependencies in a large project?**

*Expected Answer*: Dependency management is typically handled using package managers like npm for JavaScript or Maven/Gradle for Java. It's important to use version control, lock files, and update dependencies regularly while testing for compatibility.

1. **Explain how garbage collection works in languages like Java or Python.**

*Expected Answer*: Garbage collection automatically deallocates memory that is no longer in use. In Java, the JVM uses techniques like mark-and-sweep, while Python uses reference counting with a cyclic garbage collector.

1. **What is the SOLID principle in software design, and why is it important?**

*Expected Answer*: SOLID stands for Single Responsibility, Open-Closed, Liskov Substitution, Interface Segregation, and Dependency Inversion. These principles guide the design of maintainable and scalable software systems.

1. **How do you ensure the security of a web application?**

*Expected Answer*: Security measures include input validation, using HTTPS, preventing SQL injection and XSS attacks, employing authentication and authorization mechanisms, and keeping dependencies updated.

1. **What is continuous integration and continuous deployment (CI/CD), and how would you implement it in a project?**

*Expected Answer*: CI/CD automates the integration of code changes and deployment processes. It involves using tools like Jenkins, GitLab CI, or CircleCI to automate testing, building, and deploying code to production environments.