**MANUAL**

1. Difference between Sdlc and stlc
2. What are the types of testing used in QA.
3. Explain Release management process
4. What is Test strategy vs test plan
5. Test scenario vs test case
6. What is Severity and priority and how to do you identify this?
7. What is CI and CD?
8. How to report a bug in detail
9. Process of QA from start to end
10. What is the role of QA in the software development process?
11. Can you explain the difference between verification and validation?
12. How do you prioritize testing activities in a project?
13. What is the importance of test documentation?
14. Explain the difference between functional testing and non-functional testing.
15. How do you ensure the reliability and stability of a software application?
16. Can you describe the bug life cycle?
17. How do you perform regression testing, and why is it important?
18. What is the purpose of test planning, and what does it involve?
19. How do you approach testing in an Agile development environment?
20. Can you explain the concept of risk-based testing?
21. How do you ensure that your testing process is efficient and effective?
22. What is the significance of automated testing in the QA process?
23. How do you handle disagreements with developers regarding the severity of a bug?
24. Can you share an experience where your testing efforts significantly contributed to the improvement of a product?

**DATA BASE**

1. What is a Database?
2. Explain SQL and its main purposes.
3. Differentiate between a Primary Key and a Foreign Key.
4. Describe the types of SQL Joins (INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN).
5. What is Database Normalization? Why is it important?
6. Explain the ACID properties in the context of database transactions.
7. What is indexing in a database, and how does it improve performance?
8. Define a Stored Procedure. What are its advantages?
9. What is the difference between SQL and NoSQL databases?
10. Explain the concept of a database index.
11. What is the purpose of the GROUP BY clause in SQL?
12. type of keys in db
13. what is important in table to execute the join query
14. normalization and denormalization
15. query writing like select, delete, update joins group by, order by, sum, count , avg, min, max
16. Explain the difference between INNER JOIN and LEFT JOIN.
17. What is the difference between DELETE and TRUNCATE?
18. Write query for second highest salary
19. Write a query to find how many employees exist in each each department.  
    e.g   
    HR 5  
    Sales 6

|  |  |
| --- | --- |
| **Employee** | **Department** |
| Lana | HR |
| James | HR |
| Henry | IT |
| Mark | IT |
| Joe | Sales |
| Steve | Accounts |
| Michael | marketing |
| Julia | Sales |
| Rich | Marketing |
| Albert | IT |
| Steven | IT |
| Albertez | HR |
| Kin | Sales |
| Simen | Accounts |
| howrdy | Marketing |

**API TESTING**

1. What is api
2. Types of api and difference
3. Methods of api
4. Status codes
5. Validation in apis
6. Put and patch difference
7. Environments and variable in api
8. Tokens in api
9. What is API Testing?
10. Explain the difference between SOAP and REST.
11. What are the common HTTP methods used in RESTful APIs?
12. What is an Endpoint in API?
13. What is the purpose of the HTTP status code 200?
14. Explain the meaning of HTTP status code 404.
15. What is the purpose of the Authorization header in HTTP requests?
16. What is Postman, and how is it used in API testing?
17. What is Swagger?
18. Explain the concept of OAuth in API security.
19. What is Rate Limiting in API?
20. How can you handle authentication in API testing?
21. What is Mocking in API testing?

**JMETER**

1. What is Apache JMeter, and what is its primary use?
2. Explain the components of a Test Plan in JMeter.
3. What is a Thread Group in JMeter?
4. How does JMeter simulate real user behavior in performance testing?
5. What is the purpose of Samplers in JMeter?
6. Explain the difference between a Listener and a Post Processor in JMeter.
7. How do you parameterize a JMeter Test Plan?
8. What is a CSV Data Set Config in JMeter, and how is it used?
9. Explain the purpose of Assertions in JMeter.
10. What is the Ramp-up Period in JMeter, and why is it important?
11. How can you distribute load testing across multiple machines in JMeter?
12. What is the purpose of the Response Assertion in JMeter?
13. Explain the significance of Throughput in JMeter.
14. How can you analyze and interpret JMeter test results?

**Selenium Automation**

1. What is Selenium?
2. Explain the difference between implicit and explicit waits in Selenium.
3. How can you handle dynamic elements using Selenium?
4. What is WebDriver in Selenium?
5. How do you launch a browser using Selenium WebDriver?
6. Explain the difference between find\_element and find\_elements in Selenium.
7. How can you handle different windows in Selenium?
8. What is Page Object Model (POM) in Selenium?
9. How can you capture screenshots in Selenium?
10. Explain the concept of headless browsers in Selenium.
11. How do you handle alerts in Selenium?
12. What is the purpose of Desired Capabilities in Selenium WebDriver?
13. Explain the use of WebDriverWait and ExpectedConditions in Selenium.
14. How can you perform mouse actions using Selenium WebDriver?
15. How do you handle dropdowns in Selenium?

**QUESTIONS WITH ANSWERS:**

**DATA BASE**

**What is a Database and how would you define SQL?**

Answer: A database is a structured collection of data, typically organized to model relevant aspects of reality. SQL (Structured Query Language) is a domain-specific language used for managing and manipulating relational databases.

**Differentiate between a primary key and a foreign key.**

Answer: A primary key uniquely identifies each record in a table and must be unique and not null. A foreign key is a field in a table that refers to the primary key of another table, establishing a link between them.

**Explain the differences between SQL joins: INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN.**

Answer:

INNER JOIN: Retrieves records that have matching values in both tables.

LEFT JOIN (or LEFT OUTER JOIN): Retrieves all records from the left table and the matched records from the right table.

RIGHT JOIN (or RIGHT OUTER JOIN): Retrieves all records from the right table and the matched records from the left table.

FULL JOIN (or FULL OUTER JOIN): Retrieves all records when there is a match in either the left or right table.

**What is normalization, and why is it important in database design?**

Answer: Normalization is the process of organizing data in a database to reduce redundancy and improve data integrity. It involves dividing large tables into smaller, related tables and defining relationships between them. Normalization helps prevent data anomalies and ensures efficient data storage.

**Explain ACID properties in the context of database transactions.**

Answer: ACID stands for Atomicity, Consistency, Isolation, and Durability. These properties ensure the reliability and consistency of database transactions.

Atomicity: Ensures that a transaction is treated as a single, indivisible unit.

Consistency: Guarantees that a transaction brings the database from one valid state to another.

Isolation: Ensures that the execution of one transaction is isolated from the execution of other transactions.

Durability: Ensures that once a transaction is committed, its changes are permanent and survive system failures.

**What is indexing, and how does it improve database performance?**

Answer: Indexing is a database optimization technique that enhances the speed of data retrieval operations on a database table. An index is a data structure that provides a quick reference to the location of rows in a table. It improves performance by reducing the amount of data that needs to be scanned when executing queries.

**What is a stored procedure, and what are its advantages?**

Answer: A stored procedure is a set of SQL statements that can be executed as a single unit. Advantages include:

Code reusability: Procedures can be reused in multiple parts of an application.

Improved performance: Procedures are precompiled, reducing the overhead of query parsing.

Security: Permissions can be granted on procedures, controlling access to the underlying tables.

**Differentiate between SQL and NoSQL databases.**

Answer: SQL databases are relational databases that use structured query language, while NoSQL databases are non-relational and use a variety of data models. SQL databases are typically best for complex queries and relationships, while NoSQL databases excel in scalability and handling large amounts of unstructured data.

**Explain the concept of a database index.**

Answer: An index is a data structure that improves the speed of data retrieval operations on a database table. It consists of keys and pointers to the actual data, allowing the database management system to find and retrieve rows more efficiently based on the indexed columns.

**What is the purpose of the GROUP BY clause in SQL?**

Answer: The GROUP BY clause in SQL is used to arrange identical data into groups. It is often used with aggregate functions like COUNT, SUM, AVG, etc., to perform operations on each group of data. This allows for the analysis and summarization of data based on specific criteria.

**SELENIUM**

**What is Selenium?**

Selenium is a powerful tool for controlling a web browser through the program.

**Explain the difference between implicit and explicit waits in Selenium.**

Implicit waits set a global waiting time, while explicit waits apply to a specific element.

**How can you handle dynamic elements using Selenium?**

By using explicit waits and dynamic XPath or CSS selectors.

**What is WebDriver in Selenium?**

WebDriver is an interface in Selenium that provides a way to interact with web browsers.

**How do you launch a browser using Selenium WebDriver?**

By using the **webdriver.Chrome()** or **webdriver.Firefox()** constructor.

**Explain the difference between find\_element and find\_elements in Selenium.**

**find\_element** returns the first matching element, while **find\_elements** returns a list of all matching elements.

**How can you handle different windows in Selenium?**

By using **window\_handles** to switch between windows.

**What is Page Object Model (POM) in Selenium?**

POM is a design pattern that suggests creating an object repository for web UI elements and interacting with those objects in test scripts.

**How can you capture screenshots in Selenium?**

By using the **get\_screenshot\_as\_file** method of the WebDriver.

**Explain the concept of headless browsers in Selenium.**

Headless browsers operate without a graphical user interface, making them faster and suitable for running tests in environments without a display.

**How do you handle alerts in Selenium?**

By using **switch\_to.alert** to switch to the alert and then using **accept()** or **dismiss()** methods.

**What is the purpose of Desired Capabilities in Selenium WebDriver?**

Desired Capabilities are used to set properties for the WebDriver before initializing a browser.

**Explain the use of WebDriverWait and ExpectedConditions in Selenium.**

**WebDriverWait** is used to wait for a certain condition to occur before proceeding. **ExpectedConditions** are conditions that WebDriverWait waits for.

**How can you perform mouse actions using Selenium WebDriver?**

By using the **ActionChains** class, which provides methods for various mouse and keyboard actions.

**How do you handle dropdowns in Selenium?**

By using the **Select** class, which provides methods for interacting with dropdowns.

**JMETER**

**What is Apache JMeter, and what is its primary use?**

*Answer:* Apache JMeter is an open-source performance testing tool designed to test web applications and measure their performance. It can simulate a heavy load on a server, network, or object to test its strength or analyze overall performance under different load types.

**Explain the components of a Test Plan in JMeter.**

*Answer:* A Test Plan in JMeter consists of Thread Groups, Config Elements, Pre-Processors, Samplers, Logic Controllers, Post-Processors, Assertions, Listeners, Timers, and Properties.

**What is a Thread Group in JMeter?**

*Answer:* A Thread Group represents a group of virtual users or threads that will execute a set of operations defined in the test plan.

**How does JMeter simulate real user behavior in performance testing?**

*Answer:* JMeter simulates real user behavior by sending HTTP/HTTPS requests to a server and receiving the response. It can simulate multiple users concurrently to mimic the behavior of real users interacting with a web application.

**What is the purpose of Samplers in JMeter?**

*Answer:* Samplers in JMeter are responsible for generating the requests that JMeter sends to the server. They simulate different types of requests like HTTP requests, FTP requests, JDBC requests, etc.

**Explain the difference between a Listener and a Post Processor in JMeter.**

*Answer:* Listeners are used to view and analyze the results of the test plan, while Post Processors are used to process the response data after it is received from the server.

**How do you parameterize a JMeter Test Plan?**

*Answer:* Parameterization can be achieved using variables and functions. Variables can be defined using ${variable\_name} syntax, and functions can be used to generate dynamic values.

**What is a CSV Data Set Config in JMeter, and how is it used?**

*Answer:* CSV Data Set Config is used for reading values from a CSV file and using them as input parameters for test plans. It allows dynamic input data for requests.

**Explain the purpose of Assertions in JMeter.**

*Answer:* Assertions in JMeter are used to validate that the response from the server meets specific criteria. They help in determining the success or failure of a test.

**What is the Ramp-up Period in JMeter, and why is it important?**

*Answer:* The Ramp-up Period is the time taken by JMeter to start all the virtual users or threads. It is important to gradually increase the load on the server and avoid a sudden spike in the number of requests.

**How can you distribute load testing across multiple machines in JMeter?**

*Answer:* Load testing can be distributed across multiple machines using the JMeter Distributed (or Remote) Testing feature. It involves configuring a master machine and multiple slave machines.

**What is the purpose of the Response Assertion in JMeter?**

*Answer:* The Response Assertion is used to add conditions to test whether the server's response contains a certain pattern or not. It helps in verifying the correctness of server responses.

**Explain the significance of Throughput in JMeter.**

*Answer:* Throughput is the number of requests that JMeter can handle per unit of time. It helps in measuring the efficiency of the server under different loads.

**How can you analyze and interpret JMeter test results?**

*Answer:* JMeter provides various listeners (e.g., View Results Tree, Summary Report, Aggregate Report) to view and analyze test results. These listeners display metrics such as response time, throughput, error rate, etc.

**API TESTING**

**What is an API?**

API stands for Application Programming Interface. It defines a set of rules and protocols for building and interacting with software applications.

**What is API Testing?**

API testing is a type of software testing that focuses on verifying the functionality, performance, and reliability of an application programming interface.

**Explain the difference between SOAP and REST.**

SOAP (Simple Object Access Protocol) is a protocol for exchanging structured information in web services, while REST (Representational State Transfer) is an architectural style for building web services.

**What are the common HTTP methods used in RESTful APIs?**

The common HTTP methods are GET, POST, PUT, PATCH, and DELETE.

**What is an Endpoint in API?**

An endpoint is a specific URL or URI where an API can be accessed.

**What is the purpose of the HTTP status code 200?**

The HTTP status code 200 indicates a successful request.

**Explain the meaning of HTTP status code 404.**

The HTTP status code 404 indicates that the requested resource is not found.

**What is the purpose of the Authorization header in HTTP requests?**

The Authorization header is used to provide credentials (such as an API key or token) to access a protected resource.

**What is Postman, and how is it used in API testing?**

Postman is a popular API development and testing tool. It allows users to create, test, and manage APIs.

**What is Swagger?**

Swagger is a tool used to document and define RESTful APIs. It provides a standard format for describing the functionalities of an API.

**Explain the concept of OAuth in API security.**

OAuth is an open standard for access delegation commonly used for security in APIs. It allows a third-party application to obtain limited access to an HTTP service.

**What is Rate Limiting in API?**

Rate limiting is a technique used to control the number of requests a user or client can make to an API within a specified time period.

**How can you handle authentication in API testing?**

Authentication in API testing can be handled using methods such as API keys, OAuth tokens, or other authentication mechanisms provided by the API.

**What is Mocking in API testing?**

Mocking involves creating simulated versions of components, like API responses, to test how the system behaves under different conditions.