

SE Execution-Based Assessment

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Tools used: Katalon studio, Jmeter for API testing.

Katalon Studio :

- Katalon Studio is an integrated development environment (IDE) for automated web, mobile, and API application testing.
- It offers comprehensive features such as recording, scripting, and test execution. With its intuitive user interface, testers can easily create, manage, and execute automated tests without writing extensive code.
- Katalon Studio supports various testing frameworks and integrates seamlessly with popular continuous integration tools like Jenkins.
- Its robust capabilities make it a preferred choice for teams looking to streamline their testing processes and ensure software quality.

Jmeter :

- JMeter is an open-source Java-based tool primarily used for load testing and performance measurement of web applications.
- It allows users to simulate heavy loads on servers, networks, or objects to test their strength or analyze overall performance under different scenarios.
- With its intuitive GUI, users can easily create and execute test plans, monitor performance metrics, and generate comprehensive reports.
- JMeter supports various protocols like HTTP, FTP, JDBC, SOAP, and more, making it versatile for testing different types of applications.
- Additionally, it offers distributed testing capabilities, enabling distributed load testing across multiple machines for scalability testing.

➤ We used both **Jmeter** and **Katalon Studio** for **API testing**.

Key Difference between them:

Katalon Studio and JMeter serve different purposes in API testing, and their features and capabilities vary accordingly.

User Interface (UI):

- Katalon Studio: It provides a user-friendly graphical interface with drag-and-drop capabilities for creating and executing API tests. Users can easily create test cases, assertions, and test suites without needing to write code.
- JMeter: JMeter also offers a graphical user interface but is more focused on configuration through text-based scripting. While it may have a steeper learning curve for beginners, it provides advanced users with more flexibility and customization options.

Ease of Use:

- Katalon Studio: It's generally considered easier to learn and use, especially for testers with minimal programming experience. The UI-based approach allows testers to quickly create and execute API tests without extensive scripting.
- JMeter: Requires some level of scripting and configuration, which might be intimidating for users without programming knowledge. However, once users are familiar with its concepts and scripting language, it offers powerful capabilities for advanced testing scenarios.

Test Automation:

- Katalon Studio: Designed primarily for test automation across different types of testing (API, web, mobile, etc.), it provides features like built-in test recording, object repository, and integration with various CI/CD tools.
- JMeter: While it's primarily focused on load testing, it can be used for test automation through scripting. However, its main strength lies in performance testing rather than functional API testing.

Supported Protocols:

- Katalon Studio: Offers support for testing APIs using REST, SOAP, GraphQL, and more. It also provides features for handling authentication, data-driven testing, and reporting.
- JMeter: Supports a wide range of protocols including HTTP, HTTPS, FTP, JDBC, SOAP, JMS, and more, making it suitable for testing diverse applications and services.

Performance Testing:

- Katalon Studio: While it can be used for basic performance testing, its capabilities are not as robust as JMeter when it comes to simulating heavy loads, analyzing server performance, and generating detailed performance reports.

- JMeter: Specifically designed for load testing and performance measurement, it excels in simulating thousands of concurrent users, monitoring server response times, and identifying performance bottlenecks.

Comparative analysis based on our test cases :

create_user:

- Katalon Studio:
 - Use Katalon's UI to create a test case where you input user details into a form and submit it.
 - Validate that the user is successfully created by checking for the user's presence in the database or API response.
 - Assertions can be added to ensure that the response status is as expected and relevant fields are populated correctly.
- JMeter:
 - Create an HTTP request sampler to send a POST request with user details to the API endpoint.
 - Configure assertions to verify the response status code (e.g., 200 OK) and possibly check the response body for expected content.
 - Utilize parameterization for dynamic data such as user details to simulate multiple user creation scenarios

list_user:

- Katalon Studio:
 - Design a test case to retrieve the list of users using an API call.
 - Validate that the response contains the expected user data.
 - Assertions can be added to check the response status and the structure of the returned data.
- JMeter:
 - Set up an HTTP request sampler to send a GET request to fetch the list of users.
 - Configure assertions to verify the response status and possibly validate the structure of the response data, such as checking if it's a JSON array.
 - Use JMeter's built-in listeners to analyze and visualize the response data, ensuring that it matches the expected output.

delete_user:

- Katalon Studio:
 - Create a test case to send a DELETE request to the API endpoint for deleting a user.
 - Validate that the user is successfully deleted by checking for its absence in subsequent list_user requests.

- Assertions can be added to verify the response status code and any confirmation messages in the response body.
- JMeter:
 - Configure an HTTP request sampler to send a DELETE request to delete a user.
 - Add assertions to verify the response status code and possibly check for expected messages indicating successful deletion.
 - Use JMeter's logic controllers to handle conditions such as only deleting a user if it exists.

update_user:

- Katalon Studio:
 - Design a test case to send a PUT request with updated user details to the API endpoint.
 - Validate that the user's information is successfully updated by retrieving the user details and comparing them with the updated data.
 - Assertions can be added to ensure the response status code is as expected and relevant fields are modified correctly.
- JMeter:
 - Configure an HTTP request sampler to send a PUT request with updated user details.
 - Use assertions to verify the response status code and possibly check for expected messages indicating a successful update.
 - Implement parameterization to simulate different update scenarios, such as modifying different fields or updating different users.