

TECHNOLOGY



Automation Testing

Logic Controllers



A Day in the Life of an Automation Test Engineer

Alex has performed a lot of testing on JMeter. He knows how to create test plans and add JMeter elements. To conduct his testing, he uses several JMeter elements, such as samplers, configuration elements, and listeners.

However, he wants to control the flow and order of samplers within a thread. He would like to set the order in which config elements are requested.

To resolve the above scenario, he must learn how to use logic controllers.



Learning Objectives

By the end of this lesson, you will be able to:

- 🕒 Define Logic Controllers
- 🕒 Discuss the importance of controllers
- 🕒 Enumerate the types of controllers
- 🕒 Discuss the advantages of controllers



JMeter Controllers

Logic Controllers

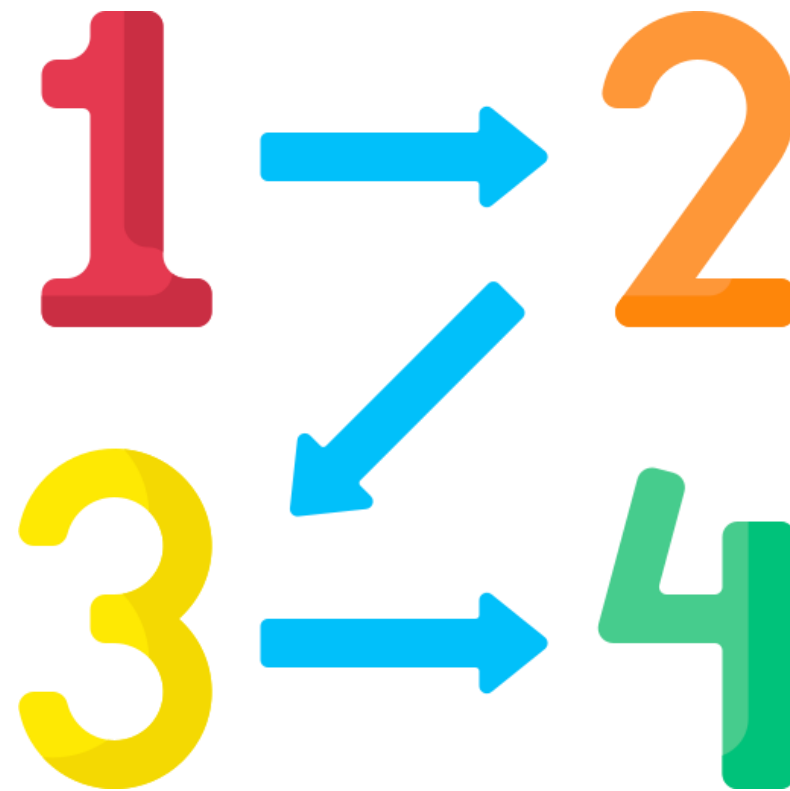
Logic Controllers allow users to send customized requests. It can change the order of requests from their child element.



The child element of a Logic Controller may include samplers, configuration elements, and other Logic Controllers.

Importance of Logic Controllers

Logic Controllers determine the order in which user request is executed.



List of Logic Controllers

The following is a list of Logic Controllers:

01 Simple Controller

02 Loop Controller

03 Only Once Controller

04 Interleave Controller

05 Random Controller

06 Random Order Controller

List of Logic Controllers

The following is a list of Logic Controllers:

07 Throughput Controller

08 Runtime Controller

09 If Controller

10 While Controller

11 Switch Controller

12 ForEach Controller

List of Logic Controllers

The following is a list of logic controllers:

13 Module Controller

14 Include Controller

15 Transaction Controller

16 Recording Controller



Add Controller

The following steps will guide the user to add a controller:

01

Right-click on **Thread Group** and select **Add**

02

Hover over the **Logic Controller**

03

Select the required **Controller**



Simple Controller

A Simple Controller provides no functionality; it only serves as a container for user requests.



User 1



User 2



User N



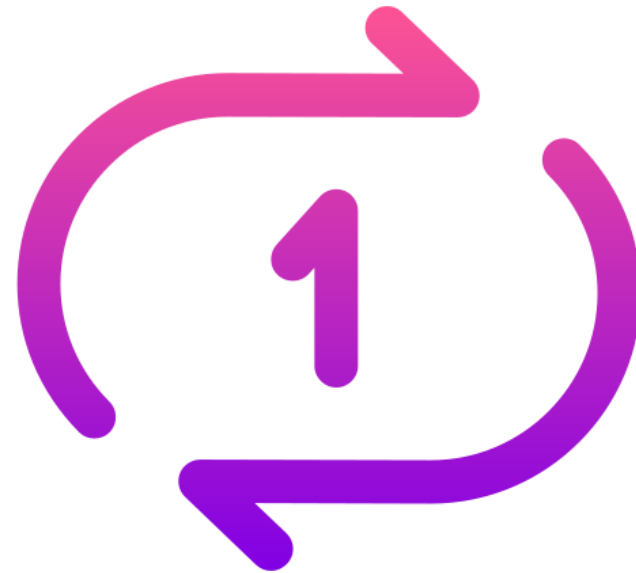
Loop Controller

The Loop Controller will run the user request a specified number of times or will run forever to execute the process.



Only Once Controller

Once Only Controller instruct JMeter to process each controller only once per thread and to pass over any requests under them during future iterations.



It runs only once per thread. So, if there are 100 threads, it will run 100 times.

Interleave Controllers

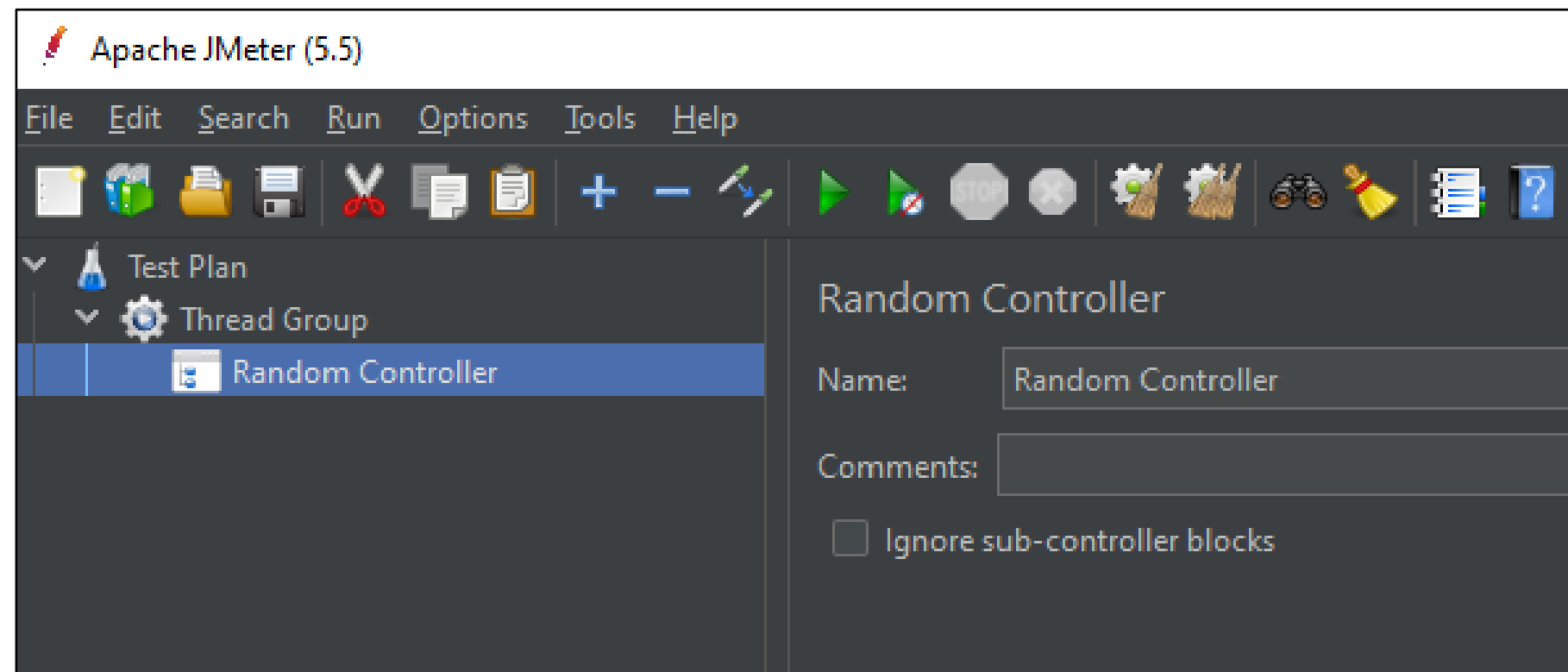
The Interleave Controller enables users to run all their requests in each loop sequentially.



It allows the user to pick and execute a single child element out of multiple child elements in each loop iteration.

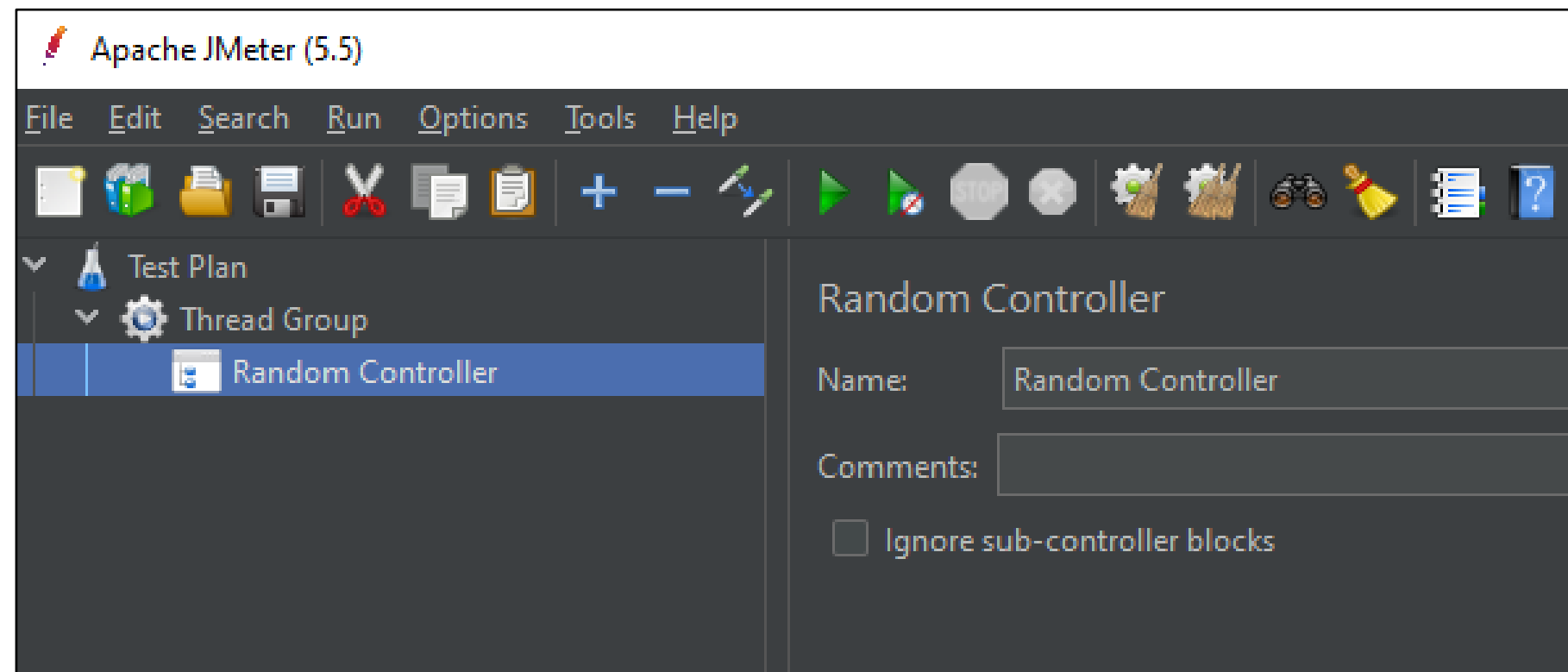
Random Controller

Random Controller provides functionality to run user requests in random order for each loop.



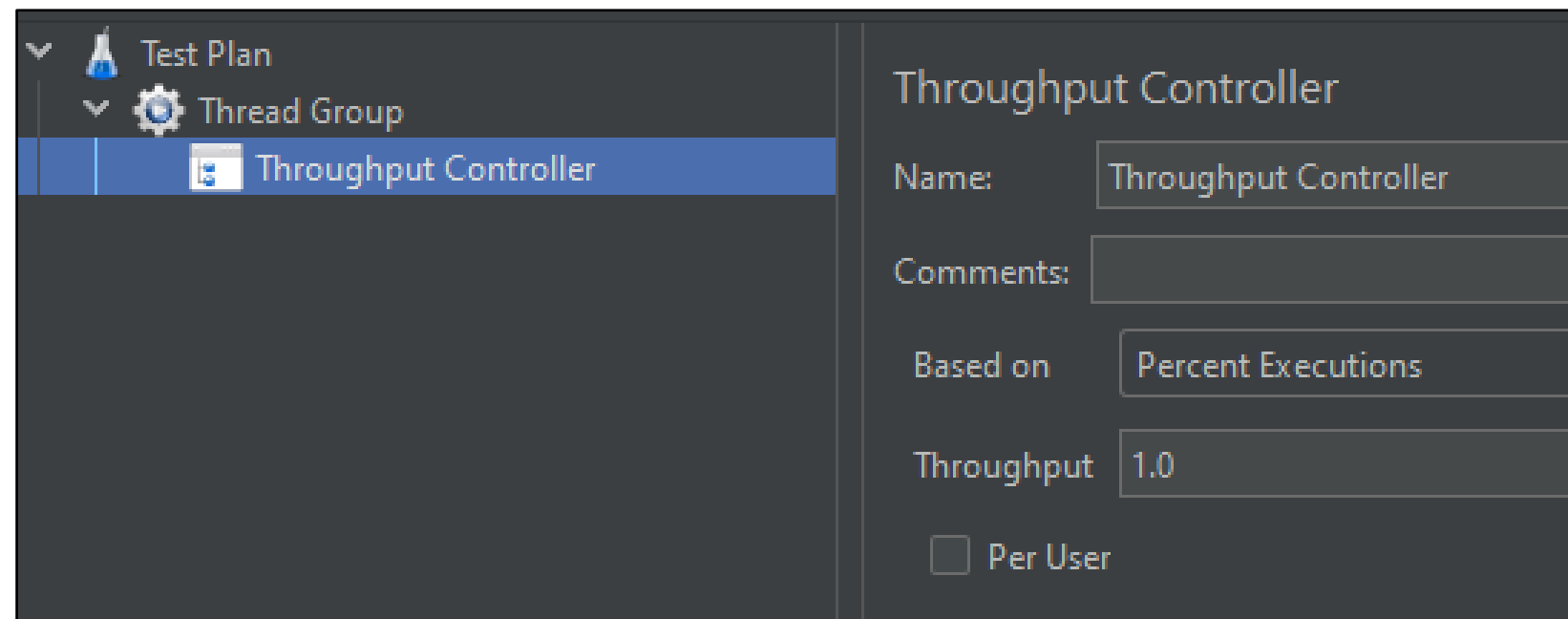
Random Order Controller

The Random Order Controller executes each of its child elements once randomly.



Throughput Controller

Throughput Controller is used to control the processing of the child elements according to the total number of executions or the percentage of execution specified within their control panels.



The screenshot displays the JMeter configuration interface. On the left, a tree view shows the hierarchy: Test Plan > Thread Group > Throughput Controller. The 'Throughput Controller' element is selected and highlighted. The right-hand panel shows the configuration for this element:

- Name:** Throughput Controller
- Comments:** (empty text area)
- Based on:** Percent Executions
- Throughput:** 1.0
- ☐ Per User



Runtime Controller

A Runtime Controller is used to limit the execution time of its child elements.



If **Runtime** is set to 100 seconds, it will run as many iterations as possible.



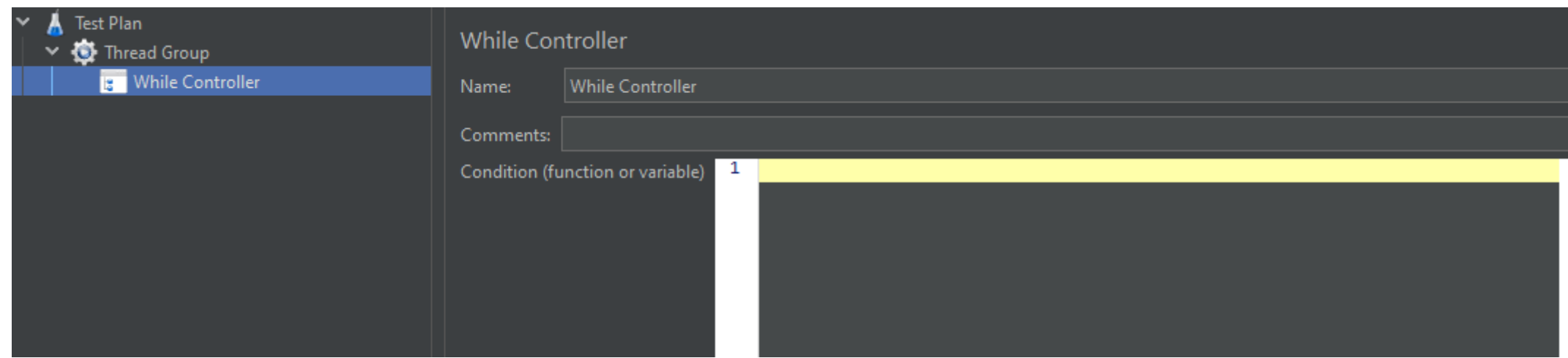
If Controller

In If Controller, the user can specify a condition that will determine whether a child element will run or not based on a true or false evaluation.



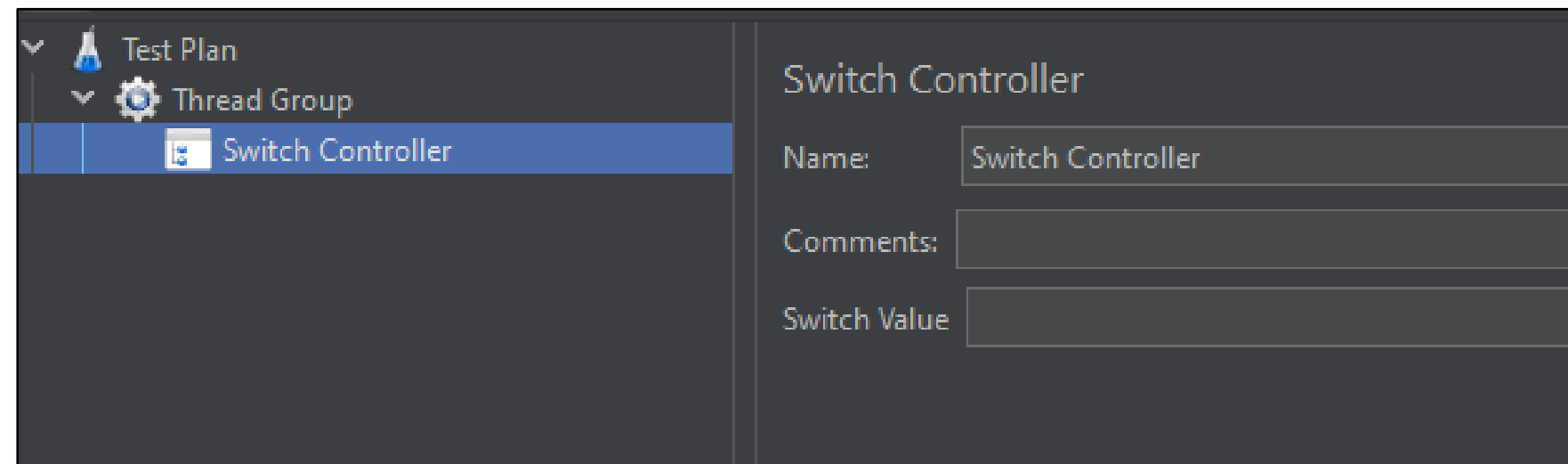
While Controller

A While Controller runs the child elements inside it until the value specified in its control panel is evaluated as false.



Switch Controller

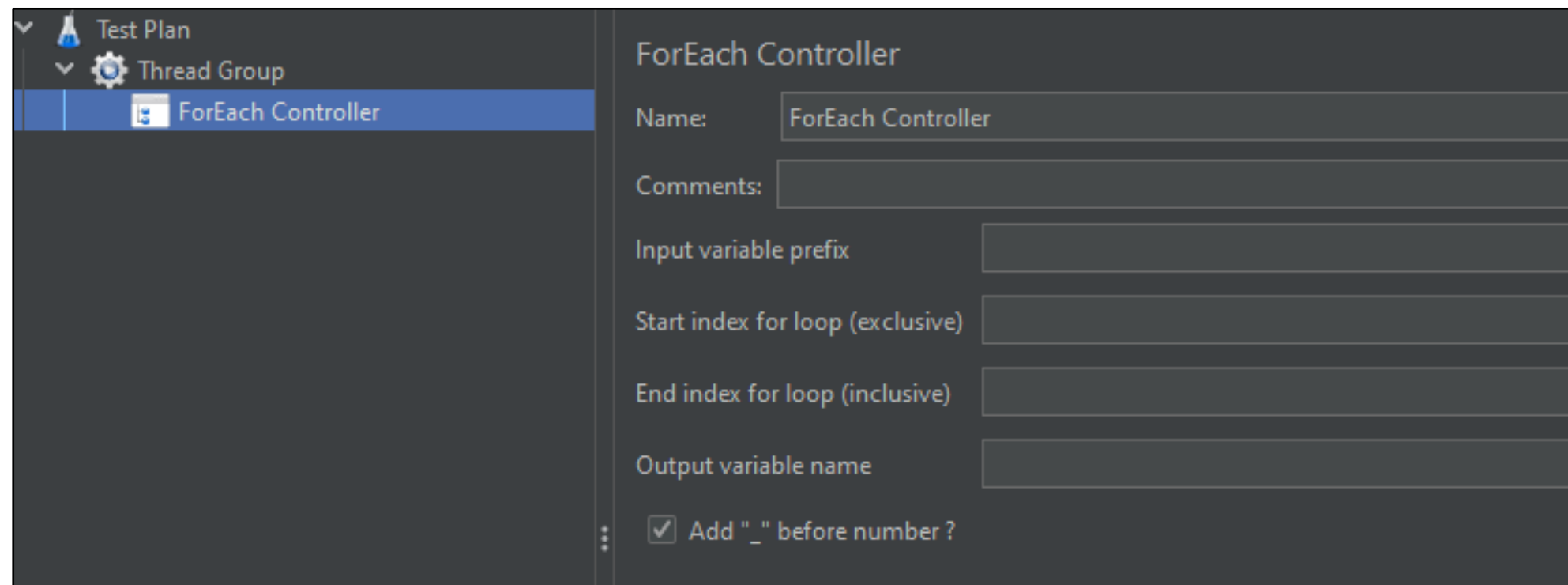
A Switch Controller is used to select one element from its multiple child elements for processing.



The element is not selected in sequential or random order but rather based on a switch value defined in its control panel.

For Each Controller

In a For Each Controller, requests are performed in a loop according to the values of a set of variables.



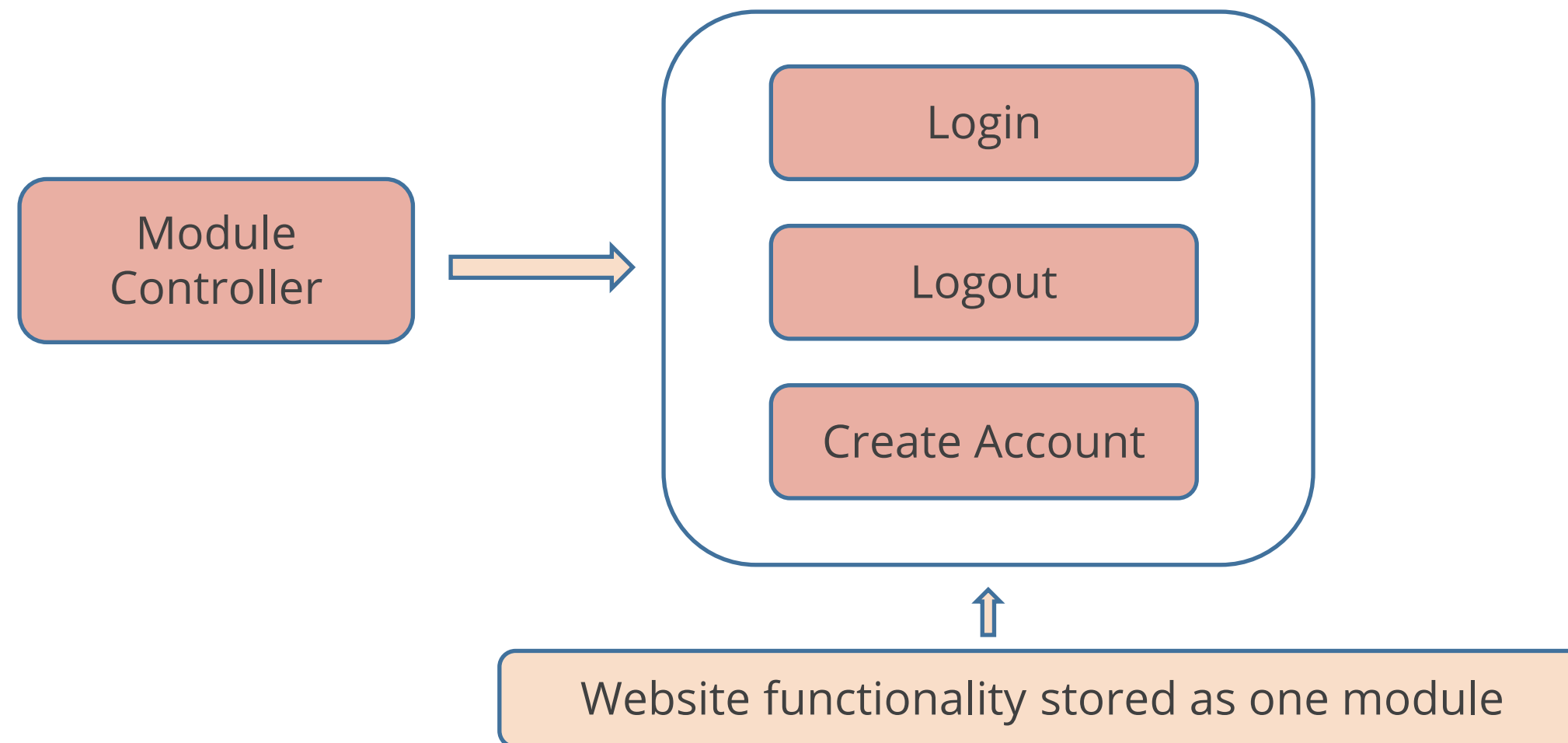
The screenshot shows the JMeter configuration interface for a ForEach Controller. The left sidebar displays a tree view with 'Test Plan' expanded, containing a 'Thread Group' which in turn contains the selected 'ForEach Controller'. The main panel on the right is titled 'ForEach Controller' and contains the following fields:

- Name:** ForEach Controller
- Comments:** (empty text area)
- Input variable prefix:** (empty text field)
- Start index for loop (exclusive):** (empty text field)
- End index for loop (inclusive):** (empty text field)
- Output variable name:** (empty text field)
- Options:** A checkbox labeled 'Add "_" before number ?' is checked.



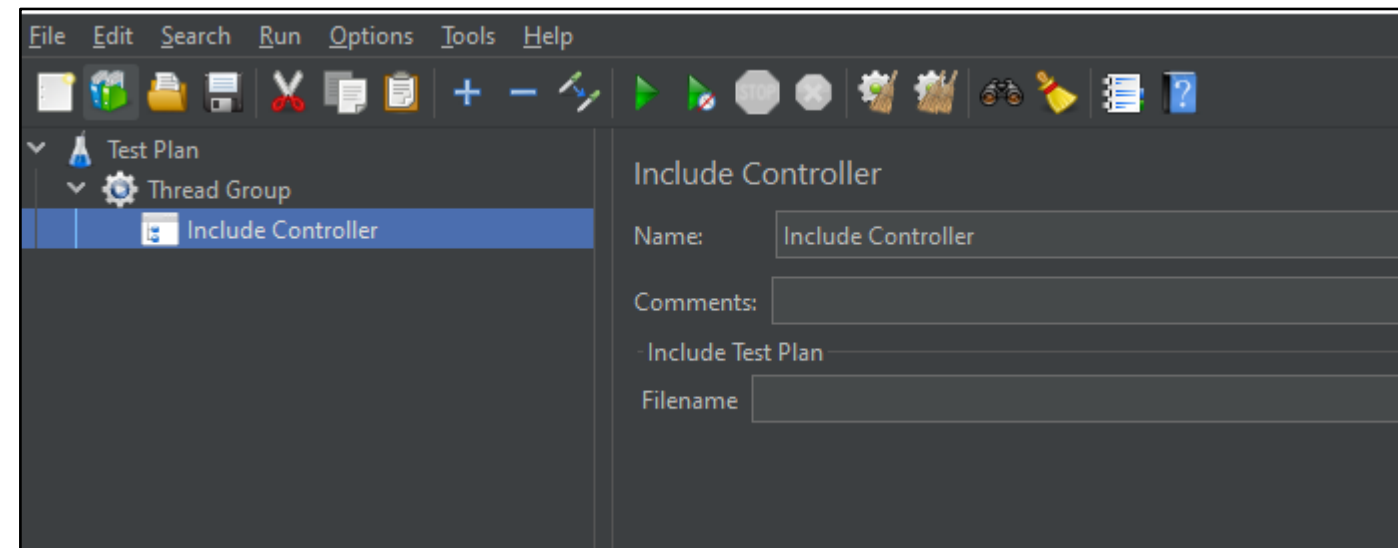
Module Controller

A Module Controller allows users to reuse a test fragment (for example, a sampler) by selecting the module from the Module Controller's control panel.



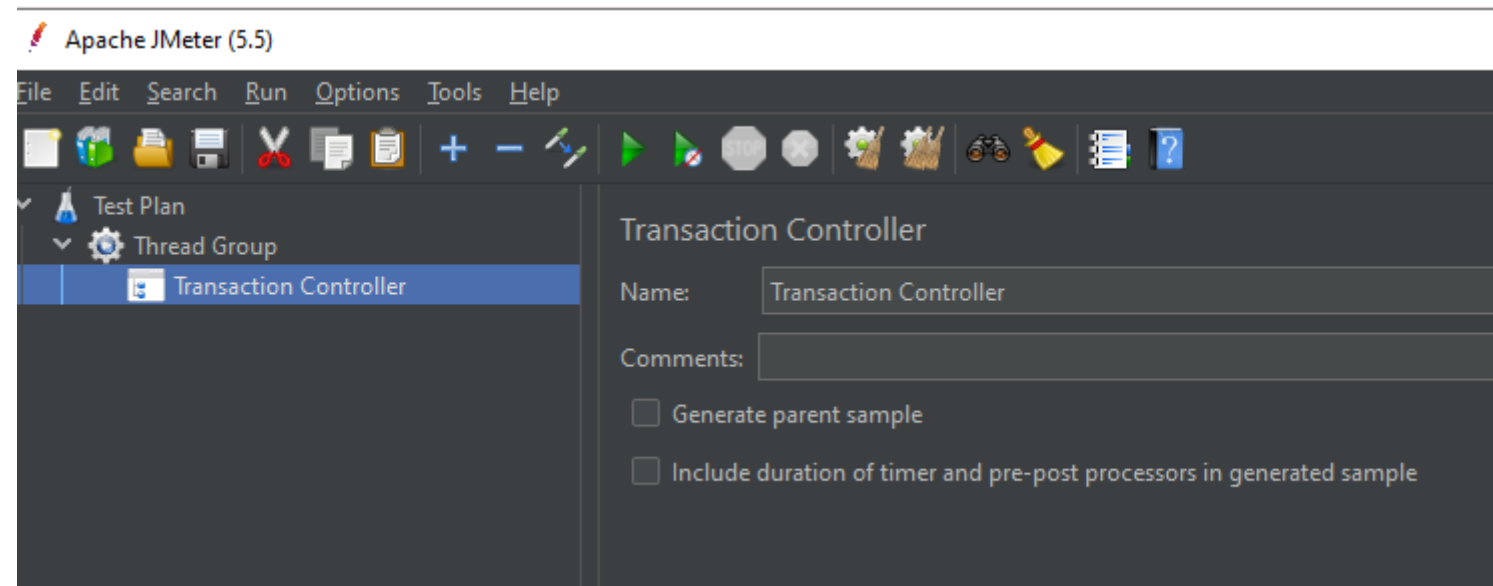
Include Controller

An Include Controller is designed for external test plans. JMeter supports multiple test plans through this controller.



Transaction Controller

A Transaction Controller is used to group multiple sampler requests into one. It evaluates the response time and other performance metrics of the entire test result.



In JMeter scripts, the Transaction Controller is one of the most widely used controllers.

Recording Controller

The Recording Controller serves as a placeholder for the scripts recorded using an HTTP proxy server.



Record



User Activity

Store

Recording
Controller

Advantages of Logic Controllers

A Logic Controller offers the following advantages:

01

It specifies the order in which requests are processed in a thread.

02

It can modify the order of requests received from their child elements.

03

It can process requests as one transaction or run them in a loop.

Key Takeaways

- Logic Controllers determine how Samplers and other child elements should be processed within a Test Plan.
- There are different types of Logic Controllers, which determine the sequence and flow of requests.
- Requests can be processed in a single transaction or looped, depending on the controller.
- It evaluates the response time and other performance metrics of the entire test result.

