Automation Testing

Processors

A Day in the Life of a Full Stack Developer

Alex uses JMeter to test his projects. As a result, he became familiar with all the elements of JMeter.

However, he wishes to modify the samplers in accordance with the requests within its scope. He would like to perform some actions prior to the sampler request and some after the sampler request.

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

Learning Objectives

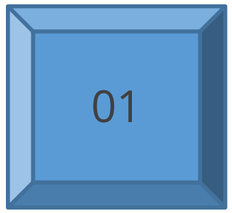
By the end of this lesson, you will be able to:

- Define processors
- Analyze the type of Preprocessor and their properties
- Understand types of Postprocessor and their properties
- Discuss the advantages of processors

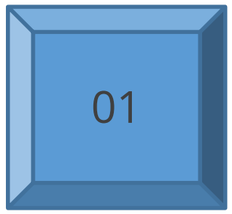
Processors

What Are Processors?

Processors are used to modify samplers within their scope.
There are two types of processors:



PreProcessors



PostProcessors

Add PreProcessor

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

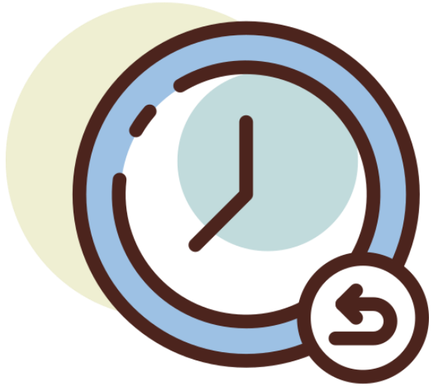
01 Right-click on **Thread Group** and select **Add**

02 Hover over the **Processor**

03 Select the required **PreProcessor**

PreProcessors

PreProcessors are JMeter elements that execute actions prior to the execution of sampler requests.



It can be used for a variety of performance testing purposes, including fetching database data, setting a timeout, and generating test data.

Types of PreProcessors

The following is a list of PreProcessors:

01 JSR223 PreProcessor

02 User Parameters

03 HTTP Link Parser

04 HTTP Re-Writing Link Modifier

Types of PreProcessors

The following is a list of PreProcessors:

05 JDBC PreProcessor

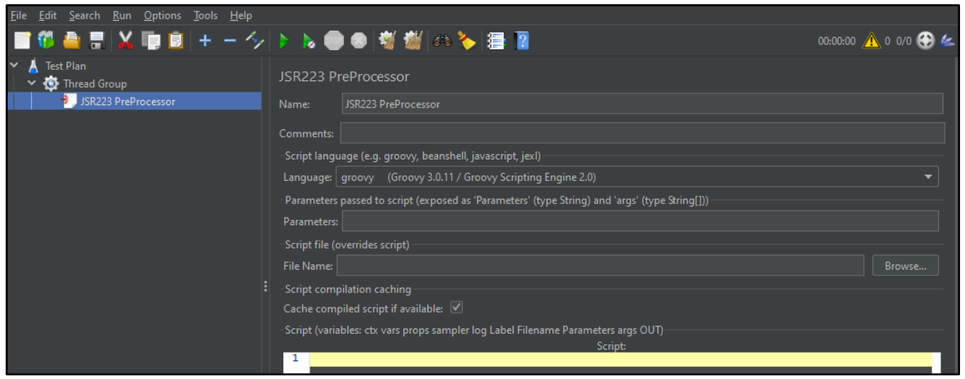
06 Sample Timeout

07 RegEx User Parameters

08 Bean Shell PreProcessor

JSR223 PreProcessor

Java Specification Requests JSR223 is a scripting-based PreProcessor for JMeter.



. JSR223 PreProcessor is useful when a user needs to write a custom code based on some unique algorithm that is not currently available in JMeter.

JSR223 Properties

A user must set the following JSR223 parameters before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Comments	It is used to describe the arbitrary comment.
Language	It is used to choose the script language.
Parameters	It is used to describe the parameters to pass to the script.

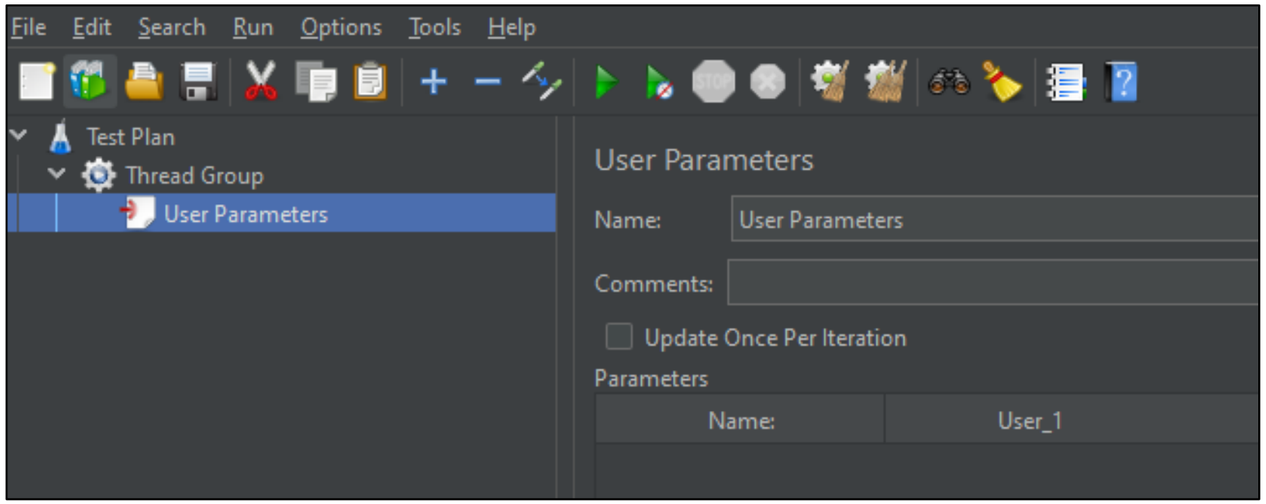
JSR223 Properties

A user must set the following JSR223 parameters before processing the processor:

Attribute	Description
Script	It is the manual script that contains the logic for preprocessing.
Script file	It is the file that contains the script to be executed.
Script compilation caching	It is a unique string across the Test Plan that will be used by JMeter to cache the results of the script.

User Parameters

A User Parameters PreProcessor can be used when users need to reuse test data repetitively and share it across multiple threads.



User Parameters Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Comments	It is used to describe the comments if needed.
Update Once Per Iteration	Users must check the Update Once Per Iteration checkbox if they want to update variables with only one iteration based on the parent controller's execution.

User Parameters Properties

A user must set the following properties before processing the processor:

Attribute	Description
Parameters	It is used to describe the parameters like variables, number of users, and variable value.
Name	It is used to describe the name of the variable in this section.
User	It is used to describe the variable value used by the user in the nth thread, where n is the thread index.

User Parameters Properties

A user must set the following properties before processing the processor:

Attribute	Description
Add or Delete Variable	It is used to add or delete new row.
Add/Delete User	It is used to add or delete the user.
Up	It is used to shift the row up.
Down	It is used to shift the row down.

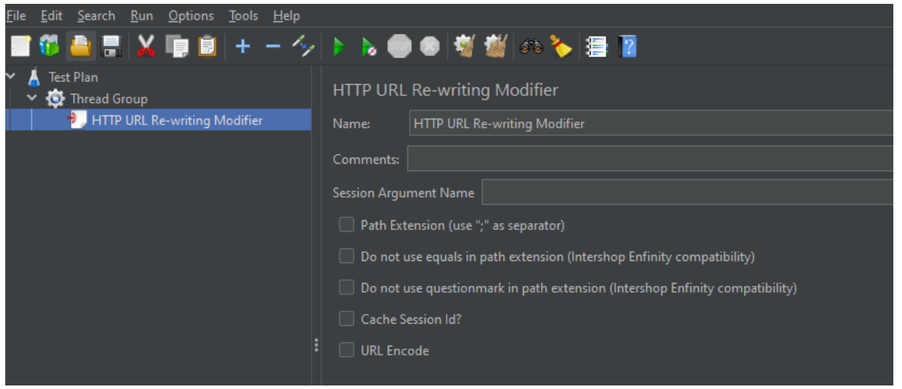
HTTP Link Parser

HTML Link Parser extracts all the HTML links from the previous response and passes the random link to the subsequent request.

This HTML Link Parser reduces manual data entry.

HTTP Re-Writing Modifier

HTML Re-writing is used for web applications to store session IDs instead of cookies, and it can be attached to the Thread Group, much like HTTP Cookie Manager.



HTTP URL Re-writing Modifier works the same as HTML Link Parser but is easier to use.

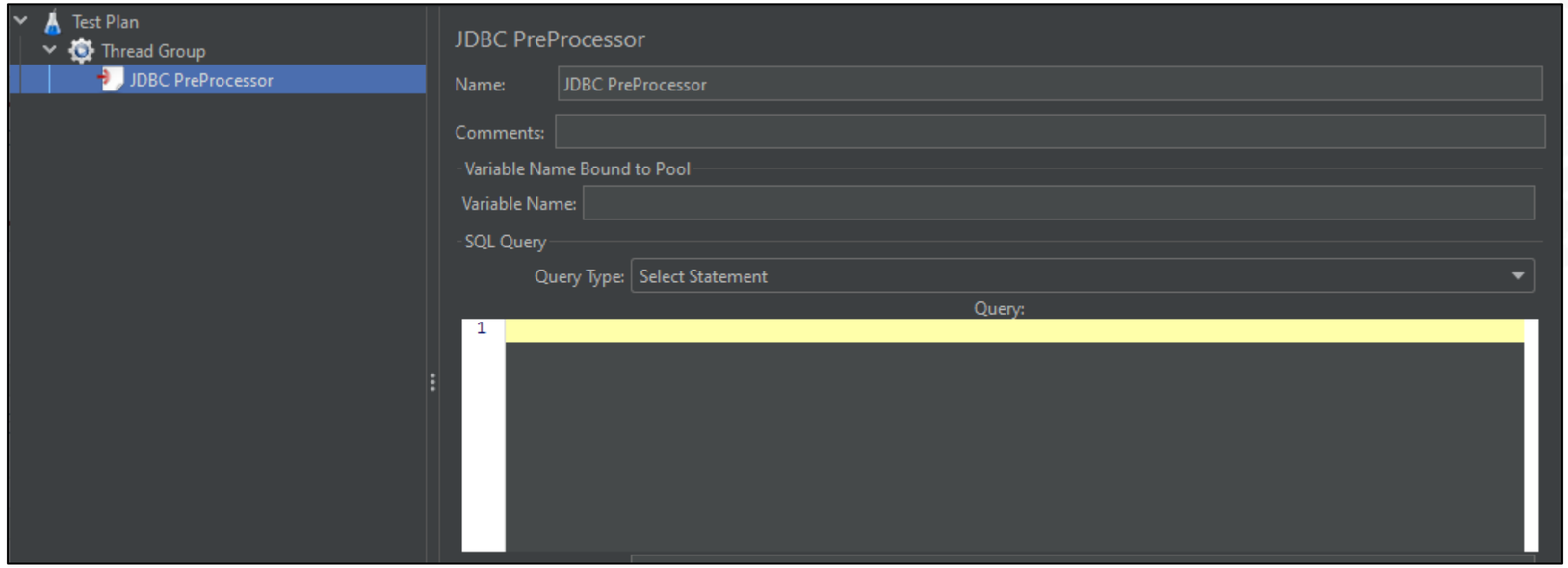
HTTP Re-Writing Link Modifier Properties

A user must set the following properties before processing the processor:

Attribute	Properties
Path Extension	It is used in web apps to rewrite URLs by appending a semicolon and the session ID. A user should not use an equal sign or a question mark.
Cache Session Id	It is a mandatory attribute that is used to save the session ID for later use.
URL Encode	It is an optional attribute that specifies how URL values are encoded.

JDBC PreProcessor

The JDBC PreProcessor is used to fetch data from the database that is used in the sampler.



JDBC PreProcessor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Comments	It is used to describe the arbitrary comment if needed.
Variable Name of Pool declared in JDBC Connection Configuration	It is used to display the name of the connection pool given in the JDBC Connection Configuration.

JDBC PreProcessor Properties

A user must set the following properties before processing the processor:

Attribute	Properties
Query Type	It is used to select the type of SQL query statement like Select, Update, Callable, Commit, and Rollback.
Query	It is used to write down the actual query which is used to perform the operation.
Parameters Value and Types	It is used to describe the parameters used in SQL query.

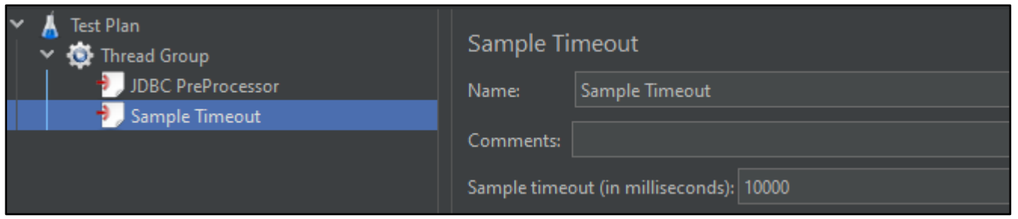
JDBC PreProcessor Properties

A user must set the following properties before processing the processor:

Attribute	Properties
Variable Names	It is used to store data fetched from the database in a comma-separated format.
Result Variable Name	It is used to store the key-values variable in which the data-set value is stored.
Query Timeout	It is used for query response until the given timeout (in seconds) reaches the end.
Handle Result Set	It is used for handling the result that has been fetched from the response.

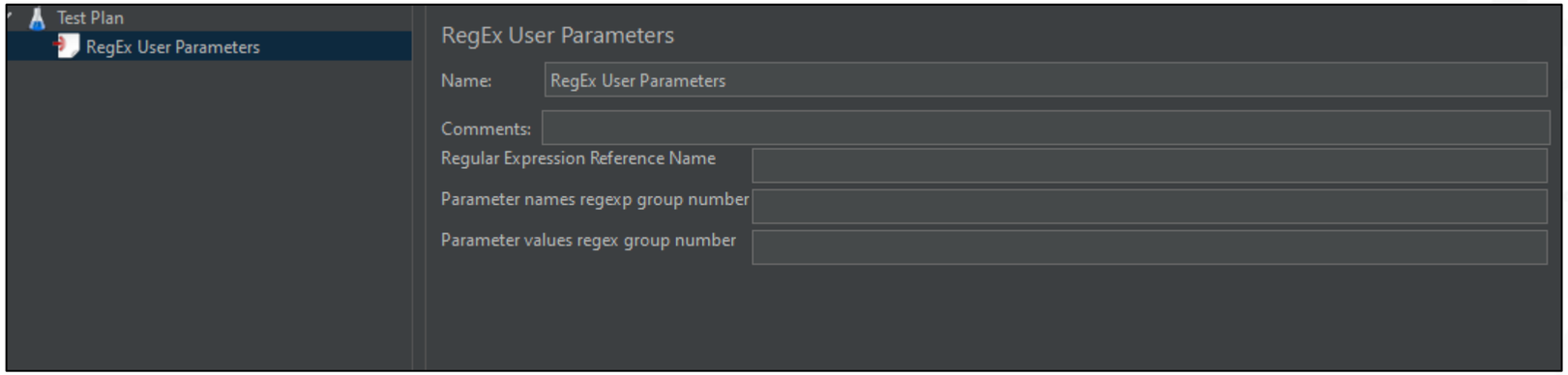
Sample Timeout

The Sample Timeout PreProcessor is used under samples in which threads may become stuck.



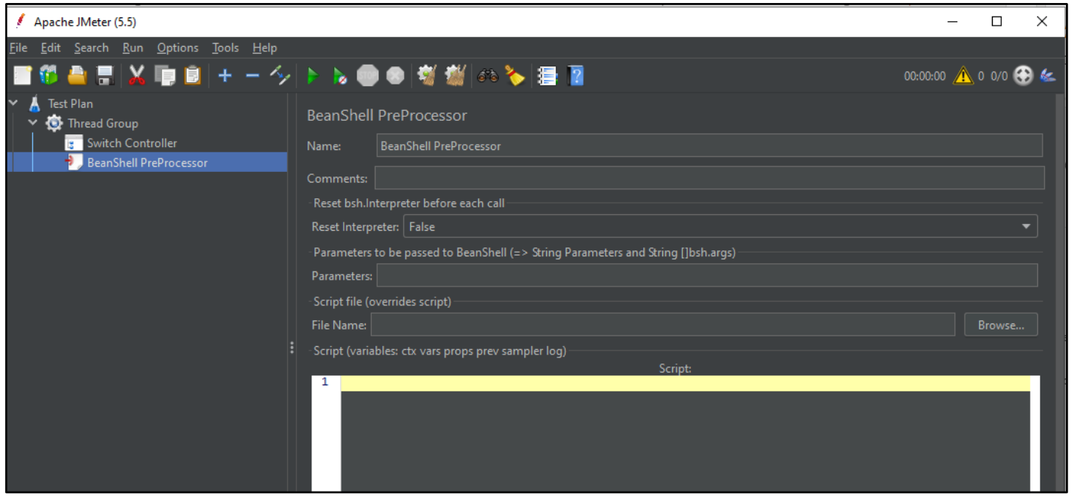
Reg Ex User PreProcessor

RegEx User Parameters allow user to specify dynamic values for HTTP parameters retrieved from another HTTP Request by using regular expressions.



Bean Shell PreProcessor

A Bean Shell PreProcessor understands Java syntax and provides scripting capabilities, such as loose types, commands, and method closures.



Bean Shell entities have access to both internal JMeter APIs and external classes loaded into the JMeter class path.

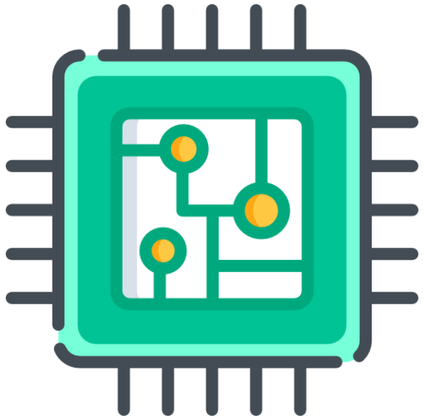
BeanShell Properties

The user must set the BeanShell parameters to process the processor.

Attribute	Description
Name	It is used to describe the name of the processor.
Reset bsh.Interpreter before each call	It is used to reset the interpreter before each call and cleans the occupied memory.
File Name	It is used to describe the path to an external BeanShell script that needs to be run.

PostProcessors

PostProcessors are JMeter elements that execute actions after the execution of sampler requests.



These elements enable JMeter to retrieve the data from the response or instruct it to perform the next action based on the response.

Types of PostProcessors

The following is a list of PostProcessors:

01 CSS Selector Extractor

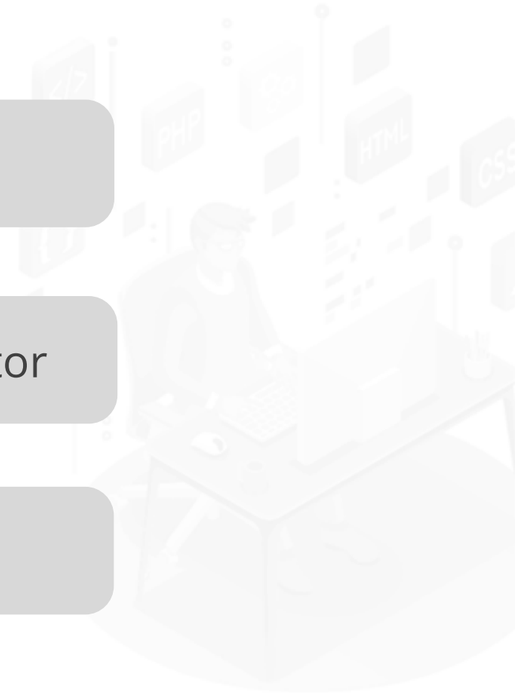
02 JSON Extractor

03 JSON JMESPath Extractor

04 Boundary Extractor

05 Regular Expression Extractor

06 JDBC PostProcessor



Types of PostProcessors

The following is a list of postprocessors:

07 JSR223 PostProcessor

08 Debug PostProcessors

09 Result Status Action Handler

10 XPath Extractor

11 XPath2 Extractor

12 BeanShell PostProcessor

Add PostProcessor

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

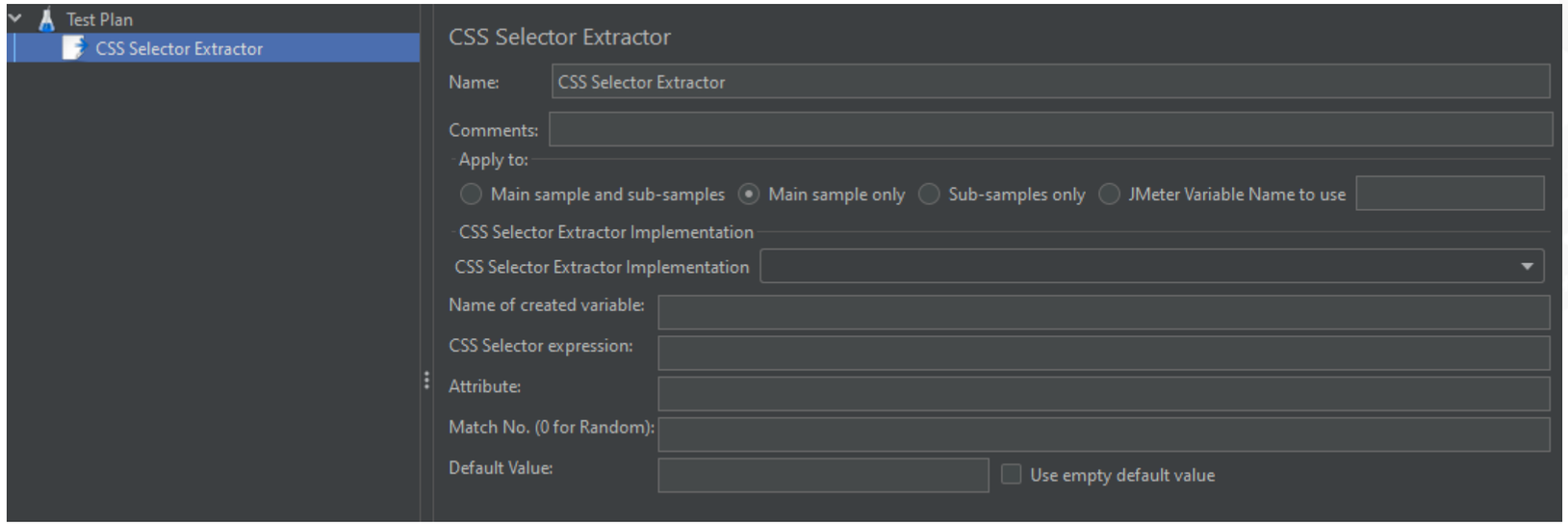
01 Right-click on **Thread Group** and select **Add**

02 Hover over the **Processor**

03 Select the required **PostProcessor**

CSS Selector Extractor

CSS and JQuery are used to access or set style properties for selected elements during application testing.



CSS Selector Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Apply To	It is used when the sampler has multiple sub-samples.
Main sample only	It is used to apply the extractor to the main sample.
Sub-samples only	It is used to apply the extractor to the sub-samples.

CSS Selector Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Main sample and sub-samples	It is used to extract the main sample and sub-samples.
JMeter Variable	It is used to extract the JMeter variable.
Reference Name	It is used to mention the name of the value container.
CSS/JQuery expression	It is used to extract matching values to JMeter variables.

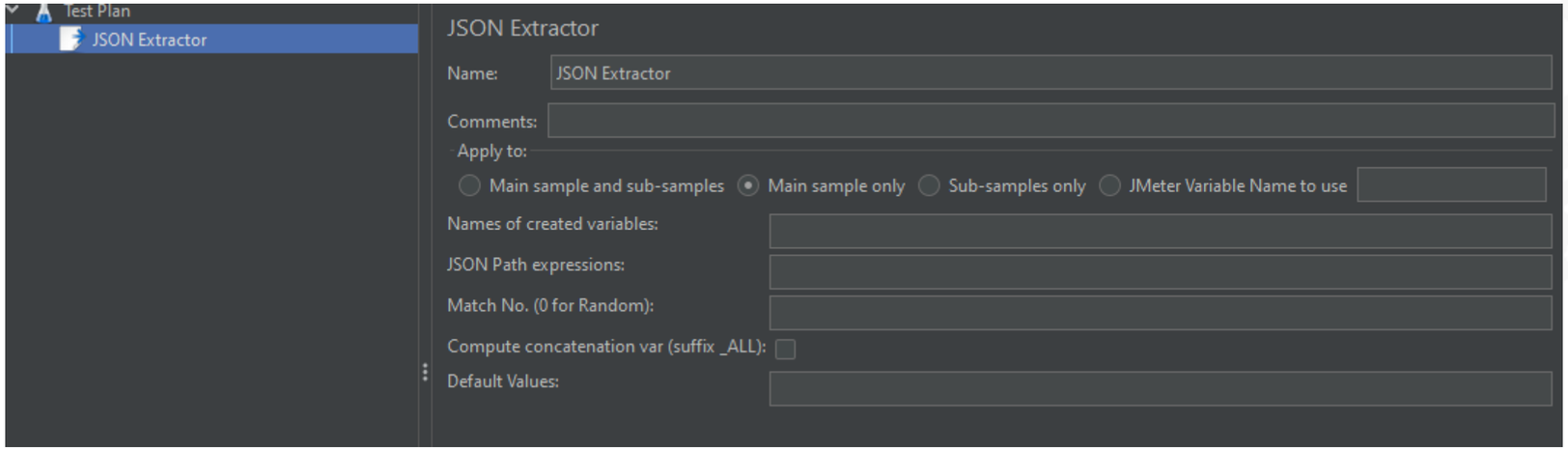
CSS Selector Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Attribute	It is used to extract values from nodes that matched the selector.
Match No	It is used to match the CSS/JQuery based on the value.
Default Value	It is used to describe the name of the result JMeter variable that will be used as a value container.

JSON Extractor

A JSON extractor facilitates the execution of JSON Path expressions against JSON responses.



The JSON extractor stores the result in a JMeter variable.

JSON Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Apply To	It is used when the sampler has multiple sub-samples.
Main sample only	It is used to apply the extractor to the main sample.
Sub-samples only	It is used to apply an extractor to the sub-sample.

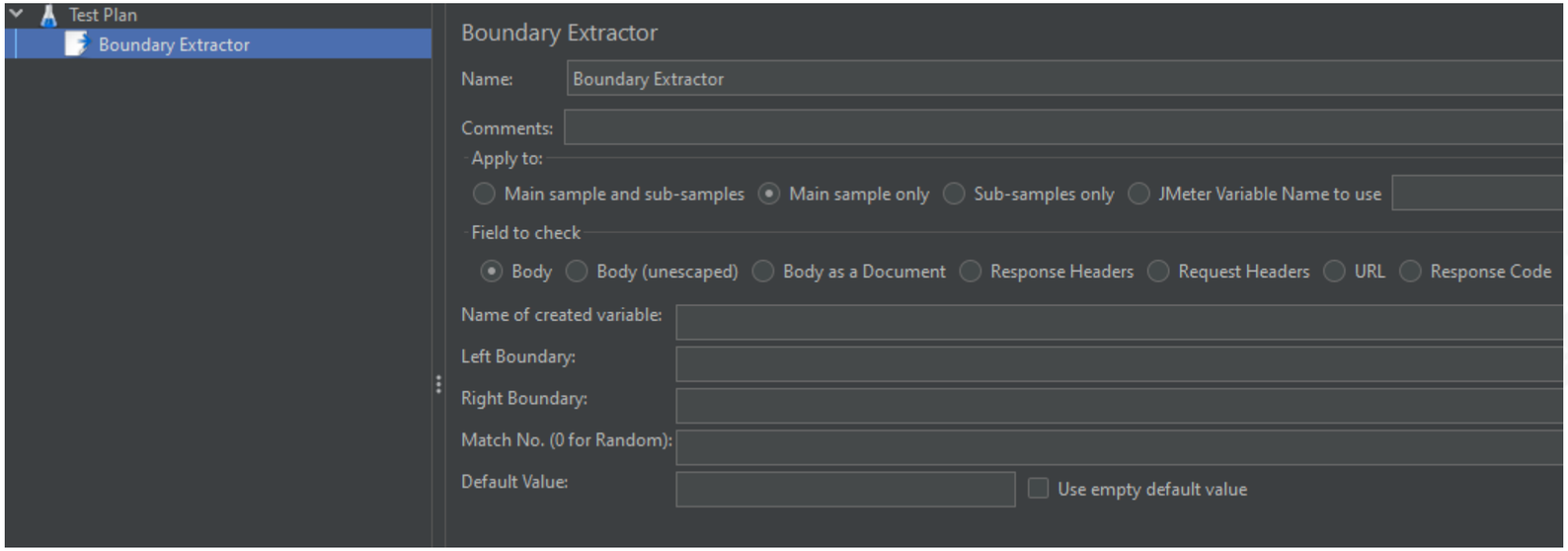
JSON Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Main sample and sub-samples	It is used to apply the extractor to both the main sample and sub-sample.
JMeter Variable	It is used to apply the extractor to the JMeter variable.
Reference Name	It is used to describe the name of the result JMeter variable that will be used as a value container.
CSS/JQuery expression	It is used to extract the matching values to JMeter variables.

Boundary Extractor

Boundary extractors extract data from the boundaries of server responses after the sampler has been executed.



Once the data or values have been extracted, the template string must be generated, and the results must be stored in the variable.

Boundary Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
JMeter Variable	It is used to apply the extractor to the JMeter variable.
Field To Check:	It is used to represent the body, and document data.
Regular expression	It is used to match the pattern against the text to be extracted. The symbols .'. + '?' represent a single instance of the text placed by the tags.

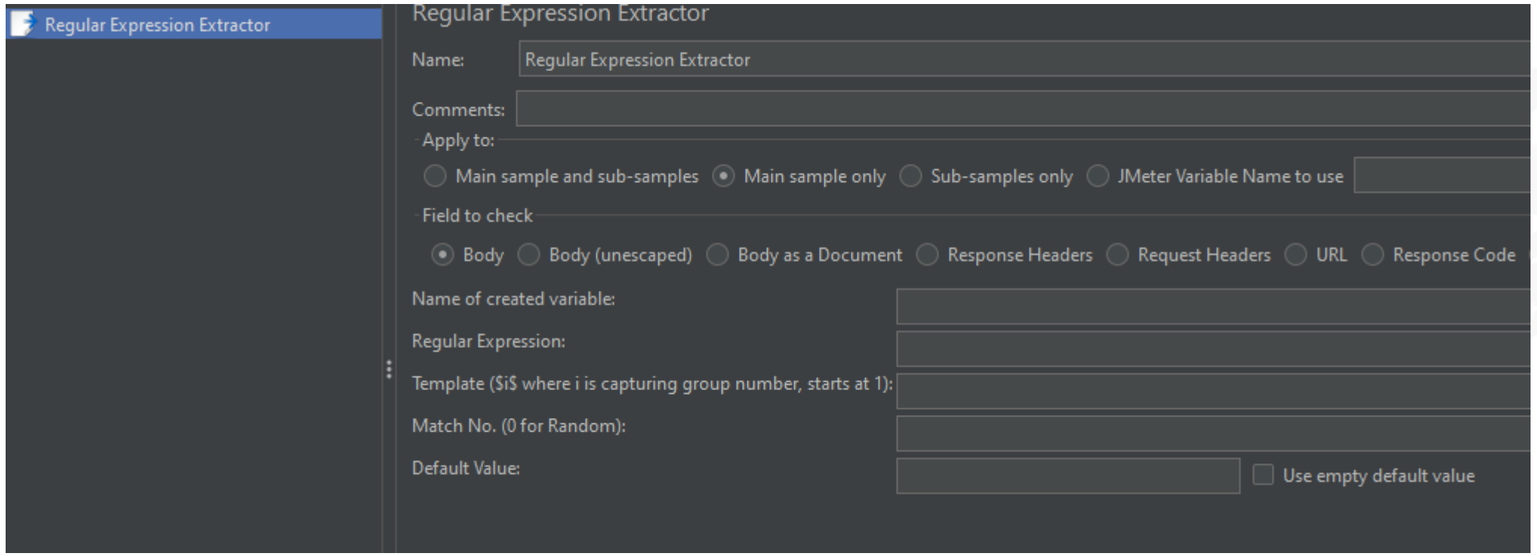
Boundary Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name of the created variable	It is used to store the result in a created variable.
Match No	It is used to match the regular expression based on the value.
Default Value	It is used to describe the name of the result JMeter variable that will be used as a value container.

Regular Expression Extractor

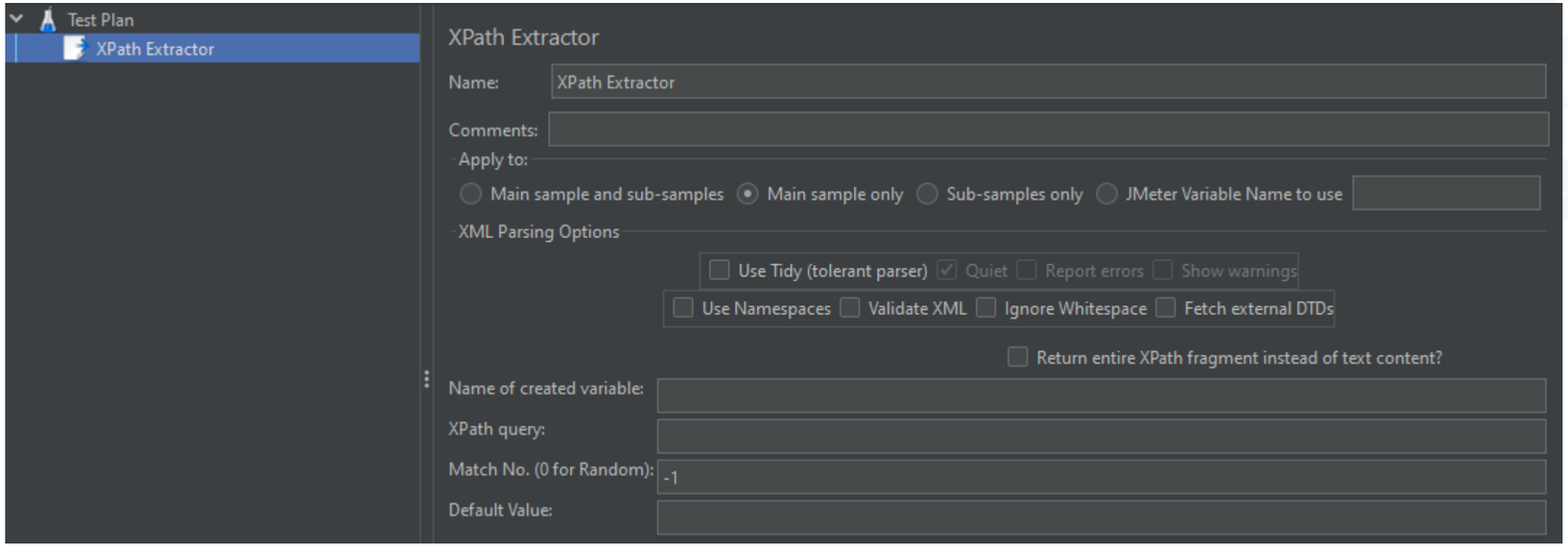
Regular expression extractors are used to extract information from the response of the server. Perl regular expressions are used to extract information such as values.



It will run after each sampler request is executed.

Xpath Extractor

The XPath Extractor extracts values from XML or XHTML responses using the Xpath Query language.



Xpath Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
Name	It is used to describe the name of the processor.
Apply To	It is used when the sampler has multiple sub-samples.
Main sample only	It is used to apply the extractor to the main sample.
Sub-samples only	It is used to apply extractor to the sub sample.

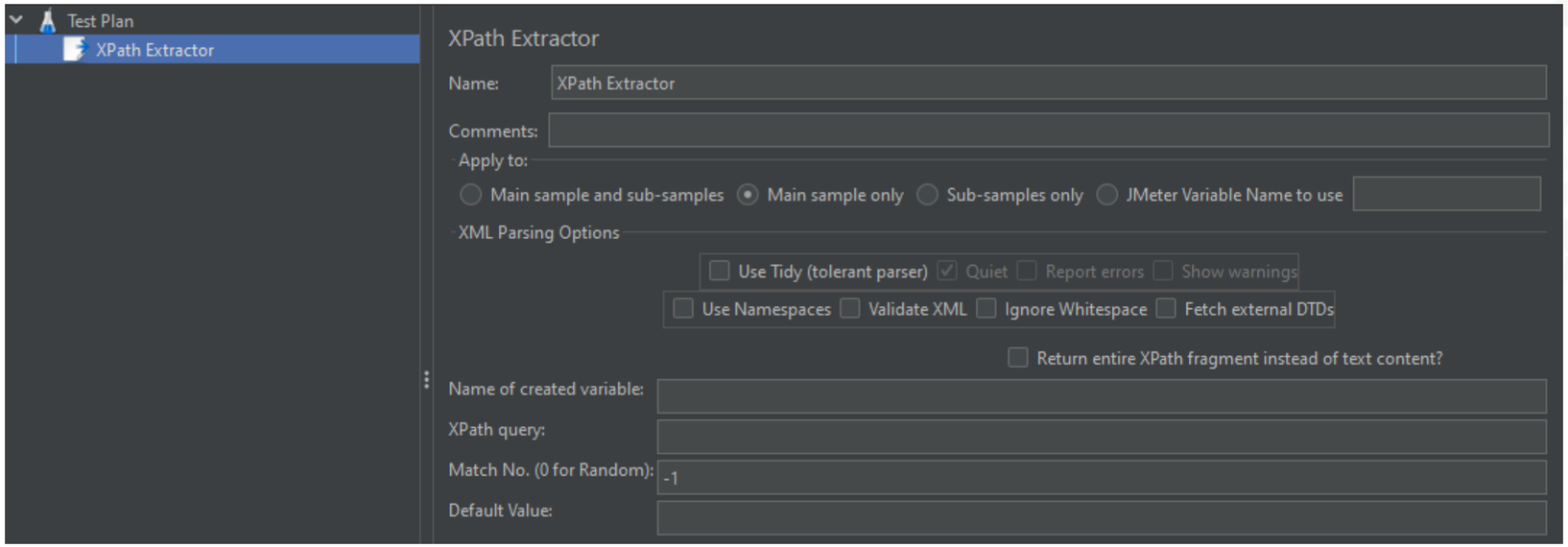
Xpath Extractor Properties

A user must set the following properties before processing the processor:

Attribute	Description
XPath Query	It is used for Query in XPath language.
Match No	It is used to match the expression based on the value. 0 will extract random value and -1 will extract all the values.
Default Value	It is used to return in case there is no match found.

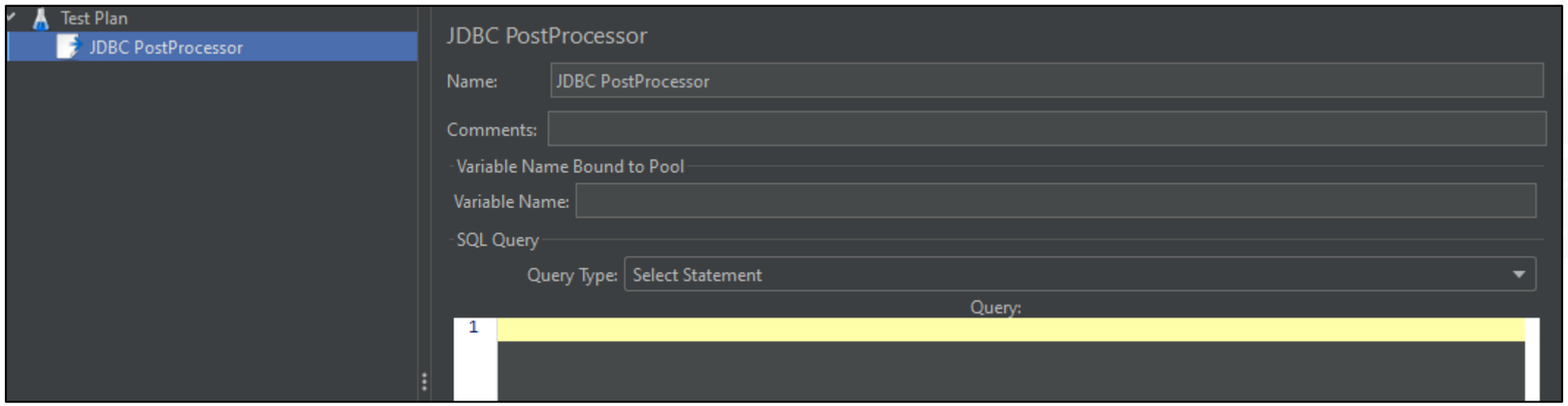
JSON Path Post Extractor

The processor gets the data from the JSON response using JSON path syntax. In this case, it is created under the sampler, which has a response.



JDBC Post Extractor

The JDBC Post-processor enables you to run SQL statements after a sample has been run. The utility can also be useful for restoring data that has been changed during a sample run.



Users can run queries against any table to get the needed information.

JDBC PostProcessor Properties

A user must set the following properties before processing the processor:

Attribute	Properties
Query Type	It is used to select the type of SQL query statement like Select, Update, Callable, Commit, and Rollback.
Query	It is used to write down the actual query that is used to perform the operation.
Parameters Value and Types	It is used to describe the parameters used in SQL query.

JDBC PostProcessor Properties

A user must set the following properties before processing the processor:

Attribute	Properties
Variable Names	It is used to store data fetched from the database in a comma-separated format.
Result Variable Name	It is used to store the key-values variable in which the data-set value is stored.
Query Timeout	It is used for query response until the given timeout (in seconds) reaches to end.
Handle Result Set	It is used for handling the result that has been fetched from the response.

Debug PostProcessor

A JMeter Debug PostProcessor is used to identify the bug in the parent sampler.

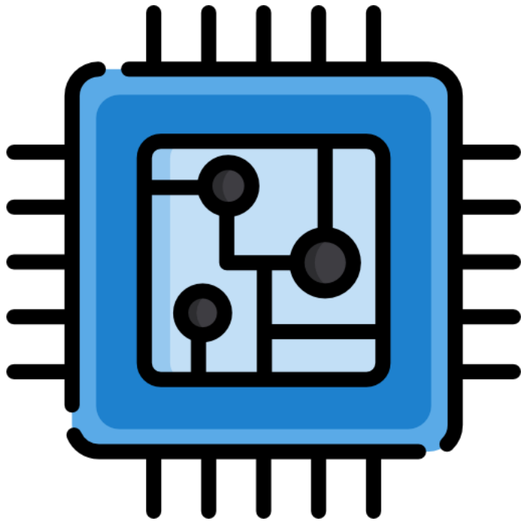
Result Station Action Handler

The Result Status Action Handler enables the user to stop the thread or the whole test if the relevant sampler fails.

It determines what should happen if a sampler error occurs, whether from a failed sample or an assertion.

Xpath PostProcessor

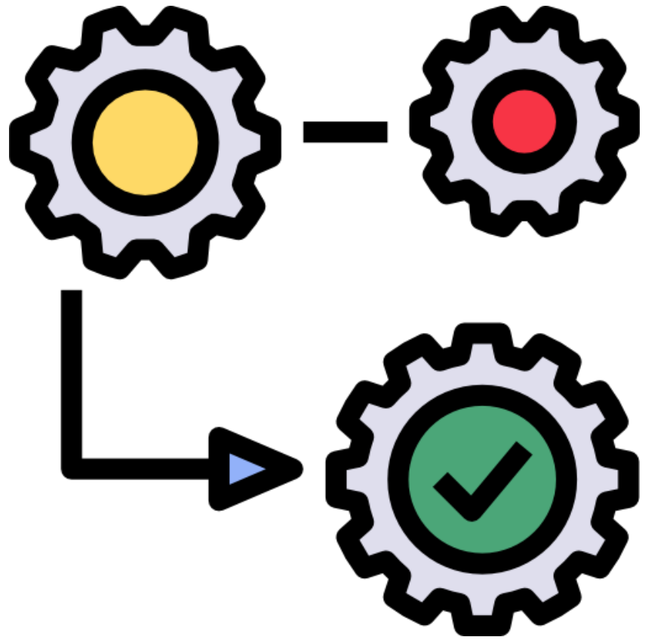
The XPath Post-Processor uses a Regular Expression string to retrieve some values from the response.



This value(s) can be stored in any variable and used as a reference for any further request in the test plan.

Advantages of Processors

The processor executes the response data from the server and saves the specific extracted values for future use.



Key Takeaways

- Processors are used to modify samplers within their scope.
- PreProcessors are JMeter elements that execute actions prior to the execution of sampler requests.
- PostProcessors are JMeter elements that execute actions after the execution of sampler requests.
- It executes the response data from the server and saves the specific values for future use.