



# Performance Testing Course : JMeter - Sampler

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Author: Hien HOANG



# Agenda

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- Introduction about several popular sampler.
- Showcases.
- Exercises.

# Definition

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Sampler is normally JMeter elements that allows tester to send request to server and wait for returned response.(except some specific elements)

=> Many types of samplers.

# Debug Sampler

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Specific JMeter sampler that allows to show variables, JMeter and system properties.

Usage:

- Print the variable to check if other elements works properly.
- Print the property so we could use it elsewhere.



# Debug Sampler

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## Showcases:

1. Use Debug Sampler to show the value of user.dir.
2. Use Debug Sampler to show the value of variables “*results*”.

# Debug Sampler

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## Exercise:

1. Define a property in file system.properties. Try to find it out with Debug Sampler.
2. Use Debug Sampler to print variable in JDBC request.

# HTTP Request Sampler

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## Attribute:

- Web server - Protocol : Default is http. If protocol is https, then specify it here.
- Server name or IP: IP address/domain name of server.
- Port number: By default it is 8080. For other ports, we should define the value there.
- Method: Common methods are GET/POST/PUT/DELETE. After WebDAV extension are released, new methods are included like PROPATH,PROFIND,LOCK,UNLOCK,COPY,etc...
- Path: Relative path in URL.
- Content encoding: Character encoding to be used.
- Redirect Automatically: If checked then JMeter will consider redirect as separate HTTP request.
- Follow Redirects: If checked, JMeter will consider each redirection as separate requests. This may result in comparatively higher response time.

# HTTP Request Sampler(continued)

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- Use Keep Alive: Checked by default. It is HTTP feature to keep a persistent connection between round trips, so that it does not initiate a new one on every single request.
- Use multiple-part/data form: Built-in option in POST request required by HTML to correctly process file uploads.
- Browser-compatible headers: When using multipart/form-data, this suppresses the Content-Type and Content-Transfer-Encoding headers; only the Content-Disposition header is sent.
- Parameters: The query string will be generated from the list of parameters you provide. Each parameter has a *name* and *value*, the options to encode the parameter, and an option to include or exclude an equals sign



# HTTP Request Sampler(continued)

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## Showcase:

- Simulate the request <https://restool-sample-app.herokuapp.com/#/characters> with HTTP Request sampler.
- Verify if result is correct.
- Simulate action when user creates characters with:
  - Thumbnail = [https://www.shareicon.net/data/128x128/2016/01/05/232816\\_naruto\\_256x256.png](https://www.shareicon.net/data/128x128/2016/01/05/232816_naruto_256x256.png)
  - Name = Naruto
  - Real name = Naruto Uzumaki
  - Location = Beyond The Wall

# HTTP Request Sampler(continued)

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## Exercises:

- Simulate action edit user location.
- Simulate action delete user.

# Dummy Sampler

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## Definition:

Dummy Sampler simulates requests to the server without actually running the requests, serving as a placeholder or to mimic other samplers. The sample is generated with the values defined in it.

# Pre-requisites : Plugin manager

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How to download?

- Go to <https://jmeter-plugins.org/install/Install/>
- Download plugin-manager.jar and place it into lib/ext folder.
- Restart JMeter.
- Click on Options > Plugin Manager.
- Select these following plugins : Dummy Sampler

# Dummy Sampler(continued)

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Usage:

- Adjust timer for request.
- Test the pre-processor/extractor.
- etc...

# Dummy Sampler(continued)

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## Showcase:

- Add timer to a Dummy sampler to make it wait for at least 1 and at most 2 s.
- Verify with listener.
- Create a dummy sampler to simulate API : <https://my.lazada.vn/api/recentOrders/> with:
  - Request header
  - Response header

# Dummy Sampler(continued)

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## Exercise:

- Create a dummy sampler with these following properties:
  - Connect time : random value between 100 and 500 ms
  - Latency : random value between 10 and 100 ms
  - Response time : random between 1000 ms and 2500 ms
- Create a dummy sampler to simulate API :  
<https://topdev.vn/blog/huong-trien-khai-cho-cac-project-machine-learning/> with:
  - Request header
  - Response data

# JDBC Sampler

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Definition: Type of JMeter sampler allowing to simulate the query request sent to database server

Note : We have different databases like MySQL, Oracle, Microsoft SQL Server,etc... and each database requires some specific connection configurations -> JDBC Sampler could not be run without the configuration for establish the connection, which is JDBC Connection Configuration.

## Attribute:

- Name : Name of the request.
- Variable Name of Pool declared in JDBC Connection Configuration: Name of the database connection specified in JDBC Connection Configuration.
- SQL Query Type: We have Select statement, Update Statement, Callable Statement, Prepared Select Statement, Prepare Update Statement, Commit, Rollback, AutoCommit(false).
- Query: Where to define the query.



# JDBC Sampler(continued)

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## Attribute:

- Name : Name of the request.
- Variable Name of Pool declared in JDBC Connection Configuration: Name of the database connection specified in JDBC Connection Configuration.
- SQL Query Type: We have Select statement, Update Statement, Callable Statement, Prepared Select Statement, Prepare Update Statement, Commit, Rollback, AutoCommit(false).
- Query: Where to define the query. **Do not enter a trailing semicolon.**

# JDBC Sampler(continued)

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## Attribute:

- Parameter values : Comma-separated list of parameter values(required in case of prepared or callable)
- Parameters type: Comma-separated list of parameter type(INTEGER,DATE,VARCHAR,DOUBLE,etc...)[required in case of prepared or callable statement]
- Variable Names: Comma-separated list of variables name that hold values returned by Select Statements.[be careful of the sequence in case of prepared or callable statement]
- Result Variable Name: If specified then JMeter will create Object variable containing a list of row maps. Each map contains the column name as the key and the column data as the value.
- Query timeout: Set a timeout in seconds for query, empty value means 0 which is infinite. -1 means don't set any query timeout which might be needed for use case or when certain drivers don't support timeout. Defaults to 0.

# JDBC Sampler(continued)

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Attribute:(for more details, please see

[https://jmeter.apache.org/usermanual/component\\_reference.html#JDBC\\_Request](https://jmeter.apache.org/usermanual/component_reference.html#JDBC_Request))

- Handle ResultSet: Defines how ResultSet returned from callable statements be handled:
  - **Store As String** (default) - All variables on Variable Names list are stored as strings, will not iterate through a **ResultSet** when present on the list.
  - **Store As Object** - Variables of **ResultSet** type on Variables Names list will be stored as Object and can be accessed in subsequent tests/scripts and iterated, will not iterate through the **ResultSet**.
  - **Count Records** - Variables of **ResultSet** types will be iterated through showing the count of records as result. Variables will be stored as Strings.

# JDBC Sampler(continued)

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## Showcase:

- Prepare a JDBC request with Select Statement to select department id and name from table Departments of database Employees.
- Prepare a JDBC request with Prepared Select Statement to select department's name knowing its id from table Departments of database Employees.

# JDBC Sampler(continued)

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## Exercise:

## Database configuration:

Username: aCduOluBJS ; Database name: aCduOluBJS ; Password: jHNSLnYXzZ ; Server: remotemysql.com ;Port: 3306

- Prepare a JDBC request with Select Statement to select all orders.
- Prepare a JDBC request with Prepared Select Statement to select employees of office with id = 2.

# JSR223 Sampler

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Definition: Type of JMeter sampler allowing to JSR223 script code to perform a sample or required computation to create/update variable.

## Attribute:

- Language : Choose your scripting language.
- Script file: Name of a file to be used as a JSR223 script, if a relative file path is used, then it will be relative to directory referenced by "**user.dir**" System property
- Parameters: List of parameters to be passed to the script file or the script.
- Cache compiled script if available: If checked and language supports Compilable interface(for now we only have Groovy in the list),JMeter will compile the script and cache it.
- Scripts(variables: xxx) : List supported variables by JMeter.

# JSR223 Sampler - Supported variables

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- ctx: Holds context for a thread. Visit <https://jmeter.apache.org/api/org/apache/jmeter/threads/JMeterContext.html> for supported methods.

Showcase:

- Print the value of previous response message.

Exercise:

- Print the value of variable “results” created by user

# JSR223 Sampler - Supported variables(continued)

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- vars: Jmeter variables. Visit <https://jmeter.apache.org/api/org/apache/jmeter/threads/JMeterVariables.html> for supported methods.

Showcase:

- Get the value of variable “results”.

Exercise:

- Put value to a variable and print it out.



# JSR223 Sampler - Supported variables(continued)

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- props: Jmeter properties. Visit <https://jmeter.apache.org/api/org/apache/jmeter/testelement/property/JMeterProperty.html> for supported methods.

Showcase:

- Get the value of property “url”.

Exercise:

- Put value to a property and print it out.

# JSR223 Sampler - Supported variables(continued)

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- SampleResult: Various information returned from taking a sample of an entry. Visit <https://jmeter.apache.org/api/org/apache/jmeter/samplers/SampleResult.html> for supported methods.

Showcase:

- Set the response code of request to be 404.

Exercise:

- Set the response code to be 500.

# JSR223 Sampler - Supported variables(continued)

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- log: Print to log of JMeter. Syntax : log.info()

Showcase:

- Print the value of property “url”.

Exercise:

- Print the value of variable “username” and “password”.

# JSR223 Sampler - Supported variables(continued)

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We still have some others variables but they are situational components. You can search more information about them on JMeter home page.