



Selenium Open Source Test Automation Framework Scripting Standards

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1. Introduction

1.1. Purpose

This document provides details about the various columns used during scripting, the keywords and their descriptions, along with methodologies to be followed while scripting using keywords.

2. Standards for Keyword Scripting

2.1. Getting Started

Before learning about the columns used for keyword scripting, the user should know the keyword script and how the framework is called.

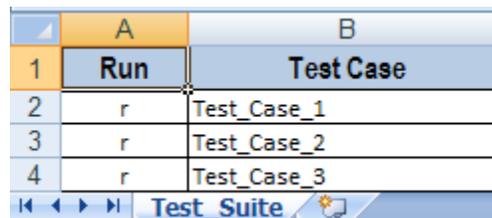
The execution is started by running the file Main.rb. In the main class when the method test_new() is called, it will call a method named importdata(). This method importdata() imports the location of all the project directories specified in the particular Excel sheet and will call the method keyword_driver(), which will perform the actual test execution.

2.2. Column Description of Test Suite

This section describes the columns used in the test suite for keyword scripting.

2.2.1. Column 'A'

The data in the 'Run' column identifies whether the test case is to be run (automated) or not. This column has the letter 'r', which denotes that the test case should be run. If any step in the test suite is not being run, then the corresponding row in the first column is to be left blank.



	A	B
1	Run	Test Case
2	r	Test_Case_1
3	r	Test_Case_2
4	r	Test_Case_3

Figure 1: Column 'Run'

2.2.2. Column 'B'

The second column of the test suite indicates the name of the Test Case that has to be executed. So, if the column A is specified 'r,' it means that the particular test case is going to be executed.

2.3. Column Description of Test Case

This section describes the columns used in Test Case for keyword scripting.

2.3.1. Step (Column 'A')

The data in column 'A' identifies whether the current step in the test case is to be run or not. This column has the letter 'r', which denotes that the current step should be run. If any step in the test case is not being run, then the corresponding row in the first column is to be left blank. All the steps will run based on the data in this column.

A	B	C	D	E	F
Step	Operation	Object	Action	Screenshot	Description
r	launchapp	https://portal.keane.com			Launch the Portal application
r	check	title:MyKeane Login	pagetitle:true	Y	Check if the Portal application is launched
r	check	textbox:UserName	exist:true	Y	Check if the User Name text box is displayed
r	perform	textbox:UserName	set:#Variable		Type the user name
r	perform	textbox:PassWord	set:#Variable1		Type the password
r	perform	button:BtlnLogin	click		Click on Login button
r	wait	10			Wait for page load
r	check	title:MyKeane Login	pagetitle:true		Check if the Portal application is launched
r	check	textbox:UserName	exist:true		Check if the User Name text box is displayed
r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true		Check if Keane Homepage is displayed
r	check	link:RecentInternalBroadcasts	exist:true		Check if Recent Internal Broadcasts link is present
r	check	text:Keane Press Release	textpresent:true		Check if Keane Press Release is present
r	check	link:KeaneInTheNews	exist:true		Check if Keane In The News link is present
r	perform	textbox:Search	set:dt_Search		Give a valid search criteria in Search textbox
r	perform	button:SearchBtn	click		Click on Search button
r	wait	8			Wait for page load
r	check	title:Search Results: Open2Test	pagetitle:true		Check if search result window is displayed.
r	check	text:Company puts a Keane eye on test scripts	textpresent:true		Validate the search result
r	check	text:Keane_QAT_Overview	textpresent:true		Validate the search result
r	perform	link:myKeane	click		Click on myKeane link
r	wait	8			Wait for page load
r	check	link:RecentInternalBroadcasts	exist:true		Check if the home page is displayed
r	perform	link:SignOut	click		Click on Signout link
r	check	link:SignOut	exist:false	Y	Check if the user had signed out

Figure 1: Column 'Step'

2.3.2. Operation (Column 'B')

The second column of the test case sheet indicates the generic type of action being performed on the application under test (AUT). This column is dedicated to different types of actions that will be performed on a particular object.

A	B	C	D	E	F
Step	Operation	Object	Action	Screenshot	Description
r	launchapp	https://portal.keane.com			Launch the Portal application
r	check	title:MyKeane Login	pagetitle:true	Y	Check if the Portal application is launched
r	check	textbox:UserName	exist:true	Y	Check if the User Name text box is displayed
r	perform	textbox:UserName	set:#Variable		Type the user name
r	perform	textbox:PassWord	set:#Variable1		Type the password
r	perform	button:BtlnLogin	click		Click on Login button
r	wait	10			Wait for page load
r	check	title:MyKeane Login	pagetitle:true		Check if the Portal application is launched
r	check	textbox:UserName	exist:true		Check if the User Name text box is displayed
r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true		Check if Keane Homepage is displayed
r	check	link:RecentInternalBroadcasts	exist:true		Check if Recent Internal Broadcasts link is present
r	check	text:Keane Press Release	textpresent:true		Check if Keane Press Release is present
r	check	link:KeaneInTheNews	exist:true		Check if Keane In The News link is present
r	perform	textbox:Search	set:dt_Search		Give a valid search criteria in Search textbox
r	perform	button:SearchBtn	click		Click on Search button
r	wait	8			Wait for page load
r	check	title:Search Results: Open2Test	pagetitle:true		Check if search result window is displayed.
r	check	text:Company puts a Keane eye on test scripts	textpresent:true		Validate the search result
r	check	text:Keane_QAT_Overview	textpresent:true		Validate the search result
r	perform	link:myKeane	click		Click on myKeane link
r	wait	8			Wait for page load
r	check	link:RecentInternalBroadcasts	exist:true		Check if the home page is displayed
r	perform	link:SignOut	click		Click on Signout link
r	check	link:SignOut	exist:false	Y	Check if the user had signed out

Figure 2: Column 'Operation'

The keywords that can be used in this column are:

1. **LaunchApp**

'LaunchApp' is used to launch the AUT. This keyword triggers the driver script to launch the application. This will launch the application either in Internet Explorer or in Firefox, depending upon the browser specified in the main.rb file.

2. **Context**

'Context' is used only to highlight a particular object in a web page.

3. **Perform**

'Perform' is used to perform an operation on a particular object (ex: clicking on a button on a Web page, or typing some text in a textbox). This keyword should be entered in the corresponding row in the second column if any such operations are to be performed.

4. **Check**

'Check' is used to check if the required property of a particular object is attained at runtime. This is a type of validation step (expected result).

5. **Condition**

'Condition' is used to compare two variables, check properties for the existence of windows, etc.

6. **CallFunction**

'Call Function' is used to call any declared function used in a particular script. These functions should be declared in a different .rb file.

7. **Storevalue**

'Storevalue' is used to store the property values of different objects in different environment variables. These environment variables can later be used as input parameters in various functions and also in scripts.

8. **PressKey**

'Press Key' is used to pass hot keys such as Enter, F3, F10, etc.

9. **Report**

'Report' is used for customized reporter events. It is displayed in the result sheet. The report results can include: i) Pass, ii) Fail, iii) Done, iv) Warning.

10. **Strsearch**

'Strsearch' is used to search for a 'sub string' inside a 'main string'.

11. **Strreplace**

'Strreplace' is used for replacing a 'sub string' inside a 'main string' with a new 'sub string'.

12. **Strconcat**

'Strconcat' is used to concatenate any number of strings with one other.

13. Wait

'Wait' is used to place static waits in the keyword script.

14. Assignvalue

'Assignvalue' is used to assign dynamically generated values from the application to environment variables.

15. Callaction

'Callaction' is used to call reusable actions that are declared in the script.

16. Loop

'Loop' is used to loop a set of actions given in the data table.

17. Popup

'Popup' keyword is used to perform any action on a Windows-based popup that pops up while performing any action in the application under test.



A detailed description of the keywords is provided in the Selenium Open Source Test Automation Framework Keywords for Web document.

2.3.3. Object (Column 'C')

The third column of the test case sheet is used to indicate the object on which a particular type of action is to be performed. When the object is present in the object repository, the object class and object name are specified in column C (as shown in Example 1). However, if the object is not added to the object repository, descriptive programming can be used by specifying any property and its value (as shown in Example 2). The object column, or column 'C', contains all the required details for an object (viz. Class to which the objects belong to and the object name) on which various operations and validations are to be performed.

Example 1:

Action	Object
Perform	Element;OK
Perform	Textbox; Lastname

In the above example, the object column indicates that some operation has to be performed on an object of class 'WebElement' having the name 'OK.' Similarly, in the next line, some operation has to be performed on an object of class 'Textbox' having the name 'Lastname.'

Action	Object
Perform	Element;text:=OK

Example 2:

Perform	Textbox;name:=Lastname
---------	------------------------

In the above example, the object is not added to the object repository. Some operation has to be performed on an object of class WebElement having a property 'text,' the value of which is 'OK'. Similarly, some operation has to be performed on an object of class Textbox having a property 'name,' the value of which is 'Lastname.'



The object and its name are usually separated by a delimiter ';' as shown in the above example. (Delimiters will be covered later in this document).

	A	B	C	D	E	F
1	Step	Operation	Object	Action	Screenshot	Description
2	r	lauchapp	https://portal.keane.com			Launch the Portal application
3	r	check	title:MyKeane Login	pagetitle:true	Y	Check if the Portal application is launched
4	r	check	textbox:UserName	exist:true	Y	Check if the User Name text box is displayed
5	r	perform	textbox:UserName	set:#Variable		Type the user name
6	r	perform	textbox:PassWord	set:#Variable1		Type the password
7	r	perform	button:BtnLogin	click		Click on Login button
8	r	wait	10			Wait for page load
9	r	check	title:MyKeane Login	pagetitle:true		Check if the Portal application is launched
10	r	check	textbox:UserName	exist:true		Check if the User Name text box is displayed
11	r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true		Check if Keane Homepage is displayed
12	r	check	link:RecentInternalBroadcasts	exist:true		Check if Recent Internal Broadcasts link is present
13	r	check	text:Keane Press Release	textpresent:true		Check if Keane Press Release is present
14	r	check	link:KeaneInTheNews	exist:true		Check if Keane In The News link is present
15	r	perform	textbox:Search	set:dt_Search		Give a valid search criteria in Search textbox
16	r	perform	button:SearchBtn	click		Click on Search button
17	r	wait	8			Wait for page load
18	r	check	title:Search Results: Open2Test	pagetitle:true		Check if search result window is displayed.
19	r	check	text:Company puts a Keane eye on test scripts	textpresent:true		Validate the search result
20	r	check	text:Keane_QAT_Overview	textpresent:true		Validate the search result
21	r	perform	link:myKeane	click		Click on myKeane link
22	r	wait	8			Wait for page load
23	r	check	link:RecentInternalBroadcasts	exist:true		Check if the home page is displayed
24	r	perform	link:SignOut	click		Click on Signout link
25	r	check	link:SignOut	exist:false	Y	Check if the user had signed out

Figure 3: Column 'Object'

2.3.4. Action (Column 'D')

The fourth column of the test case sheet is used to indicate the specific action being performed on the objects present in the AUT. It contains the details of all the operations or verifications to be performed on the objects listed in the objects column.

Consider the example of the object 'Button' with name Login.

One of the actions that can be performed on a button would be Click.

Therefore, in column 4, the above operation is put in the keyword form as "CLICK".

Example 2: The keyword CLICK on a Login button is as follows:

Action	Object	Operation
Perform	Button;Login	Click

ACTION

If user wants to **check** if the button is enabled before clicking, the syntax would be:

Action	Object	Operation
Check	Element;Login	Enabled:True

CHECKING

Similarly, if the user wants to check whether the object is disabled, the syntax would be:

Action	Object	Operation
Check	Button;OK	Enabled:False

CHECKING

A	B	C	D	E	F
Step	Operation	Object	Action	Screenshot	Description
1	r	launchapp	https://portal.keane.com		Launch the Portal application
2	r	check	title:MyKeane Login	pagetitle:true	Check if the Portal application is launched
3	r	check	textbox:UserName	exist:true	Check if the User Name text box is displayed
4	r	perform	textbox:UserName	set:#Variable	Type the user name
5	r	perform	textbox:PassWord	set:#Variable 1	Type the password
6	r	perform	button:BtnLogin	click	Click on Login button
7	r	wait	10		Wait for page load
8	r	check	title:MyKeane Login	pagetitle:true	Check if the Portal application is launched
9	r	check	textbox:UserName	exist:true	Check if the User Name text box is displayed
10	r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true	Check if Keane Homepage is displayed
11	r	check	link:RecentInternalBroadcasts	exist:true	Check if Recent Internal Broadcasts link is present
12	r	check	text:Keane Press Release	textpresent:true	Check if Keane Press Release is present
13	r	check	link:KeaneInTheNews	exist:true	Check if Keane In The News link is present
14	r	perform	textbox:Search	set:dt_Search	Give a valid search criteria in Search textbox
15	r	perform	button:SearchBtn	click	Click on Search button
16	r	wait	8		Wait for page load
17	r	check	title:Search Results: Open2Test	pagetitle:true	Check if search result window is displayed.
18	r	check	text:Company puts a Keane eye on test scripts	textpresent:true	Validate the search result
19	r	check	text:Keane_QAT_Overview	textpresent:true	Validate the search result
20	r	perform	link:myKeane	click	Click on myKeane link
21	r	wait	8		Wait for page load
22	r	check	link:RecentInternalBroadcasts	exist:true	Check if the home page is displayed
23	r	perform	link:SignOut	click	Click on Signout link
24	r	check	link:SignOut	exist:false	Check if the user had signed out

Figure 4: Column 'Action'

The most commonly used keywords for specific actions that can be used with the generic keyword 'Perform' written in Column 'Action' are:

1. **Click**

'Click' is used to perform the click operation on objects (e.g., clicking a Webbutton, linking a Webelement, etc).

2. **Close**

'Close' is used to perform the close operation on any open objects. (e.g., closing a browser, window, or dialog box).

3. **Select:<name>**
'Select' is used to select an item from Combobox or Radio button.
4. **Selectindex:<index>**
'Selectindex' is used to select an item from a Listbox or Combobox.
5. **Set:<Text>**
'Set' is used to assign a value to an edit field.
6. **Set:d_currenttime**
'Set:d_currenttime' sets the current system time in the edit field.
7. **Set:d_currentdate**
'Set:d_currentdate' sets the current system date in the edit field.
8. **Set:d_d; <value to be added/subtracted>**
This function adds or subtracts the value specified to the current system date and sets the edit field to a given value.
9. **Set:d_m; <value to be added/subtracted>**
This function adds or subtracts the value specified to the current system month and sets the edit field to a given value.
10. **Set:d_y; <value to be added/subtracted>**
This function adds or subtracts the value specified to the current system year and sets the edit field to a given value.
11. **Submit**
This function is used to submit the value entered in a Textbox, Combobox, or Radio button, etc.
12. **Deselect:<name>**
This function is used to deselect a selected item in a list.
13. **set:env_<Environment Name>**
This function is used to assign the value, which is stored in the environment variable, to the edit field.
14. **set:dt_Parameter**
This function is used to assign the value, which is given in the external test data sheet, to the edit field.
15. **set:#<variable>**
This function is used to assign the value, which is stored in the variable, to the edit field.
16. **Create;<Folder Path/Name>/<File Path/Name>**
This function is used to create a folder/file in the specified path.
17. **Delete;<Folder Path/Name>/<File Path/Name>**
This function is used to delete a folder/file in the specified path.

The most commonly used keywords for specific actions used with the generic keyword **Check** written in Column 'Action' are:

1. Selection:<item name>

This is a Check operation that is used to verify whether the desired item is selected in the 'Combobox.'

2. Checked:<Name>

This is a Check operation which is used to verify whether a Radio button in a Webradiogroup whose name is specified is checked or not.

3. Checked:<True/False>

This is a Check operation that is used to verify whether a Checkbox is checked or not.

4. Enabled:<True/False>

This is a Check operation that is used to verify whether the given Web object is enabled or not.

5. Exist:<True/False>

This is a Check operation that is used to verify whether the Web object whose name is specified exists or not.

6. Focused:<True/False>

This is a Check operation that is used to verify whether the object is focused or not.

7. Visible:<True/False>

This is a Check operation that is used to verify whether the specified object is visible or not.

8. Text:<text/#Variable_Name>

This is a Check operation that is used to verify whether the required text is present in the object.

9. text:<text to search>

This is a Check operation that is used to verify whether a string is present or not in the table.

10. search:<text>

This is a Check operation that is used to verify whether the value of the string is in the current row of the object or not.

11. search:#<variable name>

This is a Check operation that is used to verify whether a value stored in the environment variable is in the current row of the Combobox.

12. text:blank

This is a Check operation that is used to verify whether a text field is blank.

2.3.5. Screenshot (Column 'E')

The fifth column of the test case sheet is used to specify if a screen shot is required in a particular test step. In the below figure, 'Y' is specified for checks of title and a textbox, so in these steps a screen shot will be taken and a .doc report will be

created. If the column is left blank, then no screenshot will be taken. Screenshots will also be taken automatically when there is a failure in any step.

A	B	C	D	E	F	
Step	Operation	Object	Action	Screenshot	Description	
2	r	launchapp	https://portal.keane.com		Launch the Portal application	
3	r	check	title:MyKeane Login	pagetitle:true	Y	Check if the Portal application is launched
4	r	check	textbox:UserName	exist:true	Y	Check if the User Name text box is displayed
5	r	perform	textbox:UserName	set:#Variable		Type the user name
6	r	perform	textbox:PassWord	set:#Variable1		Type the password
7	r	perform	button:BtlnLogin	click		Click on Login button
8	r	wait	10			Wait for page load
9	r	check	title:MyKeane Login	pagetitle:true		Check if the Portal application is launched
10	r	check	textbox:UserName	exist:true		Check if the User Name text box is displayed
11	r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true		Check if Keane Homepage is displayed
12	r	check	link:RecentInternalBroadcasts	exist:true		Check if Recent Internal Broadcasts link is present
13	r	check	text:Keane Press Release	textpresent:true		Check if Keane Press Release is present
14	r	check	link:KeaneInTheNews	exist:true		Check if Keane In The News link is present
15	r	perform	textbox:Search	set:dt_Search		Give a valid search criteria in Search textbox
16	r	perform	button:SearchBtn	click		Click on Search button
17	r	wait	8			Wait for page load
18	r	check	title:Search Results: Open2Test	pagetitle:true		Check if search result window is displayed.
19	r	check	text:Company puts a Keane eye on test scripts	textpresent:true		Validate the search result
20	r	check	text:Keane_QAT_Overview	textpresent:true		Validate the search result
21	r	perform	link:myKeane	click		Click on myKeane link
22	r	wait	8			Wait for page load
23	r	check	link:RecentInternalBroadcasts	exist:true		Check if the home page is displayed
24	r	perform	link:SignOut	click		Click on Signout link
25	r	check	link:SignOut	exist:false	Y	Check if the user had signed out

Figure 5: Column 'Screenshot'

2.3.6. Comments (Column 'F')

The 'Comments' Column is used to enter generic information about the current step being run. It provides a better understanding of the steps being performed in the particular test script and also helps to map the test script to the manual test case.

A	B	C	D	E	F	
Step	Operation	Object	Action	Screenshot	Description	
2	r	launchapp	https://portal.keane.com		Launch the Portal application	
3	r	check	title:MyKeane Login	pagetitle:true	Y	Check if the Portal application is launched
4	r	check	textbox:UserName	exist:true	Y	Check if the User Name text box is displayed
5	r	perform	textbox:UserName	set:#Variable		Type the user name
6	r	perform	textbox:PassWord	set:#Variable1		Type the password
7	r	perform	button:BtlnLogin	click		Click on Login button
8	r	wait	10			Wait for page load
9	r	check	title:MyKeane Login	pagetitle:true		Check if the Portal application is launched
10	r	check	textbox:UserName	exist:true		Check if the User Name text box is displayed
11	r	check	title:Home Keane Portal IT Investments. Optimized.	pagetitle:true		Check if Keane Homepage is displayed
12	r	check	link:RecentInternalBroadcasts	exist:true		Check if Recent Internal Broadcasts link is present
13	r	check	text:Keane Press Release	textpresent:true		Check if Keane Press Release is present
14	r	check	link:KeaneInTheNews	exist:true		Check if Keane In The News link is present
15	r	perform	textbox:Search	set:dt_Search		Give a valid search criteria in Search textbox
16	r	perform	button:SearchBtn	click		Click on Search button
17	r	wait	8			Wait for page load
18	r	check	title:Search Results: Open2Test	pagetitle:true		Check if search result window is displayed.
19	r	check	text:Company puts a Keane eye on test scripts	textpresent:true		Validate the search result
20	r	check	text:Keane_QAT_Overview	textpresent:true		Validate the search result
21	r	perform	link:myKeane	click		Click on myKeane link
22	r	wait	8			Wait for page load
23	r	check	link:RecentInternalBroadcasts	exist:true		Check if the home page is displayed
24	r	perform	link:SignOut	click		Click on Signout link
25	r	check	link:SignOut	exist:false	Y	Check if the user had signed out

Figure 6: Column 'Comments'

2.3.7. Delimiters

Delimiters are any string characters used to identify the sub-string limits. Delimiters are generally used with the Split function, which is used to split the input into different substrings

Purpose of Delimiters:

Delimiters break down the input values to different strings and take them as keywords to perform any operation concerned with that object.

Delimiters Used in this Framework:

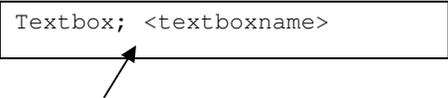
When scripting using the keyword-driven approach, use separators or delimiters appropriately between two keywords. Delimiters that are used in the framework are:

- : (colon)
- ; (semi colon)
- :: (double colon)

Using Delimiters:

There are four columns involved in the keyword-driven approach. The role of delimiters comes in the 'Objects' column (column 3) and the 'Action' column (column 4).

'Objects' column (column 3):

This column is used to define the class and the name of the object. The delimiter used in this column to separate the class of the object and the name of the object is a semi-colon ';'.


Example:

```
Textbox; <textboxname>
```

'Action' column (column 4):

This column usually provides details of the operations that need to be performed on the object. The delimiter used to separate the property and the property values in this column is a colon ':'.

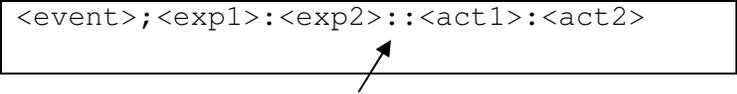

Example:

```
pagetitle:true
```

To specify multiple parameter use the '::' delimiter. This is used in case of keyword like 'report'

Example:

```
<event>;<exp1>:<exp2>::<act1>:<act2>
```



2.3.8. Variables

- To store a value in a variable, an environment variable is used.

Example:

assignvalue	strName;Smith	
-------------	---------------	--

Here in the variable 'strName', the value 'Smith' is stored.

- To input a value to a field from a variable, the variable should be preceded by '#'.

Example:

Perform	Textbox;<textbox name>	Set:#varName
---------	---------------------------	--------------

Here, the value stored in varName is typed into the textbox.

Defining a variable requires the use of certain standards. For example, for a variable to store a string value it should be appended with "Str" ex.StrVarName. Similarly, an integer should be appended with "int" and Boolean should be appended with "bln".

3. Sequence of Keywords

While scripting using keywords, some keywords have to be written in combination with other keywords. This section deals with methodologies that should be followed while scripting using keywords.

3.1. Use of 'Conditional Statements'

If the user is implementing an If-Else conditional statement, then the keyword is followed by a semi-colon ';' and the values that indicate the start row and the end row should be separated by a semi-colon ';'.
Example:

Condition	<var1>;comparator;<var2>	startrow;endrow
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If the condition mentioned is 'True,' execution starts from the startrow and would end at the endrow specified. If the condition specified is 'False,' there would be no effect in the script and the execution would continue as normal.

Two conditional statements must be used together to satisfy the 'and' condition.

Condition	<var1>;comparator;<var2>	startrow;endrow
Condition	<var2>;comparator;<var3>	startrow;endrow

This implies that an 'and' operation is being performed.

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