

XPATH Tutorial for Selenium

XPath is designed to allow the navigation of XML documents, with the purpose of selecting individual elements, attributes, or some other part of an XML document for specific processing.

What is XML?

The Extensible Markup Language (XML) is the context in which the XML Path Language, XPath, exists.

XML provides a standard syntax for the markup of data and documents.

XML documents contain one or more elements. If an element contains content, whether other elements or text, then it must have a start tag and an end tag. The text contained between the start tag and the end tag is the element's content.

```
<Element> //Start tag
Element content goes here.//Element Content
</Element>//End Tag
```

An element may have one or more attributes, which will provide additional information about the element type or its content.

Below is the sample XML:

```
<?xml version='1.0'?>
<Catalog>
<Book>
<Title>XML Tutorial</Title>
<Author>Selenium Easy</Author>
</Book>
</Catalog>
```

It can also be written as:

```
<?xml version='1.0'?>
<Catalog>
<Book Title="XML Tutorial" Author="Selenium Easy">
</Book>
</Catalog>
```

XPath can be viewed as a way to navigate round XML documents. Thus XPath has similarities to a set of street directions.

When you need to search for a address, you should know what is your starting point to reach your destination.

In XPath the starting point is called the context node.

Absolute XPath

Absolute XPath starts with the root node or a forward slash (/).

The advantage of using absolute is, it identifies the element very fast.

Disadvantage here is, if any thing goes wrong or some other tag added in between, then this path will no longer works.

Example:

If the Path we defined as

1. html/head/body/table/tbody/tr/th

If there is a tag that has added between body and table as below

2. html/head/body/form/table/tbody/tr/th

The first path will not work as 'form' tag added in between

Relative Xpath

A relative xpath is one where the path starts from the node of your choise - it doesn't need to start from the root node.

It starts with Double forward slash(//)

Syntax:

//table/tbody/tr/th

Advantage of using relative xpath is, you don't need to mention the long xpath, you can start from the middle or in between.

Disadvantage here is, it will take more time in identifying the element as we specify the partial path not (exact path).

If there are multiple elements for the same path, it will select the first element that is identified

XPath Axes :

XPath has a total of 13 different axes, which we will look at in this section. An XPath axis tells the XPath processor which "direction" to head in as it navigates around the hierarchical tree of nodes.

Xpath axis NameDescription

self	Which contains only the context node
ancestor	contains the ancestors of the context node, that is, the parent of the context node, its parent, etc., if it has one.
ancestor-or-self	contains the context node and its ancestors
attribute	contains all the attribute nodes, if any, of the context node
child	contains the children of the context node
descendant	contains the children of the context node, the children of those children, etc.
descendant-or-self	contains the context node and its descendants
following	contains all nodes which occur after the context node, in document order
following-sibling	Selects all siblings after the current node
namespace	contains all the namespace nodes, if any, of the context node
parent	Contains the parent of the context node if it has one
preceding	contains all nodes which occur before the context node, in document order
preceding-sibling	contains the preceding siblings of the context node

The below are the Axes that are very useful

1. Child Axes

The child axis defines the children of the context node.

Child::*

Syntax:

```
//child::table
```

The first location step selects the child element node of the root node, which represents the element root

element in the source document.

The child axis is the default axis, so it need not be explicitly expressed in the abbreviated.

It can be simply re-written as:

```
/table/tbody
```

```
//child::*[child::td[position()>1]]
```

The position () function, evaluates the context position of the context node within the context size. The position () function is applied to the selected nodes in document order. It will select the second td in a table

It will select all the nodes that are Child nodes of table.

Please find the below screen shot for example.

The screenshot illustrates the use of the child axis in Selenium IDE. The browser window shows a login form with a table structure. The Selenium IDE window is open, displaying two test cases. The first test case has a command of `//child::table` and a target of `//child::table`. The second test case has a command of `Find` and a target of `//child::table`. The browser window shows a login page with a table structure containing fields for email and password.

2. Parent Axes

The parent axis contains only a maximum of one node. The parent node may be either the root node or an element node.

The root node has no parent; therefore, when the context node is the root node, the parent axis is empty. For all other element nodes the parent axis contains one node.

Syntax:

```
parent::node()
```

The below example will selects the parent node of the input tag of Id='email'.

Ex: //input[@id='email']/parent::*

the above can also be re-written as

```
//input[@id='email']/..
```

Below is the image that shows you to identify using above example.

The screenshot shows the Selenium IDE interface. On the left, there is a tree view of the DOM structure of a login page. In the center, there is a table where a row has been selected. The 'Target' column of this row contains the XPath expression `//input[@id='email']/parent::*`, which is circled in red. The 'Value' column contains the string `//input[@id='email']/..`. At the bottom of the IDE window, the DOM structure is shown again, with the input field having id='email' highlighted in blue and circled in red.

3. Following Axes

"Following axis contains all nodes in the same document as the context node that are after the context node in document order.

Syntax:

The below syntax selects the immediate node following the specified node `input[@id='email']`

```
//input[@id='email']/following::*
```

Below is the image that shows you to identify using above example.

It will identify the immediate node which start after the current node.

The screenshot shows the Selenium IDE interface with the following details:

- Top Bar:** Shows the URL [http://selenumeeasy.com/](http://selenumeasy.com/), a "Log In" button, and links for "Keep me logged in" and "Forgot your password?".
- Selenium IDE Window:**
 - Test Case:** Untitled *
 - Table View:** Shows a table with one row and two columns. The first column contains the command `//input[@id='email']/fol...`. The second column contains the target `//input[@id='email']/following::*`.
 - Source View:** Displays the HTML source code of a login form. A red circle highlights the `following::*` selector in the target field of the table view.
 - Log Tab:** Shows the log output with CSS rules for input fields.
- Left Sidebar:** Shows the DOM tree with nodes like "script", "DOM", "Net", and "Cookies". A red circle highlights the `following::*` selector in the target field of the table view.

The below syntax selects the immediate node of tag 'tr' with the specified node `input[@id='email']`

```
//input[@id='email']/following::tr
```

Below is the image that shows you to identify using above example.
It will identify the immediate node which start after the current node.

The screenshot shows the Selenium IDE interface with the 'Create your account' page loaded. The 'Source' tab displays the HTML code for the login form, specifically focusing on the email input field and its sibling rows. A red circle highlights the 'following-sibling::tr' axis in the XPath expression //input[@id='email']/following-sibling::tr. The 'Log' tab shows the CSS rules for input fields.

```

<tr style="background-color: transparent;">
  <td style="background-color: transparent;">
    <td class="html7magic" style="background-color: transparent;">
      <label for="email" style="background-color: transparent;">Email or Phone</label>
    </td>
  </td>
  <td class="html7magic" style="background-color: transparent;">
    <input id="email" class="inputtext" bindex="1" value="" name="email" style="background-color: yellow; outline: 1px solid #BDC7D8;">
  </td>
  <td style="background-color: transparent;">
    <td style="background-color: transparent;">
  </td>
  <td style="background-color: yellow; outline: 1px solid #BDC7D8;">
</tr>

```

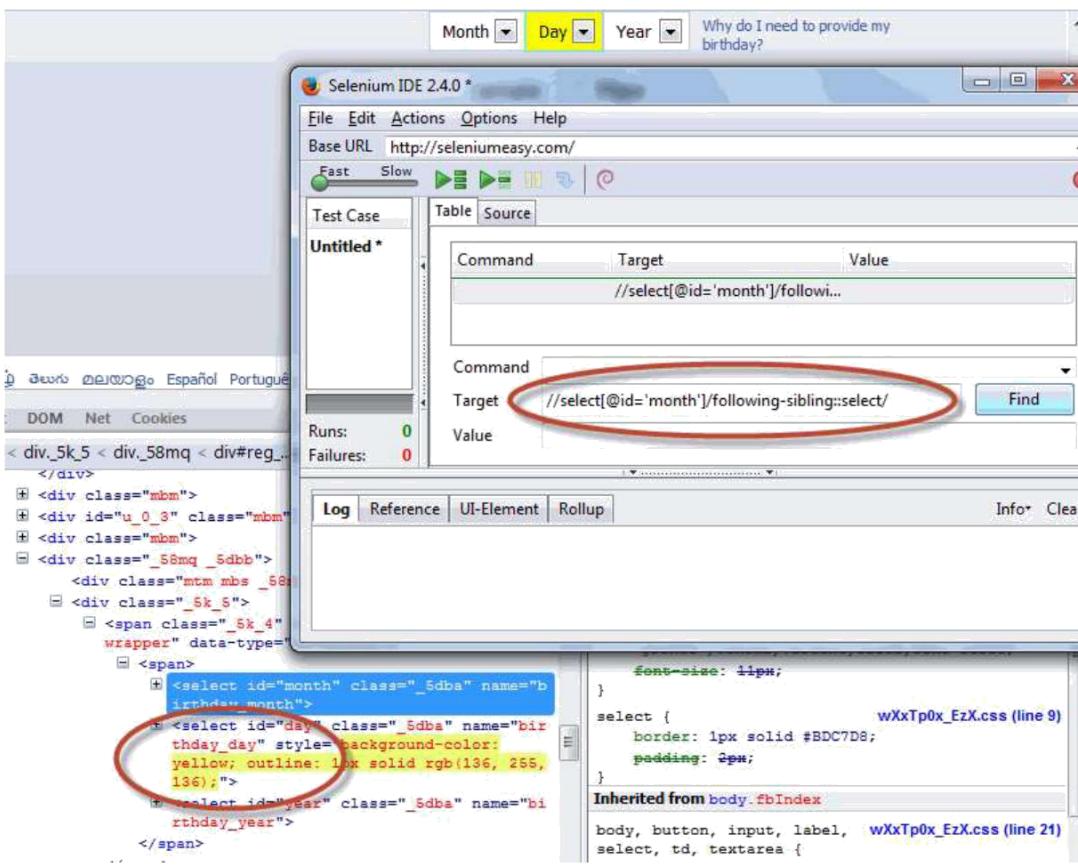
4. Following Sibling Axes

The following-sibling axis selects those nodes that are siblings of the context node (that is, the context node and its sibling nodes share a parent node) and which occur later in document order than the context node.

Syntax:

```
//select[@id='month']/following-sibling::*  
//select[@id='month']/following-sibling::select/
```

Please check the below image for the above syntax executed



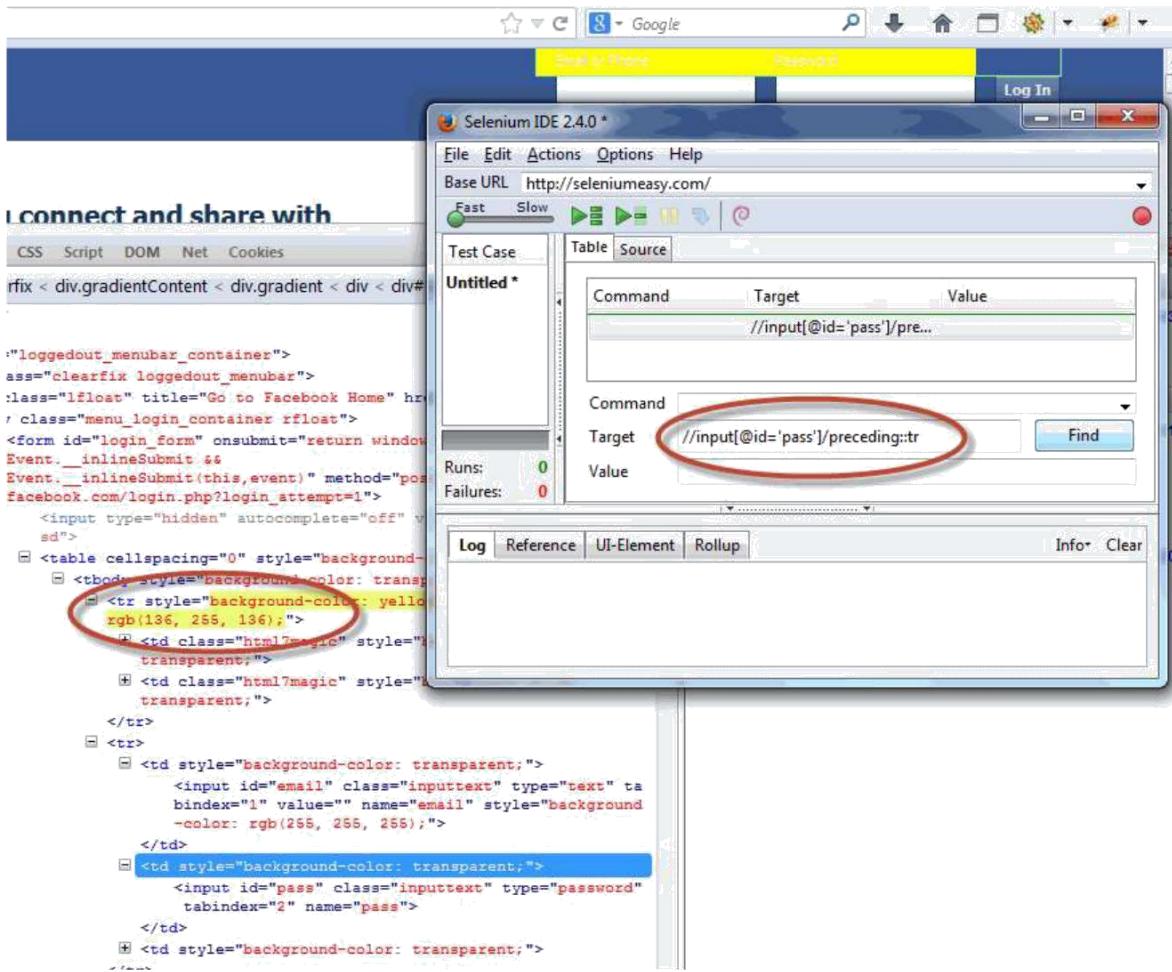
5. Preceding Axes

The preceding axis contains all nodes in the same document as the context node that are before the context node in document order.

Syntax:

```
//input[@id='pass']/preceding::tr
```

Below screen shot shows how the preceding axes selects nodes that appear before the current node in the document, except ancestors, attribute nodes and namespace .



6. Preceding Sibling Axes

The preceding-sibling axis selects those nodes which are siblings of the context node (that is, the context node and its sibling nodes share a parent node) and which occur earlier in document order than the context node.

Syntax:

```
//select[@id='day']/preceding-sibling::select/
//select[@id='day']/preceding-sibling::*
```

The below image shows how the preceding sibling axes selects siblings before the current node

Selenium IDE 2.4.0 * Month Day Year Why do I need to provide my birthday?

File Edit Actions Options Help

Base URL: http://seleniumeasy.com/

Test Case Untitled *

Command	Target	Value
	//select[@id='day']/preceding...	

Command Target Value Find

Runs: 0 Failures: 0

Log Reference UI-Element Rollup Info Clear

body, button, input, label, wXxTp0X_EzX.css (line 21)
 select, td, textarea {
 font-family: 'lucida
 grande', tahoma, verdana, arial, sans-serif;
 font-size: 11px;
 }
 select {
 border: 1px solid #BDC7D8;
 padding: 2px;
 }
 Inherited from body.fbIndex

```

<div class="mbm">
<div id="u_0_3" class="mbm">
<div class="mbm">
<div class="58mq_5dbb">
<div class="mtm mbs_58">
<div class="5k_5">
<span class="5k_4">
<span>
<select id="month" class="5dba" name="bir
thday_month" style="background-color:
yellow; outline: 1px solid rgb(136, 255,
136);">
<select id="day" class="5dba" name="bir
thday_day" style="background-color:
rgb(255, 255, 255);">
<select id="year" class="5dba" name="bir
thday_year">
</span>

```

[Click for xpath examples comparing css \(http://seleniumeasy.com/selenium-tutorials/examples-for-xpath-and-css-selectors\)](http://seleniumeasy.com/selenium-tutorials/examples-for-xpath-and-css-selectors)

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[Permalink \(/comment/958#comment-958\)](#) Submitted by Abhishek Nallam on 08 Wed 05 Mar 2015 - 01:45

Want to get the No. of rows in a table with by.findElements() method

Ex: take the the below URL.

http://aponline.gov.in/apportal/contact/sec_select.asp?sid=1 (http://aponline.gov.in/apportal/contact/sec_select.asp?sid=1)

Select Option: Agriculture and Co-Operation

write the following code

Void Driver.FindElement(By id="Table9")

[Permalink \(/comment/1516#comment-1516\)](#) Submitted by Bhartesh on Fri, 10/30/2015 - 01:31

System.out.println("No.of rows in a webtable "+rows.size());

very well explained , Thanks for it!

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Xpath custom (/comment/4071#comment-4071)

[Permalink \(/comment/4071#comment-4071\)](#) Submitted by karthik on Mon, 04/11/2016 - 04:40

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Very informative.Thank you ([/comment/538#comment-538](#))

[Permalink \(/comment/538#comment-538\)](#) Submitted by Viewer on Wed, 06/17/2015 - 01:32

Subject

Very informative.Thank you very much

Comment *

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Thank you ([/comment/570#comment-570](#))

[Permalink \(/comment/570#comment-570\)](#) Submitted by SivaKotiReddy on Sun, 07/05/2015 - 16:03

Very good explanation

[More information about text formats \(/filter/tips\)](#)

NjLT9
[Reply \(/comment/reply/48/570\)](#)

What code is in the image? *

Explained very well. Thanks ([/comment/654#comment-654](#))

[Permalink \(/comment/654#comment-654\)](#) Submitted by Abhishek on Sun, 07/19/2015 - 10:08

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Explained very well. Thanks

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Good tutorial ([/comment/741#comment-741](#))

[Permalink \(/comment/741#comment-741\)](#) Submitted by Viewer on Tue, 07/28/2015 - 08:43

Good tutorial