

# XPATH • CSS • DOM • SELENIUM

# Rosetta Stone and Cookbook

Sprinkled with Selenium usage tips, this is both a general-purpose set of recipes for each technology as well as a cross-reference to map from one to another. The validation suite for this reference chart (<http://bit.ly/gTd5oc>) provides example usage for each recipe supported by Selenium (the majority of them).

Category	Recipe	XPath (1.0 – 2.0)	CSS (CSS1 – 3)	DOM	Selenium
General	Whole web page	xpath=/html	css=html	document.documentElement	NA
	Whole web page body	xpath=/html/body	css=body	document.body	NA
	All text nodes of web page	//text()	NA	NA	NA
	Element <E> by absolute reference	xpath=/html/body/.../.../.../E	css=body>...>...>...>E	document.body.childNodes[i]...childNodes[j]	NA
Tag	Element <E> by relative reference	//E	css=E	document.gEBTN('E')[0]	NA
	Second <E> element anywhere on page	xpath=/(//E)[2]	NA	document.gEBTN('E')[1]	NA
	Image element	//img	css=img	document.images[0]	NA
	Element <E> with attribute A	//E[@A]	css=E[A]	dom-for each (e in document.gEBTN('E')) if (e.A) e	NA
	Element <E> with attribute A containing text 't' exactly	//E[@A='t']	css=E[A='t']	NA	NA
	Element <E> with attribute A containing text 't'	//E[contains(@A,'t')]	css=E[A='t']	NA	NA
	Element <E> whose attribute A begins with 't'	//E[starts-with(@A,'t')]	css=E[A^='t']	NA	NA
	Element <E> whose attribute A ends with 't'	//E[ends-with(@A,'t')]    ◀OR▶	css=E[A\$='t']	NA	NA
	Element <E> with attribute A containing word 'w'	//E[substring(@A, string-length(@A) - string-length('t')+1)='t']	css=E[A~='w']	NA	NA
	Element <E> with attribute A matching regex 'r'	//E[matches(@A,'r')]	NA	NA	NA
Attribute	Element <E1> with id I1 or element <E2> with id I2	//E1[@id=I1]   //E2[@id=I2]	css=E1#I1,E2#I2	NA	NA
	Element <E1> with id I1 or id I2	//E1[@id=I1 or @id=I2]	css=E1#I1,E1#I2	NA	NA
	Attribute A of element <E>	//E/@A  [Se: //E@A]	NA [Se: css=E@A]	document.gEBTN('E')[0].getAttribute('A')  [Se: document.gEBTN('E')[0]@A]	NA
	Attribute A of any element	//*/@A  [Se: //*/@A]	NA [Se: css=*@A]	NA	NA
Id & Name	Attribute A1 of element <E> where attribute A2 is 't' exactly	//E[@A2='t']/@A1  [Se: //E[@A2='t']@A1]	NA [Se: css=E[A2='t']@A1]	NA	NA
	Attribute A of element <E> where A contains 't'	//E[contains(@A,'t')]/@A  [Se: //E[contains(@A,'t')@A]	NA [Se: css=E[A*='t']@A]	NA	NA
	Element <E> with id I	//E[@id='I']	css=E#I	document.gEBI('I')	id=I
	Element with name N	//E[@name='N']	css=E[name=N]	NA	name=N
Lang & Class	Element with name N	//E[@name='N']	css=[name=N]	document.getElementsByName('N')[0]	name=N
	Element with id X or, failing that, a name X	//E[@id='X' or @name='X']	NA	NA	X ◀OR▶ identifier=X
	Element with name N & specified 0-based index 'v'	//E[@name='N'][v+1]	css=[name=N]:nth-child(v+1)	NA	name=N index=v
	Element with name N & specified value 'v'	//E[@name='N'][@value='v']	css=[name=N][value='v']	NA	name=N value=v
Text & Link	Element <E> is explicitly in language L or subcode	//E[@lang='L' or starts-with(@lang, concat('L',''))]	css=E[lang=L]	NA	NA
	Element <E> is in language L or subcode (possibly inherited)	NA	css=E:lang(L)	NA	NA
	Element with a class C	//E[contains(concat(' ', @class, ' '), 'C')]	css=C	document.getElementsByClassName('C')[0]	NA
	Element <E> with a class C	//E[contains(concat(' ', @class, ' '), 'C')]	css=E.C	NA	NA
Parent & Child	Element containing text 't' exactly	//E[.='t']	NA	NA	NA
	Element <E> containing text 't'	//E[contains(text(),'t')]	css=E:contains('t')	NA	NA
	Link element	//a	css=a	document.links[0]	link=t
	<a> containing text 't' exactly	//a[.='t']	NA	NA	NA
General	<a> containing text 't'	//a[contains(text(),'t')]	css=a:contains('t')	NA	NA
	<a> with target link 'url'	//a[@href='url']	css=a[href='url']	NA	NA
	Link URL labeled with text 't' exactly	//a[.='t']/@href	NA	NA	NA
	First child of element <E>	//E/*[1]	css=E>*:first-child [Se: css=E>*]	document.gEBTN('E')[0].firstChild	NA
General	First <E> child	//E[1]	css=E:first-of-type  [Se: css=E]	document.gEBTN('E')[0]	NA
	Last child of element E	//E/*[last()]	css=E*:last-child	document.gEBTN('E')[0].lastChild	NA
	Last <E> child	//E[last()]	css=E:last-of-type	document.gEBTN(E).length-1	NA
	Second <E> child	//E[2] ◀OR▶ //E/following-sibling::E	css=E:nth-of-type(2)	document.gEBTN('E')[1]	NA
General	Second child that is an <E> element	//E*[2][name()='E']	css=E:nth-child(2)	NA	NA
	Second-to-last <E> child	//E[last()-1]	css=E:nth-last-of-type(2)	document.gEBTN(E)[document.gEBTN(E).length-2]	NA
	Second-to-last child that is an <E> element	//E*[last()-1][name()='E']	css=E:nth-last-child(2)	NA	NA
	Element <E1> with only <E2> children	//E1[E2 and not( *[not(self::E2)])]	NA	NA	NA
General	Parent of element <E>	//E/..	NA	document.gEBTN('E')[0].parentNode	NA
	Descendant <E> of element with id I using specific path	//E/*[@id='I']/.../.../.../E	css=#I >...>...>...>E	document.gEBI('I')...gEBTN('E')[0]	NA
	Descendant <E> of element with id I using unspecified path	//E/*[@id='I']/E	css=#I E	document.gEBI('I').gEBTN('E')[0]	NA
	Element <E> with no children	//E[count(*)=0]	css=E:empty	NA	NA
General	Element <E> with an only child	//E[count(*)=1]	NA	NA	NA
	Element <E> that is an only child	//E[count(preceding-sibling::*)+count(following-sibling::*)=0]	css=E:only-child	NA	NA
	Element <E> with no <E> siblings	//E[count(..E)=1]	css=E:only-of-type	NA	NA
	Every Nth element starting with the (M+1)th	//E[position() mod N = M + 1]	css=E:nth-child(Nn + M)	NA	NA
General	Element <E1> following some sibling <E2>	//E2/following-sibling::E1	css=E2 ~ E1	NA	NA
	Element <E1> immediately following sibling <E2>	//E2/following-sibling::*[1][name()='E1']	css=E2 + E1	NA	NA
	Element <E1> following sibling <E2> with one intermediary	//E2/following-sibling::*[2][name()='E1']	css=E2 + * + E1	NA	NA
	Sibling element immediately following <E>	//E/following-sibling::*	css=E + *	document.gEBTN('E')[0].nextSibling	NA
General	Element <E1> preceding some sibling <E2>	//E2/preceding-sibling::E1	NA	NA	NA
	Element <E1> immediately preceding sibling <E2>	//E2/preceding-sibling::*[1][name()='E1']	NA	NA	NA
	Element <E1> preceding sibling <E2> with one intermediary	//E2/preceding-sibling::*[2][name()='E1']	NA	NA	NA
	Sibling element immediately preceding <E>	//E/preceding-sibling::*[1]	NA	document.gEBTN('E2')[0].previousSibling	NA
General	Cell by row and column (e.g. 3rd row, 2nd column)	//E/*[@id='TestTable']/tr[3]/td[2] [Se: //E/*[@id='TestTable'].2.1]	css=#TestTable tr:nth-child(3) td:nth-child(2) [Se: css=#TestTable.2.1]	document.gEBTN('TestTable').gEBTN('tr')[2].gEBTN('td')[1] [Se: document.gEBI('TestTable').2.1]	NA
	Cell immediately following cell containing 't' exactly	//td[preceding-sibling::td='t']	NA	NA	NA
	Cell immediately following cell containing 't'	//td[preceding-sibling::td[contains(., 't')]]	css=td:contains('t') ~ td	NA	NA
	User interface element <E> that is disabled	//E[@disabled]	css=E:disabled	NA	NA
General	User interface element that is enabled	//E*[not(@disabled)]	css=*:enabled	NA	NA
	Checkbox (or radio button) that is checked	//E*[checked]	css=*:checked	NA	NA
	Element being designated by a pointing device	NA	css=E:hover	NA	NA
	Element has keyboard input focus	NA	css=E:focus	NA	NA
General	Unvisited link	NA	css=E:link	NA	NA
	Visited link	NA	css=E:visited	NA	NA
	Active element	NA	css=E:active	NA	NA

## LEGEND

	XPath
	CSS
	DOM
	Selenium

(Se: ...) Selenium-only variation

Not supported by Selenium

Space character

expression CSS3 or XPath 2.0

DOM abbreviations:

gEBI getElementById  
gEBTN getElementsByTagName

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**Indexing (all):** XPath and CSS use 1-based indexing; DOM and Selenium's table syntax use 0-based indexing.

**Prefixes (all):** `xpath=` required unless expression starts with `//` • `dom=` required unless expression starts with "document." • `css=` always required • `identifier=` never required.

**Cardinality (Selenium):** XPath and CSS may specify a node set or a single node; DOM must specify a single node. When a node set is specified, Selenium returns just the first node.

**Content (XPath):** Generally should use `normalize-space()` when operating on display text.

**DOM** has limited capability with a simple "document..." expression; however, arbitrary JavaScript code may be used as shown in this example.

**CSS** does not support qualifying elements with the style attribute, as in `div[style="border-width"]`.

Selenium uses a special syntax for returning attributes; normal XPath, CSS, and DOM syntax will fail.

CSS: The `CSS2 contains` function is *not in CSS3*; however, Selenium supports the superset of CSS1, 2, and 3.

DOM: `firstChild`, `lastChild`, `nextSibling`, and `previousSibling` are problematic with mixed content; they will point to empty text nodes rather than desired elements depending on whitespace in web page