Mastering **XPath** and **CSS** selectors

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1. XPath Basics

- Syntax
- Absolute and Relative
- and / or
- Parents and Children
- Index
- Nested locators

Syntax:

'//' Means anywhere in the DOM

Expression should always be between bruckets

```
// * [ @attribute = 'value' ]
```

Tag

@name

text()

Values should always be between quotes

'@' should always be here except for text locators

Absolute XPATH

/html/body/div[3]/div[2]/form/fieldset/input[9]

Relational XPATH

// input [name=‘Options’]

```
// tag [ condition1 ]    # Simple

// tag [ condition1 and condition2]     # 'AND' logic

// tag [ condition1 or condition2]      # 'OR' logic

// tag [ (condition1 or condition2) and condition3]     # 'AND' + 'OR'

// tag [ condition1 ] /..       #Parent

// tag [ condition1 ] / tag [ condition2 ]     # Child

// tag [ condition1 ] // tag [ condition2 ]    # Search through children
```

// tag [condition1] [index] #Nth child (of its parent) with this locator

(// tag [condition1]) [index] #Nth element with this locator

// tag [tag [condition1]] # Nested

// tag [.// tag [condition1]] # Nested

2. XPath Functions

- contains()
- starts-with()
- position()
- last()
- count()
- normalize-space()
- translate()
- string-length()
- round()
- floor()
- not()
- substring-before()
- substring-after()

contains()

```
// * [ contains(text(), 'string')]

// * [ contains(text(), 'string') and @id='some-id']
```

starts-with()

// * [starts-with(text(), 'string')]

```
<br>
<label for="datalists">Start typing and it till automatically guess answer:</label> == $0
<br>
<input list="datalists" name="Options">
<datalist id="datalists">…</datalist>
<br>
<br>
<label for="favcolor">Select your favorite color:</label>
```

html body div.row div.main form fieldset label

//* [starts-with (text() , 'Start typing')] 1 of 1 Cancel

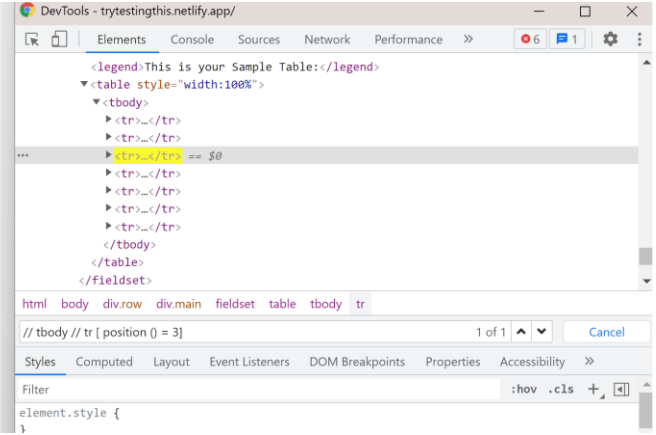
position()

// * [position() = 3] //starts from 1

Title description, Sep 2, 2017

This is your Sample Table:

Firstname	Lastname	Gender	Age	Occupation
tr 561.4 × 49	Geller	F	27	Chef
Pheobe	Buffay	F	27	Singer
Joey	Tribbiani	M	28	Actor
Chanandler	Bong	O	28	Transponster
Ross	Geller	M	29	Paleontogist
Rachel	Green	F	27	Personal Shopper

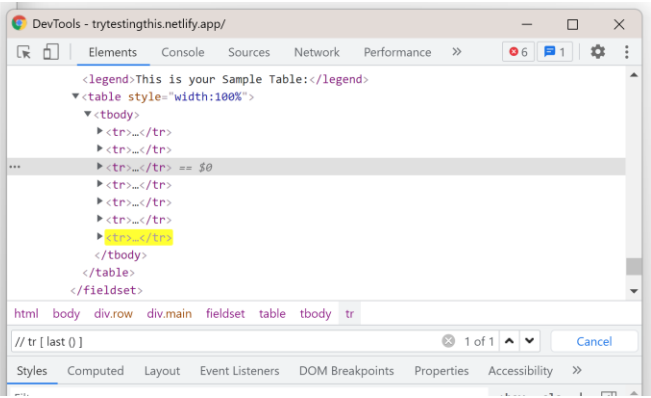


last()

// * [last()]

This is your Sample Table:

Firstname	Lastname	Gender	Age	Occupation
Monika	Geller	F	27	Chef
Pheobe	Buffay	F	27	Singer
Joey	Tribbiani	M	28	Actor
Chanandler	Bong	O	28	Transponster
tr 561.4 × 49	Geller	M	29	Paleontogist
Rachel	Green	F	27	Personal Shopper



count()

// tbody [count (.//tr) = 7]

tbody 561.4 × 343

le Table:

Firstname	Lastname	Gender	Age	Occupation
Monika	Geller	F	27	Chef
Pheobe	Buffay	F	27	Singer
Joey	Tribbiani	M	28	Actor
Chanandler	Bong	O	28	Transponster
Ross	Geller	M	29	Paleontogist
Rachel	Green	F	27	Personal Shopper

DevTools - trytestingthis.netlify.app/

Elements Console Sources Network Performance

```
<table style="width:100%">
  <tbody>
    <tr>…</tr>
    <tr>…</tr>
    <tr>…</tr> == $0
    <tr>…</tr>
    <tr>…</tr>
    <tr>…</tr>
    <tr>…</tr>
    </tbody>
  </table>
</fieldset>
</div>
```

html body div.row div.main fieldset table tbody tr

// tbody [count (. //tr) = 7] 1 of 1 Cancel

Styles Computed Layout Event Listeners DOM Breakpoints Properties Accessibility

normalize-space()

// *[normalize-space (text()) = 'Option1']

// *[normalize-space (@id) = 'Option1']

```
<br>
<label for="option">Choose applicable options:</label>
<br>
<input type="checkbox" id="moption" name="option1" value="Optio
<label for="moption"> Option 1</label> == $0
```

html body div.row div.main form fieldset label

//*[normalize-space (text()) = 'Option 1']

translate()

// *[translate (text(), 'OPTION', 'option') = 'option1']

Elements Console Sources Network Performance Memory Application

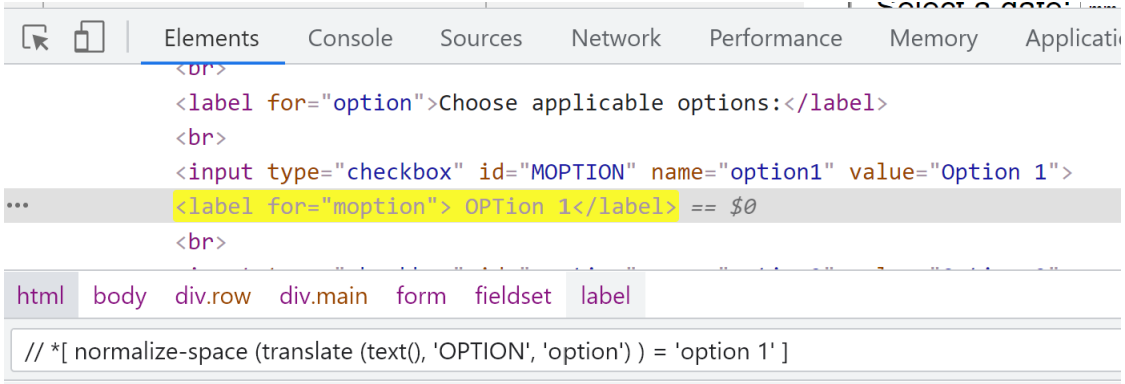
```
<br> == $0
<label for="option">Choose applicable options:</label>
<br>
<input type="checkbox" id="MOPTION" name="option1" value="Option 1">
<label for="moption"> Option 1</label>
<br>
<input type="checkbox" id="moption" name="option2" value="Option 2">
```

html body div.row div.main form fieldset br

```
//*[translate ( @id, 'ABCDEFGHIJKLMNOPQRSTUVWXYZ', 'abcdefghijklmnopqrstuvwxyz'  ) = 'moption' ]
```

Combine normalize-space() and translate()

// *[normalize-space (translate (text(), 'OPTION', 'option')) = 'option1']



string-length()

// *[string-length (text()) > 30]

// *[string-length (@id) = 4]

round()

// td [text() = '53.76']

OR

// td [round (text()) = '54']

floor()

// td [text() = '53.76']

OR

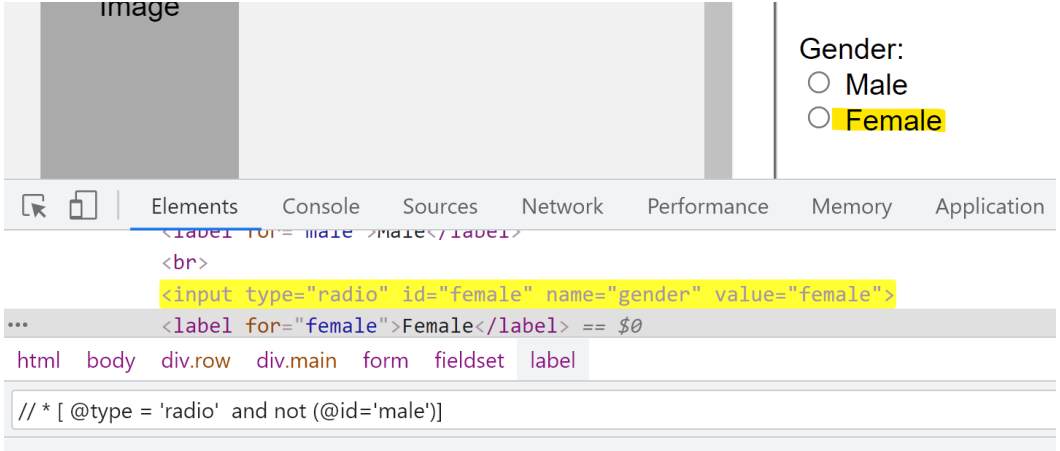
// td [floor (text()) = '53']

not()

// * [type() = 'radio' and @id='femail']

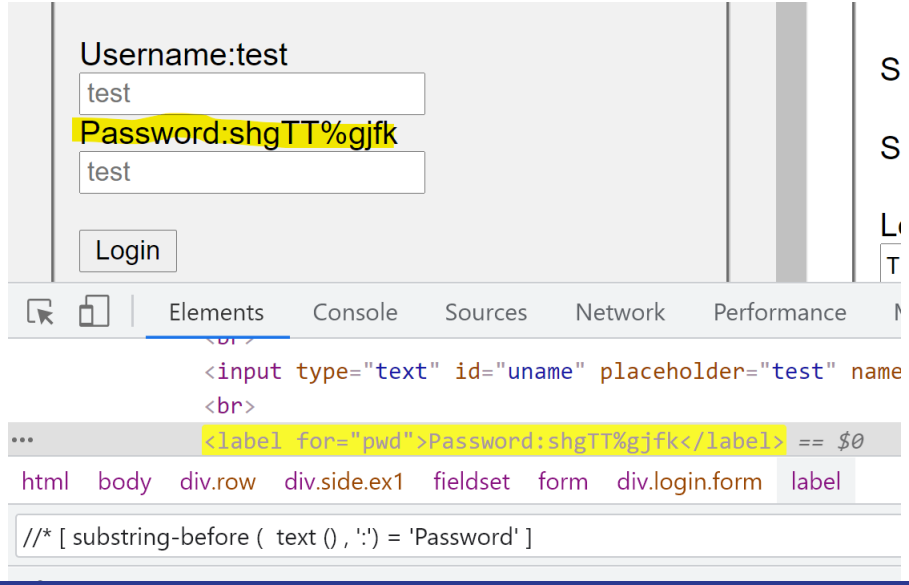
OR

// * [type() = 'radio' and not (@id='male')]



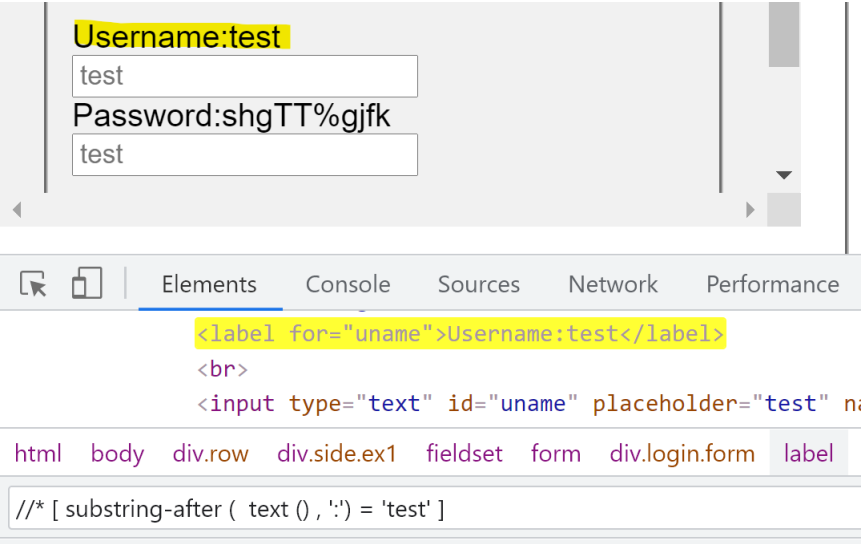
substring-before()

//* [substring-before (text () , ':') = 'Password']



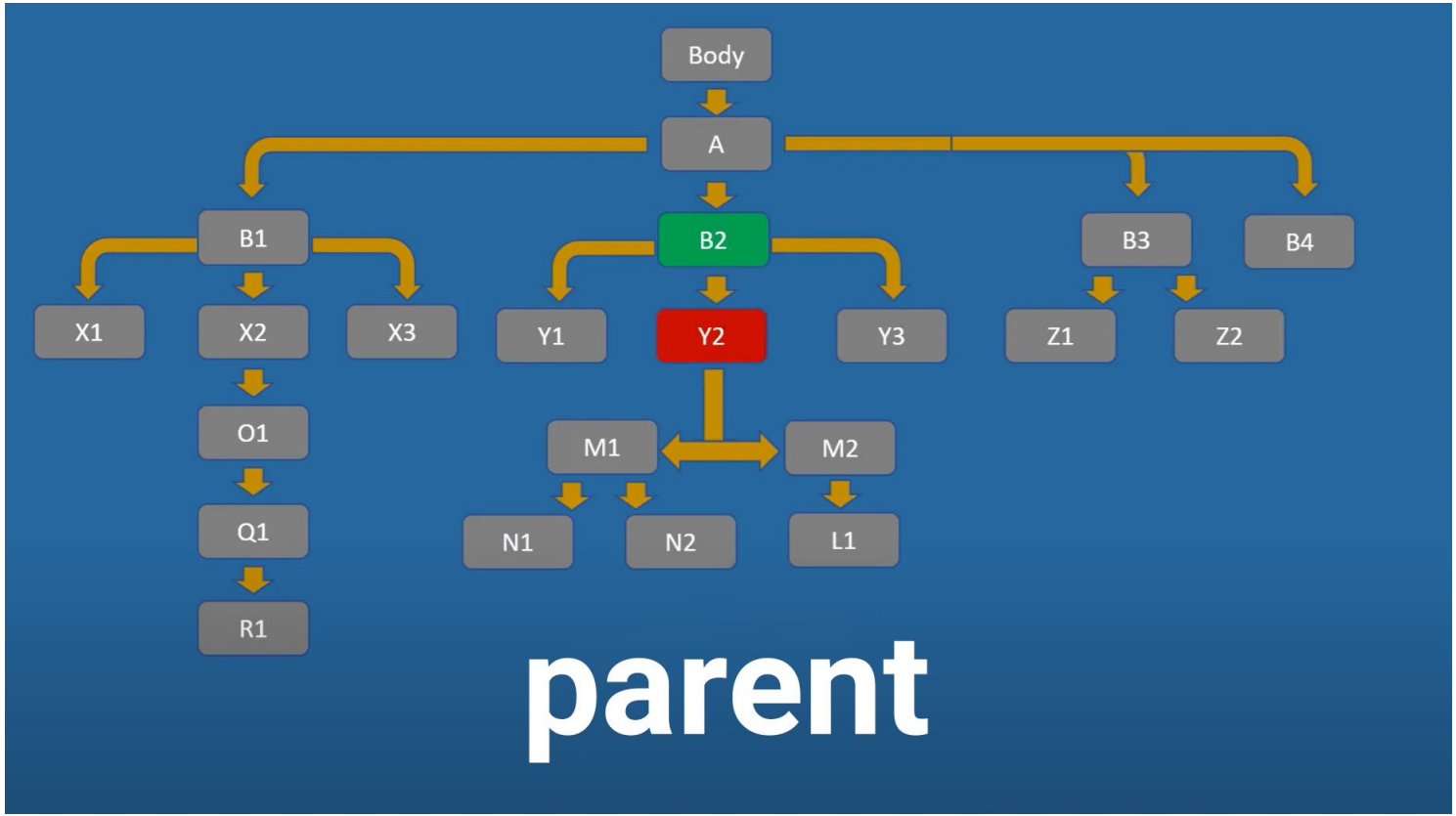
substring-after()

//* [substring-after (text () , ':') = 'Password']

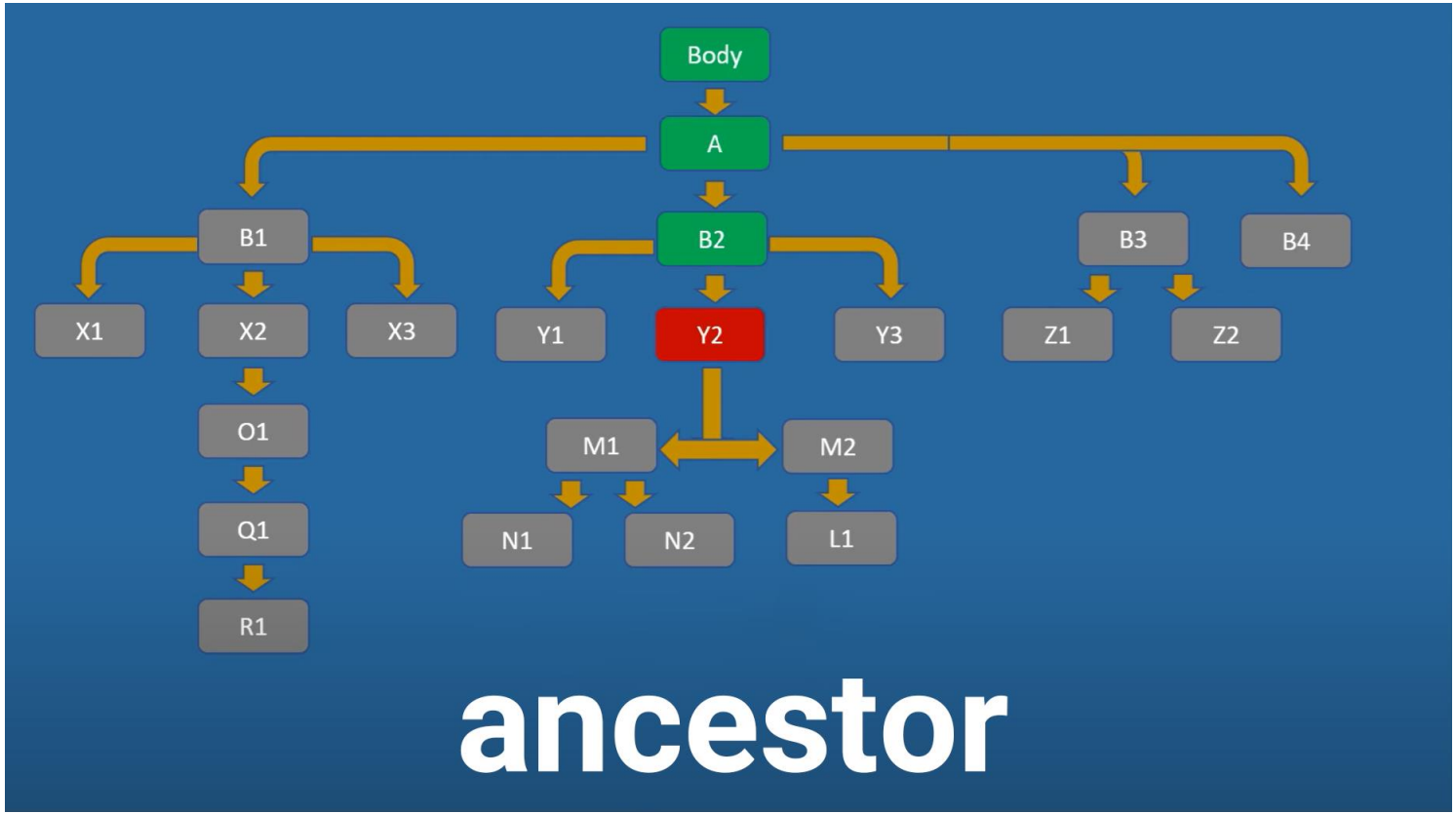


3. XPath Axes

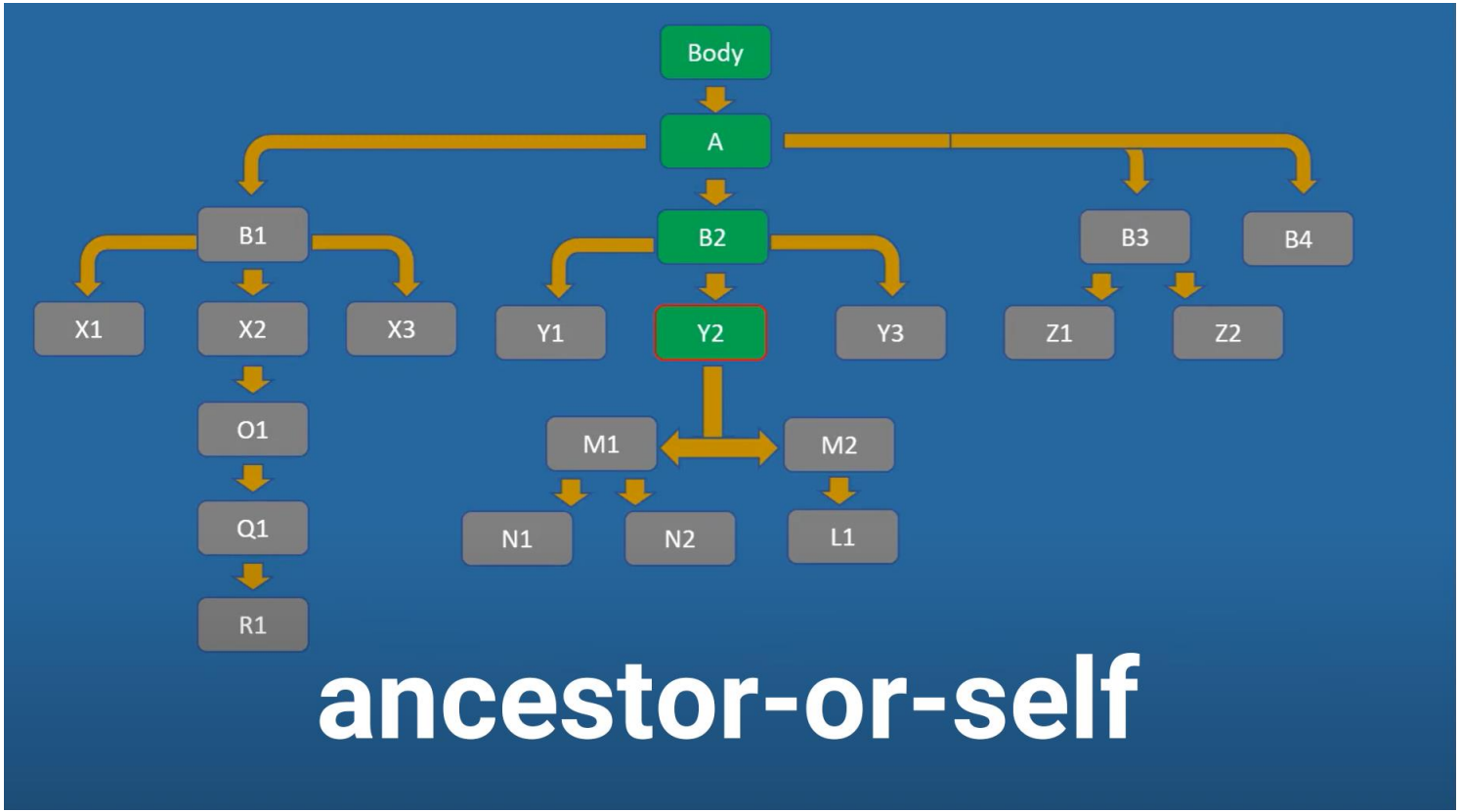
- parent
- ancestor
- ancestor-or-self
- child
- descendent
- descendent-or-self
- following
- following-sibling
- preceding
- preceding-sibling



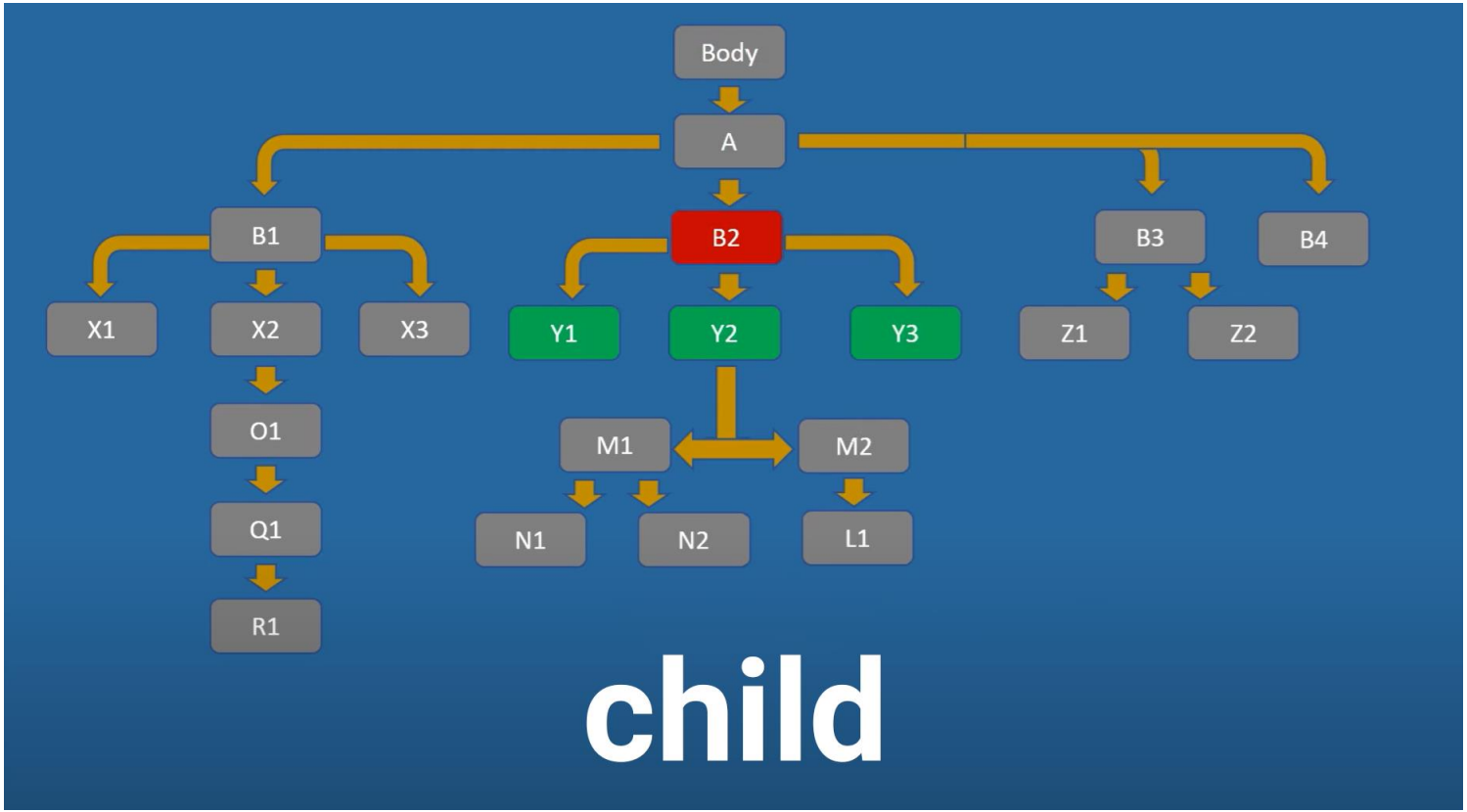
//* [@id='abc'] / parent :: *[@id='def']



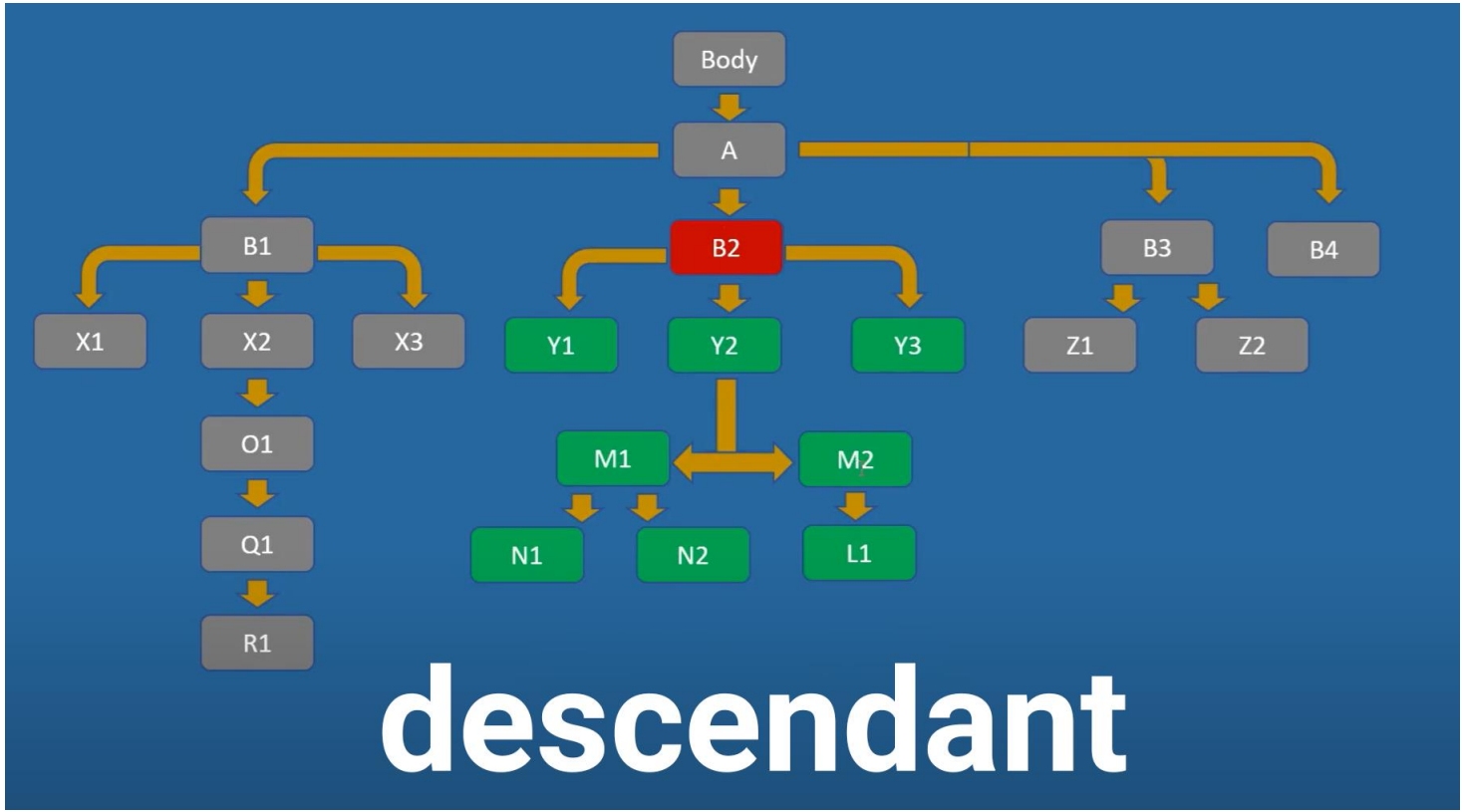
//* [@id=‘abc’] / ancestor :: *[@id=‘def’]



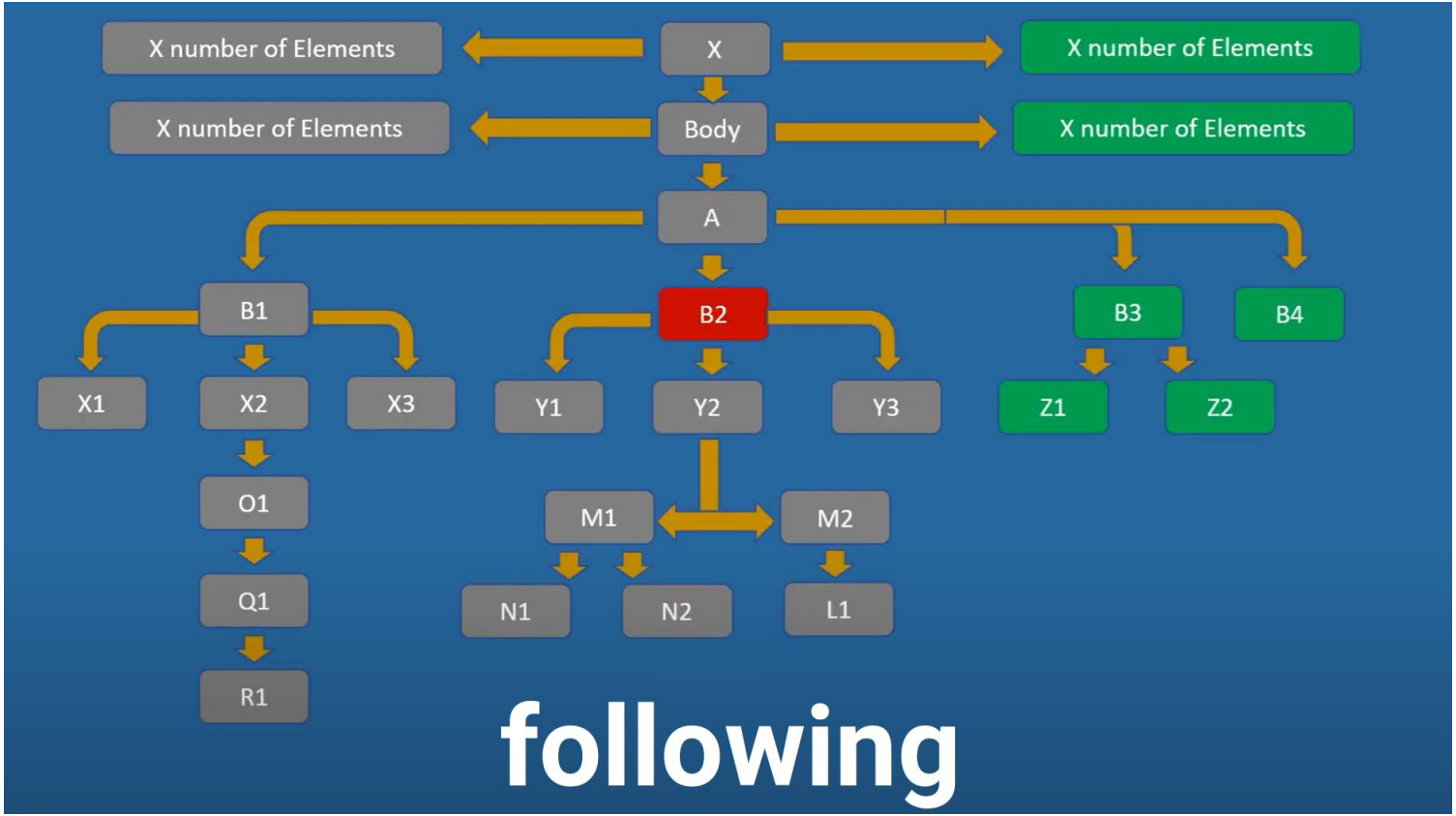
//* [@id=‘abc’] / ancestor-or-self :: *[@id=‘def’]



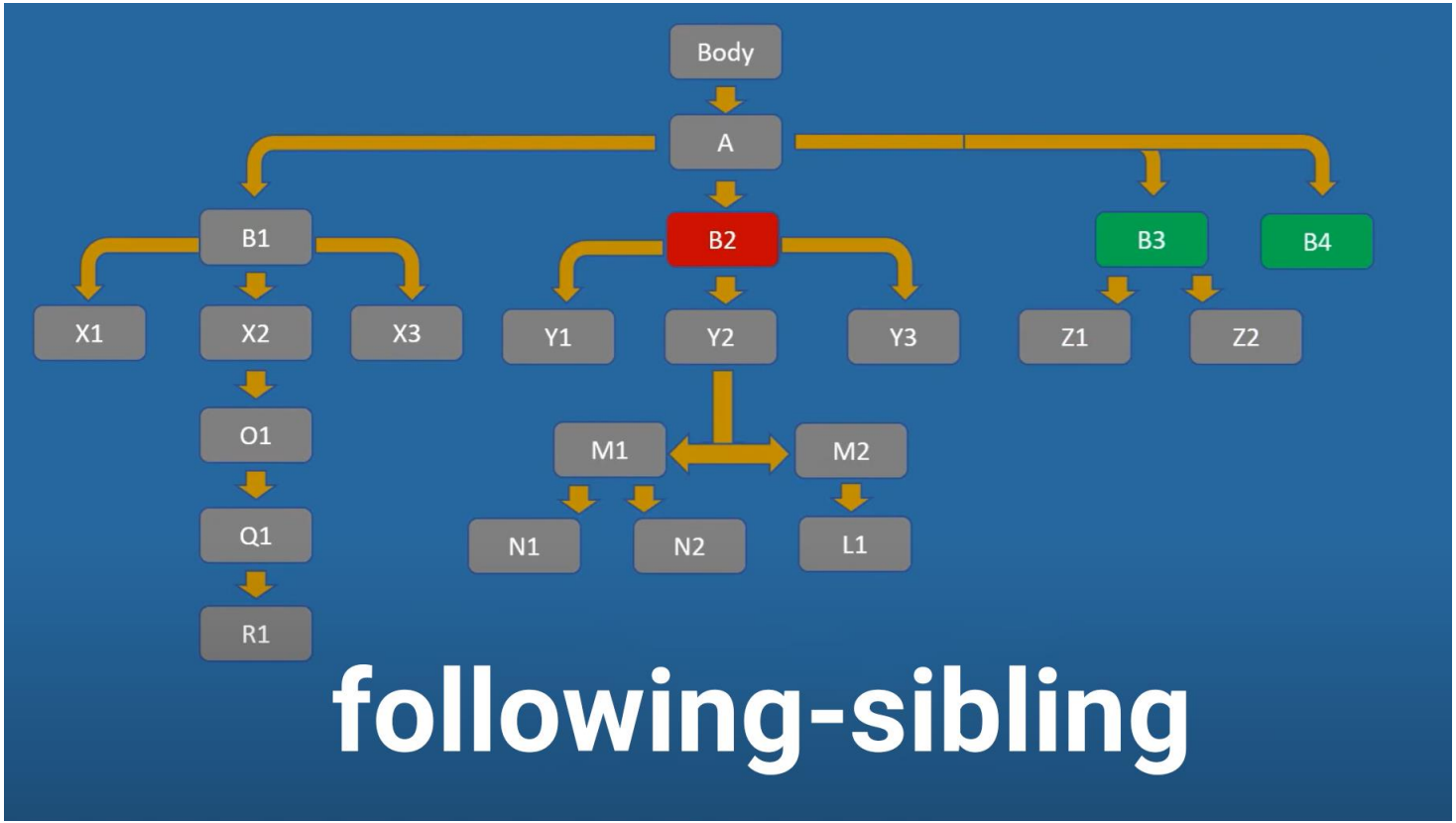
//* [@id='abc'] / child :: *[@id='def']



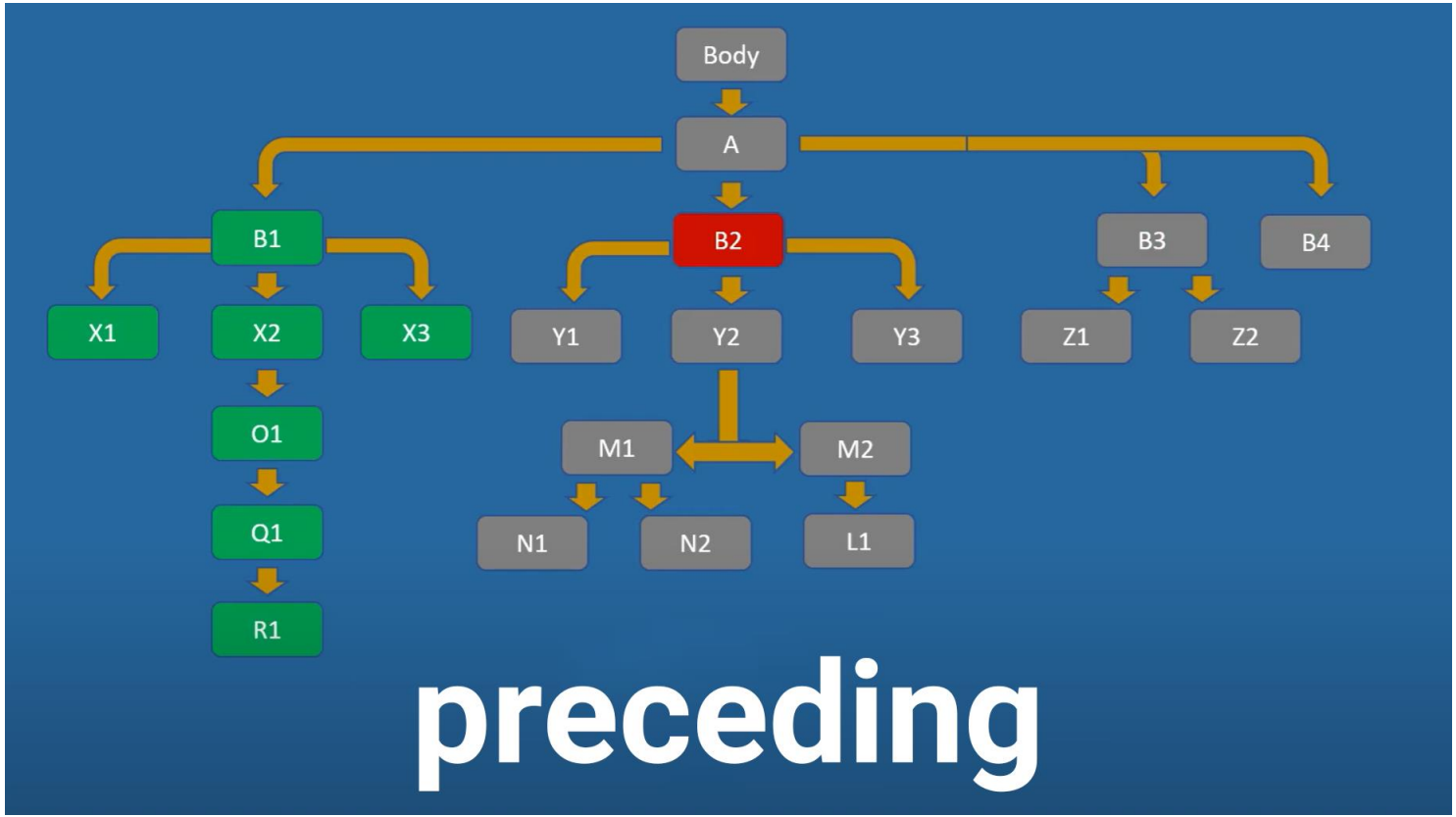
//* [@id=‘abc’] / descendant :: *[@id=‘def’]



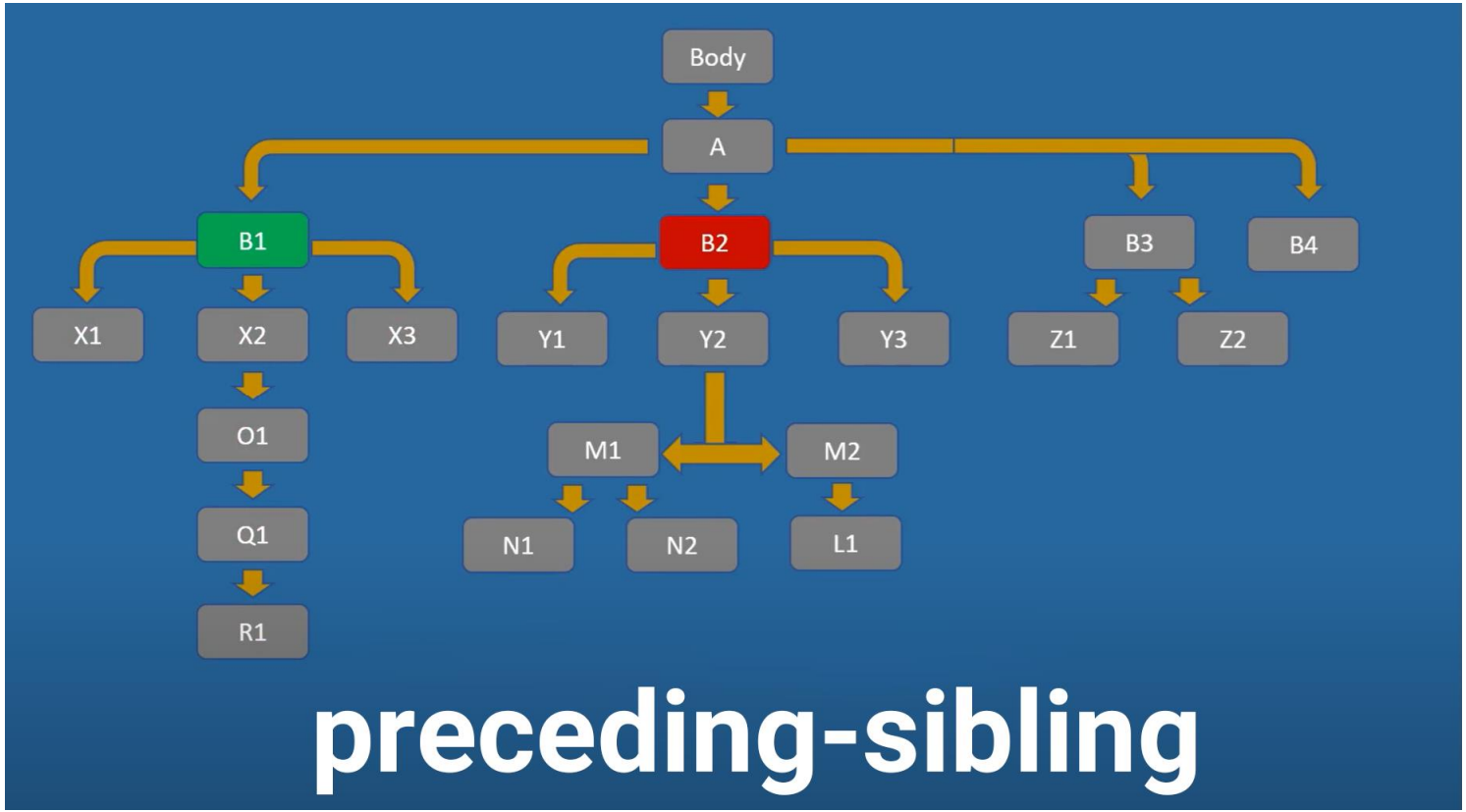
//* [@id='abc'] / following :: *[@id='def']



//* [@id=‘abc’] / following-sibling :: *[@id=‘def’]

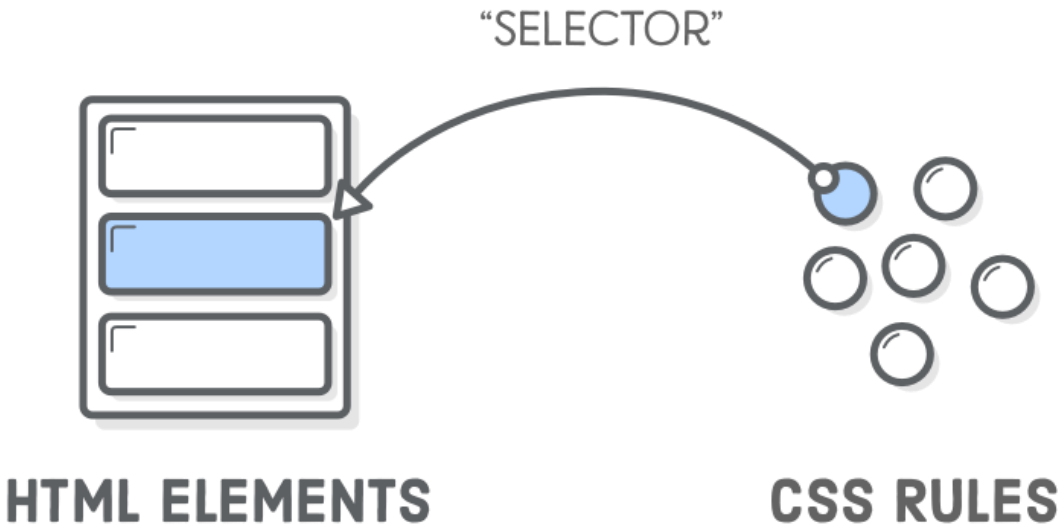


//* [@id=‘abc’] / preceding :: *[@id=‘def’]



//* [@id='abc'] / preceding-sibling :: *[@id='def']

4. CSS Selectors



Advantages

1. CSS selectors typically offer better, faster, and more reliable performance than XPath in most web browsers.

2. All the JS-based test framework like Cypress use CSS selectors

3. It is necessary to use CSS locators when we are using the JS executor to locate elements in Selenium/Appium.

4. To perform useful functions within selectors, such as ‘select all checked checkboxes’ or ‘select all visited links’, we need to use CSS pseudo-functions.

5. An essential fundamental for frontend developers.

Basic Syntax

tag [AttrName = ‘AttrValue’]

Sample expressions:

input[id = ‘fname’]

button[value = ‘submit’]

ID & Class Selectors

tag # ID-value

input # fname

tag . Class-value

div . tooltip

Combination

tag # ID-value [AttrName = ‘AttrValue’]
tag # ID-value . Class-value

AND (for attributes of a element)

tag # ID-value [Attr1Name = ‘Attr1Value’] [Attr2Name = ‘Attr2Value’]

OR (select any element of given expressions

tag1. Class-value , tag2 . Class-value

Sub-string Match

*<input **type**="checkbox" **id**="moption“>*

‘ ^ ‘	Starts with	*input[id^=‘mop’]*
‘ $ ‘	Ends with	*input[id$=‘tion’]*
‘ * ‘	Partial text	*input[id*=‘opt’]*

Can be combined as well:

input[id=‘opt’][type$=‘box’]*

Child/Descendant

Direct child

tag # ID-value>tag # ID-value

Descendant (Child and sub-child)

tag # ID-value tag # ID-value

Next-sibling (Adjacent)

tag # ID-value+tag # ID-value

Pseudo Class - Child

First child

tag # ID-value :first-child

Last child

tag # ID-value :last-child

Select by Index

tag # ID-value :nth-child(index)

Select by Index

tag # ID-value :nth-last-child(index)

Pseudo Class – Type of child

First child of its type

tag # ID-value>tag # ID-value:first-of-type

Last child of its type

tag # ID-value>tag # ID-value:last-of-type

Nth child of its type

tag # ID-value>tag # ID-value :nth-of-type(index)

Pseudo Class

<tag>:checked *Selects checked <tag> elements (e.g. input)*
<tag>:disabled *Selects disabled <tag> elements (e.g. button)*
<tag>:enabled *Selects enabled elements (e.g. button)*
<tag>:empty *Selects element that has no children*
<tag>:hover *Selects <tag> elements on mouse hover*
<tag>:only-of-type *Selects <tag> element that is the only <tag> of its parent*
<tag>:only-child *Selects <tag> element that is the only child of its parent*
<tag>::placeholder *Selects <tag> element with the place holder attribute specified*
<tag>:invalid *Selects all <tag> with invalid value (e.g. input)*
<tag>:valid *Selects all <tag> with valid value (e.g. input)*
<tag>:link *Selects all unvisited links*
<tag>:visited *Selects all visited links*

More pseudo classes

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