

How to use Xpaths in automated test cases

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Agenda

1. *What Xpath is*
2. *XPath Terminology*
3. *Relationship of Nodes*
4. *Functions*
5. *Predicates*
6. *Axes*
7. *Xpaths from my previous projects*
8. *Xpaths in UFT*
9. *The End*

1. What Xpath is

XPath is a syntax for defining parts of an XML document

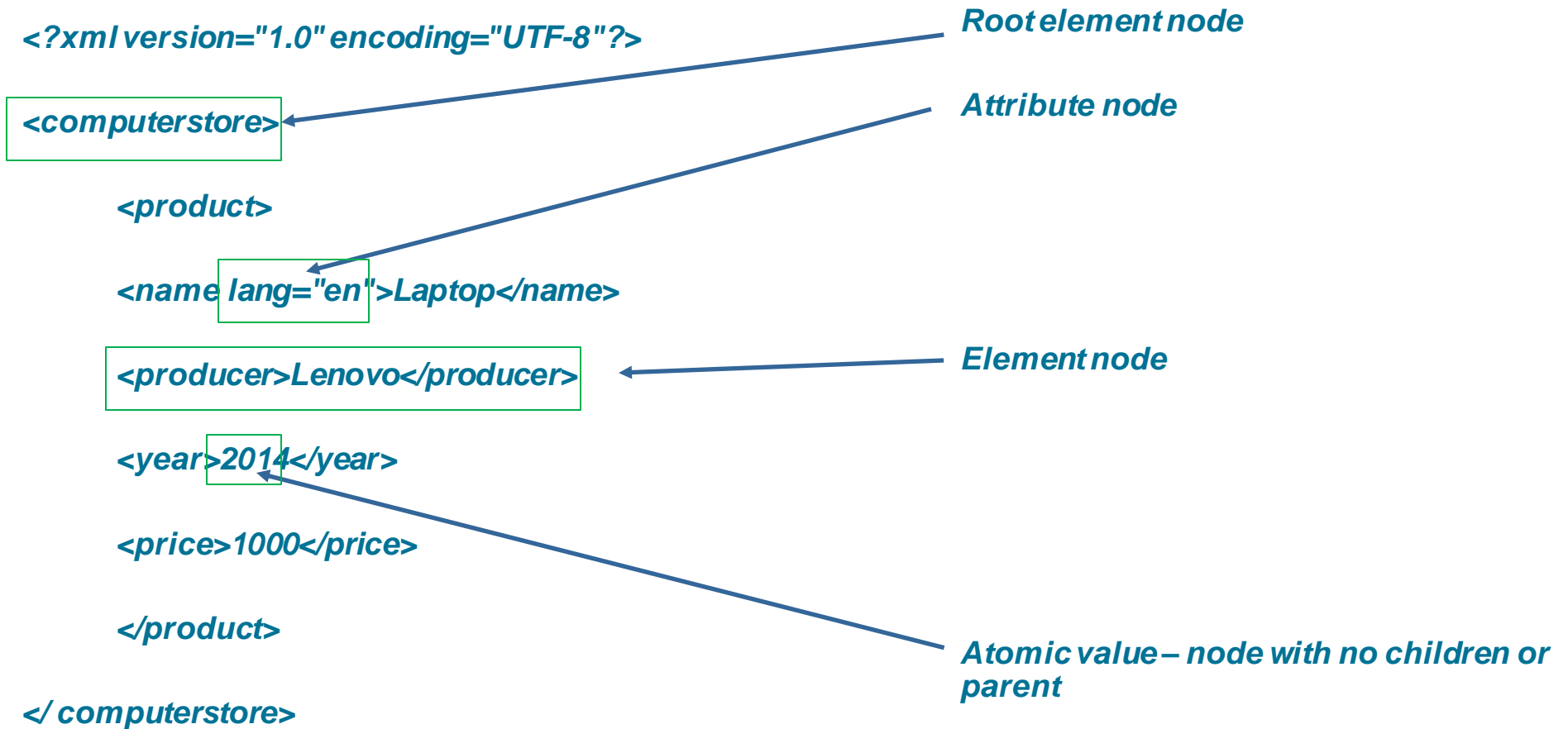
XPath uses path expressions to select nodes or node-sets in an XML document

XPath contains a library of over 100 built-in standard functions

XPath is a major element in XSLT, without it the XSLT couldn't be created

XPath is a W3C recommendation since 16 November 1999 to be used by XSLT, XPointer and other XML parsing software.

2. XPath Terminology



3. Relationship of Nodes

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<computerstore>
```

```
  <product>
```

```
    <name lang="en">Laptop</name>
```

```
    <producer>Lenovo</producer>
```

```
    <year>2014</year>
```

```
    <price>1000</price>
```

```
  </product>
```

```
</computerstore>
```

Parent – each element or attribute must have one parent.

Example: product is parent of name, producer, year and price

Children - element nodes may have zero, one or more children

Example: name is a child of the product

Siblings - nodes that have the same parent

Example: name, producer, year and price are siblings

Ancestors - a node's parent, parent's parent, etc.

Example: computerstore is an ancestor of a product and a year

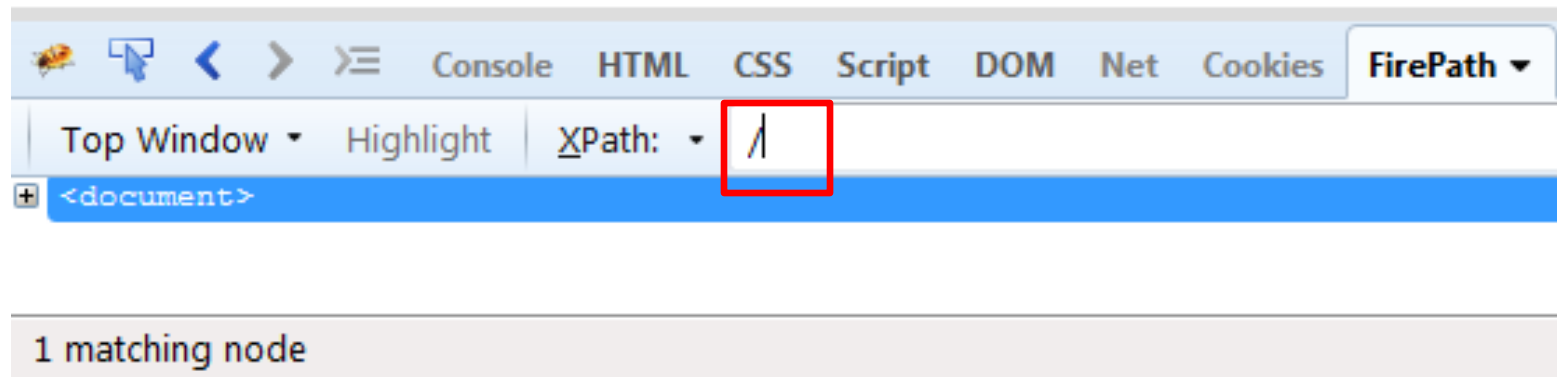
Descendants - node's children, children's children, etc.

Example: descendants of computerstore are product, name, producer, year and the price

4. Functions - / - select root node

/ *Expression, which selects from the root node*

Broken Images



4. Functions - *//* - select all nodes

// Expression, which selects nodes in the document from the current node that match the selection no matter where they are

Broken Images

FirePath toolbar: XPath: `//img`

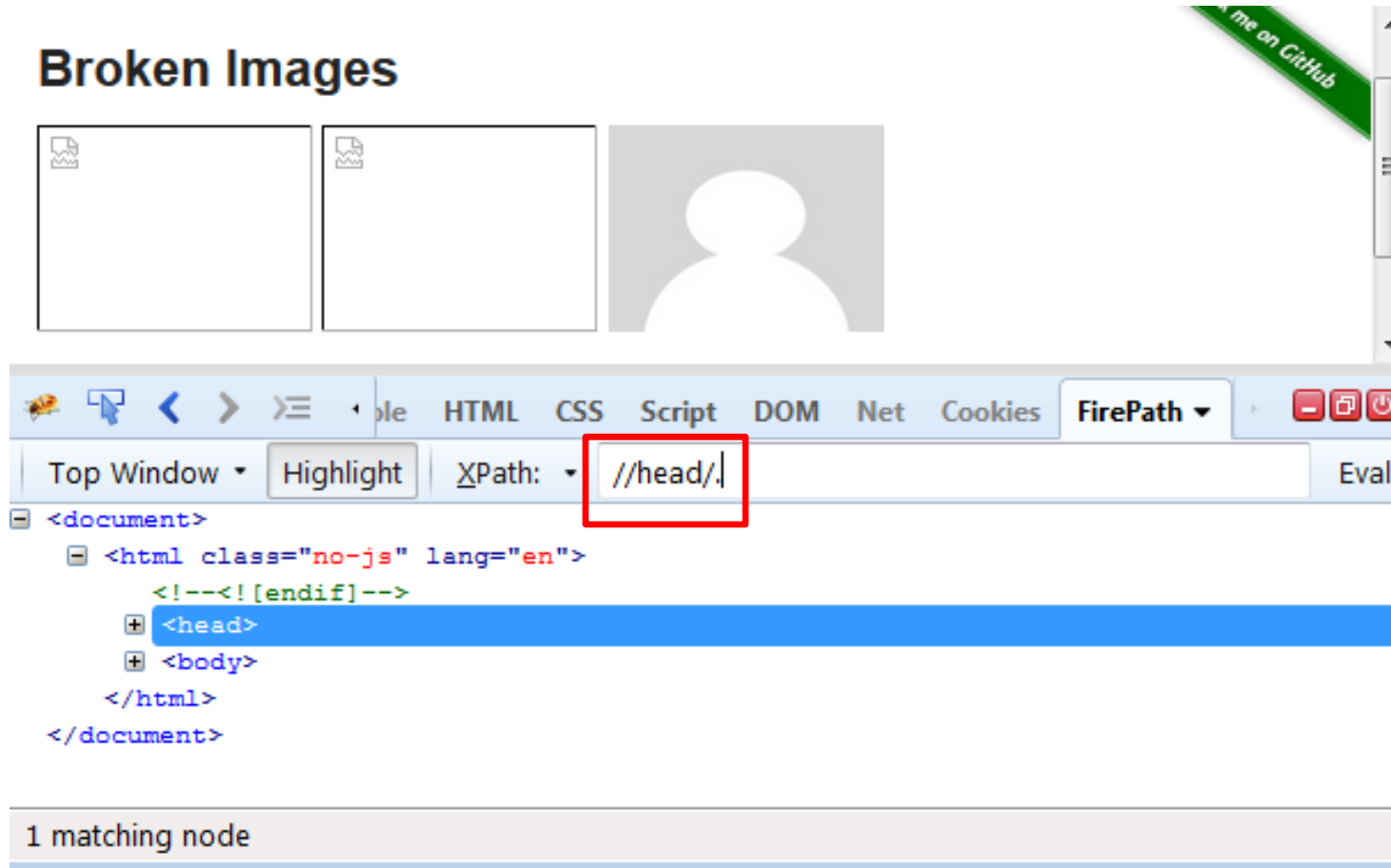
```
<div class="row">  
  <a href="https://github.com/tourdedave/the-internet">  
      
  </a>  
  <div id="content" class="large-12 columns">  
    <style> img { width: 120px; height: 90px; } </style>  
    <div class="example">  
      <h3>Broken Images</h3>  
        
        
        
    </div>  
  </div>  
</div>
```

4 matching nodes

4. Functions - . - select current node

Selects the current node

Broken Images



The screenshot shows a web browser window with the title 'Broken Images'. Below the title are three image placeholders: two empty boxes with broken image icons and one gray box with a white silhouette of a person. Below the browser window is the FirePath DOM tool. The 'XPath' field is highlighted with a red box and contains the text '//head/'. The 'Eval' button is to the right of the field. Below the XPath field, the DOM tree is displayed. The root node is '<document>'. It has a child node '<html class="no-js" lang="en">'. This node has two children: '<!--<![endif]-->' and '<head>'. The '<head>' node is highlighted in blue. Below the '<head>' node is the '<body>' node. The '</html>' node is the parent of the '</document>' node. At the bottom of the FirePath tool, a status bar shows '1 matching node'.

Top Window Highlight XPath: `//head/` Eval

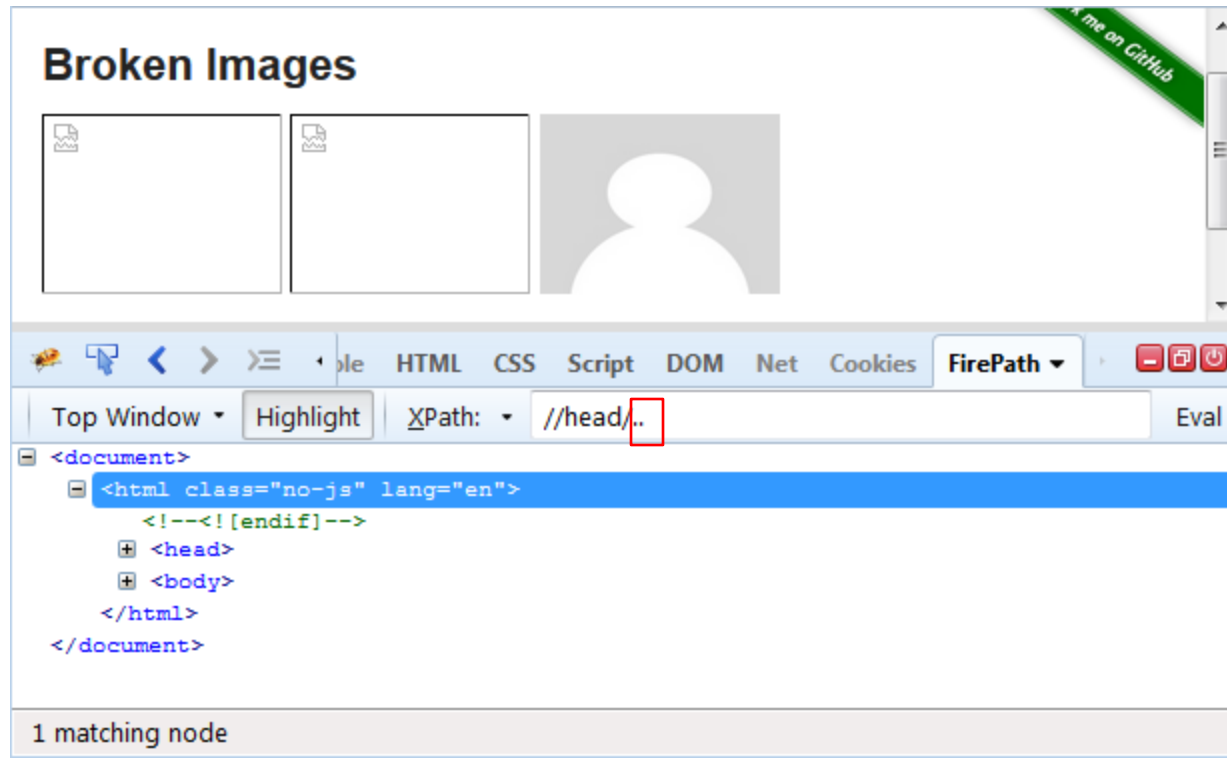
```
<document>
  <html class="no-js" lang="en">
    <!--<![endif]-->
    <head>
    <body>
  </html>
</document>
```

1 matching node

4. Functions - `..` – select parent of the current node

`..`

Selects the parent of the current node



4. Functions - @ – selects attributes

@

Selects attributes

The screenshot shows a web browser displaying the onet.pl website. The FirePath extension is open, showing the XPath query `//@id` in the search bar. The DOM tree below the search bar shows the resulting nodes, including `<li id="mailCounter" class="ico6">`, `<div id="servicesNavBox" class="toggle" style="overflow: visible;">`, `<ul id="servicesNav" class="channels toggle">`, `<li data-channel="obserwowane">`, `<li id="channelPolecane" class="active" data-channel="polecane">`, `<li data-channel="wiadomosci">`, `<li class="more">`, and `<div id="rootMenuBox" class="notificationBox switch hidden toggle">`. The bottom of the FirePath window indicates "82 matching nodes".

4. Functions - * – matches any element node

* *matches any element node*

Laptop Lenovo 2014 1000

FirePath

Top Window ▾ Highlight XPath: ▾ //computerstore/product/* Eval

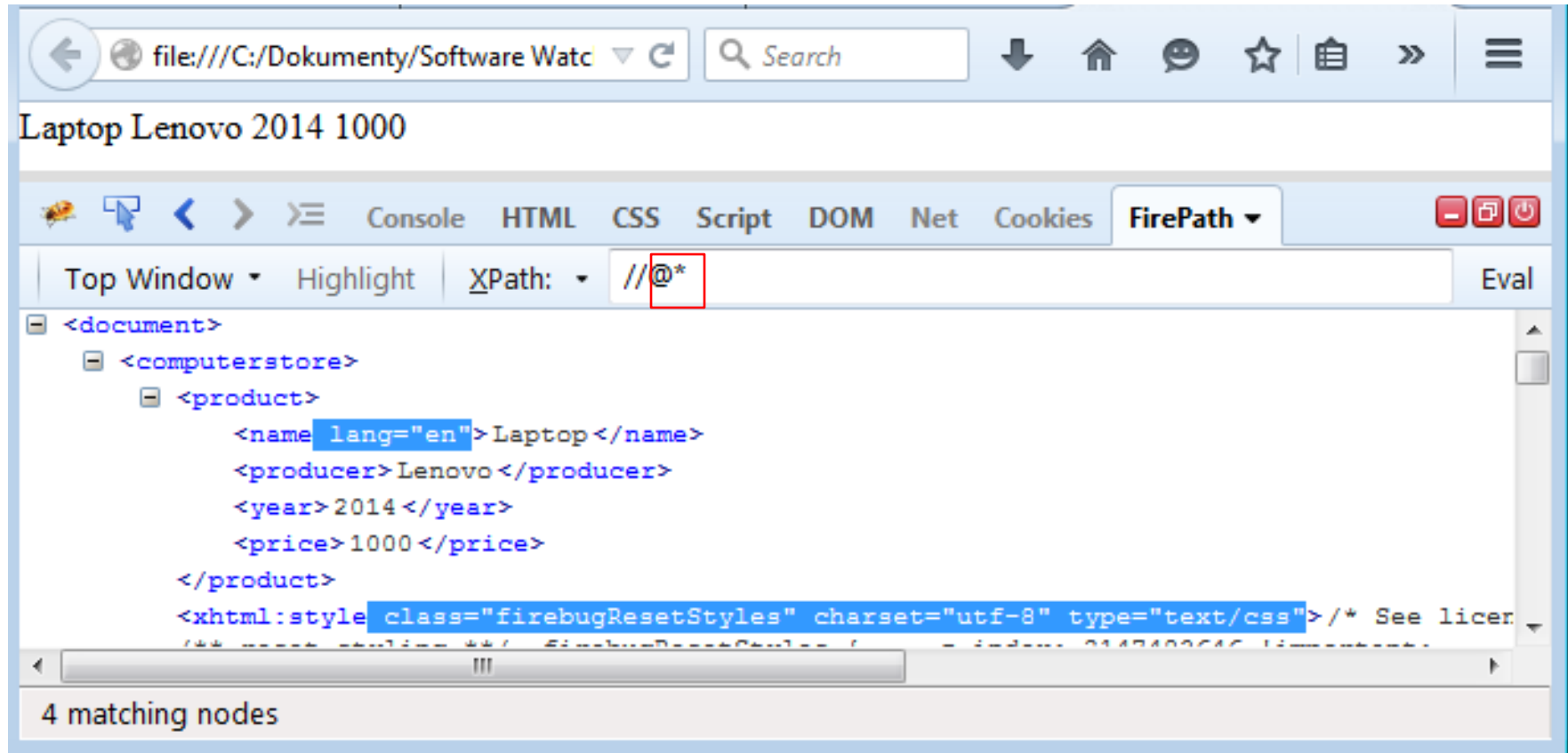
```
<document>
  <computerstore>
    <product>
      <name lang="en">Laptop</name>
      <producer>Lenovo</producer>
      <year>2014</year>
      <price>1000</price>
    </product>
  </computerstore>
</document>
```

4 matching nodes

4. Functions - *@** – matches any attribute

*@**

Selects any attribute



4. Functions – `node()` – matches any node of any kind

`node()` *Selects any element node*

The screenshot shows a web browser window with the address bar displaying `file:///C:/Dokumenty/Software Watch/€`. The page content is `Laptop Lenovo 2014 1000`. Below the page content, the FirePath tool is open, showing the XPath `//node()` entered in the search bar. The tool highlights the XML document structure in the DOM panel, showing the following XML content:

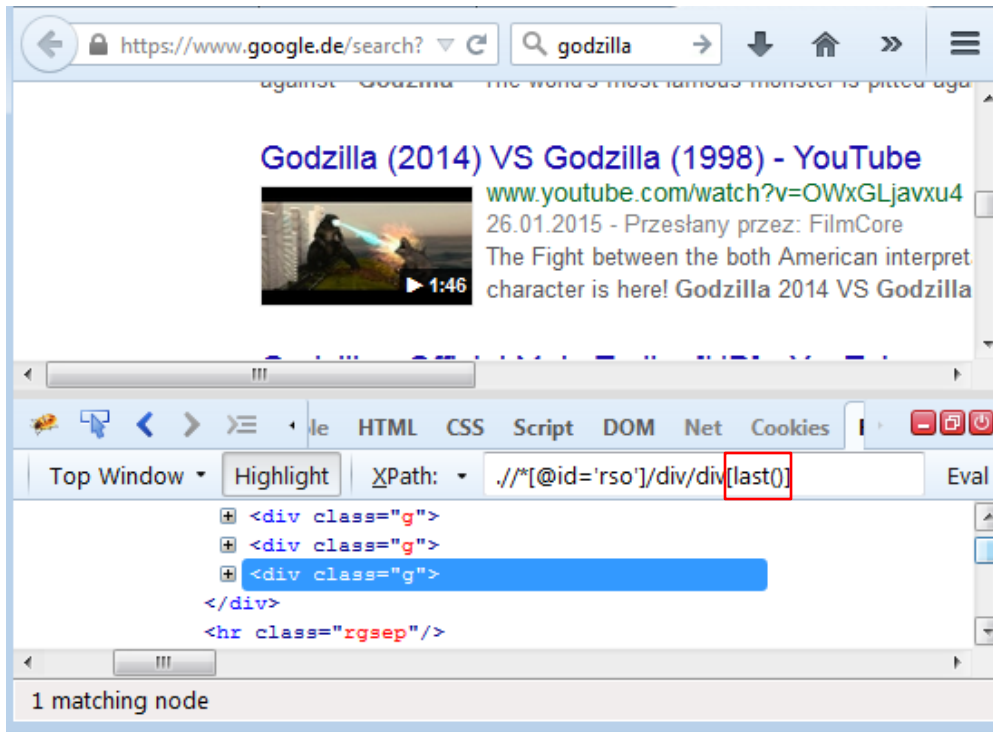
```
<document>
  <computerstore>
    <product>
      <name lang="en">Laptop</name>
      <producer>Lenovo</producer>
      <year>2014</year>
      <price>1000</price>
    </product>
    <stylesheet class="firebugResetStyles" charset="utf-8" type="text/css">/* See license.txt
    (**reset-styles **/ - firebugResetStyles ( - indent: 2147483646 - line: 1 - col: 1)
  </document>
```

At the bottom of the FirePath tool, it indicates `19 matching nodes (7 whitespace nodes)`.

4. Functions – `last()` – matches last node

`last()`

Can be used to match the last node or the last-n node



godzilla

Godzilla (2014) VS Godzilla (1998) - YouTube

www.youtube.com/watch?v=OWxGLjavxu4

26.01.2015 - Przesłany przez: FilmCore

The Fight between the both American interpret character is here! Godzilla 2014 VS Godzilla

1:46

HTML CSS Script DOM Net Cookies

Top Window Highlight XPath: `//*[@id='rso']/div/div[last()]` Eval

```
<div class="g">
<div class="g">
<div class="g">
</div>
<hr class="rgsep"/>
```

1 matching node



godzilla

Godzilla (2014) VS Godzilla (1998) - YouTube

www.youtube.com/watch?v=OWxGLjavxu4

26.01.2015 - Przesłany przez: FilmCore

The Fight between the both American interpret character is here! Godzilla 2014 VS Godzilla

1:46

HTML CSS Script DOM Net Cookies

Top Window Highlight XPath: `//*[@id='rso']/div/div[last()-1]` Eval

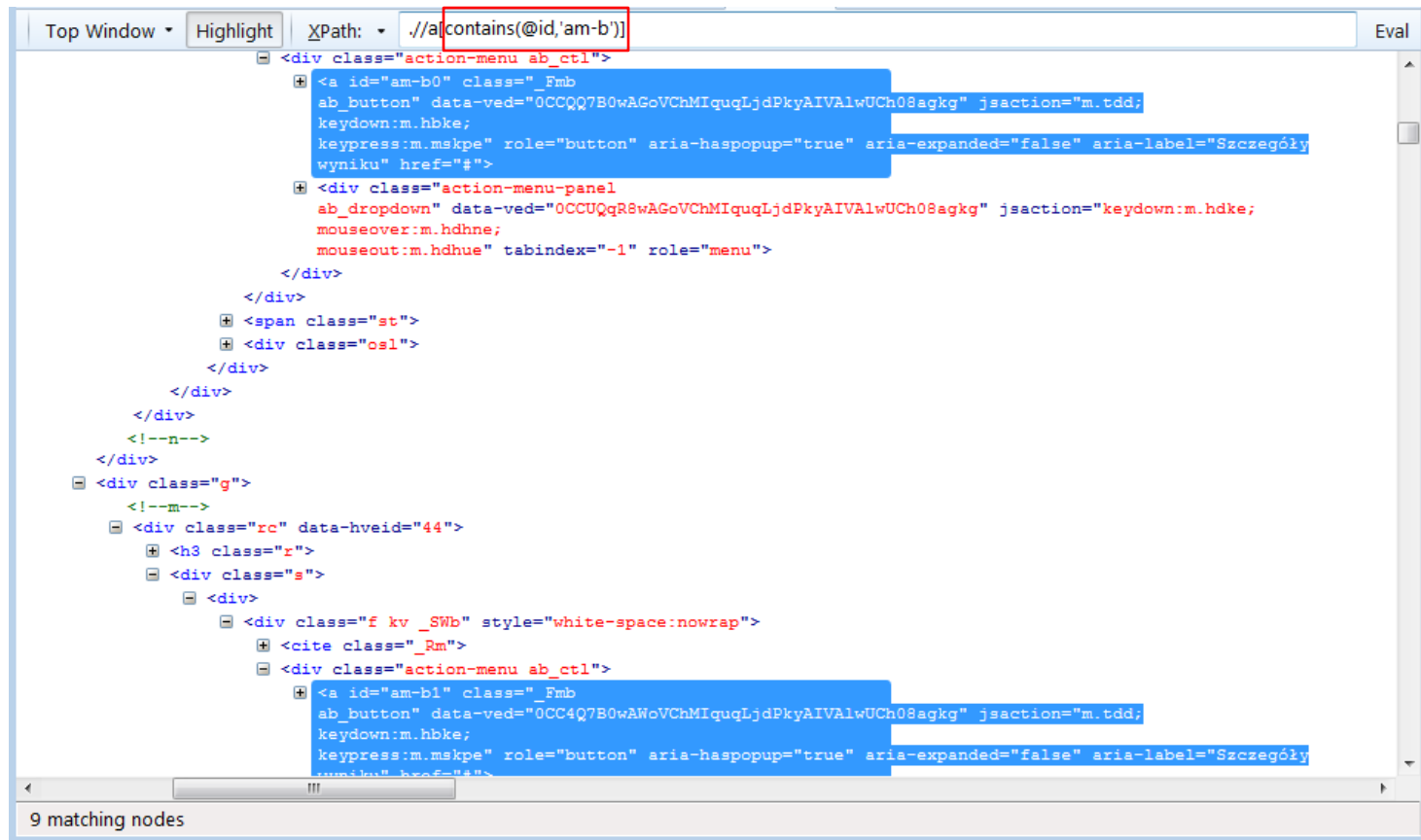
```
<div class="g">
<div class="g">
<div class="g">
<div class="g">
</div>
```

1 matching node

4. Functions – **contains()** – matches node containing text

contains(string,substring)

checks if node in string contains the substring



The screenshot shows the XPath Workshop interface. The XPath expression `./a[contains(@id,'am-b')]` is entered in the top bar, with `contains(@id,'am-b')` highlighted in a red box. The main area displays an XML document structure with several nodes. The nodes `` and `` are highlighted in blue. The bottom status bar indicates "9 matching nodes".

```
Top Window ▾ Highlight XPath: ▾ ./a[contains(@id,'am-b')] Eval
```

```
<div class="action-menu ab_ctl">
  <a id="am-b0" class="_Fmb
    ab_button" data-ved="0CCQ7B0wAGoVChMIquqLjdPkyAIVAlwUCh08agkg" jsaction="m.tdd;
    keydown:m.hbke;
    keypress:m.mskpe" role="button" aria-haspopup="true" aria-expanded="false" aria-label="Szczegóły
    wyniku" href="#">
  <div class="action-menu-panel
    ab_dropdown" data-ved="0CCUQqR8wAGoVChMIquqLjdPkyAIVAlwUCh08agkg" jsaction="keydown:m.hdke;
    mouseover:m.hdhne;
    mouseout:m.hdhue" tabindex="-1" role="menu">
  </div>
</div>
  <span class="st">
  <div class="osl">
  </div>
</div>
<!--n-->
</div>
<div class="g">
  <!--m-->
  <div class="rc" data-hveid="44">
    <h3 class="r">
    <div class="s">
      <div>
        <div class="f kv _SWb" style="white-space:nowrap">
          <cite class="_Rm">
          <div class="action-menu ab_ctl">
            <a id="am-b1" class="_Fmb
              ab_button" data-ved="0CC4Q7B0wAGoVChMIquqLjdPkyAIVAlwUCh08agkg" jsaction="m.tdd;
              keydown:m.hbke;
              keypress:m.mskpe" role="button" aria-haspopup="true" aria-expanded="false" aria-label="Szczegóły
              wyniku" href="#">
```

9 matching nodes

4. Functions – **text()** – returns text of node

text() *returns text of the node*

The screenshot displays a web browser window with two Wikipedia pages open. The top page is the Polish version for 'Technicy-magicy', and the bottom page is the English version for 'The IT Crowd'. A FirePath tool is overlaid on the browser, showing the XPath query `./em[text()='IT Crowd']` in the 'XPath' field. The 'Eval' tab shows the resulting HTML structure, highlighting the `IT Crowd` nodes. The bottom status bar indicates '12 matching nodes'.

Technicy-magicy – Wikipedia, wolna encyklopedia
<https://pl.wikipedia.org/wiki/Technicy-magicy>
The **IT Crowd** – brytyjski sitcom, wyprodukowany i nadawany przez telewizję ... Akcja serialu rozgrywa się w dziale IT jednej z wielkich korporacji, na którego ...
Fabuła - Obsada - Spis odcinków - Ciekawostki

The IT Crowd - Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/The_IT_Crowd Tłumaczenie strony
The **IT Crowd** is set in the offices of Reynholm Industries, a fictional British corporation in central London, located at 123 Caranden Road. It focuses on the

Top Window ▾ Highlight XPath: ▾ `./em[text()='IT Crowd']` Eval

```
The
<em>IT Crowd</em>
) - brytyjski sitcom, wyprodukowany i nadawany przez telewizję ... Akcja serialu rozgrywa się w dziale IT je
</span>
<div class="os1">
</div>
</div>
<!--n-->
</div>
<div class="g">
<!--m-->
<div class="rc" data-hveid="44">
<h3 class="r">
<div class="s">
<div>
<div class="f kv _SWb" style="white-space:nowrap">
<span class="st">
The
<em class="">IT Crowd</em>
```

12 matching nodes

4. Functions – **string-length()** – returns length of string

string-length() - returns length of string

The screenshot shows a Selenium IDE interface. At the top, a browser window displays the Wikipedia page for "Chocolate". The text "Chocolate" is highlighted with a blue box, and "chocolate" is also highlighted with a blue box. Below the browser window, the Selenium IDE interface is visible. The "FirePath" tab is selected, and the XPath query `.///*[@id='rso']/div[3]/div[1]/div/div/div/span/em` is entered. The "Eval" button is clicked, and the results are displayed in the "2 matching nodes" section. The results show two nodes: `Chocolate` and `chocolate`. The second node, `chocolate`, is highlighted with a red box.

Chocolate - Wikipedia, the free encyclopedia
<https://en.wikipedia.org/wiki/Chocolate> ▼ Tłumaczenie strony
Chocolate has become one of the most popular food types and flavors in the world, and a vast number of foodstuffs involving chocolate have been created.

Top Window ▾ Highlight XPath: ▾ `.///*[@id='rso']/div[3]/div[1]/div/div/div/span/em` `string-length(text())=9` Eval

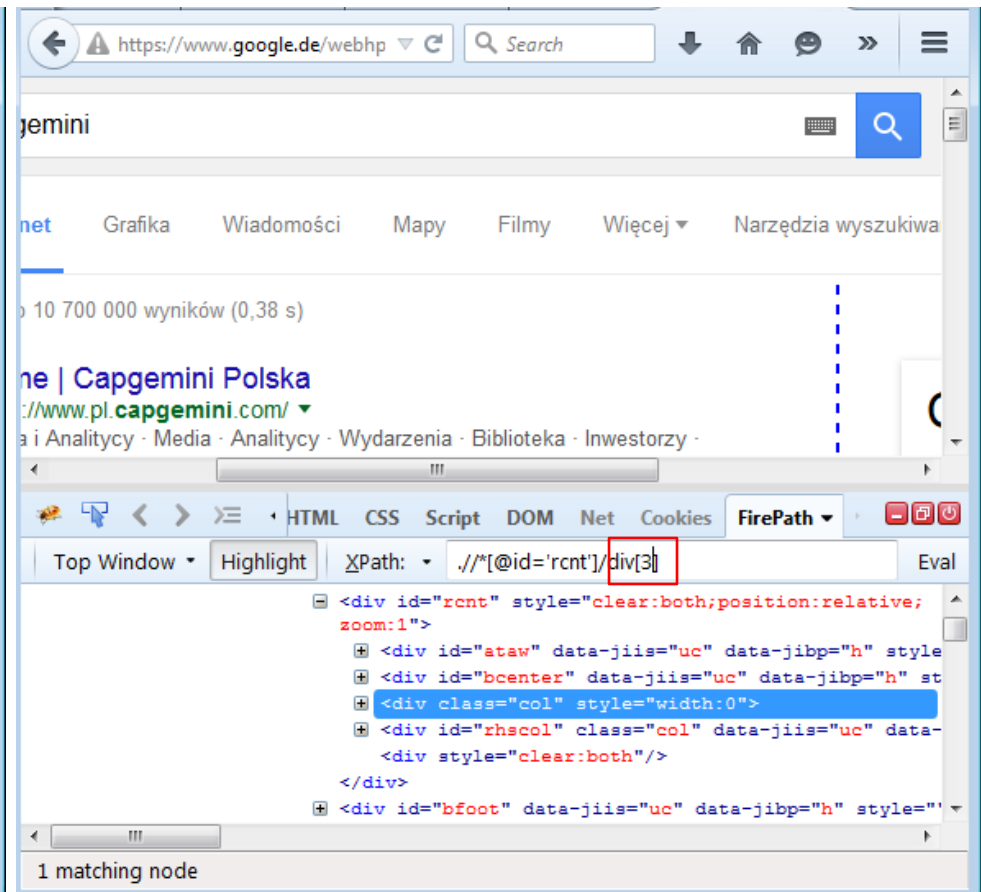
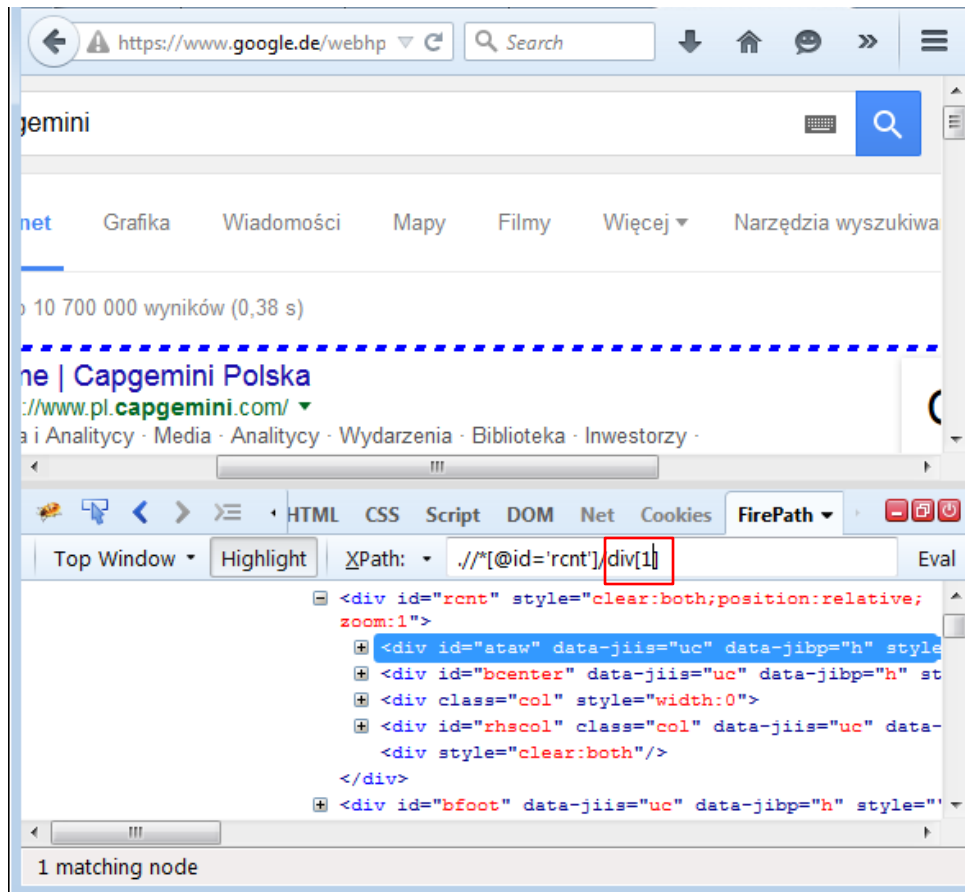
```
<div class="rc" data-hveid="60">
  <h3 class="r">
    <div class="s">
      <div>
        <div class="f kv _SWb" style="white-space:nowrap">
          <span class="st">
            <em>Chocolate</em>
            has become one of the most popular food types and flavors in the world,
            <em>chocolate</em>
            have been created.
          </span>
        </div>
      </div>
    </div>
  </div>
</div>
```

2 matching nodes

5. Predicates – [x] – matches x node in order

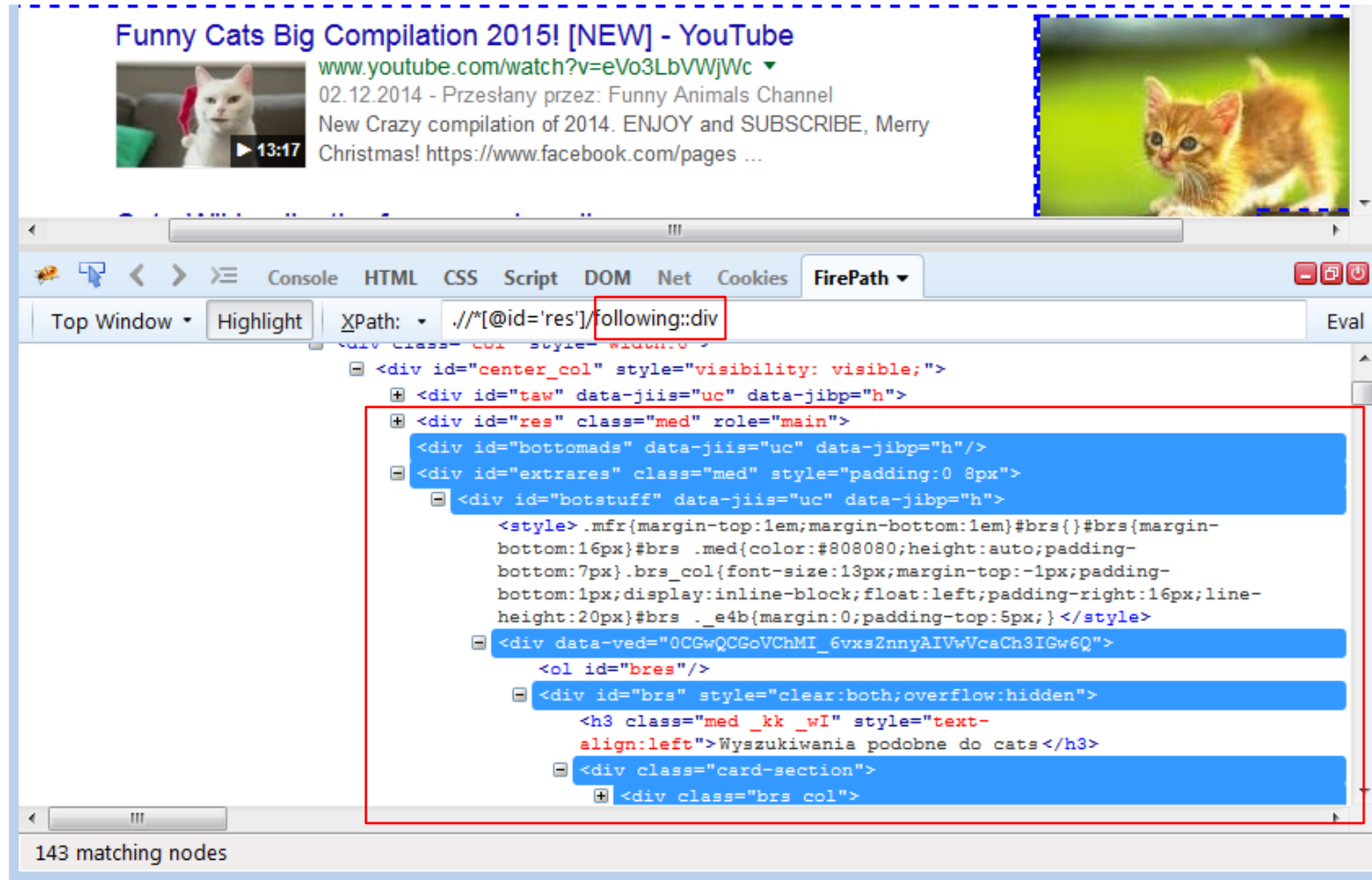
Node_name[x]

matches x node in order, x is an integer representing the order of node in its location



6. Axes – **following::** – nodes after current node

following:: matches nodes after current node, which fulfill the conditions after “::”



The screenshot shows a web browser displaying a YouTube video titled "Funny Cats Big Compilation 2015! [NEW] - YouTube". The video player is visible, showing a white cat. Below the video player, the FirePath DOM inspector is open. The XPath expression is set to `//*[@id='res']/following::div`. The DOM tree shows a tree of `div` elements. The `res` element is highlighted. The `following::div` axis is applied to the `res` element, resulting in 143 matching nodes. The DOM tree structure is as follows:

```
<div id="center_col" style="visibility: visible;">
  <div id="taw" data-jjis="uc" data-jibp="h">
    <div id="res" class="med" role="main">
      <div id="bottomads" data-jjis="uc" data-jibp="h"/>
      <div id="extrares" class="med" style="padding:0 8px">
        <div id="botstuff" data-jjis="uc" data-jibp="h">
          <style>.mfr{margin-top:1em;margin-bottom:1em}#brs{ }#brs{margin-
            bottom:16px}#brs .med{color:#808080;height:auto;padding-
            bottom:7px}.brs_col{font-size:13px;margin-top:-1px;padding-
            bottom:1px;display:inline-block;float:left;padding-right:16px;line-
            height:20px}#brs ._e4b{margin:0;padding-top:5px;}</style>
          <div data-ved="0CGwQCGoVChMI_6vxsZnnyAIVwVcaCh3IGw6Q">
            <ol id="brs"/>
              <div id="brs" style="clear:both;overflow:hidden">
                <h3 class="med _kk_wI" style="text-
                  align:left">Wyszukiwania podobne do cats</h3>
                <div class="card-section">
                  <div class="brs_col">
```

6. Axes – **preceding::** – nodes before current node

preceding:: matches nodes before current node, which fulfill the conditions after “::”

The screenshot shows a web browser displaying the Grumpy Cat page. The FirePath tool is open, showing the XPath expression: `../../@id='rso']/div/div[5]/div/div/div/span/preceding::*[contains(text(),'Grumpy')]`. The DOM tree is visible, showing the HTML structure. The Grumpy Cat image and the text "Grumpy Cat" are highlighted in blue. The text "The Original Grumpy Cat! - YouTube" is also visible. The FirePath tool shows 12 matching nodes.

7. Xpaths from my previous projects

`./button[@id='base:exportAllButton_button']` – simple xpath, which alone can be generated by FirePath

`./span[text()='Fehlerhafte exportieren']/..` – matches span and returns to node above

`./tr[contains(@class,'postal-vote-export-invalid-address')]/td[text()='32167']` – matches tr with help from class-id, then go deeper to td which has the expected text

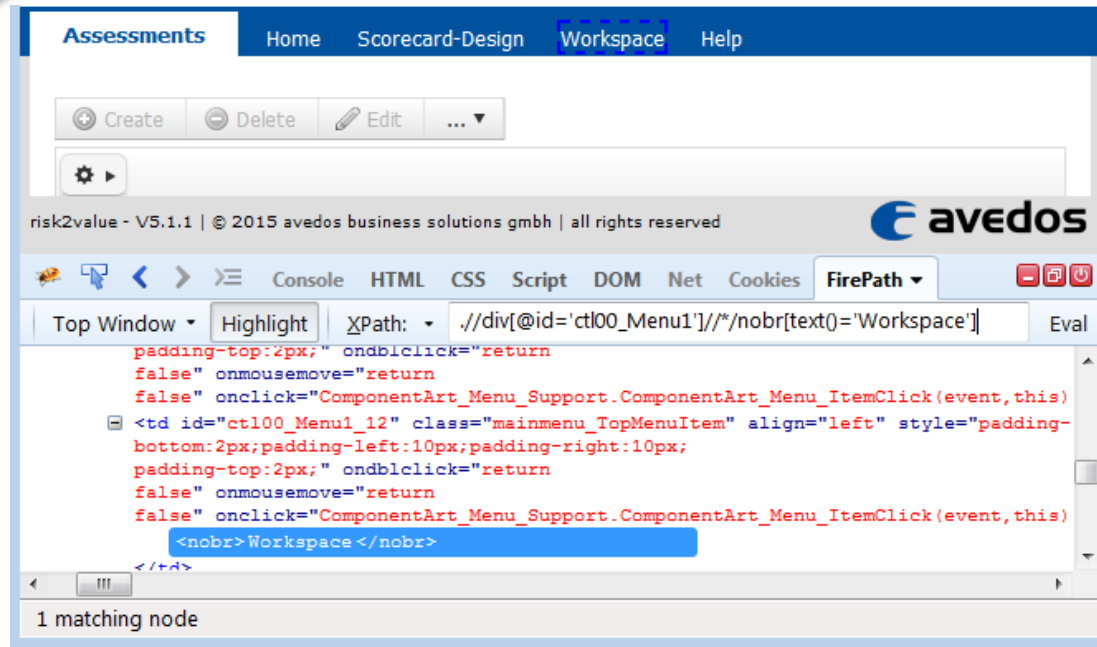
`./button[contains(@id,'base:dialogCreateVoter:')]/span[text()='Speichern']/..`

- Matches a button, which in „id“ contains „base:dialogCreateVoter:“ (because the other part of this id was random generated each release), then goes deeper to span with text „Speichern“ and returns to button node

`./*[@id='base:dialogCreateVoter:dialogCreateVoterDiag' and @aria-hidden='false']` – matches a node which has the expected values of attributes id and aria-hidden

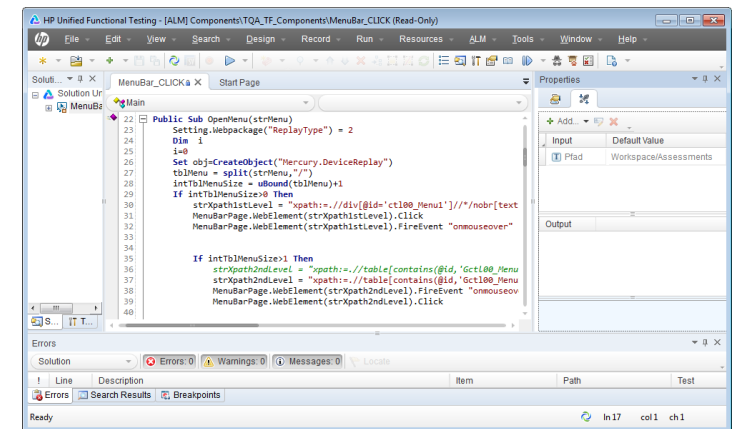
`./*[@id='base:dialogCreateVoter:gender_panel']/div/ul/li[text()='W']` – matches node with expected “id” and goes deeper to list item, which contains the text “W”

8. Xpaths in UFT

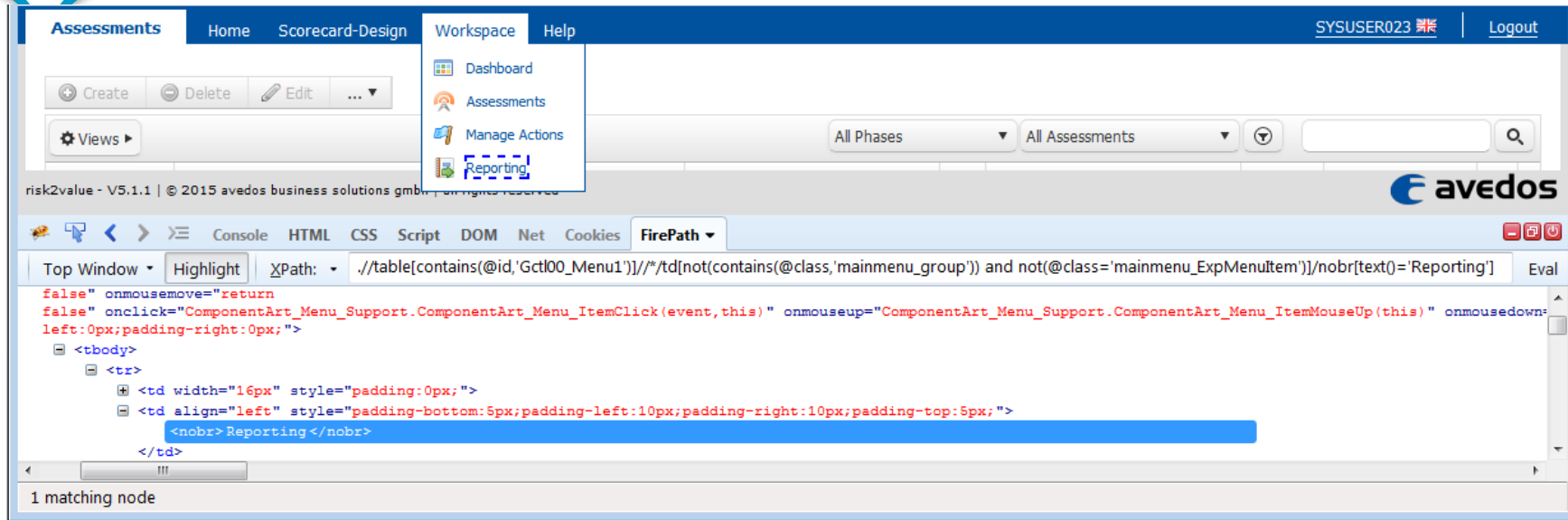


```
Public Sub OpenMenu(strMenu)
    Setting.Webpackage("ReplayType") = 2
    Dim i
    i=0
    Set obj=CreateObject("Mercury.DeviceReplay")
    tblMenu = split(strMenu,"/")
    intTblMenuSize = uBound(tblMenu)+1
    If intTblMenuSize>0 Then
        strXPath1stLevel = "//*[@id='ctl00_Menu1']/*/no[nobr[text()='&tblMenu(0)']]"
        MenuBarPage.WebElement(strXPath1stLevel).Click
        MenuBarPage.WebElement(strXPath1stLevel).FireEvent "onmouseover"

        If intTblMenuSize>1 Then
            strXPath2ndLevel = "//*[@id='ctl00_Menu1']/*/td[not(contains(@class,'NavigTopMenuItem')) and not(@class='mainmenu_CurrentLocationTopItemLook')]/no[nobr[text()='&tblMenu(1)']]"
            strXPath2ndLevel = "//*[@id='ctl00_Menu1']/*/td[not(contains(@class,'mainmenu_group')) and not(@class='mainmenu_ExpMenuItem')]/no[nobr[text()='&tblMenu(1)']]"
            MenuBarPage.WebElement(strXPath2ndLevel).FireEvent "onmouseover"
            MenuBarPage.WebElement(strXPath2ndLevel).Click
        End If
    End If
End Sub
```

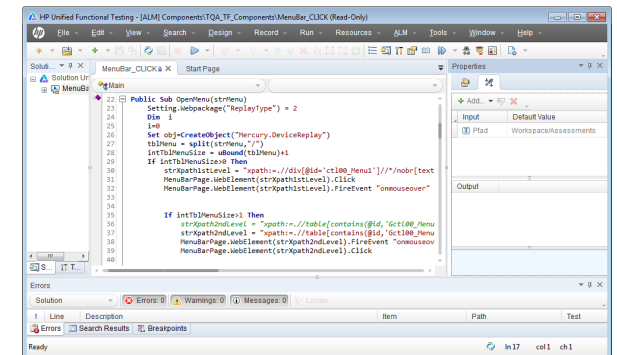


8. Xpaths in UFT



```
Public Sub OpenMenu(strMenu)
    Setting.Webpackage("ReplayType") = 2
    Dim i
    i=0
    Set obj=CreateObject("Mercury.DeviceReplay")
    tblMenu = split(strMenu,"/")
    intTblMenuSize = uBound(tblMenu)+1
    If intTblMenuSize>0 Then
        strXpath1stLevel = "xpath:../../div[@id='ctl00_Menu1']/td[not(contains(@class,'mainmenu_group')) and not(@class='mainmenu_ExpMenuItem')]/nobr[text()='&tblMenu(0)&']"
        MenuBarPage.WebElement(strXpath1stLevel).Click
        MenuBarPage.WebElement(strXpath1stLevel).FireEvent "onmouseover"

    If intTblMenuSize>1 Then
        strXpath2ndLevel = "xpath:../../table[contains(@id,'Gct100_Menu1')]/td[not(contains(@class,'mainmenu_group')) and not(@class='mainmenu_ExpMenuItem')]/nobr[text()='&tblMenu(1)&']"
        strXpath2ndLevel = "xpath:../../table[contains(@id,'Gct100_Menu1')]/td[not(contains(@class,'mainmenu_group')) and not(@class='mainmenu_ExpMenuItem')]/nobr[text()='&tblMenu(1)&']"
        MenuBarPage.WebElement(strXpath2ndLevel).FireEvent "onmouseover"
        MenuBarPage.WebElement(strXpath2ndLevel).Click
    End If
End Sub
```



10. The End

Thank You for Your kindly attention

People matter, results count.

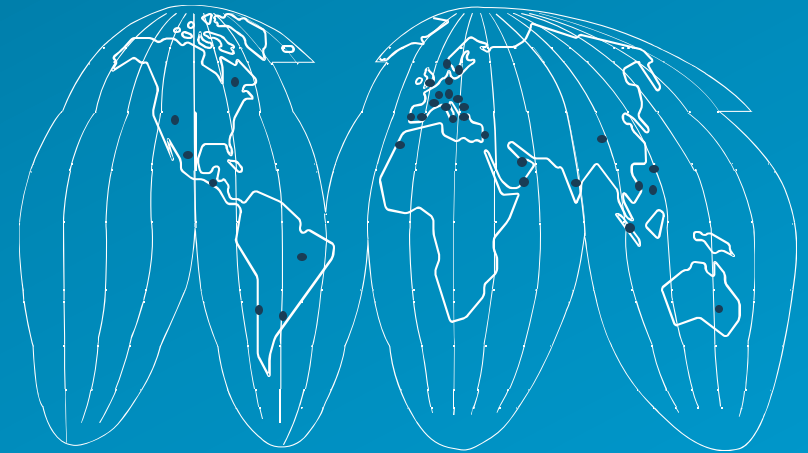


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