XPath

in Selenium WebDriver

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What is XPath?

- XPath is defined as **XML path**.
- **It is a syntax or language for finding any element on the web page using XML path expression**.
- XPath is used to find the location of any element on a webpage using HTML DOM structure.

Types of X-path

- There are two types of XPath:

1) Absolute XPath

2) Relative XPath

Absolute XPath

- It is the direct way to find the element, but the disadvantage of the absolute XPath is that if there are any changes made in the path of the element then that XPath gets failed.
- It begins with the single forward slash(/) ,which means you can select the element from the root node.
- Below is the example of an absolute xpath expression of the element shown in the below screen.
- Ex:
- /html[1]/body[1]/div[1]/table[1]/tbody[1]/tr[1]/td[2]/table[1]/tbody[1]/tr[4]/td[1]/table[1]/tbody[1]/tr[1]/td[2]/table[1]/tbody[1]/tr[2]/td[3]/form[1]/table[1]/tbody[1]/tr[4]/td[1]/table[1]/tbody[1]/tr[2]/td[2]/input[1]

Relative xpath

- For Relative Xpath the path starts from the middle of the HTML DOM structure.
- It starts with the double forward slash (//), which means it can search the element anywhere at the webpage.
- You can start from the middle of the HTML DOM structure and no need to write long xpath.

Ex:

```
//input[@name='userName']
```

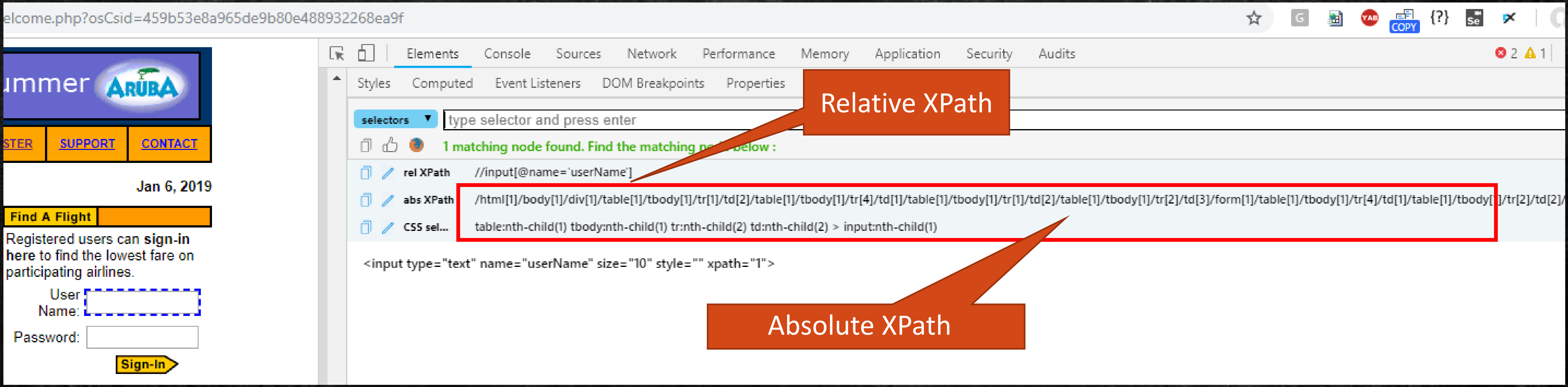
Syntax for Relative XPath

- XPath contains the path of the element situated at the web page. Standard syntax for creating XPath is.

```
Xpath=//tagname[@attribute='value']
```

- **//** : Select current node.
- **Tagname:** Tagname of the particular node.
- **@:** Select attribute.
- **Attribute:** Attribute name of the node.
- **Value:** Value of the attribute.

Absolute & Relative XPath



Jan 6, 2019

Registered users can **sign-in here** to find the lowest fare on participating airlines.

User Name:

Password:

1 matching node found. Find the matching node below :

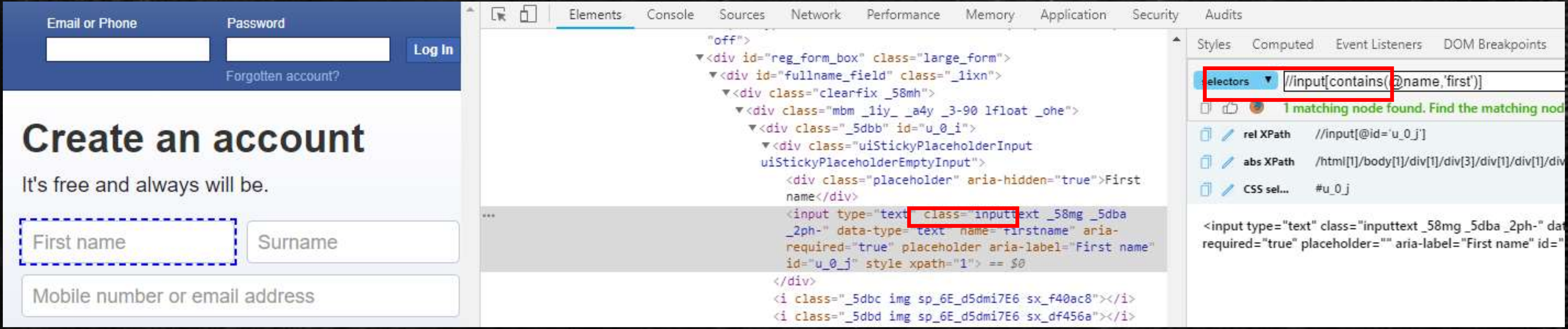
```
rel XPath   //input[@name='userName']
abs XPath   /html[1]/body[1]/div[1]/table[1]/tbody[1]/tr[1]/td[2]/table[1]/tbody[1]/tr[4]/td[1]/table[1]/tbody[1]/tr[1]/td[2]/table[1]/tbody[1]/tr[2]/td[3]/form[1]/table[1]/tbody[1]/tr[4]/td[1]/table[1]/tbody[1]/tr[2]/td[2]/
CSS sel...  table:nth-child(1) tbody:nth-child(1) tr:nth-child(2) td:nth-child(2) > input:nth-child(1)

<input type="text" name="userName" size="10" style="" xpath="1">
```

Contains()

//input[contains(@name,'first')]

- Contains() is a method used in XPath expression. It is used when the value of any attribute changes dynamically, for example, login information.
- The contain feature has an ability to find the element with partial text



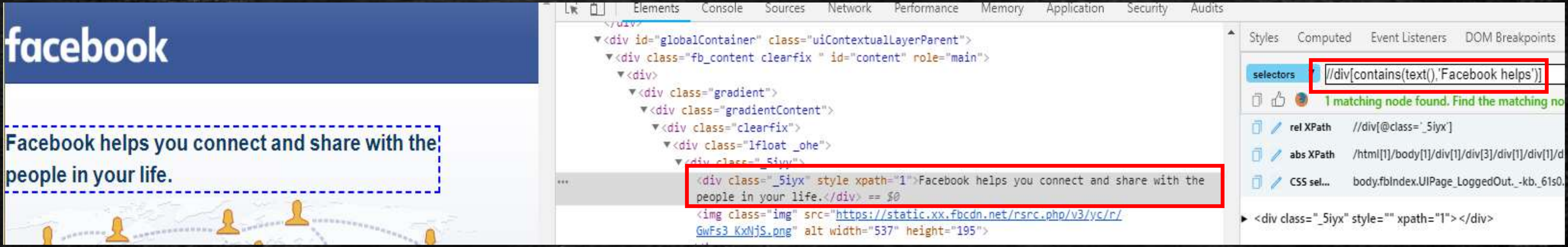
```
"off">
▼<div id="reg_form_box" class="large_form">
  ▼<div id="fullname_field" class="_1ixn">
    ▼<div class="clearfix _58mh">
      ▼<div class="mbm _1iy_ _a4y _3-90 lfloat _ohe">
        ▼<div class="_5dbb" id="u_0_i">
          ▼<div class="uiStickyPlaceholderInput
          uiStickyPlaceholderEmptyInput">
              <div class="placeholder" aria-hidden="true">First
              name</div>
...           <input type="text" class="inputtext _58mg _5dba
              _2ph-" data-type="text" name="firstname" aria-
              required="true" placeholder aria-label="First name"
              id="u_0_j" style xpath="1"> == $0
            </div>
            <i class="_5dbc img sp_6E_d5dmi7E6 sx_f40ac8"></i>
            <i class="_5dbd img sp_6E_d5dmi7E6 sx_df456a"></i>
```

```
//input[contains(@name,'first')]
1 matching node found. Find the matching nod
rel XPath   //input[@id='u_0_j']
abs XPath   /html[1]/body[1]/div[1]/div[3]/div[1]/div[1]/div
CSS sel...  #u_0_j

<input type="text" class="inputtext _58mg _5dba _2ph-" dat
required="true" placeholder="" aria-label="First name" id="
```

Contains() with text()

//div[contains(text(),'Facebook helps')]

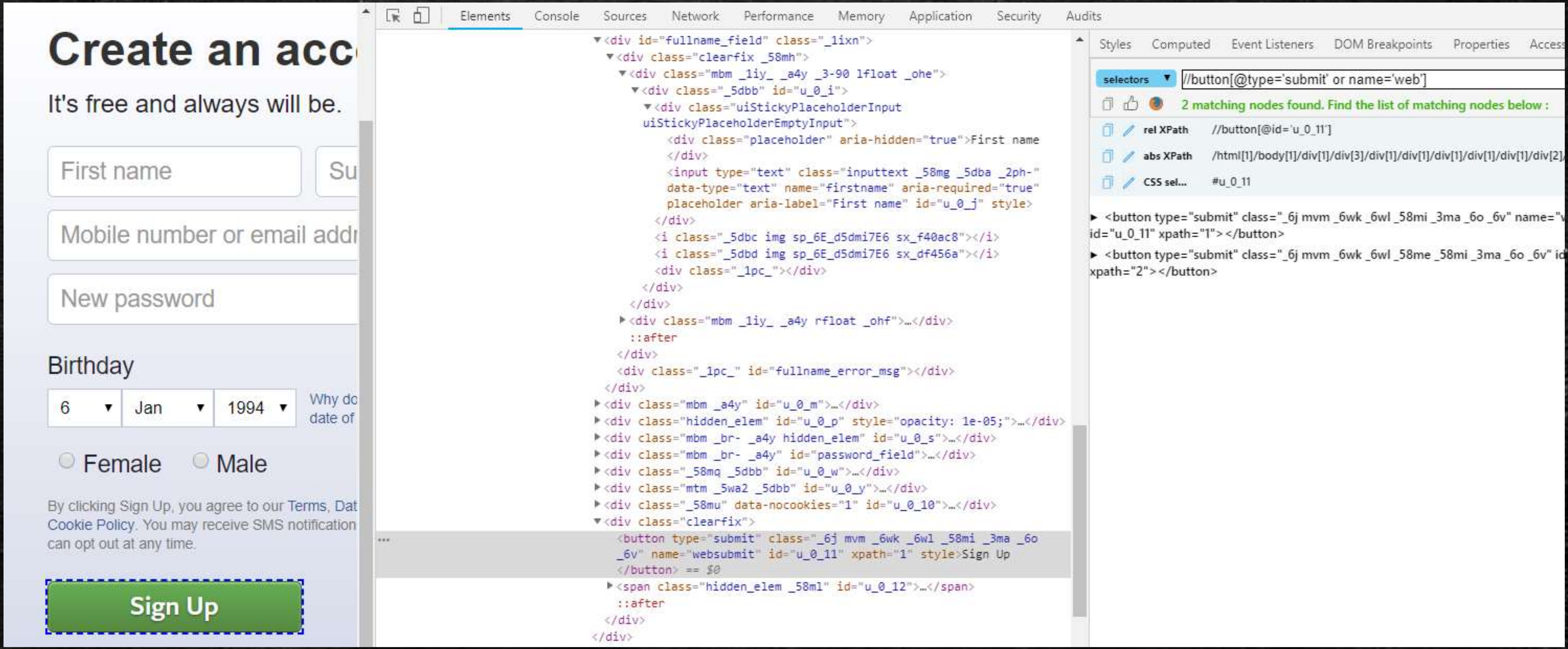


```
▼<div id="globalContainer" class="uiContextualLayerParent">
 ▼<div class="fb_content clearfix " id="content" role="main">
  ▼<div>
   ▼<div class="gradient">
    ▼<div class="gradientContent">
     ▼<div class="clearfix">
      ▼<div class="lfloat _ohe">
       ▼<div class="_5iyy">
          <div class="_5iyx" style xpath="1">Facebook helps you connect and share with the
          people in your life.</div> == $0
          <img class="img" src="https://static.xx.fbcdn.net/rsrc.php/v3/yc/r/
          GwFs3_KxNjS.png" alt width="537" height="195">
```

```
//div[contains(text(),'Facebook helps')]
1 matching node found. Find the matching no
rel XPath     //div[@class='_5iyx']
abs XPath     /html[1]/body[1]/div[1]/div[3]/div[1]/div[1]/d
CSS sel...    body.fbIndex.UIPage_LoggedOut._-kb._61s0.
▸ <div class="_5iyx" style="" xpath="1"> </div>
```

Using OR

//button[@type='submit' or name='web']



By clicking Sign Up, you agree to our Terms, Dat
Cookie Policy. You may receive SMS notification
can opt out at any time.

```
▼<div id="fullname_field" class="_1ixn">
  ▼<div class="clearfix _58mh">
    ▼<div class="mbm _1iy_ _a4y _3-90 lfloat _ohe">
      ▼<div class="_5dbb" id="u_0_i">
        ▼<div class="uiStickyPlaceholderInput
        uiStickyPlaceholderEmptyInput">
            <div class="placeholder" aria-hidden="true">First name
            </div>
            <input type="text" class="inputtext _58mg _5dba _2ph-"
            data-type="text" name="firstname" aria-required="true"
            placeholder aria-label="First name" id="u_0_j" style>
          </div>
          <i class="_5dbc img sp_6E_d5dmi7E6 sx_f40ac8"></i>
          <i class="_5dbd img sp_6E_d5dmi7E6 sx_df456a"></i>
          <div class="_1pc_"></div>
        </div>
      </div>
    ▶<div class="mbm _1iy_ _a4y rfloat _ohf">…</div>
      ::after
    </div>
    <div class="_1pc_" id="fullname_error_msg"></div>
  </div>
▶<div class="mbm _a4y" id="u_0_m">…</div>
▶<div class="hidden_elem" id="u_0_p" style="opacity: 1e-05;">…</div>
▶<div class="mbm _br- _a4y hidden_elem" id="u_0_s">…</div>
▶<div class="mbm _br- _a4y" id="password_field">…</div>
▶<div class="_58mq _5dbb" id="u_0_w">…</div>
▶<div class="mtm _5wa2 _5dbb" id="u_0_y">…</div>
▶<div class="_58mu" data-nocookies="1" id="u_0_10">…</div>
▼<div class="clearfix">
    <button type="submit" class="_6j mvm _6wk _6wl _58mi _3ma _6o
    _6v" name="websubmit" id="u_0_11" xpath="1" style>Sign Up
    </button> == $0
  ▶<span class="hidden_elem _58ml" id="u_0_12">…</span>
    ::after
  </div>
</div>
```

//button[@type='submit' or name='web']

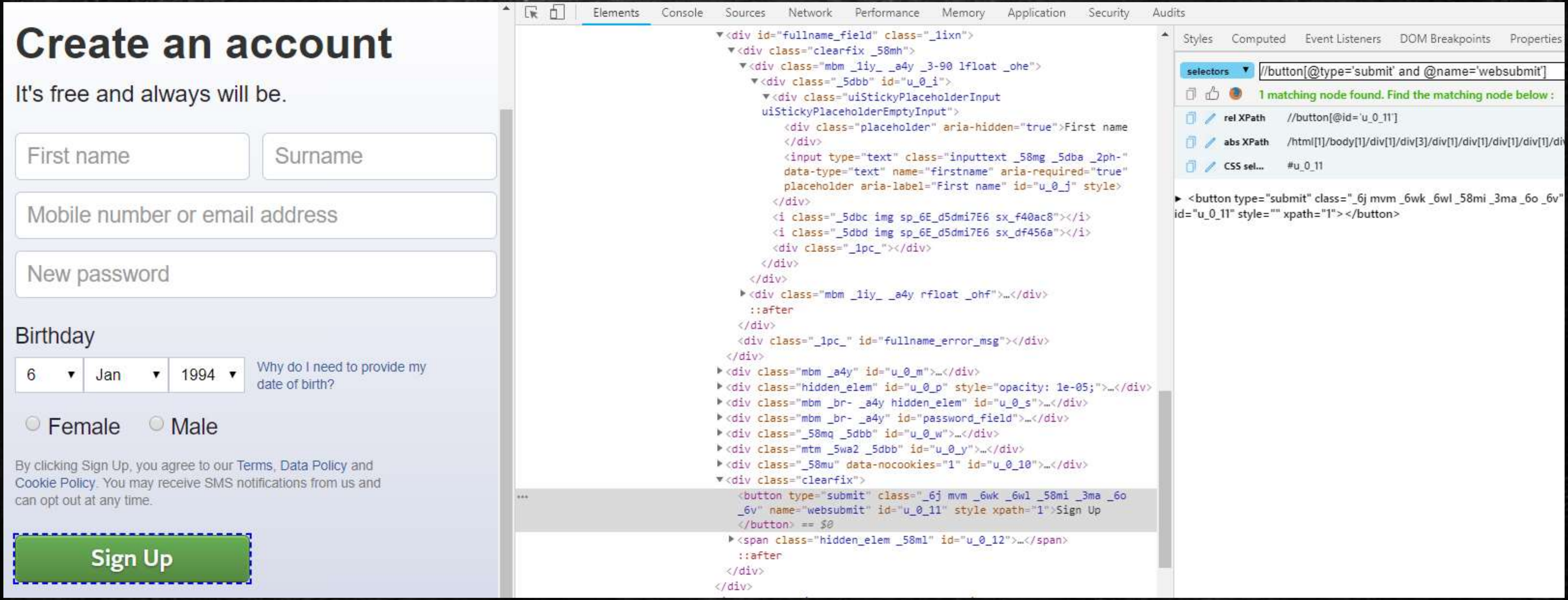
2 matching nodes found. Find the list of matching nodes below :

rel XPath	//button[@id='u_0_11']
abs XPath	/html[1]/body[1]/div[1]/div[3]/div[1]/div[1]/div[1]/div[1]/div[1]/div[2]
CSS sel...	#u_0_11

```
▶ <button type="submit" class="_6j mvm _6wk _6wl _58mi _3ma _6o _6v" name="
id="u_0_11" xpath="1"></button>
▶ <button type="submit" class="_6j mvm _6wk _6wl _58me _58mi _3ma _6o _6v" id
xpath="2"></button>
```

Using AND

//button[@type='submit' and @name='websubmit']



Create an account

It's free and always will be.

Birthday

Why do I need to provide my date of birth?

By clicking Sign Up, you agree to our Terms, Data Policy and Cookie Policy. You may receive SMS notifications from us and can opt out at any time.

```
▼<div id="fullname_field" class="_1ixn">
  ▼<div class="clearfix _58mh">
    ▼<div class="mbm _1iy_ _a4y _3-90 lfloat _ohe">
      ▼<div class="_5dbb" id="u_0_i">
        ▼<div class="uiStickyPlaceholderInput
        uiStickyPlaceholderEmptyInput">
            <div class="placeholder" aria-hidden="true">First name
            </div>
            <input type="text" class="inputtext _58mg _5dba _2ph-"
            data-type="text" name="firstname" aria-required="true"
            placeholder aria-label="First name" id="u_0_j" style>
          </div>
          <i class="_5dbc img sp_6E_d5dmi7E6 sx_f40ac8"></i>
          <i class="_5dbd img sp_6E_d5dmi7E6 sx_df456a"></i>
          <div class="_1pc_"></div>
        </div>
      </div>
    ▶<div class="mbm _1iy_ _a4y rfloat _ohf">…</div>
     ::after
   </div>
   <div class="_1pc_" id="fullname_error_msg"></div>
 </div>
▶<div class="mbm _a4y" id="u_0_m">…</div>
▶<div class="hidden_elem" id="u_0_p" style="opacity: 1e-05;">…</div>
▶<div class="mbm _br- _a4y hidden_elem" id="u_0_s">…</div>
▶<div class="mbm _br- _a4y" id="password_field">…</div>
▶<div class="_58mq _5dbb" id="u_0_w">…</div>
▶<div class="mtm _5wa2 _5dbb" id="u_0_y">…</div>
▶<div class="_58mu" data-nocookies="1" id="u_0_10">…</div>
▼<div class="clearfix">
   <button type="submit" class="_6j mvm _6wk _6wl _58mi _3ma _6o
   _6v" name="websubmit" id="u_0_11" style xpath="1">Sign Up
   </button> == $0
  ▶<span class="hidden_elem _58ml" id="u_0_12">…</span>
   ::after
 </div>
</div>
```

//button[@type='submit' and @name='websubmit']

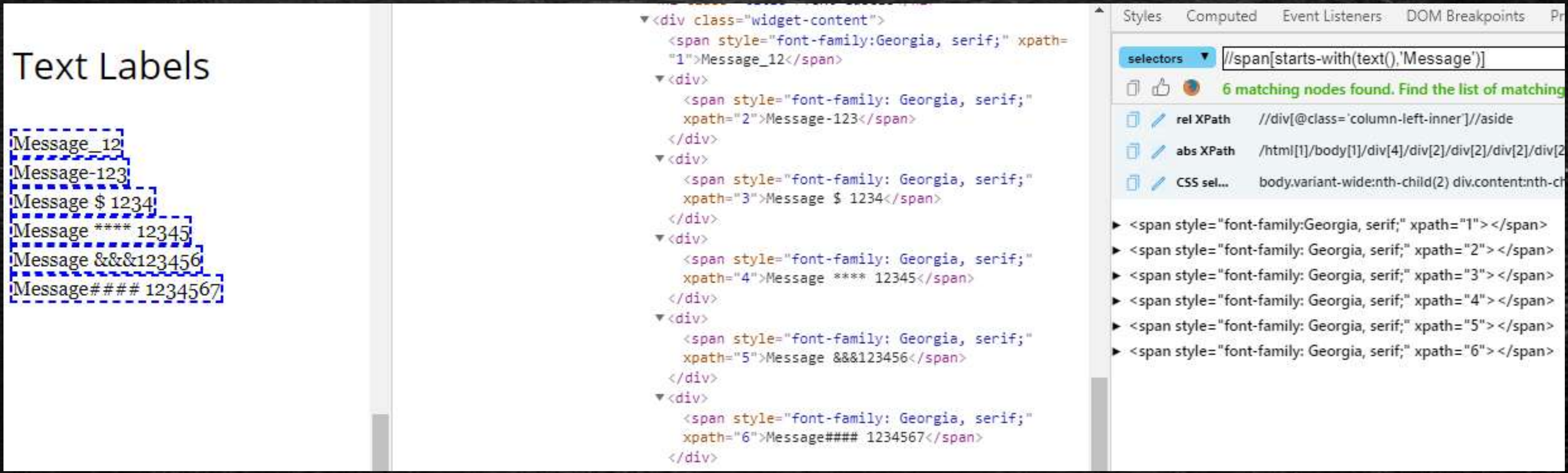
1 matching node found. Find the matching node below :

rel XPath	//button[@id='u_0_11']
abs XPath	/html[1]/body[1]/div[1]/div[3]/div[1]/div[1]/div[1]/div[1]/di
CSS sel...	#u_0_11

```
▶ <button type="submit" class="_6j mvm _6wk _6wl _58mi _3ma _6o _6v"
id="u_0_11" style="" xpath="1"> </button>
```

Start-with()

//span[starts-with(text(),'Message')]



Text Labels

Message_12
Message-123
Message $ 1234
Message **** 12345
Message &&&123456
Message#### 1234567

```
▼<div class="widget-content">
  <span style="font-family:Georgia, serif;" xpath=
  "1">Message_12</span>
 ▼<div>
    <span style="font-family: Georgia, serif;"
    xpath="2">Message-123</span>
  </div>
 ▼<div>
    <span style="font-family: Georgia, serif;"
    xpath="3">Message $ 1234</span>
  </div>
 ▼<div>
    <span style="font-family: Georgia, serif;"
    xpath="4">Message **** 12345</span>
  </div>
 ▼<div>
    <span style="font-family: Georgia, serif;"
    xpath="5">Message &&&123456</span>
  </div>
 ▼<div>
    <span style="font-family: Georgia, serif;"
    xpath="6">Message#### 1234567</span>
  </div>
```

//span[starts-with(text(),'Message')]

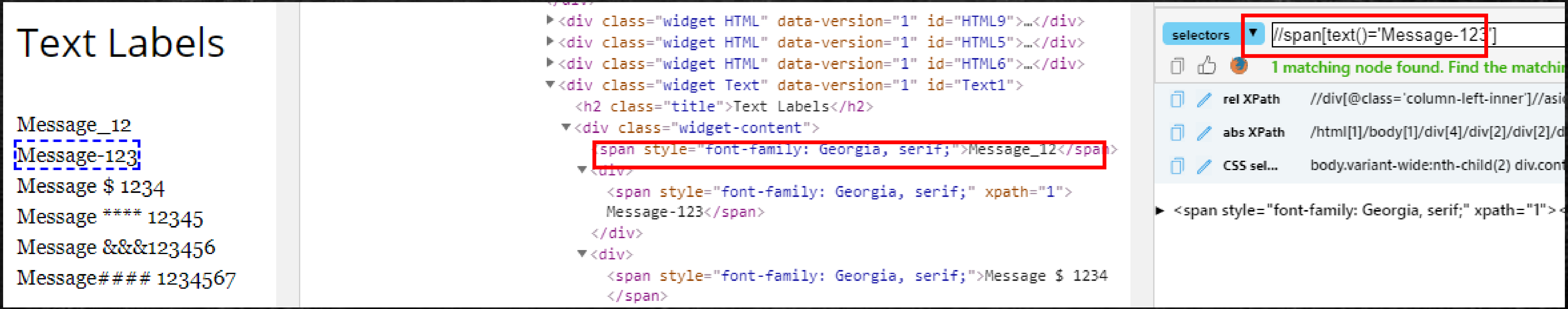
6 matching nodes found. Find the list of matching

rel XPath	//div[@class='column-left-inner']//aside
abs XPath	/html[1]/body[1]/div[4]/div[2]/div[2]/div[2]/div[2
CSS sel...	body.variant-wide:nth-child(2) div.content:nth-ch

```
▸ <span style="font-family:Georgia, serif;" xpath="1"></span>
▸ <span style="font-family: Georgia, serif;" xpath="2"></span>
▸ <span style="font-family: Georgia, serif;" xpath="3"></span>
▸ <span style="font-family: Georgia, serif;" xpath="4"></span>
▸ <span style="font-family: Georgia, serif;" xpath="5"></span>
▸ <span style="font-family: Georgia, serif;" xpath="6"></span>
```

text()

//span[text()='Message-123']



Text Labels

Message_12
Message-123
Message $ 1234
Message **** 12345
Message &&&123456
Message#### 1234567

```
▶<div class="widget HTML" data-version="1" id="HTML9">…</div>
▶<div class="widget HTML" data-version="1" id="HTML5">…</div>
▶<div class="widget HTML" data-version="1" id="HTML6">…</div>
▼<div class="widget Text" data-version="1" id="Text1">
   <h2 class="title">Text Labels</h2>
  ▼<div class="widget-content">
     <span style="font-family: Georgia, serif;">Message_12</span>
    ▼<div>
       <span style="font-family: Georgia, serif;" xpath="1">
       Message-123</span>
     </div>
    ▼<div>
       <span style="font-family: Georgia, serif;">Message $ 1234
       </span>
```

selectors ▼ //span[text()='Message-123']

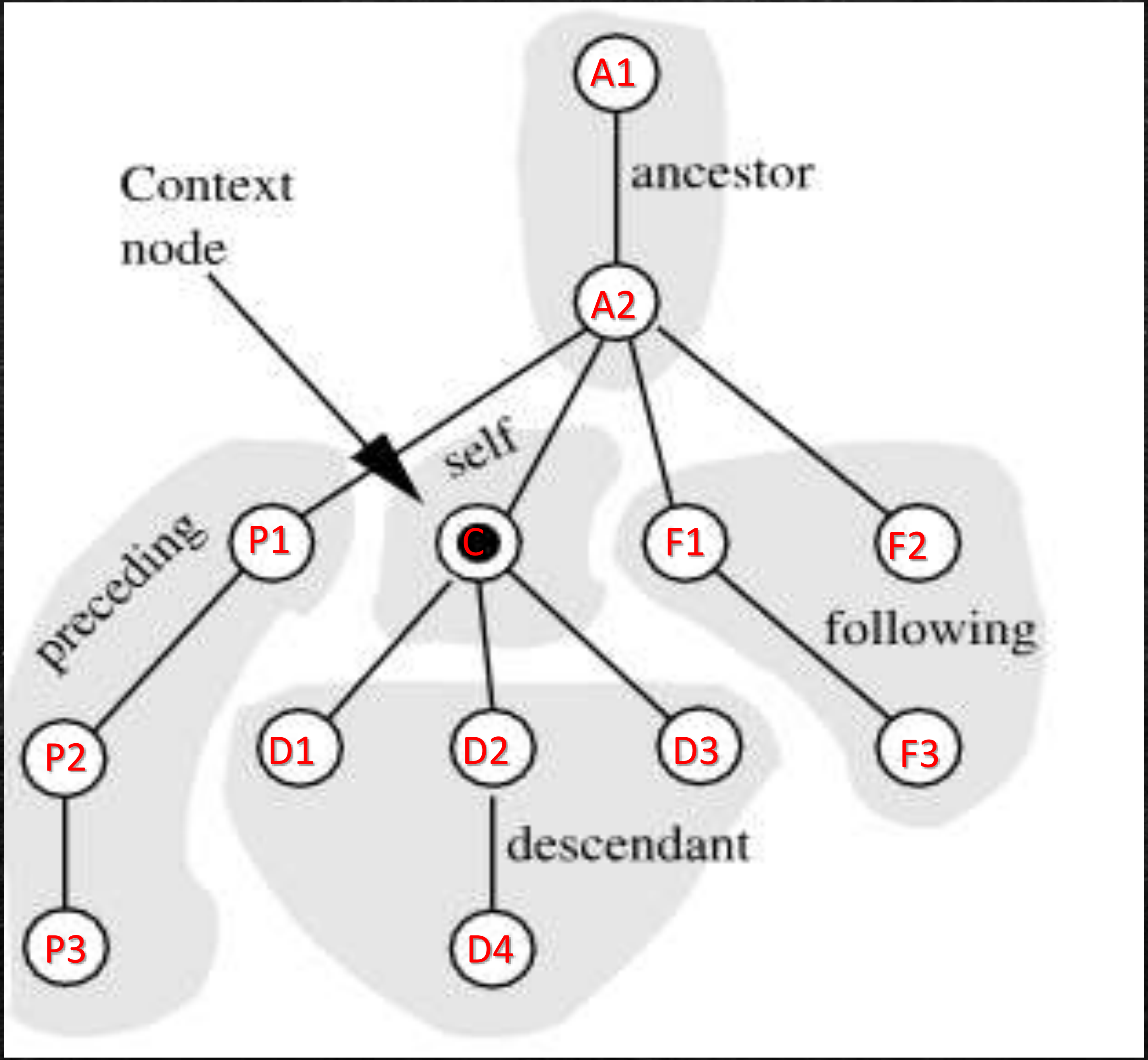
1 matching node found. Find the matchi

rel XPath	//div[@class='column-left-inner']//asi
abs XPath	/html[1]/body[1]/div[4]/div[2]/div[2]/d
CSS sel...	body.variant-wide:nth-child(2) div.cont

▶ <span style="font-family: Georgia, serif;" xpath="1"> <

XPath axes methods

- XPath methods are used to find the complex or dynamic elements.
  - Ancestor
  - Child
  - Parent
  - Preceding
  - Following
  - Self
  - Descendant


A1
ancestor
Context node
A2
self
preceding
P1
C
F1
F2
following
P2
D1
D2
D3
F3
descendant
P3
D4

Ancestor

- selects all ancestors element (grandparent, parent, etc.) of the current node

//employee/ancestor::*	Select all ancestor node of the employee node.
//ancestor::name	Select all ancestor of the name node in context node.

Child

- select child of the context node.

child::*	Select All child nodes of the context node.
child::employee	Select all child elements of employee node.

Parent

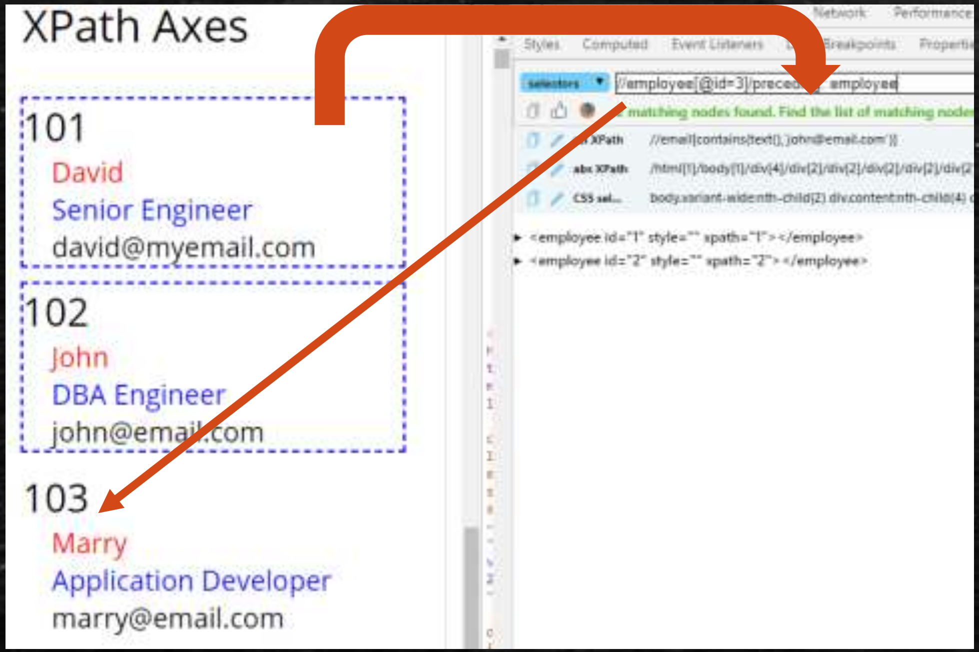
- select the parent node of the context node.

//name/parent::*	Select parent node of the 'name' context node.
//email/parent::employee	Return result node if employee node is parent node of the context node, otherwise no node found.

Preceding

- select all nodes before the context node, excluding attributes node or namespace

//employee[@id=3]/preceding::employee	Select all nodes (with child nodes) before the context node.



XPath Axes

101
David
Senior Engineer
david@myemail.com

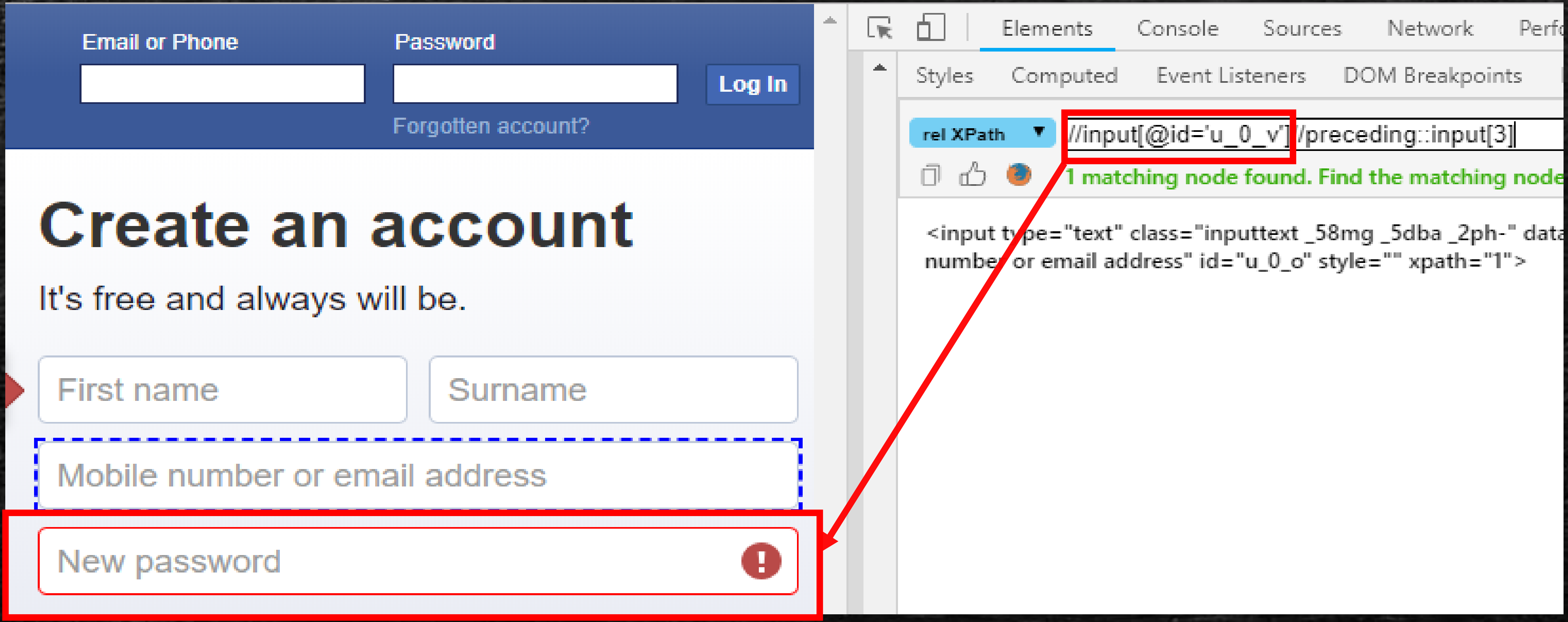
102
John
DBA Engineer
john@email.com

103
Marry
Application Developer
marry@email.com

```
//employee[@id=3]/preced   employee
  matching nodes found. Find the list of matching node
   XPath     //email[contains(text(),'john@email.com')]
abs XPath    /html[1]/body[1]/div[4]/div[2]/div[2]/div[2]/div[2]/div[2
CSS sel...   body.variant-wide:nth-child(2) div.content:nth-child(4)
▸ <employee id="1" style="" xpath="1"></employee>
▸ <employee id="2" style="" xpath="2"></employee>
```

Preceding…

//input[@id='u_0_v']//preceding::input[3]



//input[@id='u_0_v']//preceding::input[3]

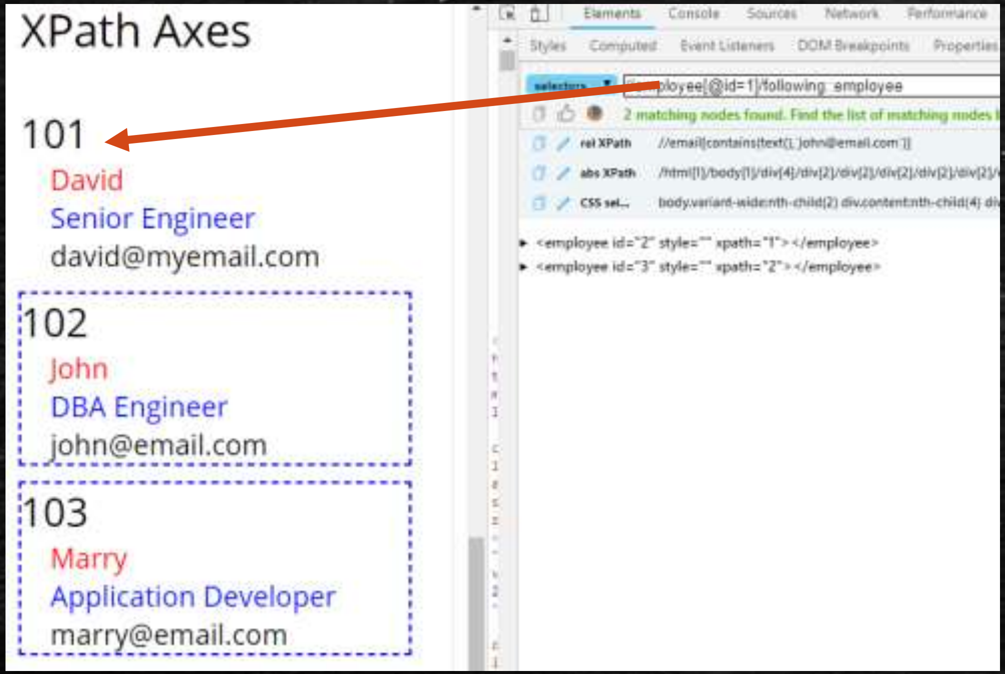
1 matching node found. Find the matching node

```
<input type="text" class="inputtext _58mg _5dba _2ph-" data
number or email address" id="u_0_o" style="" xpath="1">
```

Following

- select all nodes after the context node, excluding attributes node or namespaces node.

//employee[@id=1]/following::employee	Select all nodes (with child nodes) after the context node.



XPath Axes

101
David
Senior Engineer
david@myemail.com

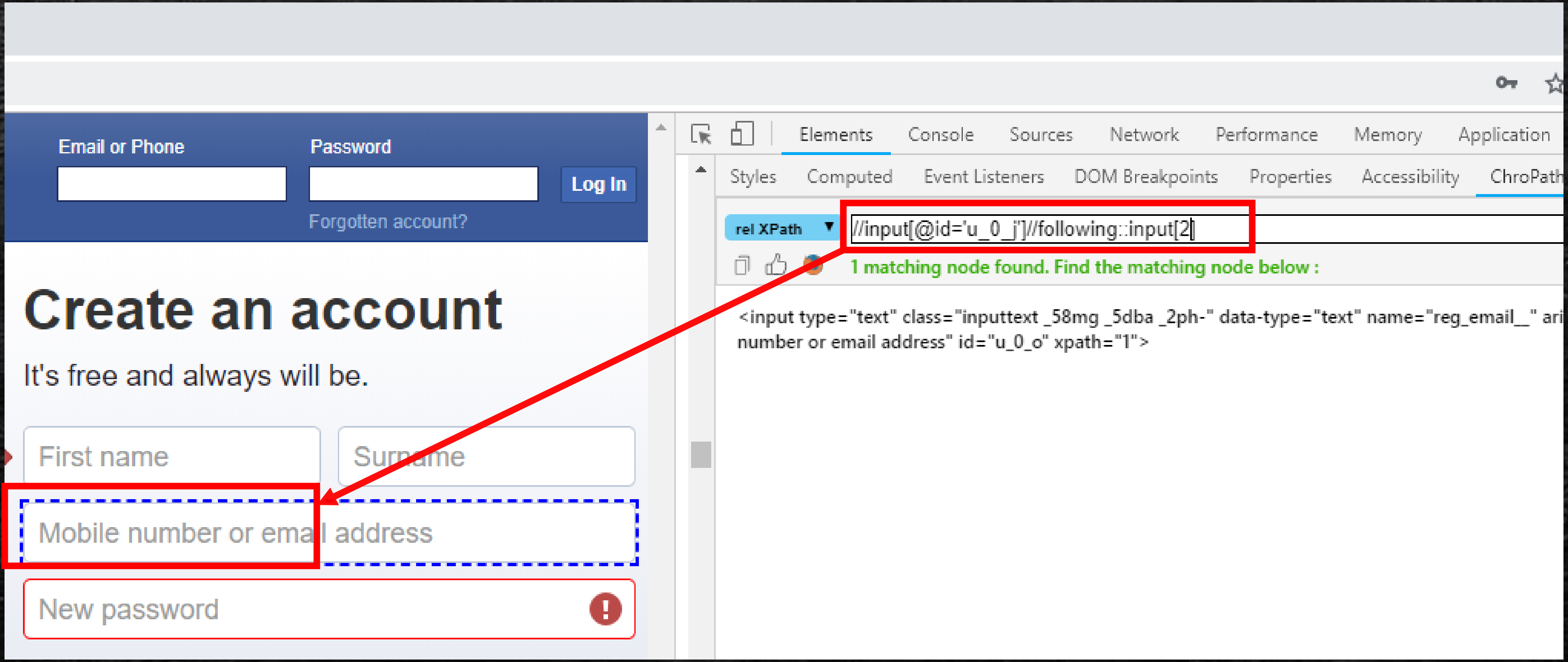
102
John
DBA Engineer
john@email.com

103
Marry
Application Developer
marry@email.com

```
ployee[@id=1]/following::employee
2 matching nodes found. Find the list of matching nodes
rel XPath   //email[contains(text(),'john@email.com')]
abs XPath   /html[1]/body[1]/div[4]/div[2]/div[2]/div[2]/div[2]/div[2]/
CSS sel...  body.variant-wide:nth-child(2) div.content:nth-child(4) di
▸ <employee id="2" style="" xpath="1"></employee>
▸ <employee id="3" style="" xpath="2"></employee>
```

Following..

//input[@id='u_0_j']//following::input[2]



```
//input[@id='u_0_j']//following::input[2]
1 matching node found. Find the matching node below :
<input type="text" class="inputtext _58mg _5dba _2ph-" data-type="text" name="reg_email__" ari
number or email address" id="u_0_o" xpath="1">
```

Self

- Selects the current node ‘name’

```
//name/self::*
```

Descendant

- Selects all descendants (children, grandchildren, etc.) of the current node

//descendant::employee	Select all descendant of the employee node in context node.