

Element locating

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Selenium Webdriver 2个寻找元素方法

- driver.findElement
 - Return WebElement
- driver.findElements
 - Return List<WebElement>

- By ID
 - <div id="myId"></div>
 - driver.findElement(By.id("myID"))
- By Name
 - <div name="myName"></div>
 - driver.findElement(By.name("myName"))
- By class
 - <div class="myClass"></div>
 - driver.findElement(By.className("myClass"))
- By tag name
 - <label></label>
 - driver.findElement(By.tagName("label"))
- By link text
 - My Link
 - driver.findElement(By.linkText("My Link"))
- By partial link text : driver.findElement(By.partialLinkText(<link text>))
 - My Partial Link
 - driver.findElement(By.partialLinkText("Partial"))

By CSS

- #Id
 - <div id="myId"></div>
 - driver.findElement(By.cssSelector("#myId"))
- tagName
 - <input value="myText" />
 - driver.findElement(By.cssSelector("input"))
- .className
 - <div class="myClass"></div>
 - driver.findElement(By.cssSelector("input"))
- Attribute
 - <div type="myType" typeE="anotherType"></div>
 - driver.findElement(By.cssSelector("div[type='myType'][typeE='anotherType']"))
 - driver.findElement(By.cssSelector("div[type]"))
 - driver.findElement(By.cssSelector("div[type]"))

- Not
 - driver.findElement(By.cssSelector("img:not([alt])"))
- ^=
 - Input[id^='ctrl']
- \$=
 - input[id\$='_userName']
- *=
 - Input[id*='userName']

Absolute and relative path

- Absolute
 - <html><body><p>
- Relative
 - <html><p>

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>菜鸟教程(runoob.com)</title>
  </head>
  <body>
    <h1>我的第一个标题</h1>
    <p>我的第一个段落。</p>
  </body>
</html>
```

- *
- Selects all elements
- *[class='blue']
- div, p
 - Selects all <div> elements and all <p> elements
- div p
 - Selects all <p> elements inside <div> elements
- div > p
 - Selects all <p> elements where the parent is a <div> element
- div + p
 - Selects all <p> elements that are placed immediately after <div> elements
- p ~ ul
 - Selects every element that are preceded by a <p> element
- p:nth-child(2):start from 1
 - Selects every <p> element that is the second child of its parent
- p:first-child & p:last-child

By XPath : driver.findElement(By.xpath(<xpath query expression>))

- /:absolute path
- //:relative path
- TagName
- @Attribute
 - driver.findElement(By.xpath("//input[@id='username']"))
- And & Or
- //input[@type='submit'][@value='Login']
- //input[@type='submit' and @value='Login']
- //input[@type='submit' or @value='Login']

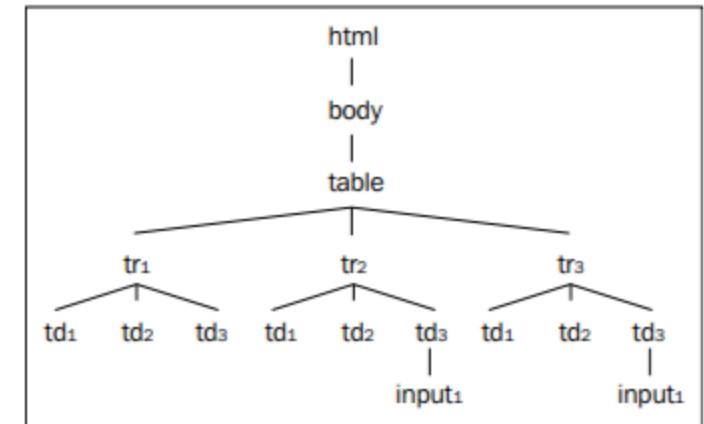
- Not
 - //div[not[@class="myClass"]]
- starts-with()
 - input[starts-with(@id,'ctrl')]
- ends-with()
 - input[ends-with(@id,'_userName')]
- contains()
 - input[ends-with(@id,'_userName')]
- Text()
 - <div>My Text</div>
 - //div[text()='My Text']
 - //div[contains(text(),'My Text')]
 - //div[contains(.,'My Text')]
- Normalize-space: 去除字符串头尾的空格
 - <div> My Text </div>
 - //div[normalize-space(.)='My Text']

- //body[h1]
 - To get body that contains h1
- //body//h1
 - To get h1

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>菜鸟教程(runoob.com)</title>
  </head>
  <body>
    <h1>我的第一个标题</h1>
    <p>我的第一个段落。</p>
  </body>
</html>
```

axis

- **Ancestor:** 选择当前节结点所有的父类元素，包括祖先元素
 - `//td[text()='Product 1']/ancestor::table`
- **Descendant:** 选择当前节点所有子元素
 - `//table/descendant::td/input`
- **Following:** 选择当前元素结束标签后的所有元素
 - `//td[text()='Product 1']/following::tr`
- **Preceding:** 选择文档中当前节点的开始标签之前的所有节点
 - `//td[text()='$150']/ preceding::tr`
- **following-sibling:** 选择当前元素后的兄弟元素
 - `//td[text()='Product 1']/following-sibling::td`
- **preceding-sibling:** 选择当前节点之前的所有同级节点
 - `//td[text()='$150']/ preceding-sibling::td`



following::* 表示当前节点后的所有节点

The screenshot shows the FirePath tool interface with the following details:

- Toolbar: Control台 (Console), HTML, CSS, 脚本 (Script), DOM, 网络 (Network), Cookies, FirePath.
- Panel: iframe#x-URS-iframe, Highlight, XPath: //input[@name='email']//following::*.
- DOM Tree:
 - <div id="auto-id-1507607166073" class="u-input box">
 - <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱账号或手机号
 - <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱账号或手机号" name="email" data-type="email" data-required="true" data-remote="true" data-remote-url="http://127.0.0.1:8080/validateEmail" data-remote-param="email" type="text" value="1234567890@126.com"/>
 - @126.com
 - <div id="auto-id-1507607166045" class="u-tip" style="display: block;">
 - <div class="fur-change-email"/>
 - <div id="auto-id-1507607166071" class="inputbox">
 - <div id="auto-id-1507607166077" class="u-logo">

preceding::* 表示当前节点前的所有节点

The screenshot shows the FirePath extension for a browser, specifically targeting an iframe with ID 'x-URS-iframe'. The current selection is the input field with name='email'. The XPath expression used is //input[@name='email']//preceding::*.

The DOM tree is displayed with nodes highlighted in blue. A large red circle is drawn around the entire path from the selected input field back up to the document root, illustrating the scope of the preceding::* selector.

```
<document>
  <html>
    <head>
    <body>
      <div id="confirm" class="m-confirm f-dn">
        <div class="note">你确定放弃注册吗? </div>
        <div class="f-cb btnbox">
          <a class="u-btn-confirmed f-ib btncolor" data-action="confirmgoon">继续</a>
          <a class="u-btn-confirmed f-ib btncolor-ext" data-action="confirmclose">放弃</a>
        </div>
      </div>
      <div id="cnt-box-parent" class="g-bd cnt-box-include">
        <div id="loading" class="loading f-dn">
          <span>登录成功，正在跳转...</span>
        </div>
        <div id="cnt-box" class="g-bd">
          <div class="m-header">
            <div class="u-closebtn u-closebtn1" data-action="doclose"/>
            <div class="heading j-heading"></div>
          </div>
          <div class="m-cnt">
            <form id="login-form">
              <div id="auto-id-1507607166069" class="m-container">
                <div id="account-box" class="inputbox">
                  <div id="auto-id-1507607166078" class="u-logo">
                    <div id="auto-id-1507607166079" class="u-logo-img1"/>
                  </div>
                  <div id="auto-id-1507607166073" class="u-input box">
                    <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱账号或手机号</label>
                    <input id="auto-id-1507607166035" class="j-inputtext dilemail" data-placeholder="邮箱账号或手机号" name="email" data-type="email" data-r>
                      <span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com</span>
                    </div>
                  </div>
                </div>
              </form>
            </div>
          </div>
        </div>
      </div>
    </body>
  </html>
</document>
```

following-sibling::* 表示当前节点后的所有同级节点

The screenshot shows the FirePath tool interface with the 'Highlight' tab selected. The XPath expression entered is `//label[text()='邮箱帐号或手机号']//following-sibling::*`. The resulting DOM tree highlights the entire sibling structure of the label node. Red arrows point to the closing tag of the first div and the opening tag of the second div, indicating the range of nodes selected by the XPath.

```
<div id="auto-id-1507607166069" class="m-container">
  <div id="account-box" class="inputbox">
    <div id="auto-id-1507607166078" class="u-logo">
    <div id="auto-id-1507607166073" class="u-input box">
      <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号</label>
      <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱帐号或手机号" name="email" data-type="ema
      <span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com</span>
    </div>
```

preceding-sibling::* 表示当前节点前的所有同级节点

The screenshot shows the FirePath tool interface with the 'Highlight' tab selected. The XPath expression entered is `//label[text()='邮箱帐号或手机号']//preceding-sibling::*`. The resulting DOM tree highlights the entire sibling structure of the label node. Red arrows point to the opening tag of the first div and the closing tag of the second div, indicating the range of nodes selected by the XPath.

```
<div id="auto-id-1507607166069" class="m-container">
  <div id="account-box" class="inputbox">
    <div id="auto-id-1507607166078" class="u-logo">
    <div id="auto-id-1507607166073" class="u-input box">
      <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号</label>
      <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱帐号或手机号" name="email" data-type="ema
      <span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com</span>
    </div>
```

preceding-sibling::* 表示当前节点前的所有同级节点



The screenshot shows the Firefox developer toolbar with the FirePath extension active. The URL bar shows a login page. The FirePath tab is selected, displaying the XPath expression `//label[text()='邮箱帐号或手机号']//following-sibling::*`. The DOM tree is expanded to show the following structure:

```
<div id="auto-id-1507607166069" class="m-container">
  <div id="account-box" class="inputbox">
    <div id="auto-id-1507607166078" class="u-logo">
    <div id="auto-id-1507607166073" class="u-input box">
      <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号</label>
      <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱帐号或手机号" name="email" data-type="ema
      <span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com</span>
    </div>
  </div>
```

The entire input field structure is highlighted with a blue box, and two red arrows point to the closing tags of the `input` and `span` elements.

child::* 表示当前节点的所有子节点

The screenshot shows the FirePath tool interface in a browser. The top navigation bar includes icons for file operations, tabs for Control Panel, HTML, CSS, Scripts, DOM, Network, Cookies, and the active FirePath tab. Below the tabs is a toolbar with buttons for Highlight, XPath, and a dropdown menu. The main area displays the DOM structure under the context of an iframe with ID 'x-URS-iframe'. The XPath search bar contains the query `//div[@class='u-input box']//child::*`. The DOM tree is expanded to show two input fields. The first input field, located in the account box, has its entire code block highlighted in blue. This block includes the label '邮箱帐号或手机号', the input element with ID 'auto-id-1507607166035' and placeholder '邮箱帐号或手机号', and a span element with class 'pr-domain j-prdomain' containing the value '0126.com'. The second input field, located in the password box, also has its code block highlighted in blue. It includes the label '密码', an input element with style 'display:none; width:0; height:0;' and type 'password', the input element with ID 'auto-id-1507607166036' and placeholder '密码', and the input element with ID 'pwdtext' and class 'u-pwdtext' with type 'text'.

```
<div class="m-cnt">
    <form id="login-form">
        <div id="auto-id-1507607166069" class="m-container">
            <div id="account-box" class="inputbox">
                <div class="u-logo">
                <div id="auto-id-1507607166073" class="u-input box">
                    <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号0126.com</span>
                </div>
                <div id="auto-id-1507607166045" class="u-tip" style="display: block;">
                </div>
                <div class="fur-change-email"/>
            <div id="auto-id-1507607166071" class="inputbox">
                <div class="u-logo">
                <div id="auto-id-1507607166072" class="u-input box">
                    <label id="auto-id-1507607166048" class="u-label f-dn" style="display: block;">密码
```

parent::* 表示当前节点的所有父节点

The screenshot shows the FirePath extension in the Firefox developer toolbar. The URL is http://blog.csdn.net/weixin_39568072. The XPath expression used is `//input[@name='email']//parent::*`. The DOM tree is expanded to show all parent elements of the input field with name 'email'. The input field itself is highlighted with a red border.

```
<document>
  <html>
    <head>
    <body>
      <div id="confirm" class="m-confirm f-dn">
        <div id="cnt-box-parent" class="g-bd cnt-box-include">
          <div id="loading" class="loading f-dn">
            <div id="cnt-box" class="g-bd">
              <div class="m-header">
              <div class="m-ent">
                <form id="login-form">
                  <div id="auto-id-1507607166069" class="m-container">
                    <div id="account-box" class="inputbox">
                      <div id="auto-id-1507607166078" class="u-logo">
                        <div id="auto-id-1507607166073" class="v-input box">
                          <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱账号或手机号</label>
                          <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱账号或手机号" name="email" data-type="email" data-required="true" autocomplete="off" />
                        </div>
                      </div>
                    </div>
                  </form>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </body>
  </html>

```

ancestor::* 表示当前节点的祖父节点

The screenshot shows the FirePath extension in a browser's developer tools. The URL is `iframe#x-URS-iframe`. The XPath expression is `//input[@name='email']//ancestor::*`. The DOM tree is displayed with nodes expanded. A red box highlights the path from the final input node back up through several levels of the tree to the `<body>` tag.

```
<document>
  <html>
    <head>
    <body>
      <div id="confirm" class="m-confirm f-dn">
        <div id="cnt-box-parent" class="g-bd cnt-box-include">
          <div id="loading" class="loading f-dn">
            <div id="cnt-box" class="f-bd">
              <div class="m-header">
              <div class="m-cnt">
                <form id="login-form">
                  <div id="auto-id-1507607166069" class="m-container">
                    <div id="account-box" class="inputbox">
                      <div id="auto-id-1507607166078" class="u-logo">
                      <div id="auto-id-1507607166073" class="u-input box">
                        <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱账号或手机号@126.com
```

self::* 表示当前节点的自身元素

The screenshot shows the FirePath tool interface with the following details:

- Toolbar:** Includes icons for file operations, navigation, and tabs labeled "控制台" (Console), "HTML", "CSS", "脚本" (Script), "DOM", "网络" (Network), "Cookies", and "FirePath".
- Address Bar:** Shows the current frame as "iframe#x-URS-iframe" and the XPath query as "//input[@name='email']//ancestor::*".
- DOM Tree:** Displays the HTML structure with nodes expanded to show their children. A red box highlights the entire `<body>` node.
- Selected Node:** The `<input id="auto-id-1507607166035" ...>` node is selected and highlighted with a red border. It is located within the `<div id="account-box" class="u-input box">` element.
- Node Properties:** Below the tree, the node's properties are listed:
 - `Label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱账号或手机号`
 - `input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱账号或手机号" name="email" data-type="email" data-required="true" autocomplete="off"/>`
 - `span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com`

descendant-or-self::* 表示当前节点及他们的后代元素

The screenshot shows the FirePath extension in the Firefox developer toolbar. The path entered is `//div[@class='u-input box']//descendant-or-self::*`. The DOM tree is expanded to show the following structure:

```
<div id="auto-id-1507607166069" class="m-container">
  <div id="account-box" class="inputbox">
    <div id="auto-id-1507607166078" class="u-logo">
      <div id="auto-id-1507607166073" class="u-input box">
        <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号</label>
        <input id="auto-id-1507607166035" class="j-inputtext dlemail" data-placeholder="邮箱帐号或手机号" name="email" data-type="email" data-required="true" type="text"/>
        <span id="auto-id-1507607166075" class="pr-domain j-prdomain" style="right: -76px;">@126.com</span>
      </div>
      <div id="auto-id-1507607166045" class="u-tip" style="display: block;"></div>
    </div>
    <div class="fur-change-email"></div>
    <div id="auto-id-1507607166071" class="inputbox">
      <div id="auto-id-1507607166077" class="u-logo">
        <div id="auto-id-1507607166072" class="u-input box">
          <label id="auto-id-1507607166048" class="u-label f-dn" style="display: block;">密码</label>
          <input style="display:none; width:0; height:0;" type="password"/>
          <input id="auto-id-1507607166036" class="j-inputtext dlpwd" data-placeholder="密码" name="password" maxlength="50" data-required="true" autocomplete="off" type="text"/>
          <input id="pwdtext" class="u-pwdtext" type="text"/>
        </div>
      </div>
    </div>
  </div>
</div>
```

ancestor-or-self::* 表示当前节点及它的祖先节点

The screenshot shows the FirePath extension in a browser's developer tools. The URL bar indicates the current page is 'iframe#x-URS-iframe'. The 'XPath' field contains the expression '/input[@name='email']//ancestor-or-self::*'. The DOM tree is displayed with nodes highlighted in blue. A large red box highlights the entire path from the root <document> node down to the specific input field. Red arrows point from the text in the XPath field to the corresponding nodes in the tree. The input field itself is also highlighted with a red border.

```
<document>
  <html>
    <head>
    <body>
      <div id="confirm" class="m-confirm f-dn">
        <div id="cnt-box-parent" class="g-bd cnt-box-include">
          <div id="loading" class="loading f-dn">
            <div id="cnt-box" class="g-bd">
              <div class="m-header">
                <div class="m-cnt">
                  <form id="login-form">
                    <div id="auto-id-1507607166069" class="m-container">
                      <div id="account-box" class="inputbox">
                        <div id="auto-id-1507607166078" class="u-logo">
                        <div id="auto-id-1507607166073" class="u-input box">
                          <label id="auto-id-1507607166039" class="u-label f-dn" style="display: none;">邮箱帐号或手机号@126.com</span>
                        </div>
                    </div>
                  </div>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </body>
  </html>
</document>
```

Driver.findElements

```
package com.example.tests;
import static org.junit.Assert.*;
import java.util.*;
import org.junit.*;
import org.openqa.selenium.*;
import org.openqa.selenium.ie.InternetExplorerDriver;
public class Selenium2 {
    WebDriver driver = new InternetExplorerDriver();
    JavascriptExecutor jse = (JavascriptExecutor)driver;
    @Test
    public void tableTest() {
        driver.get
        ("http://www.w3school.com.cn/html/html_tables.asp");
        //首先得到所有tr的集合
        List<WebElement> rows =
            driver.findElements(By.cssSelector(".dataintable tr"));
        //验证表格的行数
        assertEquals(11,rows.size());
        //打印出所有单元格的数据
        for (WebElement row : rows) {
            //得到当前tr里td的集合
            List<WebElement> cols =
                row.findElements(By.tagName("td"));
            for (WebElement col : cols) {
                System.out.print(col.getText());//得到td里的文本
            }
            System.out.println();
        }
        driver.close();
    }
}
```

Any Questions?