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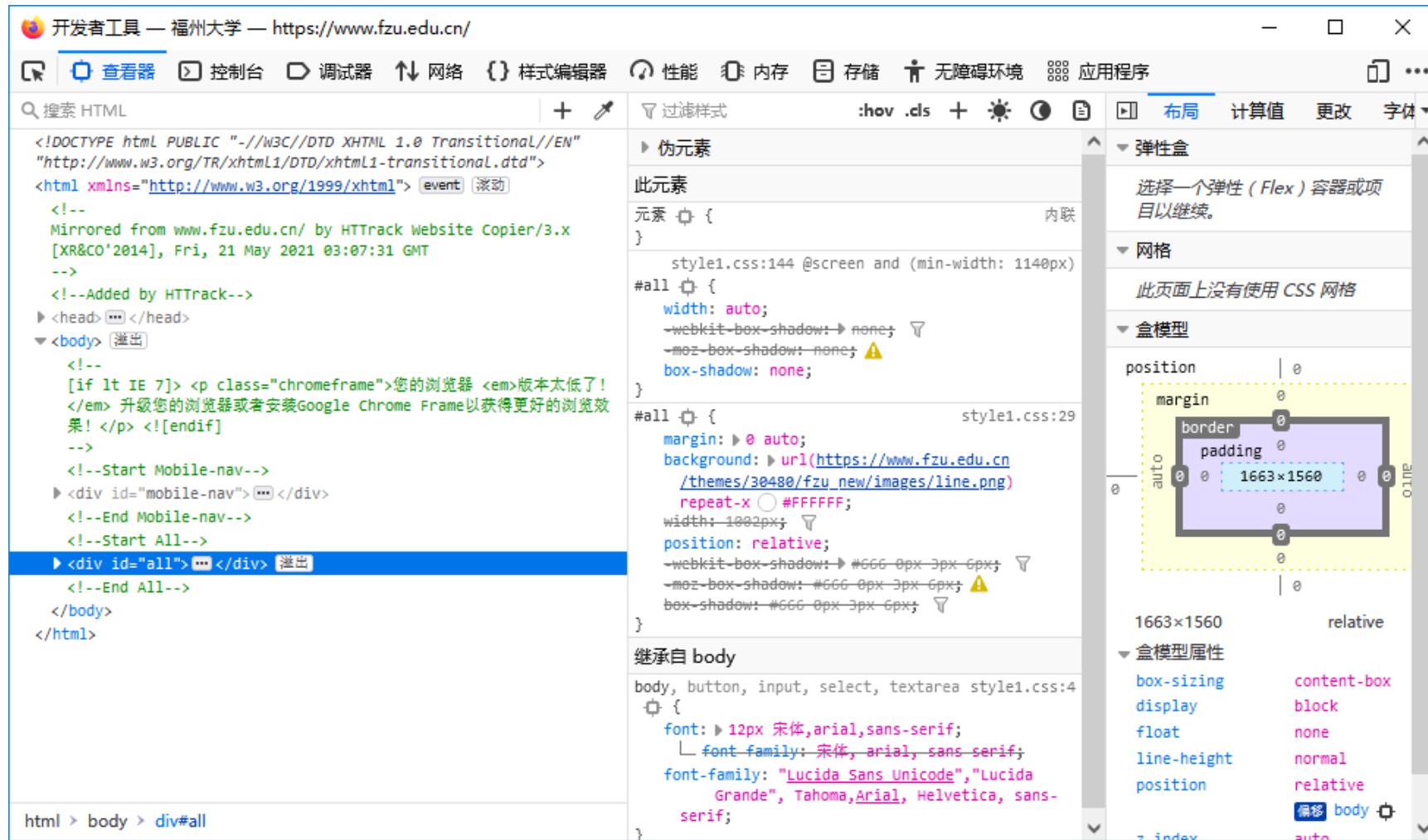
# Web 开发者工具

HTML, CSS, JavaScript, DOM 调试

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福州大学 计算机与大数据学院 软件工程系 陈昱

# Firefox 开发者工具

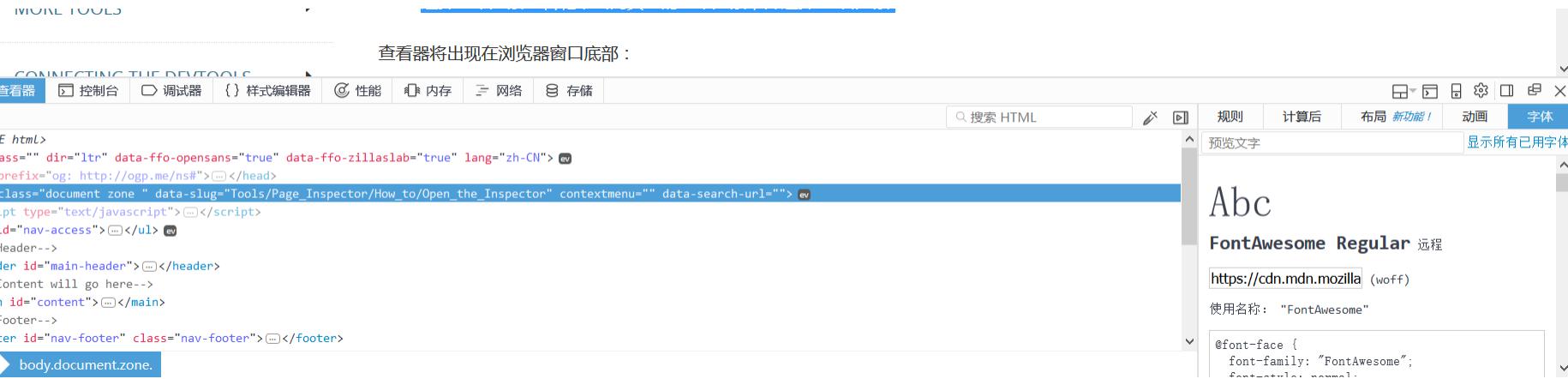


# Firefox 开发者工具 (1)

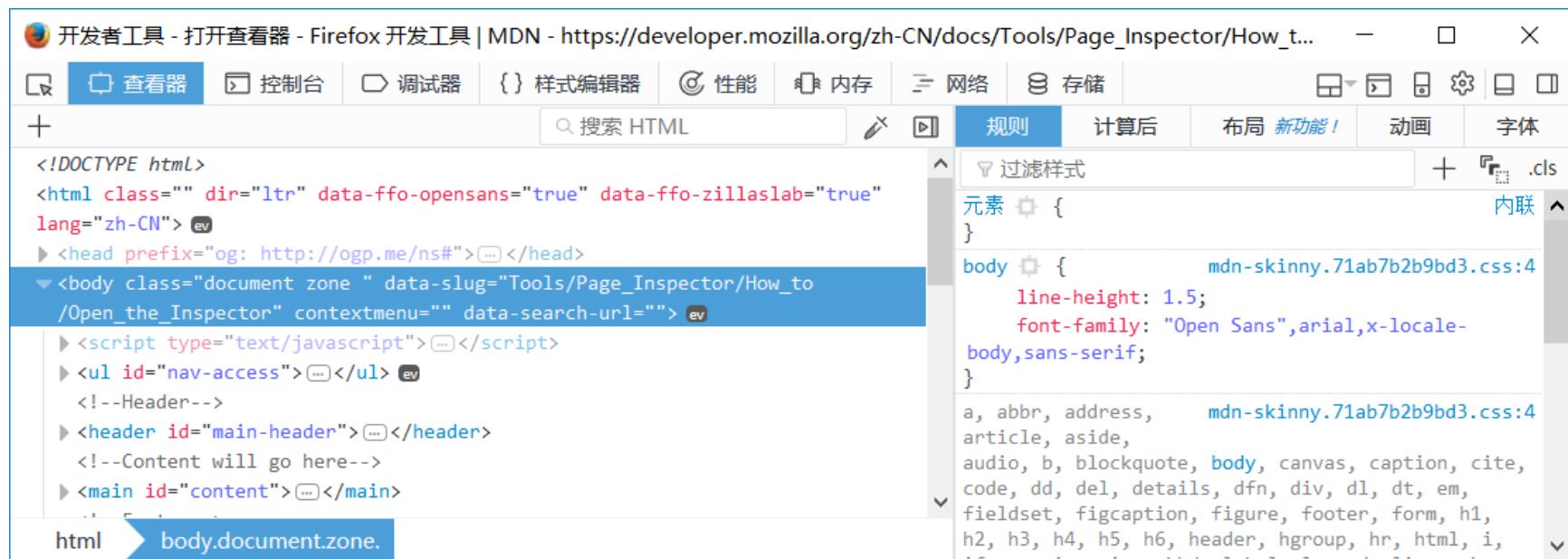
- 使用方法
- HTML Development
- CSS Development
- <https://developer.mozilla.org/zh-CN/docs/Tools/>

# 基本使用操作

- 有两种主要方法打开查看器：
- 未选中元素：从“开发者”菜单选择“查看器”选项或使用键盘快捷键 F12打开
- 选择一个元素：右键单击网页上的一个元素，并选择“查看元素”



# 利用第二个显示器空间



# F12 is your friend

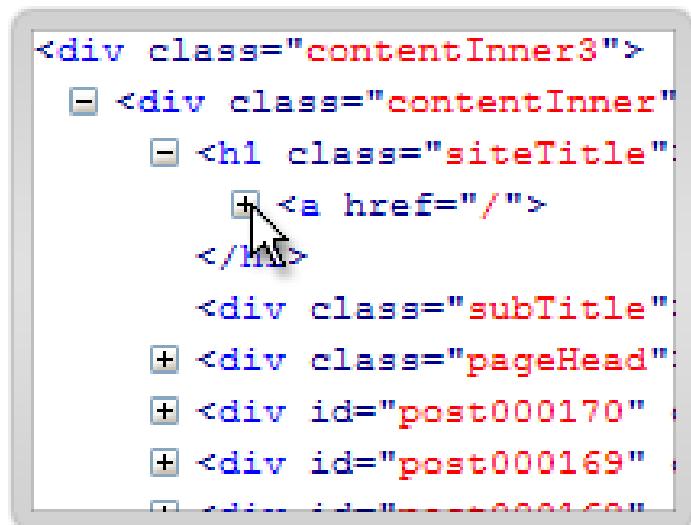
- 随时可以用 F12 调出



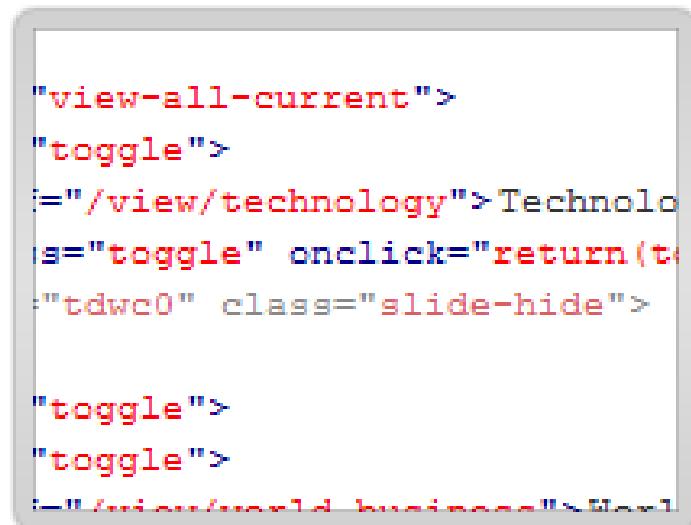
# HTML 调试

# HTML Development

- 查看 HTML 树（可以查看被 JavaScript 修 改过的 HTML 代码）
- 高亮显示 JS 执行时 HTML 代码的改变



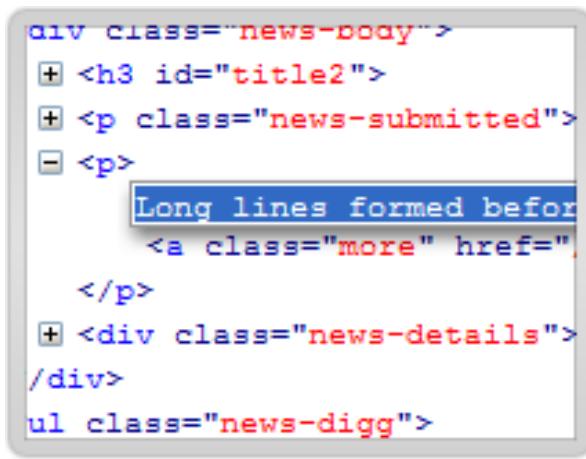
A screenshot of a browser's developer tools element inspector. It shows a hierarchical tree of HTML elements. The root node is a `<div class="contentInner3">`. Inside it is a `<div class="contentInner">`, which contains an `<h1 class="siteTitle">` and an `<a href="/">` element. The `<a>` element has a small blue square icon with a '+' sign next to it, indicating it can be expanded. Other visible nodes include `<div class="subTitle">`, `<div class="pageHead">`, `<div id="post000170">`, and `<div id="post000169">`.



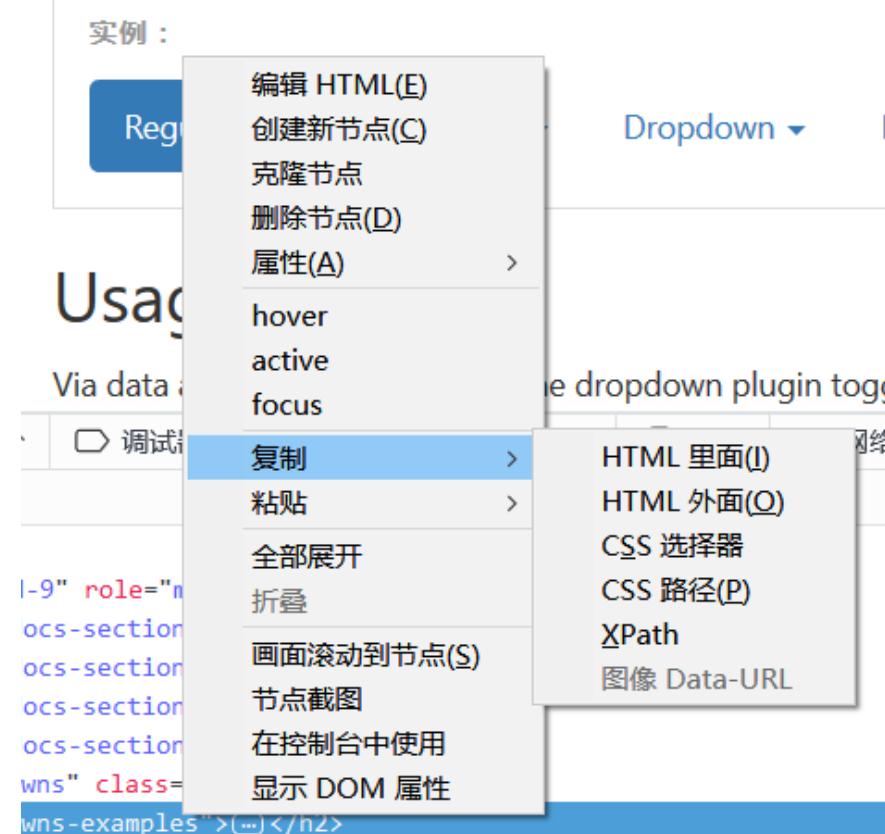
A screenshot of a browser's developer tools element inspector showing the same DOM tree as the first image, but with certain parts highlighted in red. The `<a href="/">` element is fully highlighted in red. To its right, another part of the tree is also highlighted in red, showing code like `"view-all-current">`, `"toggle">`, and `"/view/technology"> Technolo`. This visual cue indicates that these specific parts of the DOM have been modified by running JavaScript.

# HTML Development

- 实时HTML编辑
- 复制与粘贴，拖拽功能



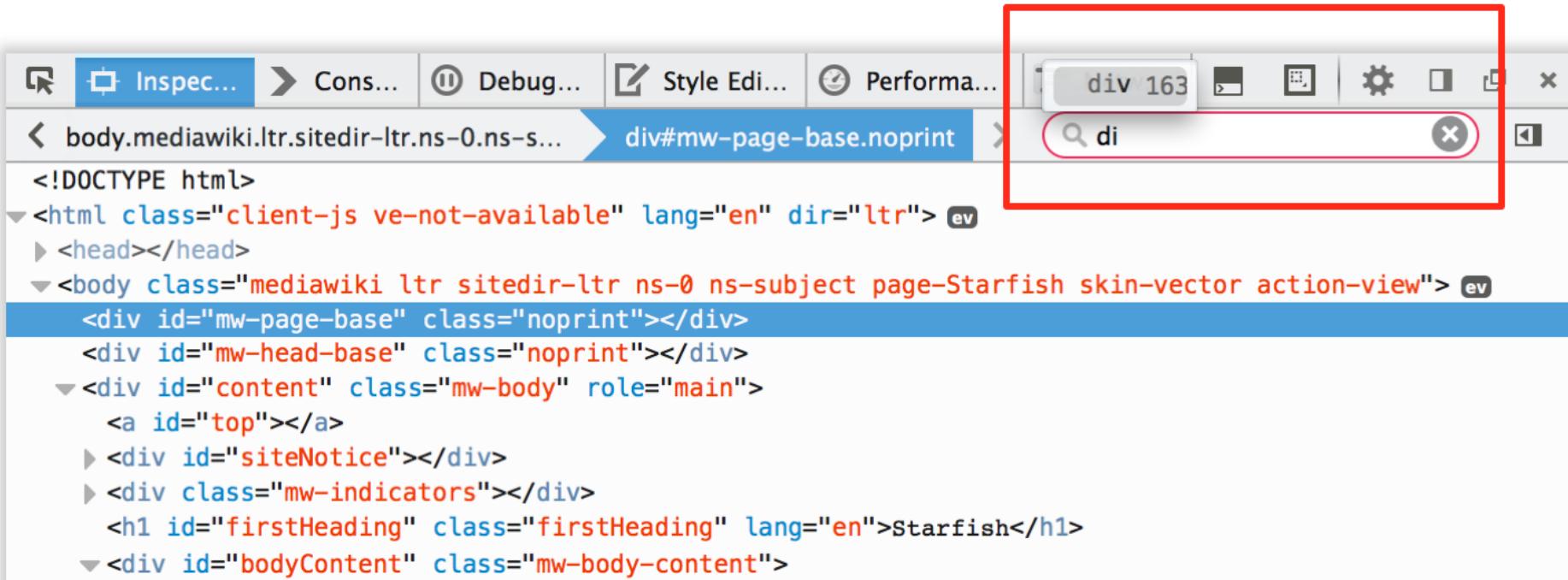
```
div class="news-body">
  + <h3 id="title2">
  + <p class="news-submitted">
  - <p>
    Long lines formed before the scroll bar appears.
    <a class="more" href="#">Read more</a>
  </p>
  + <div class="news-details">
  /div>
  ul class="news-digg">
```



# HTML Development

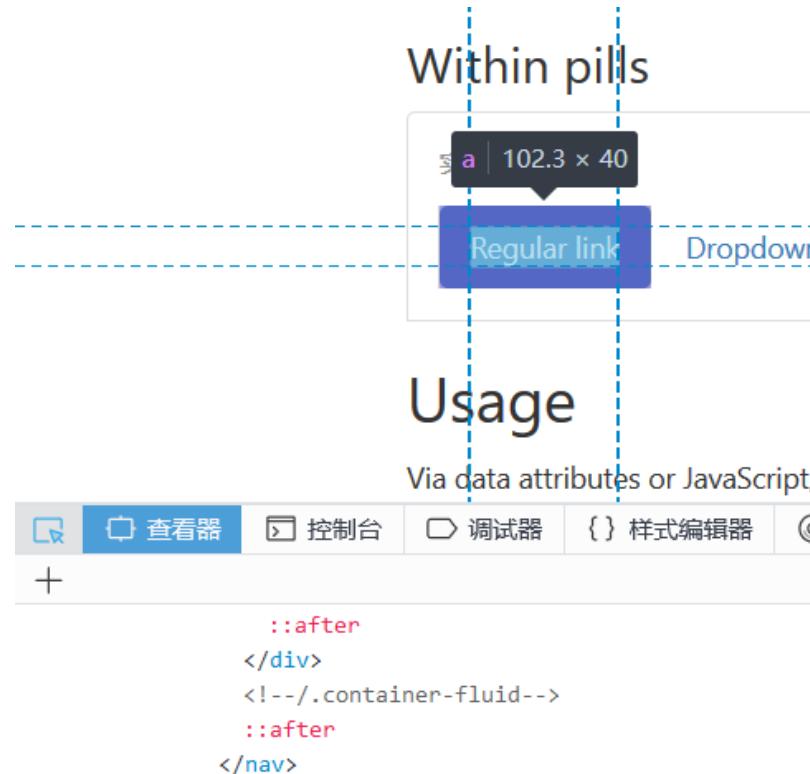
- 搜索

- 你可以以CSS选择器搜索一个标签, 所以你可以通过输入字符串 `#myId` 来检索拥有 `myId` 的元素。



# HTML Development

- Inspect 按钮：用来选择并查看某个特定元素的代码（菜单最左边）



# 控制台 : Finding Errors

- 可以查看 CSS, JavaScript 执行错误

The screenshot shows the Firefox Developer Tools interface with the 'Console' tab selected. The title bar indicates it's for 'Bootstrap v3 中文文档'. The toolbar includes tabs for Viewport, Control Panel, Debugger, Style Editor, Performance, Memory, Network, and Storage. The Network tab is currently active. The main area displays a list of errors:

- 不可识别的 at-rule 或解析 at-rule 时出错 '@viewport'.
- 解析 'background-image' 的值时出错。 声明被丢弃。
- 预期为 'none'、网址或过滤功能，但却得到 'progid'。 解析 'filter' 的值时出错。 声明被丢弃。
- 预期为颜色，但却得到 'thin'。 预期为颜色，但却得到 'dotted\9'。 预期为变量结尾，但却得到 'dotted\9'。 解析 'outline' 的值时出错。 声明被丢弃。
- 解析 '-webkit-text-size-adjust' 的值时出错。 声明被丢弃。
- 未知伪类或者伪元素 '-webkit-inner-spin-button'。 选择器错误导致忽略规则集。
- 未知伪类或者伪元素 '-webkit-search-cancel-button'。 选择器错误导致忽略规则集。
- 未知属性 'orphans'。 声明被丢弃。
- 未知属性 'widows'。 声明被丢弃。
- 未知属性 '-moz-osx-font-smoothing'。 声明被丢弃。

Each error message is followed by its file name and line number in blue text. The right side of the interface includes icons for responsive design mode and other developer tools.

# 练习

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- 练习 Firefox 开发者工具的基本用法
- 练习 HTML 的调试功能
  - 在线查看代码
  - Inspect 按钮
  - 实时HTML编辑
  - 搜索功能
  - 代码拷贝

# CSS 调试

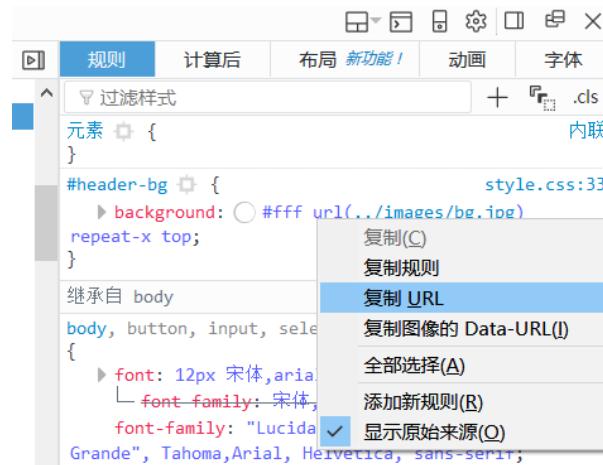
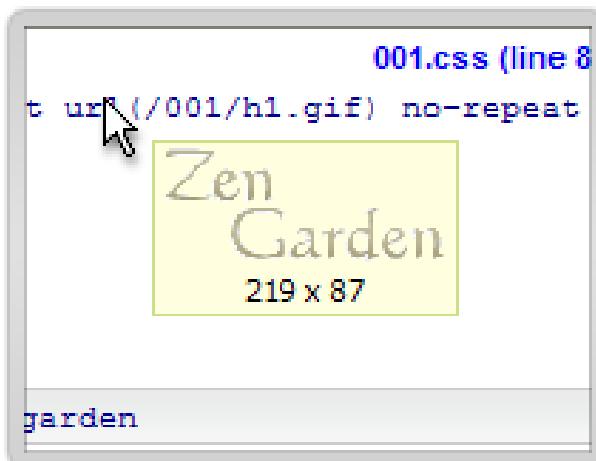
# CSS Development

- 实时查看元素样式 ( Inspect )
- 预览颜色和图片
- 复制颜色和图片 URL

```
li { margin-bottom: 0.3em; }
```

Inherited from ul.news-digg

```
.news-digg { text-align: center; font-size: 85%; list-style-type: none; list-style-image: none; }
```



# CSS Development

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- 实时编辑 CSS
- 用上、下键调整数值

The screenshot shows the Firebug developer toolbar with the 'Style' tab selected. The code editor displays the following CSS rule:

```
#quickSummary p {  
    font-family: georgia  
    font-style: italic;  
    font-variant: normal;  
    font-weight: normal;  
    font-size: 10pt;  
    line-height: 22pt;  
    font-size-adjust: none;  
}
```

The word "georgia" is highlighted with a blue selection box.

The screenshot shows the Firebug developer toolbar with the 'Style' tab selected. The code editor displays two CSS rules:

```
firefox .features h3 a {  
    padding: 2px 0pt 6px 32px  
    background: transparent url  
    display: block;  
    text-decoration: none;  
  
firefox .features p {  
    margin: 0pt 50px 1em 32px;
```

# CSS Development

- 启用/禁用某个属性
- 在导入的多个CSS文件间选择

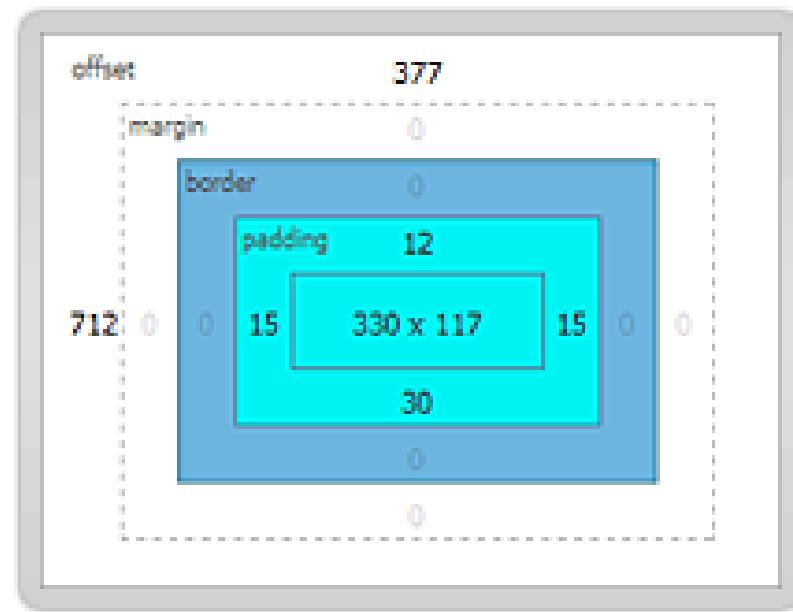
border: medium none;  
}  
  
#firefox .features h3 a {  
 padding: 2px 0pt 6px 35px;  
 background: transparent;  
 display: block;  
 text-decoration: underline;  
}  
  
#firefox .features p {

开发者工具 - 首页 - 福州大学 - http://www.fzu.edu.cn/  
查看器 控制台 调试器 样式编辑器 性能 内存 网络 存储  
+ 凸  
style.css 113 个规则。  
index.css 34 个规则。  
font-awesome.min.css 400 个规则。  
purple.css 37 个规则。  
1 @charset "utf-8";  
2 /\* CSS Document \*/  
3 body,h1,h2,h3,h4,h5,h6,h7,dd,p,ul,li,ol,dl,form,input,te...  
4 body,button,input,select,textarea { font:12px \5b8b\4f53,...  
5 yahei{ font-family:"\5FAE\8F6F\96C5\9ED1";}  
6 h1, h2, h3, h4 {font-family:"\5FAE\8F6F\96C5\9ED1";font-w...  
7 \*::selection {background:#ffc000;color: #FFFFFF;text-shad...  
8 a{ color:#22132D; text-decoration:none;}  
9 a:hover{ color:#F00; text-decoration:none;}  
10 table{border-collapse:separate; border-spacing:0;}  
11 a img{border:0;}  
12 ul li{list-style:none;}  
13 pre{  
14 white-space:pre-wrap;  
15 white-space:-moz-pre-wrap;  
16 white-space:-pre-wrap;  
17 white-space:-o-pre-wrap;  
18 word-wrap:break-word;  
19 overflow: auto;  
20 }  
21 .clearfix:after{visibility:hidden; display:block; font-si...  
22 .clearfix{zoom:1;}  
23 .right{ float:right;}  
24  
25 /\*layout\*/  
26 body{ background:#ffffff;}  
27 .cont{ width:1000px; margin-right:auto; margin-left:auto;...  
28 <

# CSS Layout

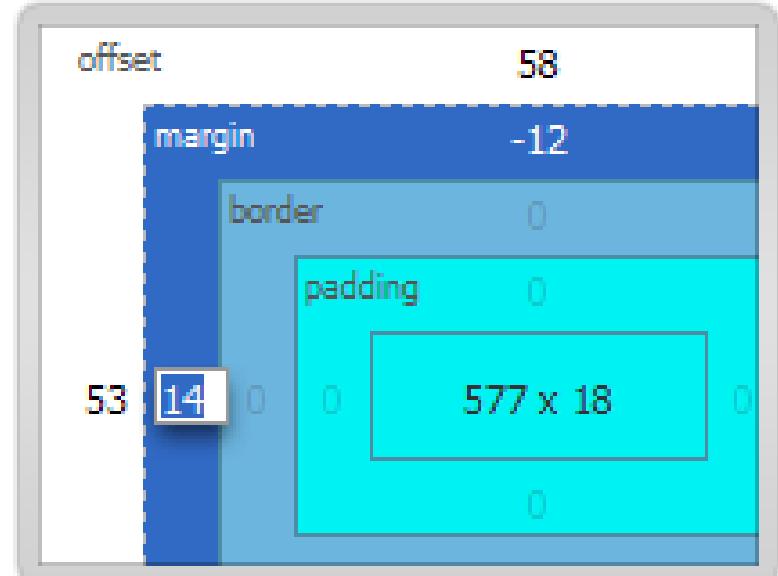
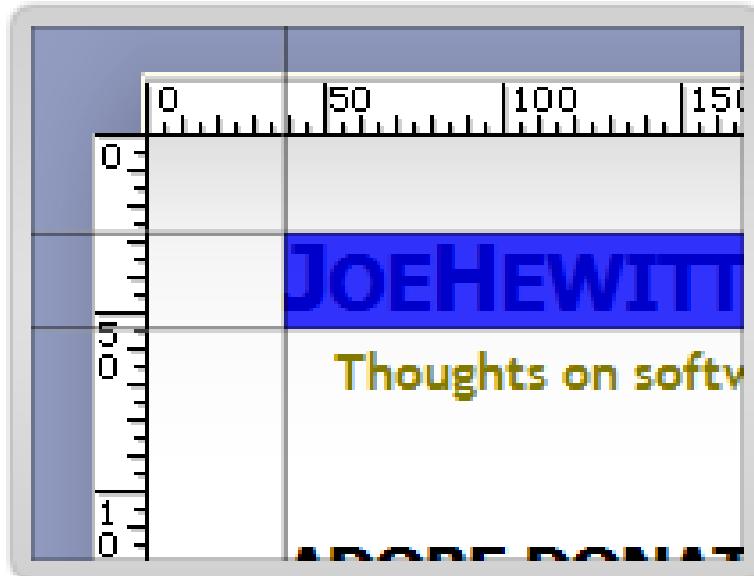
- 阴影显示元素的盒模型
- 度量元素的每条边

The screenshot shows the Mozilla Firefox homepage. In the top left, there's a yellow star icon next to the text "What's New". Below it, a blue link reads "Firefox 2 Released!". Underneath that, a smaller blue link says "The official announcement". At the bottom, another blue link reads "Mitchell Baker's Blog". Mozilla's CEO on Firefox.



# CSS Layout

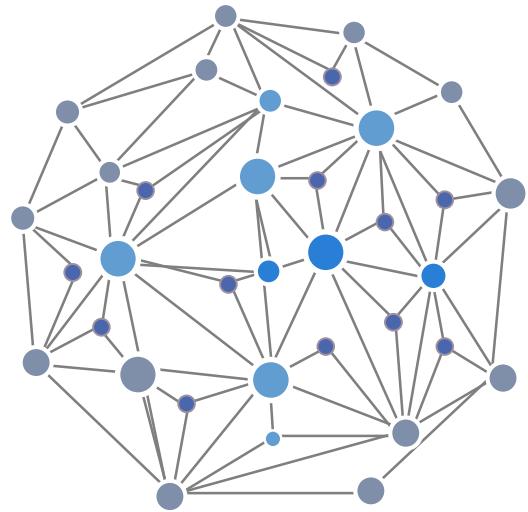
- 实时编辑盒状模型的参数
- 鼠标移到盒状模型上时显示参考线和尺子
  - 选项中开启标尺



# 练习

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- 练习 CSS 调试功能
  - 实时查看元素样式 ( Inspect )
  - 预览颜色和图片
  - 复制颜色和图片 URL
  - 实时编辑 CSS
  - 用上、下键调整数值
  - 用上、下键在可选属性值之间切换
  - 启用/禁用某个属性
  - 在导入的多个CSS文件间选择



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# JavaScript 调试面板

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# 调试器的作用

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- 调试 Debug
- 调试器提供了一种非常实用的方式来发现程序究竟做了什么
- 调试器让我们可以控制一段正在运行的代码的执行流程，你可以手工暂停或者启动代码，并且在运行时查看程序的状态。

# JavaScript Debugging

开发者工具 - Folding Puzzle - file:///C:/Users/cheny/Documents/%E6%95%99%E5%AD%A6%E5%B7%A5%E4%BD%9C/Web%E7%A8%8B%E5%BA%8F%E...

查看器 控制台 调试器 样式编辑器 性能 内存 网络 存储 Adblock Plus

Ctrl+P 以搜索

test.js x +

```
// 地球到太阳的距离
distanceToSun = 149597870*1000*1000;
thickness = .07; // 纸的厚度

foldCount = 0;
while (thickness < distanceToSun) {
    thickness *= 2;
    foldCount++;
}
document.write("Number of folds = " +
    foldCount);
```

▶ 监视表达式  
添加监视表达式

▼ 断点  
 test.js: 7

▼ 调用堆栈  
(global) test.js: 7  
在断点上暂停

▼ 范围

▼ 块  
▶ <this>: Window  
▶ Window: Global

{ } ⚡

# JavaScript 调试器

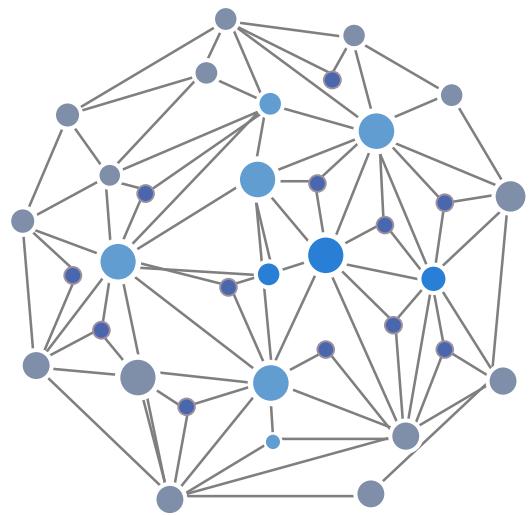
---

- 左键 设置断点
  - 右键 设置条件断点
- 
- F10 Step Over 单步执行，跳过函数
  - F11 Step In 单步执行，进入函数
  - F12 Step Out 跳出函数
  - F8 停止单步执行状态

# 练习

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- 打开  
[http://sw.fzu.edu.cn/WebProgramming/textbook\\_samples/ch04/nested\\_arrays2.html](http://sw.fzu.edu.cn/WebProgramming/textbook_samples/ch04/nested_arrays2.html)
- 用左键设置断点
- 按 F5 刷新
- 按 F10 进行单步调试



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# JavaScript 控制台

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# 控制台 : Finding Errors

- 可以查看 CSS, JavaScript 执行错误



The screenshot shows the Firefox Developer Tools interface with the 'Console' tab selected. The title bar indicates it's for 'Bootstrap v3 中文文档'. The toolbar includes tabs for Viewport, Control Panel, Debugger, Style Editor, Performance, Memory, Network, and Storage. The Network tab is currently active. The main area displays a list of errors:

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- 解析 'background-image' 的值时出错。 声明被丢弃。
- 预期为 'none'、网址或过滤功能，但却得到 'progid'。 解析 'filter' 的值时出错。 声明被丢弃。
- 预期为颜色，但却得到 'thin'。 预期为颜色，但却得到 'dotted\9'。 预期为变量结尾，但却得到 'dotted\9'。 解析 'outline' 的值时出错。 声明被丢弃。
- 解析 '-webkit-text-size-adjust' 的值时出错。 声明被丢弃。
- 未知伪类或者伪元素 '-webkit-inner-spin-button'。 选择器错误导致忽略规则集。
- 未知伪类或者伪元素 '-webkit-search-cancel-button'。 选择器错误导致忽略规则集。
- 未知属性 'orphans'。 声明被丢弃。
- 未知属性 'widows'。 声明被丢弃。
- 未知属性 '-moz-osx-font-smoothing'。 声明被丢弃。

Each error is followed by its file name and line number in red text. The right side of the interface shows icons for responsive design and other developer tools.

# JavaScript Command Line

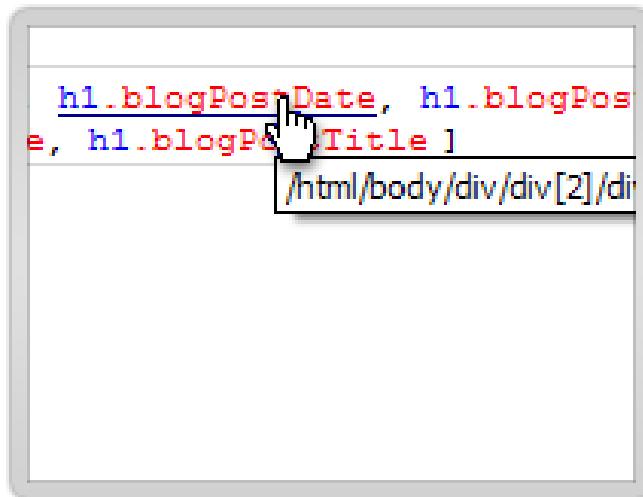
- 直接在页面上执行 JavaScript
- 用Tab键可以自动完成方法名和属性名

```
>>> var number = "(408) 328-  
>>> /\(\d{1,3}\)/.exec(number)  
[ "(408)" ]  
>>> /\(\d{1,3}\)\s+\d+/.exec(number)  
[ "(408) 328" ]  
>>> /\(\d{1,3}\)\s+(\d+)/.exec(number)  
[ "(408) 328", "328" ]  
>>>
```

```
>>> document.get  
Done
```

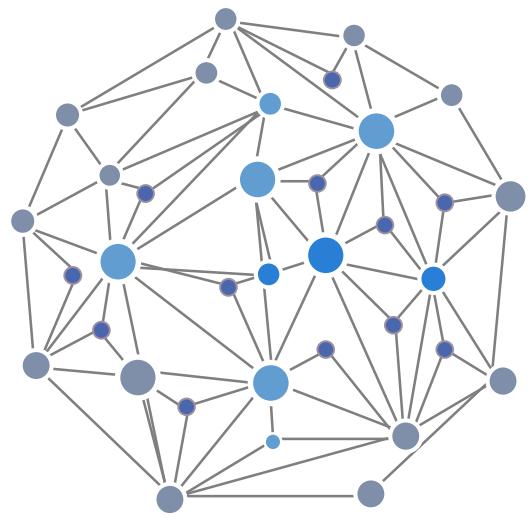
# JavaScript Command Line

- 在对象名上右边图标上点击左键，可以直接跳转到HTML中的该节点
- 在对象名上点左键，可以跳到DOM查看
- 右键也很有用



```
<a href="java
</span>
<a class="comment
"
>>> $1
<div class="ready toggled
>>> $$ ("a") [0]
Done
```

# 其他工具



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# Web Developer Extention

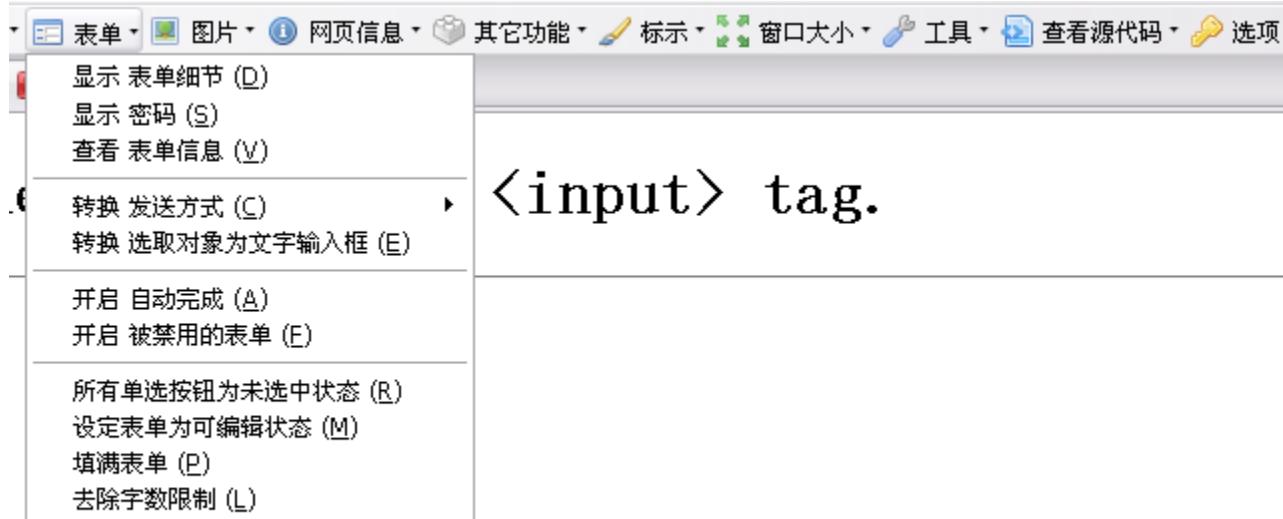
---

# Web Developer

---

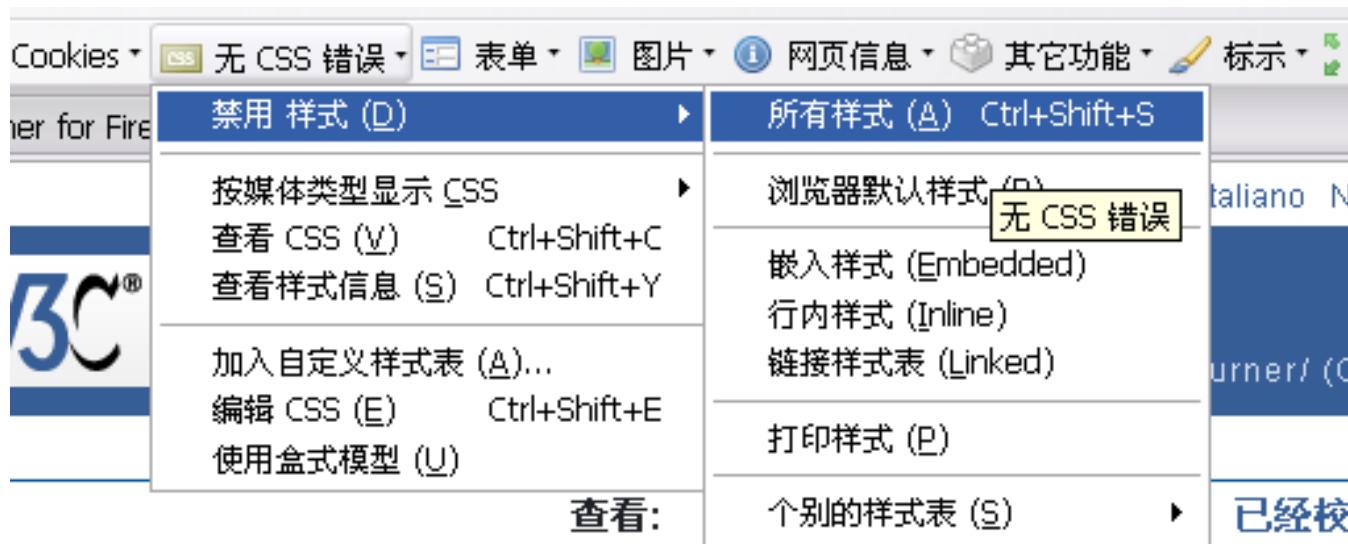
- Web Developer 中的 HTML 相关菜单：

- 表单
  - 图片
  - 网页信息
  - 标示



# Web Developer

- Web Developer 中的 CSS 菜单，能够禁用，切换媒体类型，查看并编辑CSS代码



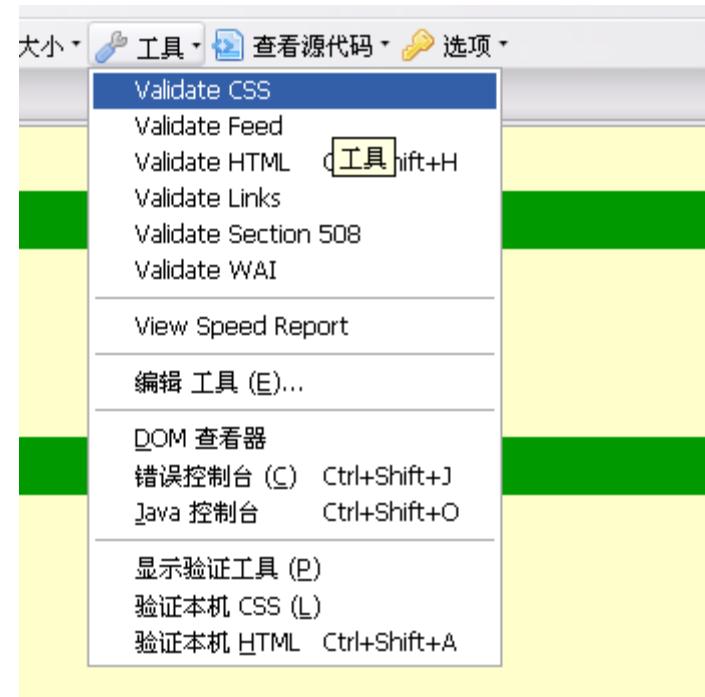
# Web Developer

- 其他功能菜单提供了很多辅助排版工具，比如参考线，放大镜（不知为何ff3下不能用了），标尺



# Web Developer

- 窗口大小菜单可以模拟各种屏幕分辨率的窗口大小
- 工具菜单提供了 W3C 各种验证工具的链接



# 练习

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- 用下面的网页练习 HTML Validator 的使用
  - <http://www.fzu.edu.cn/>
  - 查看错误，并分析错误原因
- 练习 Web Developer 的使用

# W3C CSS 语法校验

- <http://jigsaw.w3.org/css-validator/>

Deutsch English Español Français Italiano Nederlands 日本語 Polski 简体中文

**W3C®** CSS Validation Service  
W3C CSS 校验器结果： <http://sw.fzu.edu.cn/WebProgramming/homeworks/hw1/hw1.html> (CSS 版本 3)

查看： 警告 (50) 已经校验的层叠样式表

W3C CSS 校验器结果： <http://sw.fzu.edu.cn/WebProgramming/homeworks/hw1/hw1.html> (CSS 版本 3)

恭喜恭喜

恭喜恭喜，此文档已经通过 [CSS 版本 3](#) 校验！

为了告诉你的访客你曾致力于建立交互性的网页 你可以显示这个图标在任意经过检验的网页上。这里是 你用作加入图标到你的网页上的HTML代码：



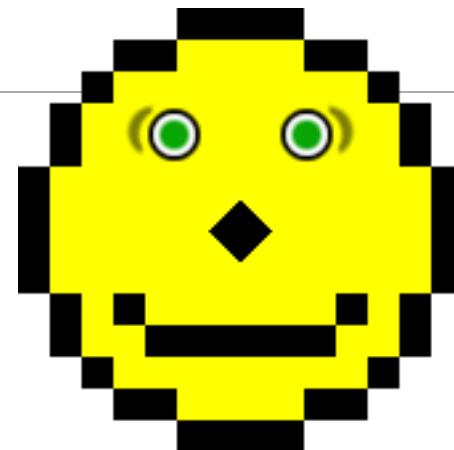
```
<p>
    <a href="http://jigsaw.w3.org/css-validator/">
        
    </a>
</p>
```

# ACID 测试

---

- ACID 是网页标准计划小组 ( WaSP ) 设计的一套浏览器与标准的兼容性的测试软件
- Acid 1 CSS 1.0
  - <http://acid1.acidtests.org/>
- Acid 2 HTML/CSS 2.0/PNG
  - <http://acid2.acidtests.org>
- Acid 3 ECMAScript / DOM level 3
  - <http://acid3.acidtests.org/>

# ACID 1/2/3 测试图



toggle  
the way  
the world ends  
bang  
whimper  
i grow old  
pluot?  
bar maids.  
sing to me, erbarme dich

This is a nonsensical document, but syntactically valid HTML 4.0. All 100%-conformant CSS1 agents should be able to render the document elements above this paragraph indistinguishably (to the pixel) from this [reference rendering](#). (except font rasterization and form widgets). All discrepancies should be traceable to CSS1 implementation shortcomings. Once you have finished evaluating this test, you can return to the [parent page](#).

# Acid3

100/100

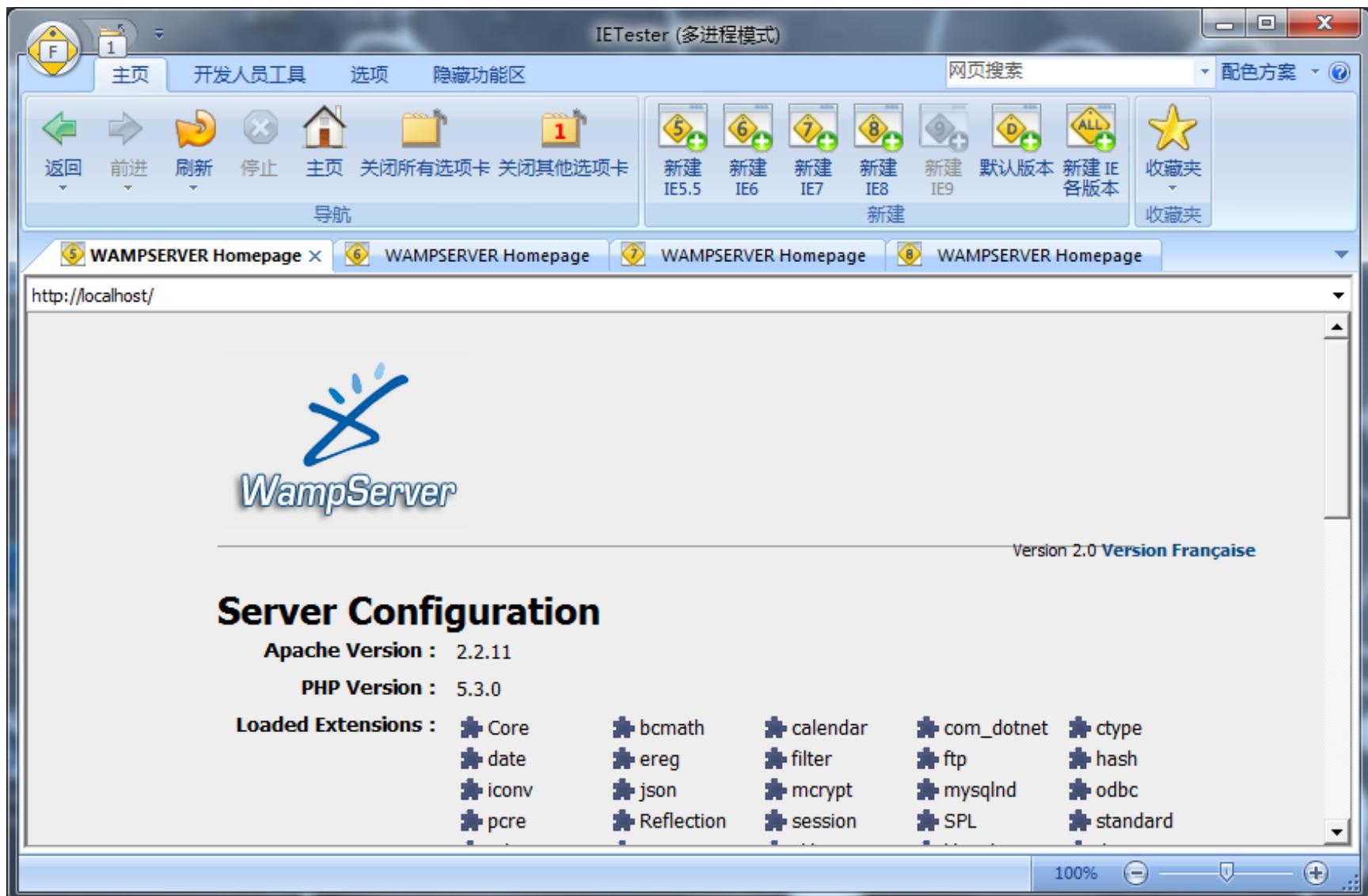
To pass the test, a browser must use its default settings, the animation has to be smooth, the score has to end on 100/100, and the final page has to look exactly, pixel for pixel, like [this reference rendering](#).

# 题外话：其他 CSS 测试

---

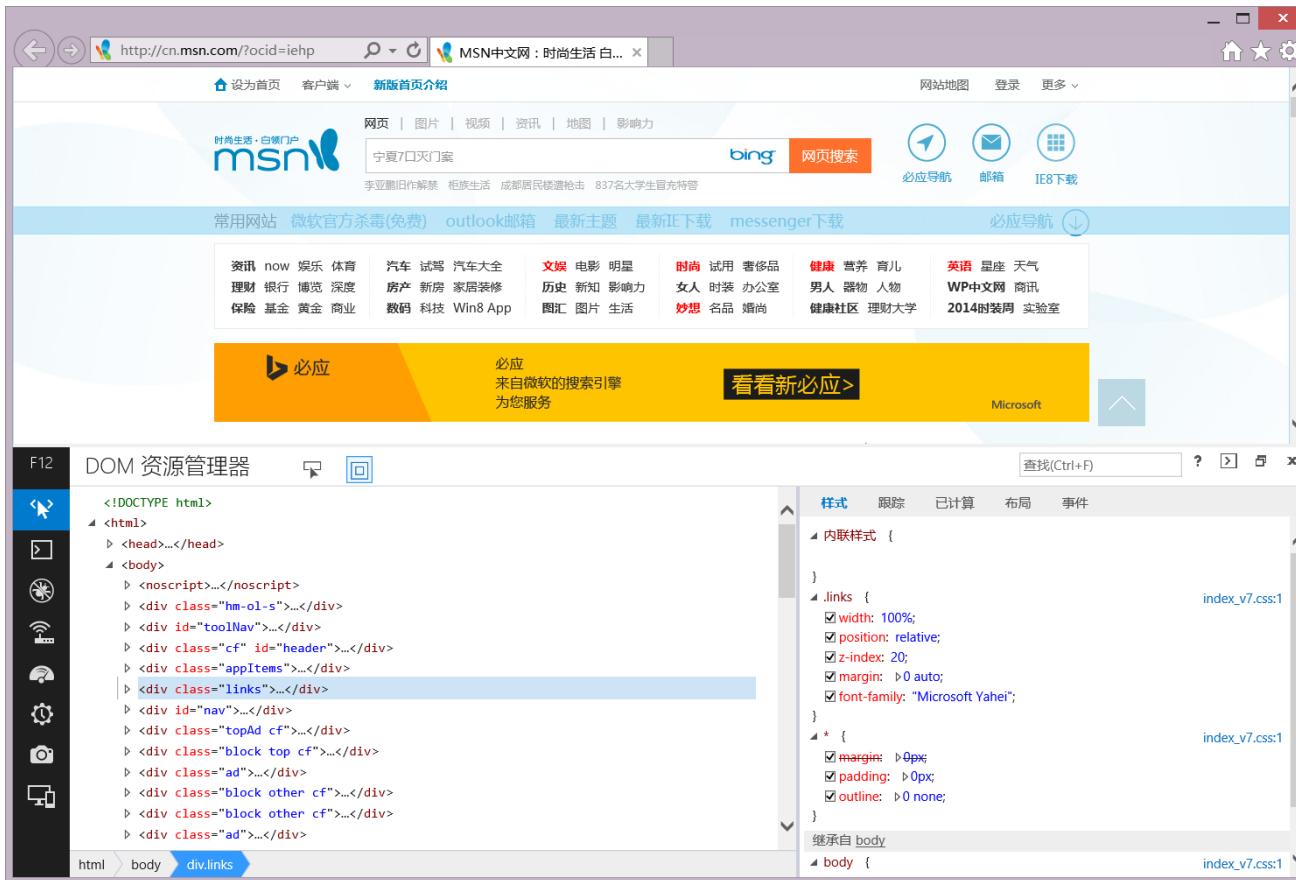
- CSS 选择器测试
  - <http://www.css3.info/selectors-test/>
- 更多测试
  - <http://chrome.360.cn/labs/>

# IE 兼容性测试工具——IETester



# IE 开发者工具

- IE 内置开发者工具，F12 调出



# Chrome 开发者工具

The screenshot shows the Chrome Developer Tools interface with the "Elements" tab selected. The left panel displays the DOM tree for a page containing a single paragraph with placeholder text. The right panel shows the "Styles" tab of the DevTools, which lists the CSS rules applied to the selected element. The styles are organized into three sections: "element.style", "p", and "Inherited from div". The "element.style" section contains a rule for the font-family property. The "p" section contains a rule for the display property and margin properties. The "Inherited from div" section contains a rule for the font-family property. The "body" section is also listed under inheritance, showing a rule for the font property. The bottom navigation bar indicates that the "p" node is currently selected.

Developer Tools - http://sw.fzu.edu.cn/WebProgramming/class\_samples/CSS/positioning/posi... ─ X

Elements Resources Network Sources Timeline Profiles Audits Console

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
  <head>...</head>
  <body>
    <div>
      <p>
        "Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum."
      </p>
      <p>...</p>
      <p>...</p>
    </div>
  </body>
</html>
```

Styles Computed Event Listeners DOM Breakpoints Properties

element.style {  
}

\* {  
 font-family: topbar, sv, MD\_Font, octicons, 'Glyphicons Halflings',  
 FontAwesome, dashicons, 'Segoe UI', 'WenQuanYi Micro Hei',  
 'WenQuanYi Micro Hei Mono', 'Microsoft Yahei', 'Microsoft Yahei  
 Mono', , 微软雅黑, sans-serif;  
}

p {  
 display: block;  
 -webkit-margin-before: 1em;  
 -webkit-margin-after: 1em;  
 -webkit-margin-start: 0px;  
 -webkit-margin-end: 0px;  
}

Inherited from div

\* {  
 font-family: topbar, sv, MD\_Font, octicons, 'Glyphicons Halflings',  
 FontAwesome, dashicons, 'Segoe UI', 'WenQuanYi Micro Hei',  
 'WenQuanYi Micro Hei Mono', 'Microsoft Yahei', 'Microsoft Yahei  
 Mono', , 微软雅黑, sans-serif;  
}

Inherited from body

media="all" positioning5\_fixed.html  
body {  
 font-size: 1em/1.5 arial, helvetica, sans-serif;  
}

\* {  
 font-family: topbar, sv, MD\_Font, octicons, 'Glyphicons Halflings',  
 FontAwesome, dashicons, 'Segoe UI', 'WenQuanYi Micro Hei',  
 'WenQuanYi Micro Hei Mono', 'Microsoft Yahei', 'Microsoft Yahei  
 Mono', , 微软雅黑, sans-serif;  
}

html body p (text)

# 练习

- 练习使用W3C CSS 语法校验功能验证CSS 源代码
- 练习使用 IETester
  - <http://www.my-debugbar.com/wiki/IETester/HomePage>
- 练习使用 IE 和 Chrome 的开发者工具调试 CSS