Molecular Biomedical Informatics

Web Programming

Web Programming 網際網路程式設計
JavaScript
**JavaScript**

- Executed by browser
  - completely different to Java
  - script language (腳本語言)

- So, it is just a programming language
  - for example, it can accumulate from one to ten
  - notice that it is executed by browser, which means no internet connection is required

- Its survival is a miracle
  - heard of Netscape?
Its advantage: integration with web

- When integrating with web, the most important thing is to show the result

```javascript
document.getElementById('foo').value='bar';
```

  - `document` is an object of Document Object Model (DOM)
  - `getElementById()` is a method of `document`, which returns a DOM object
  - `value` is an attribute of an input object, where `#foo` is a `<input>`

- You may consult HTML and CSS references for available properties and [here](#) for objects and methods
How to select `.foo` objects?

- **JavaScript `getElementsByClass` function**
  ```javascript
  function getElementsByClass(searchClass, domNode, tagName) {
    if (domNode == null) domNode = document;
    if (tagName == null) tagName = '*';
    var el = new Array();
    var tags = domNode.getElementsByTagName(tagName);
    var sc = ' ' + searchClass + ' ';
    for (i=0, j=0; i<tags.length; ++i) {
      var tc = ' ' + tags[i].className + ' ';
      if (tc.indexOf(sc) != -1)
        el[j++] = tags[i];
    }
    return el;
  }
  ```

- Painful
jQuery

- A Javascript library that every web site should use.
- What is a library (module)? If many people do the same things, these things should become a library.
- The advantage is that code becomes simple and understandable.
  - jQuery('.foo').val('bar');
- The disadvantage is that you have to learn more functions, but totally worthy.
  - Main Page - jQuery JavaScript Library
jQuery('.foo').css('color','red');

Understand this, and you know almost all fancy transitions
Remember the CSS Zen Garden?
More advanced function, `animate()`

- jQuery('.foo').animate({
  'margin-left': '100px',
}, 2000, function(){
  // animation completed
});
In addition to ‘show the result’, there is another important things while integrating with web
Input (event)

- All web transitions are caused by events (such as clicking a button). This is the so-called **event-driven programming** (事件導向)
  - not specific for web programming, **windows programming** (視窗程式設計) and any programing in a **multi-tasking environment** (多工) are based on such a concept

- jQuery('#foo').click(function(){...});
  - **jQuery** is a good tool to test jQuery
  - suppose that #foo is a `<button>`
  - **click** is an event (**.click() - jQuery API**)
  - Here we used the trick of **anonymous function**. Please be familiar with it since this field uses it a lot.
JavaScript references

- JavaScript Garden
- Learn jQuery & JAVASCRIPT for free
- Some interesting concepts widely used, but not unique, in JavaScript
  - anonymous function, callback function, closure, functional programming (那些 Functional Programming 教我的事)

- Notice that they are for JavaScript rather than for web programming with JavaScript
Any Questions?
Develop an app with these techniques

- WebView
- Various frameworks
  - box2dweb
- Cross-platform
Today’s assignment
今天的任務
Make your web site dynamic

- Implement at least one dynamic effect (see these sample effects for some inspiration) for your future requirements. If you have no ideas, try a slideshow facility, which makes your web site more professional.

- Reference
  - 8 Layout Solutions To Improve Your Designs
  - 40 Super-Neat JavaScript Plugins
  - 45+ New jQuery Techniques For Good User Experience

- Your web site (http://merry.ee.ncku.edu.tw/~xxx/cur/) will be checked not before 23:59 10/14 (Sun). You may send a report (such as some important modifications) to me in case I did not notice your features.
Appendix
附錄
If we have time, I want to discuss…

- Any web effects you want to learn?
- JavaScript Garden