IT350 Web and Internet Programming
Fall 2007
SlideSet #9: JavaScript Functions

(from Chapter 10 of the text)
Function Definitions

• Syntax and terminology:

```javascript
function function-name( parameter-list )
{
    declarations and statements
}
```

• Example

```javascript
/* Return an integer no larger than 'max' */
function getIntegerWithMax(max) {
    var value;
    do {
        value = window.prompt(
            "Please enter an integer no larger than "+max);
    } while (value > max);
    return value;
}
```
Function Invocation

• Built-in functions

• User-defined functions

Arguments are passed ________________, so original values in caller are ________________
Scope – Where is a variable visible in the program?

```javascript
function dog(g) {
    h = 3;
    var sum = g+h;
    document.write("<br/> Sum is: "+sum);
}
g = 7;
h = 5;

document.writeln("<br/> g: "+g+" h: "+h);
dog(g);
document.writeln("<br/> g: "+g+" h: "+h);
document.writeln("<br/> sum: "+sum);
```

**Output?**
JavaScript Scope Rules

• Variables declared inside a function:
  – Explicitly (with var)
  – Implicitly (just used)
  – Parameters
  
  (Look at FIRST USE inside a function to decide which applies)

• Variables declared outside a function:
  – Explicitly
  – Implicitly
Exercise #1 – Write a function that takes two arguments and returns the minimum of the two
function fun1 (x) {
    x = x + 3;
    y = y + 4;
    document.writeln("<br/> FUN1: "+x+ "," +y);
}

function fun2 () {
    var y;
    x = x + 10;
    y = y + 20;
    document.writeln("<br/> FUN2: "+x+ "," +y);
}

x = 1;
y = 2;

document.writeln("<br/> MAIN #1: "+x+ "," +y);
fun1(x);
document.writeln("<br/> MAIN #2: "+x+ "," +y);
fun1(y);
document.writeln("<br/> MAIN #3: "+x+ "," +y);
fun2();
document.writeln("<br/> MAIN #4: "+x+ "," +y);
Exercise #3 – Write a function `indentPrint(N, str1, str2)` that outputs the following:

a.) ‘N’ dashes, followed by the string ‘str1’, then `<br/>

b.) ‘N’ dashes, followed by the string ‘str2’, then `<br/>

Use `document.write()` for output. You can assume `N` is an integer.
Exercise #4

1. What point(s) are strange about the following code?

2. Will each cause a syntax error, logic error, or neither?

3. Fix the average function so that it correctly calculates both requested averages.

4. (a stretch) Do #3 without changing the function header.

```javascript
function average(x, y, z) {
    return (x + y + z) / 3;
}

document.write("<br/> avg2:" + average(3, 9));
document.write("<br/> avg1:" + average(10, 20, 30, 40));
```
Connecting JavaScript and XHTML

• Where to place the JavaScript
  – In the .html file
  – In a separate file

    <script type = "text/javascript" src = "calc.js" />

• How to invoke the script?
  – Place non-function code in the <head>
  – <body onload="start()">}

  – <input type = "button" value = "Roll" onclick = "play()" />
JavaScript Secrets

• Invalid numbers are NaN
  – Test with `isNaN(value)`

• 5 types for variables:
  – number (including NaN)
  – string
  – boolean
  – “undefined” – may cause error or lead to NaN
  – null

• Gotchas
  – `color = red;`
  – `if (x = 7) …`
  – Uninitialized variables
  – Forgetting “break” in switch
JavaScript Tips

• Quoting
  ```javascript
document.writeln("<a href="\"cat.html\">cat</a>" );
  vs.
  document.writeln("<a href='cat.html'>cat</a>" );
```

• Multiple arguments to `document.write()`
  ```javascript
document.writeln("<h1>"+heading+"</h1>" );
  document.writeln("<h1">, heading, "</h1>" );
```

  *(doesn't work with my_writeLn() )*