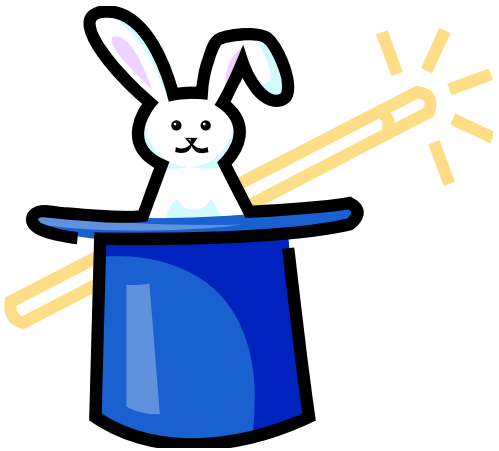

# Announcement

- Gradebook has been down
- So we haven't been able to transfer your quiz scores over to MyUW
- Supposed to be fixed this morning


# Announcement

- Marc's Friday office hour
  - Has miraculously transformed into
    - 2 hours
      - In a computer classroom
        - MGH 030 from 4-6pm on Fridays




# Announcement

- Project 2A
  - Available Friday
  - Due on Wednesday
    - 2 paragraph story
    - 2 images
    - Copyright information
    - Choose words in story to replace


# Keepin' on with the Program:

*Fundamental Programming Concepts Expressed in JavaScript (continued)*


# Exercise Part 4,

- You'll understand more as we work through the next few slides.


Right side in the assignment statement

# EXPRESSIONS


# An Expression and its Syntax

- Algebra-like formula called an *expression*
  - Describe the means of performing the actual computation
  - Built out of values and *operators*
    - Standard *arithmetic operators* are symbols of basic arithmetic


# Arithmetic Operators

- Multiplication requires an asterisk ( * ), the multiply operator
- Multiply and divide are performed before add and subtract
  - Anything within parentheses is done first
  - Any multiplication or division within parentheses is performed first
- No operator for exponents
- *Modulus* or mod ( % ) divides two integers and returns the remainder


# Relational Operators

- Make comparisons between numeric values
- Outcome is a **Boolean** value, *true* or *false*
- < less than
- <= less than or equal to
- == equal to

**(Note difference between = and = =)**

- != not equal to
- >= greater than or equal to
- > greater than


# Logical Operators

- To test two or more relationships together
  - Teenagers are older than 12 and younger than 20
- Logical **AND**
  - Operator is **&&**
  - Outcome of a && b is true if both a and b are true; otherwise it is false
- Logical **OR**
  - Operator is **||**
  - Outcome of a || b is true if either a is true or b is true
- Logical **NOT**
  - Operator is **!**
  - Outcome is opposite of value of comparison


# Operators (cont'd)

- Operator Overload
  - Use of an operator with different data types
  - Case of interest in JavaScript is +
- Addition
  - When used with numbers, + adds
    - 4 + 5 produces 9
- Concatenation
  - When + is used with strings, + concatenates or joins the strings together
    - "four" + "five" produces "fourfive"


# A Conditional Statement

**if ( <Boolean expression> )**

**<then-statement>;**

- Boolean expression is a relational expression;
  - Evaluates as either True or False
- then-statement is any JavaScript statement


# If Statements and Their Flow of Control

- The Boolean statement, called a predicate, is evaluated, producing a true or false outcome
- If the outcome is true, the then-statement is performed
- If the outcome is false, the then-statement is skipped
- Then-statement can be written on the same line as the Boolean or on the next line


# Compound Statements

- Sometimes we need to perform more than one statement on a true outcome of the predicate test
- You can have a sequence of statements in the then clause
- Group these statements using curly braces **{ }**
  - They are collected as a compound statement


# if/else Statements

- To execute statements if a condition is false

```
if ( <Boolean expression> )
{
        <then-statements>;
}
else
{
        <else-statements>;
}
```

- The Boolean expression is evaluated first
  - If the outcome is true, the then-statements are executed and the else-statements are skipped
  - If the outcome is false, the then-statements are skipped and the else-statements are executed


# Nested if/else Statements

- The then-statement and the else-statement can contain an if/else
- The else is associated with the immediately preceding if
- Correct use of curly braces ensures that the else matches with its if


# Nested if/else Statements

```
if (<Boolean exp1>)
{
    if (< Boolean exp2>)
    {
        <then-stmts for exp2>;
    }
    else
    {
        <else-stmts for exp2>;
    }
}
```

```
if (<Boolean exp1>)
{
    if (< Boolean exp2>)
    {
        <then-stmts for exp2>;
    }
}
else
{
    <else-stmts for exp1>;
}
```


# Exercise Part 4

| Expressions or conditions | Replacing Variables with values | Result | Number | String | Boolean |
|---|---|---|---|---|---|
| e + f | "Donald" + "Duck" | "DonaldDuck" | | X | |
| Better: | “Donald “ + “Duck” | “Donald Duck” | | | |
| e + g | "Donald" + 10 | "Donald10" | | X | |
| ( (b / c) < a ) | 75 /25 < 100<br>= 3 < 100 | true | | | X |
| ( ( c > a ) \|\| ( b < a ) ) | (25 > 100) OR (75 < 100) | If either is true, it’s true | | | X |
| ( h = b ) | h = 75 | | X | | |
| ( h == b) | 75==75? | True | | | X |


*Working Together*

# HTML, CSS, AND JAVASCRIPT


# Purposes of Each

- Three separate types of coding
  - HTML—for content
  - CSS—for appearance
  - JavaScript—for action


# Examples

- HTML—static page
- CSS—add styling to the page
- JavaScript—adds action!


FIT100


# JavaScripts and HTML

Types of JavaScripts are based on location in the HTML page:

* Body scripts—body section
* Header scripts—head section
* External scripts—links to a .js page
  - Similar to .css pages


# Body Script

```
<html>
  <head>
    <title>Name of Page</title>
  </head>
  <body>
    <script type="text/javascript">
        //JavaScript goes here
    </script>
  </body>
</html>
```


# Body Script

```
<html>
  <head>
    <title>Name of Page</title>
  </head>
  <body>
    <script type="text/javascript">
        //JavaScript goes here
    </script>
  </body>
</html>
```


# Header Script

```
<html>
  <head>
    <title>Name of Page</title>
    <script type="text/javascript"
      //JavaScript goes here
    </script>
  </head>
  <body>
      Body content goes here
  </body>
</html>
```


# External Script

- Linked in the <head>
- src gives pathname

```
<html>
  <head>
    <title>Name of Page</title>
    <script type="text/javascript"
       src="basic.js"></script>
  </head>
  <body>
     Body content goes here
  </body>
</html>
```


# External JavaScripts

- Make changes to scripts in one place
- Reusable
  - Can be linked to any page, every page in a site, or many sites

about.js - Notepad2

File Edit View Settings ?

```
1  function showSection(id) {
2    var divs = document.getElementsByTagName("div");
3    for (var i=0; i<divs.length; i++ ) {
4      if (divs[i].className.indexOf("section") == -1) continue;
5      if (divs[i].getAttribute("id") != id) {
6        divs[i].style.display = "none";
7      } else {
8        divs[i].style.display = "block";
9      }
10   }
11 }
12
13 function prepareInternalnav() {
14   if (!document.getElementsByTagName) return false;
15   if (!document.getElementById) return false;
16   if (!document.getElementById("internalnav")) return false;
17   var nav = document.getElementById("internalnav");
18   var links = nav.getElementsByTagName("a");
19   for (var i=0; i<links.length; i++ ) {
20     var sectionId = links[i].getAttribute("href").split("#")[1];
21     if (!document.getElementById(sectionId)) continue;
22     document.getElementById(sectionId).style.display = "none";
23     links[i].destination = sectionId;
24     links[i].onclick = function() {
25       showSection(this.destination);
26       return false;
27     }
28   }
29 }
30
31 addLoadEvent(prepareInternalnav);
```

Ln 15 : 31 Col 33 Sel 0 | 1,014 Bytes | ANSI | LF | INS | JavaScript


# Summary

- Programming is the exact specification of an algorithm
- JavaScript is typical ... with many rules
  - Learning strategy
    - Do the reading first
    - Practicing is better than memorizing for learning the rules
    - Use the program-save-reload-test plan
    - Precision is your best friend