

# Comp 110-004 Midterm practice: Answers

Fall 2007

These questions represent the kind of questions asked on the midterm. The practice is longer than the midterm to provide more examples.

## Answers in bold blue

### Execute statements

Evaluate each of the following JavaScript expressions and show the value.

5-4	<b>1</b>
4+5	<b>9</b>
-9*3	<b>-27</b>
"value is " + 50	<b>"value is 50"</b>
17 % 5	<b>2</b>
5 % 17	<b>5</b>
5/10	<b>0.5</b>
(7 <= 8)	<b>true</b>
(4 == 4)	<b>true</b>
(4 != 5)	<b>true</b>
Math.floor(77.8)	<b>77</b>
Math.ceil(40.3)	<b>41</b>

## Converting binary-decimal numbers

Use bit values to complete conversion. what is the pattern?

128   64   32   16   8   4   2   1

Convert these binary numbers into decimal numbers

- 110111      =  $32 + 16 + 4 + 2 + 1 = 55$
- 101011      =  $32 + 8 + 2 + 1 = 43$
- 10100        =  $16 + 4 = 20$

Convert these decimal values into binary numbers

- 55            (see above)
- 43
- 20

**How to solve: It is like making change from the bit values. You can take at most one bit value. Start with the bit value less than the decimal number**

### Example 55

- Start with bit 32. Calculate remainder ( $55-32 = 23$ )
- Find the next bit that covers 23. Repeat previous step.
- Bits that are used are "1". Bits that are not used are "0"

Read a given HTML/JavaScript file. Be able to complete the following:

- Recognize HTML tags (those used in Hw0, your first web page)
- Write JavaScript commands to access form fields (input and output). Similar to commands used in program 1-3.
- Understand buttons and functions.
- Given some HTML, sketch a web page as it appears in a web browser

```
<html>
<head>
  <title>The bank</title>
</head>
<body>

<script>
function convertCents() {
    alert("Start conversion");
}
function currency() {
    alert("Which one?");
}
</script>
<h1>Penny converter</h1>
<form name = "myForm">
  Enter the number of cents to convert to change:
  <br>
  <input name="inputCents">
  <br>
  <input type="button" onClick="convertCents()" value="Get change">
  <input type="button" onClick="currency()" value="Currency">
  <hr>
  <input name="outputChange">
</form>
</body>
</html>
```

**Given a segment of code, trace loops and selection statements**

Trace the following program by showing the text of the alert messages that are displayed when it runs. There are no errors. Execution begins just after the comment // Start of execution.

```
// Start of execution
var x =5;
var y =1;
while (x > 0){
    x = x-1;
    y = y*x;
    alert(x + " " + y);
}
```

**4 4**  
**3 12**  
**2 24**  
**1 24**  
**0 0**

Trace the following program by showing the text of the alert messages that are displayed when it runs. There are no errors. Execution begins just after the comment // Start of execution.

```
var i;  
var count =0;  
for (i =0; i < 11; i++){  
    if (i < 3 || 7 <i){  
        count++;  
        alert(count + " i " + i + " range 1");  
    }else if (i == 5){  
        count++;  
        alert(count + " i " + i + " range 2");  
    }  
    if ( 2<= i && i < 7){  
        count++;  
        alert(count + " i " + i + " range 3");  
    }  
}
```

**1 i 0 range 1**  
**2 i 1 range 1**  
**3 i 2 range 1**  
**4 i 2 range 3**  
**5 i 3 range 3**  
**6 i 4 range 3**  
**7 i 5 range 2**  
**8 i 5 range 3**  
**9 i 6 range 3**  
**10 i 8 range 1**  
**11 i 9 range 1**  
**12 i 10 range 1**

**Given a description of a task, write the JavaScript commands involving loops and selection statements**

Write a for loop that counts the zeros in the array named temp. There are three zeros in this case. Your for loop should apply to any size array.

```
var temp = [2, 1, 0, 67, 0, 20, 0];
```

```
var i;  
var count = 0;  
for (i =0; i < temp.length; i++){  
    if (temp[i] == 0)  
        count++;  
}
```