COMP 110 Practice Exercises for Midterm

Answers are available, but try these before you look at the answers.

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

1. \(-9 \times 3\)
2. \(\text{“value is “} + 50\)
3. \(17 \% 5\)
4. \(5 \% 17\)
5. \(5/10\)
6. \((4 == 4)\)
7. \((4 != 5)\)
8. \((7 <= 8)\)
9. \(\text{Math.ceil(x)} - \text{Math.floor(x)}\)

Convert these binary numbers into decimal numbers.

10. 110111
11. 101011
12. 10100

Convert these decimal values into binary numbers.

13. 55
14. 43
15. 20

Write javascript code to do the following.

16. Alert "Hello world."
17. Read a number (using prompt) and display it using alert.
18. Read two numbers and display their product.
19. Read two numbers and display their sum. What problem did you encounter?
20. Read in two numbers and display the larger.
21. Read in two numbers and display then in ascending order.
22. Use a loop to display the numbers 0 through 5, each in a separate alert window.

23. Use a loop to display the numbers 0 through 5 in a single alert window.

24. Use a loop to display the numbers in the range 0...20 that are multiples of 3.

25. Use a loop to display the integers 9 through 0 in descending order.

26. Prompt the user for a number in the range 0...100. If the number is out of range, display an error message and prompt again until a valid number is entered. Assume the user enters a number each time.

27. Repeat previous exercise, but this time allow for the possibility that the user enters something that is not a number. Hint: the built in function isNaN(x) returns true if x is not a number. It returns false if x is a number. Sort of backwards, but that's what's available.

28. Prompt for an integer, then display the sum of the integers from 0 through the number entered. For example, if you enter 10, then display 55 which is the sum of 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10.

29. Prompt for an integer, then display the average of the integers from 0 through the number entered. For example, if you enter 10, then display 5 which is the average of \((0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10)/11\).

**Write a function to do each of the following.**

30. greet(); displays "Hello world"

31. sum(n); displays the sum of 0+1+2+...+n.

32. isValid(n) returns true if n is a number 0...100.

33. isInteger(n) returns true is n is an integer 0...100. Hint: use isValid.

**Code tracing:**

34. Trace the following code by showing the values of the 3 variables in the table on the right, for each line of code that is executed (after the line is executed):

```javascript
// Start of execution
var x = 5; ---------------
var y = 10; ---------------
var z = 7; ---------------
x = (y+z)/2; ---------------
y = 8; ---------------
z = (x-y)/2; ---------------
```
35. Trace the following program by showing the text of the alert messages that are displayed when it runs. There are no errors.

```javascript
// Start of execution
var x = 5;
var y = 1;
while (x > 0){
    x = x-1;
    y = y*x;
    alert(x + " " + y);
}
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");
    }
}
```
36. What is the output displayed by each of the following code fragments?

```javascript
for (var i=0; i<10; i++)
{
    alert(i);
}
for (var i=10; i<10; i++)
{
    alert(i);
}
for (var i=10; i>=0; i--)
{
    alert(i);
}
for (var i=0; i<5; i++)
{
    for (var j=0; j<3; j++)
    {
        alert(i +" "+ j);
    }
}
for (var i=0; i<5; i++)
{
    for (var j=i; j<5; j++)
    {
        alert(i +" "+j);
    }
}
```
37. What does this code do?

```javascript
var count=0;
for (var half=0; half<=2; half++)
{ for (var qtr=0; qtr<=4; qtr++)
  { for (var dime=0; dime<=10; dime++)
    { for (var nick=0; nick<=20; nick++)
      { for (penny=0; penny<=100; penny++)
        { if (50*half + 25*qtr + 10*dime + 5*nick + penny == 100)
          { count++; }
        }
      }
    }
  }
}
alert(count);
```