CISC110 Test 2, Fall 2015

Student Number: ____________________________

Note: This test will be marked out of 30 possible marks. There are 5 questions. Please write in pen. Only answers written in the answer boxes provided will be marked. You are not allowed a calculator! If you need help with math, ask me for the calculation. I will be your calculator.

Read each question carefully. You may find that a good strategy would be to read over the whole test, and then answer the questions that you are confident about first. Don’t get stuck on one question!

Good luck 😊

1. [4 marks] Evaluate the following expressions. For each expression, give both its value and data type. The solution for the first expression is given as an example.

   Assume the following variable declaration:

   ```
   var num: String = "5";
   ```

<table>
<thead>
<tr>
<th>Expression</th>
<th>Value</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 * 3 + 6</td>
<td>21</td>
<td>int</td>
</tr>
<tr>
<td>var ans = int(num) + 5</td>
<td>10</td>
<td>int</td>
</tr>
<tr>
<td>(num.length &gt; 0) &amp;&amp; (ans == 10)</td>
<td>true</td>
<td>Boolean</td>
</tr>
</tbody>
</table>

2. [4 marks] Write expressions that correspond to the following descriptions. Write your answer in the box next to the description. The first two solutions are given as an example.

   True if int variables a and b are greater than zero and a is also less than b
   
   $$ (a>0) \&\& (b>0) \&\& (a<b) $$

   For 3 int variables, a, b, and c, the result value is the quotient of the sum of a and b divided by c
   
   $$ (a+b)/c $$

   True if an int variable a, is less than an int variable b, or if b is equal to zero
   
   $$ (a < b) \mid (b == 0) $$

   The result is the int variable a, to the power of the length of an array b (for example, 2 to the power of n means a number in the form 2^n)
   
   $$ \text{Math.pow}(a, b.\text{length}) $$
3. Write the output of the following code in the answer boxes provided.

   a) [3 marks]

   ```javascript
   for (var i = 1; i < 6; i += 2)
   {
       trace(i);
   }
   ```

   **ANSWER:**
   1
   3
   5

   b) [3 marks]

   ```javascript
   //hint: n % 0 = NaN, where n is an integer
   var count = 0;
   var inCount = 1;

   while (count <= 2)
   {
       while (inCount < 4)
       {
           if(inCount % count == 0){
               trace( count + inCount);
           }
           inCount ++;
       }
       count++;
       trace(count);
       trace(inCount);
   }
   ```

   **ANSWER:**
   1
   4
   2
   4
   3
   4
4. [8 marks] Below are two arrays; one that contains different fruit, and the other that contains different fruits and vegetables

```javascript
var fruit: Array = new Array("apple", "orange", "banana");
var salad: Array = new Array("broccoli", "orange", "apple", "carrot", "banana", "peas");
```

Using the fruit array, write a nested for loop that displays only the fruit in the salad array (i.e. only display the elements that appear in both arrays). Your for loop should still work if the length of your arrays change, for example, if you decide to add more elements to your array later in the program.

**ANSWER:**

```javascript
for(var i = 0; i < fruit.length; i++){
    for (var j = 0; j < salad.length; j++){
        if(fruit[i] == salad[j]){
            trace(salad[j]);
        }
    }
}
```
5. **[8 marks]** Create an array and fill it with any 5 strings. Make sure you give your array an appropriate name.

Assume that an int variable `userNum` has been read in from an input textfield.

Write a while loop that removes an element from the end of your array. Your loop should execute the number of times specified by `userNum` (i.e. if `userNum` = 5, then your loop should execute 5 times).

Make sure that you don’t try to remove elements from an empty array (this would happen if `userNum` is greater than the length of your array)!

**ANSWER:**

```javascript
var salad = new Array("brocoli", "orange", "apple", "carrot", "banana");

//Alternatively:
//var salad: Array = ["brocoli", "orange", "apple", "carrot", "banana"];

//or:
//var salad: Array = new Array();
//salad.push("brocoli", "orange", "apple", "carrot", "banana");

while(userNum > 0){
    if (salad.length > 0){
        salad.pop()
    }
    userNum --;
}

//Alternatively:
/*
var i = 0

while (i < userNum){
    if (salad.length > 0){
        salad.pop()
    }
    i++;
}
*/```