CISC110 Test 1, 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 trace statement, write what would be displayed in the Output Window. The solution to the first trace statement is given as an example.

Assume the following variable declarations:
var num = 8;
var val = 2;

<table>
<thead>
<tr>
<th>trace Statement</th>
<th>Output Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>trace(5 * 3 + 6);</td>
<td>21</td>
</tr>
<tr>
<td>trace(num + num * val);</td>
<td>24</td>
</tr>
<tr>
<td>trace(“The equation: ” + num + “+” + val + “=” + (num + val));</td>
<td>The equation: 8+2=10</td>
</tr>
<tr>
<td>trace(Math.min(2, 7, 39, 1, 24));</td>
<td>1</td>
</tr>
<tr>
<td>trace(“The answer is: ” + Math.sqrt(val * 2));</td>
<td>The answer is: 2</td>
</tr>
</tbody>
</table>
2. [6 marks] Write expressions that correspond to the following descriptions. Write your answer in the box next to the description. Use methods in the Math class where applicable. The first solution is given as an example.

<table>
<thead>
<tr>
<th>Description</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 3 int variables, (a), (b), and (c), the result is the product of (a) and (b) divided by (c)</td>
<td>(a \times b / c)</td>
</tr>
<tr>
<td>The result is the maximum of 4 Number variables, (a), (b), (c), and (d)</td>
<td>(\text{Math.max}(a, b, c, d))</td>
</tr>
<tr>
<td>For 4 int variables, (a), (b), (c), and (d), the result is the remainder of (a) divided by (b), multiplied by the remainder of (c) divided by (d)</td>
<td>((a % b) \times (c % d))</td>
</tr>
<tr>
<td>For 4 Number variables, (a), (b), (c), and (d), the result is the sum of (a) and (b), divided by (c), then all multiplied by (d)</td>
<td>((a + b) / c) \times d)</td>
</tr>
</tbody>
</table>

3. [6 marks] Write the output of the following code in the answer box below.

```javascript
const TOTAL = 100;
const NAME_BONUS = 0.1;

var grade = 90;
var bonusAmount = grade * NAME_BONUS;
var totalMarks = grade + bonusAmount
var percentGrade = (totalMarks/TOTAL) * 100

trace("Your name bonus is: " + bonusAmount);
trace("Your mark on this test is: " + totalMarks + " out of 100");
trace("You've received " + percentGrade + "%");
```

**ANSWER:**

Your name bonus is: 9
Your mark on this test is: 99 out of 100
You’ve received 99%
4. [ 6 marks ] Write ActionScript code that used Math.random() and Math.round() to generate a random position to place a character on the stage.

Remember that a position is represented as two numbers: an x and a y coordinate. This means that you must generate TWO random numbers; one for the x position, and one for the y position.

You can imagine the stage as a grid, and different positions are where the horizontal and vertical lines intersect (like points on graph).

Assume that the height of the stage is 500 and that the width of the stage is 300.

Write the code that generates these random numbers in the answer box below. You do not need to write the code that actually places the character on the stage.

**ANSWER:**

```actionscript
var xPos = Math.round(Math.random() * 300);
var yPos = Math.round(Math.random() * 500);
```

5. [ 8 marks ] Write code for a simple Inventory App. This is an app that helps a store owner manage their inventory of delicious candies. You only need to write the code that creates any variables needed and does the calculations. **Imagine** that your code will be placed inside a constructor in the app, and that the results will be displayed in output text fields (but you don’t have to write that part or any trace statements).

This simple Inventory App does the following:

- Calculates the sum of all the incoming candies and adds it to the total number of candies in inventory
- Calculates the number of candies that need to be ordered by subtracting the spoilage and sales from the total number of candies (after incoming candies have been added)
- Imagine that the current inventory and candy order are displayed in output text fields

Assume that the following variables have already been read from input text fields:

- totalCandies – the number of candies before any incoming candies have been added
- lollyIn – the number of incoming lollipops
- bearsIn – the number of incoming gummy bears
- skittlesIn – the number of incoming skittles
- spoilage – the number of candies that have spoiled, dropped, (or eaten), and cannot be sold
- sales – the number of candies that have been sold

Write code that calculates the sum of the incoming candies and adds it to the total number of candies in inventory. Then write code that calculates the number of candies that need to be ordered by subtracting spoilage and sales from the total number of candies (after incoming candies have been added).

Write your answer in the box provided.

**ANSWER:**

```javascript
var sumIncoming = lollyIn + bearsIn + skittlesIn;
totalCandies += sumIncoming;
//Alternatively:
//totalCandies += lollyIn + bearsIn + skittlesIn
var order = totalCandies - (spoilage + sales);
```