# Intro to Programming Midterm

May 9th 2012

*For this test you can assume there is a show() function. The show function displays a string on the page (just like the one from the homework assignments).*

*There are a total of 115 possible points on the test. Your grade will be out of 100 however, so there is possibility of earning up to 15 bonus points.*

**#1 (2 points)**
Write Javascript code to store your first name and last name in separate variables. Then print them together with a space in between. If you don't know how to do this, just write your name below. *(2 points)*

**#2 (5 points)**
For each data value below, write the type of the value (i.e. what you'd get if you used the `typeof` operator) and whether the value is truthy or falsey.

```
2.3
true
"false"
0
{title: "Introduction to Programming"}
```

**#3 (3 points)**
List three invalid variable identifiers, along with why they are invalid. They should all be invalid for different reasons.

**#4 (10 points)**
Write a function called `diceRoll`. It should return a random number between 1 and 6 inclusive.

**#5 (2 points)**
List two reasons why you might write part of your program as a function.

**#6 (2 points)**
List the two things that a `return` statement does.

**#7 (2 points)**
In the following code snippet, explain the purpose of `event.preventDefault()`.

```
<a href="http://creativecircus.com" id="myLink">Creative
Circus</a>

<script>
var linkElement = document.getElementById('myLink');
linkElement.addEventListener(function(event) {
     alert('You clicked the link!');
     event.preventDefault();
});
</script>
```

**#8 (4 points)**
What does the following program output?

```
var num = "20";
show("The sum is: " + num + 4);
```

How about this?

```
var num = "20";
show("The sum is: " + 4 + num);
```

**#9 (1 point)**
What does this print?

```
var x;
show( typeof x );
```

**#10 (5 points)**
Prompt the user repeatedly to enter a number until they enter a valid number. Then print that number.

**#11 (6 points)**
Explain what this code snippet does:

```
var element = document.getElementById("firstName");
element.className += " highlighted";

var text = document.createTextNode("* please enter your
name");
element.appendChild(text);
```

**#12 (2 points)**
Is the following statement `true` or `false`? *(2 points)*

```
!((4 <= 6) && "") || null && 2 === (12 - 20 / 2)
```

**#13 (8 points)**

For the for loop below:

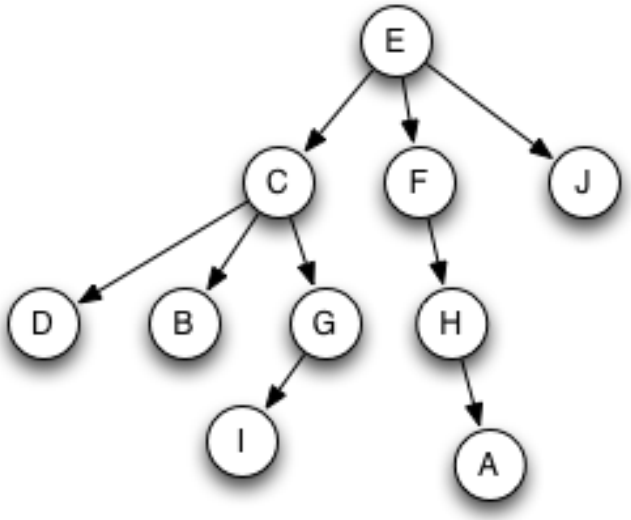
- Explain when `var i=0` is executed
- Explain when `i < 5` is executed
- Explain when `i++` is executed
- Write the output of the code

```
for (var i=0; i < 5; i++) {
     show( i);
}
```

**#14 (5 points)**

Using the graph below:

- Draw an asterisk beside of the root node
- Draw a square around each sibling of the node labelled "B"
- Draw a hash beside of a leaf node (any one).
- Why is this a "tree" and not just a regular graph?



**#15 (10 points)**
Create an object and store it into a variable called `dog`. The `dog` object should have a `name` property that has the value `"fido"` and should have a `speak` property that is a function that prints the string `"woof"`. The `speak` function doesn't need to return a value; just call the `show()` function directly in it.

Print the `name` property of the `dog`. Then invoke the `speak` function that is stored in the `dog` object.

**#16 (15 points)**
Write a function called `fancyCount` that accepts three parameters named `start`, `end`, and `interval`. Your function should print every `interval` numbers between `start` and `end` on one line separated by commas and a space. For example, the output of `fancyCount(0, 12, 3)` should be:

```
0, 3, 6, 9, 12
```

Likewise, the output of `fancyCount(5, 10, 2)` should be:

```
5, 7, 9
```

Write your function on the back of this page.

**#17 (8 points)**
A misguided n00b (someone who is new to programming) wrote the following code. Make it better by rewriting the code to use a function and invoke the function 3 times with different values instead of using a for loop. Write your program on the back of this page.

```
for (var i=0; i < 3; i++) {
     var studentName;
     var grade;

     if (i === 0) {
          studentName = 'Jonathan';
          grade = 85;
     } else if (i === 1) {
          studentName = 'Sarah';
          grade = 68;
     } else if (i === 2) {
          studentName = 'Julia';
          grade = 94;
     }

     show( studentName + ' gets a ' + grade + '!' );
}
```

**#18 (6 points)**
Describe the purpose of the following operators and expressions in JavaScript?

!
;
.
=
===
*
%
++

**#19 (18 points)**
Write a function called `diceGame`. It will be a different dice game than your homework assignment. Here are the rules:

- Each player gets the same number of dice rolls
- The winner is the person who has the highest total after all their rolls are complete.

Your function should accept the following parameters:

- The number of players in the game
- The number of rolls per turn.

It should return the number of the player who won. Feel free to call the `diceRoll` function that you wrote earlier in the test instead of rewriting the dice rolling logic.

Write your answer on the back of this page.

**#20 (1 point)**
Write a Javascript comment (either single line style, or multi-line style) that tells me one thing you've actually enjoyed about the class so far.