Intro to Programming Final Exam
Spring 2012

For this test you can assume there is a printLine() function. The printLine function takes a variable number of arguments separates them with spaces and displays them on the page followed by a newline character (Just like the one from the homework).

There are a total of 100 possible points on the test, plus up to 12 bonus points.

Question 1 (4 points)
Create an object (using the object literal syntax) that holds the following information about you:

- Your name
- Your quest
- Your favorite color

If you don't have a quest, then your quest is "Watch 'Monty Python and the Holy Grail'". If you don't know how to do this, just write your name.

Question 2 (2 Points)
What are the two situations in which you **have** to use [] instead of the . operator to access a property of an object?

Question 3 (6 points)
Name 2 purposes of each of the following programming constructs:

The return statement

Functions

Objects

Question 4 (2 points)
What is encapsulation?

Question 5 (4 points)
What does the following code print?

```
function doSomething() {
      var  name = "Intro to Programming";
}

doSomething();

printLine( name );
```

Question 6 (4 points)
What does the following code print?

```
var greeting = "hello, world";
greeting = greeting.replace( /h.llo/, 'goodbye' );
greeting = greeting.replace( /world/, 'class' );
printLine( greeting );
```

Question 7 (6 points)
Finish the code below to print "myDate" in MM/DD/YYYY format.

```
var myDate = "Thu, 14 Jun 2012 22:30:00 GMT";
```

Question 8 (10 points)
Given this html write the code to add the values of #num1 and #num2 and place the result in #result when the form is submitted. The solution should place 2.8 in #result. You may use jQuery if you'd like.

```
<form method="get" action="" id="myForm">
     <input type="text" id="num1" value="1.5" />
     <input type="text" id="num2" value="1.3" />
     <input type="submit" value="Add" id="myFormSubmit" />
</form>
<h1>Result:</h1>
<p id="result"></p>
```

Question 9 (6 points)

Write a function that takes an object and prints its property names and associated values. Don't worry about nested objects. For example:

calling printObject	produces....

printObject({
    name: "Elliot",
    weight: 9.5,
    dad: "Jon",
    mom: "Julie"
});
	name: Elliot
	weight: 9.5
	dad: Jon
	mom: Julie

Question 10 (10 Points)

Write a constructor for a Person object type. The constructor should:
- Accept a name, date of birth (as a string), and occupation as arguments.
- Store the name, date of birth (as a date object), and occupation as properties of the object that is being constructed.

Question 11 (7 Points)
Write the code that would add an "isOlderThan" method to Person object types. The isOlderThan method will accept a second person as an argument, and return true if the person that isOlderThan was called on has a birthdate that is earlier than the second person. Otherwise it will return false.

Question 12 (10 Points)
Write the code that would add a "getAge" method to Person object types. The getAge method does not accept any parameters, but instead uses the birthdate property of the person that getAge is called on.

Here are the steps to calculate a person's age by their birthdate.

1. If the person's birthdate has already passed this year (i.e. the current month is less than their birth month, or the current month is equal to their birth month and the current day is less than or equal to their birth day), than their age is the current year - their birth year.
2. Otherwise the person's birthdate has not passed this year, so their age is current year - their birth year - 1.

Even if you don't know how to do this completely please try, or at least try to write out the algorithm in Javascript. I will give partial credit.

Do this problem on the back of this page.

Question 13 (10 Points)

Assume that you have a correctly defined Person object type from the previous few questions. Write a program that:
1. Creates two Person objects (you can make up whatever names, birthdates, and occupations that you want),
2. Compares them using isOlderThan, and
     - prints '[person1 name] is older than [person2 name]' if person1 is older than person2
     - prints '[person2 name] is older than [person1 name]' if person2 is older than person1
     - prints '[person1 name] and [person2 name] were born at exactly the same time' otherwise

Question 14 (4 Points)

What does the following code print?

```
var color1 = { red: 255, green: 255, blue: 255 };
var color2 = color1;
var color3 = { red: 255, green: 255, blue: 255 };


printLine( color1 == color2 );
printLine( color1 == color3 );
```

Question 15 (5 Points)
Print out the name property of the second employee's boss.

```
var employees = [
    {
        name: 'John Smithers',
        position: 'Pencil Pusher',
        boss: { name: 'Joe Lafferty', position: 'Project Manager' }
    },
    {
        name: 'Carl Fox',
        position: 'Salesperson',
        boss: { name: 'Laura Story', position: 'Sales Manager' }
    }
];
```

Question 16 (6 Points)
Using the employees array from the previous question:

Joe Lafferty has just been fired for stealing erasers. Assign John Smithers a new boss named "Matt Jones" who has the position "Department Manager" using the existing employees array.

Question 17 (2 Points)
What does the "throw" keyword do? How is it different from other ways of handling errors?

Question 18 (2 Point)
Write a comment (either single line style, or multi-line style) that says what your favorite assignment of the class was.

BONUS Questions:

What is XKCD? **(2 Points)**

What is wrong with this array? var myArray = ['Red', 'Orange', 'Yellow', 'Blue',]; **(3 Points)**

What is the DRY principle? Why is it important? **(2 Points)**

Name possible object types for a program that simulates a game of Blackjack (a card game involving multiple players, a dealer, and betting). **(1 point each, up to 5)**