CISC 3300 S25
Homework 4

1. How does an interpreted programming language differ from a compiled language?

In an interpreted language, there is no “middle” machine. An interpreter goes through the code line by line. These languages typically take longer to execute. In a compiled language, a compiler translates code into machine code, which is then executed by the Central Processing Unit (CPU). The main difference is that a compiled language has a middle step (the compiler), and an interpreted language does not.

2. Contrast dynamically typed programming languages with statically typed ones. And contrast strongly typed programming languages with weakly typed ones.

Dynamically typed means type checking is performed at runtime. This means that a variable’s type can change over its lifetime. Statically typed means the type is bound to the variable and is checked at compile time. Weakly typed recognizes different types but doesn’t use them too strictly. Strongly typed languages have type discipline ,which are enforced by the compiler.

3. What is the difference between var, let, and const when declaring variables in JS?

“Var” keyword that is re-declarable, global, and function scoped. The “Let” keyword is block scoped and re-decarable. “Const” is block scoped and not declarable. If you need older behavior use var. If a variable will change, use let. If a variable won’t be reassigned, use const.

4. What are anonymous functions? Higher order functions? Callback functions? First class functions?

An anonymous function is a function without a name. A higher-order function is a function that returns a function or takes other functions as arguments. If a function in that language is treated like other variables, it is a first-class function.

5. Define objects in JavaScript.

Objects are a non-primitive data type. It is a collection of properties. A property is an associate between a name (or key) and a value (which can be a function). You can also define object as a data structure that is a collection of key-value pairs.

6. Loop through the cats array variable found here: https://github.com/cisc3300/SP25-lecture-code/blob/main/2-13-lecture/cats.js a. if the cats adoption status is available add that cat's name to a result array b. create a new sentence about your newly adopted cats from your result array via the join array function.

7. Create a variable that sets a value via a ternary operator. Use Math.random() * 10, which will output a random number from 1 to 10, to set the variable's value as a string of "greater than five!" if the output from Math.random() * 10 is greater than 5, and "less than five!" if the output is less than 5.

8. Loop through the values of the cat object variable found here: https://github.com/cisc3300/SP25-lecture-code/blob/main/2-13-lecture/cats.js. Console.log the value of each property in the loop.

9. Write two if statements, pick the correct comparison operator to have the first if statement equate an integer of 1 and a string of '1' as true. And pick the correct comparison operator to have the second equate an integer of 1 and a string of '1' as false.

10. Using the map function create a new array via the cats array used in question 6. Pass the map function a callback function that accepts each element of the array as a parameter. Return the value of the name property of each object in the cats array concatenated with the string " is cute!". The output should be an array of "Charlie is cute!", "Lily is cute!", etc.
Include questions 6-10 in a single JavaScript file or HTML file via a script tag.