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CS 471
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Program 6: Chapter 9 Binding of Global Variables During Subroutine Passing

Problem Description:

- The problem we are trying to figure out is whether JavaScript implements shallow, deep, or ad hoc binding of variables. To solve this problem, I implemented the code from the textbook and added a call to sub1() then ran it on my mac. Once I finished implementing the code, I realized I didn't have the NodeJS Runtime Environment downloaded on to my laptop so I couldn't run the program. After downloading it and running it, I got the value of x to print in the terminal window by using console.log() within the program instead of alert() like the textbook uses.

Conclusion:

- Based on the output of the program for x being 1, we can conclude that JavaScript uses deep binding. In the code, we can see that x = 1 in sub1()'s environment. This means that when we call sub2(), it is referencing the environment of sub1(). So, the 'x' referenced in sub2() is bound to 'x' of sub1(), therefore outputting a 1 in the print statement.

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JavaScript Code & Output:

```
/*
* Name: Tony Maldonado
* Date: October 26, 2020
* Input: None
* Output: The output of alert() which is the value of x
* Precondition: None
* Postcondition: None
*/

// Run function sub1()
sub1();

function sub1() {
    var x;
    function sub2() {
        // Creates a dialog box with the value of x
        console.log("The value of x is: " + x);
    }
    function sub3() {
        var x;
        x = 3;
        sub4(sub2);
    }
    function sub4(subx) {
        var x;
        x = 4;
        subx();
    }
    x = 1;
    sub3();
}
```

```
Tonys-MacBook-Pro:Program 6 m21tony$ node program6.js
The value of x is: 1
Tonys-MacBook-Pro:Program 6 m21tony$
```