CSCI 450 Fall 2024
Homework 8

Problem 1: (1 pt) Assume the following JavaScript program was interpreted using static-scoping rules. What value of x is displayed in function sub1?
Under dynamic-scoping rules, what value of x is displayed in function sub1?

```
var x;

function sub1() {
    document.write("x = " + x);
}

function sub2() {
    var x;
    x = 10;
    sub1();
}
x = 5;
sub2();
```


Problem 2: (2 pts) Consider the following JavaScript program:

```
var x, y, z;

function sub1() {
    var a, y, z;
    function sub2() {
        var a, b, z;
        …
    }
    …
}

function sub3() {
    var a, x, w;
    …
}
```

List all the variables, along with the program units where they are declared, that are visible in the bodies of sub1, sub2, and sub3, assuming static scoping is used.

Problem 3: (2 pts) Consider the following C program:

```
void fun() {
    int a, b, c;                 /* definition 1 */
    …
    while (…) {
        int b, c, d;             /* definition 2 */
        …        <----------------------------------------- 1
        while (…) {
            int c, d, e;         /* definition 3 */
            …    <----------------------------------------- 2
        }
        …        <----------------------------------------- 3
    }
    …            <----------------------------------------- 4
}
```

For each of the four marked points in this function, list each visible variable, along with the number of the definition statement that defines it.

Problem 4: (5 pts) Finish the Python program, make sure to include the header comments (check Program Template on Bb). If your program does not execute, you will get NO credit.