

Programming languages  
Homework 5 Due date : 30.05.2019

1- 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();
```

2- Consider the following Python program:

```
x = 1;
y = 3;
z = 5;
def sub1():
    a = 7;
    y = 9;
    z = 11;
    ...
def sub2():
    global x;
    a = 13;
    x = 15;
    w = 17;
    ...
def sub3():
    nonlocal a;
    a = 19;
    b = 21;
    z = 23;
    ...
```

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.