# Lab 1 Writeup

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## 1 Overview

This document contains my responses to the questions written in Lab1.pdf.

1. *Do the survey* Done
2. *Give the line where the name is bound and reasoning:*
   (a) *Consider the following (code) The use of pi at 4 is bound at which line? The use of pi at 7 is bound at which line?*
   At line 4, the value of pi is bound to the value 3.14159 at line 3. This is so because it is within the scope of circumference()
   At line 7, the value of pi is bound to the value 3.14 at line 1. This is so because the value of pi used is of the global scope.
   (b) *Consider the following code. X at 3 is bound at which line? X at 6 is bound at which line? X at 10 is bound at which line? X at 13 is bound at which line?*
   At line 3, the value of x is equal to whatever was passed ot function f() (ie. it's bound at 2). This is so because the value x used there is within the scope of function f().
   The value of x at 6 should still be the same (bound at 2), since the match and case will pass the value of x forward.
   I think that the value of x at 10 should be equal to the value of x passed to the function (ie. it's bound at 2), since it's outside the scope of the inner experession that sets a new value for x.
   The value of x at 13 is bound at line 1, since it is outside the scope of f().

3. *Is g well typed?* g should be well typed. It always returns a tuple of type tuple, int. The return type of g is formally ((Int, Int), Int). a is an Int, and b is a tuple of two Ints.

```
g():Int because
    (b, 1):Int because
        b: Int because
            x: Int
            3: Int
        1: Int
    (b, a+2): Int because
        b: Int because
            x: Int
            3: Int
        a+2: Int because
            a: Int
            2: Int
```