Name: \_Katie Prescott\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_2/12/16\_\_\_\_\_\_\_\_\_\_

**I pledge my honor that I have abided by the Stevens Honor System.**

For each function below, trace through it with reasonably small integer values. What does each function do?

**HINT:** You should assume integers are 8 bits for the purpose of this exercise.

**int** **mystery1**(**int** a, **int** b) {

**int** c = a - b,

d = (c >> 7) & 1,

mystery = a - c \* d;

**return** mystery;

}

Trace: mystery1(3, 7) returns \_\_\_7\_\_\_

Trace: mystery1(8, 7) returns \_\_\_8\_\_\_

Summary: \_\_\_\_mystery1 returns the largest of the numbers given.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**void** **mystery2**(**int** values[], **int** i, **int** j) {

values[i] = values[i] ^ values[j];

values[j] = values[i] ^ values[j];

values[i] = values[i] ^ values[j];

}

Note: Improper C++ syntax found below.

Trace: mystery2([1, 2, 3, 4], 0, 3) values = [ \_\_4\_\_, \_\_2\_\_, \_\_3\_\_, \_\_1\_\_ ]

Trace: mystery2([1, 2, 3, 4], 1, 2) values = [ \_\_1\_\_, \_\_3\_\_, \_\_2\_\_, \_\_4\_\_ ]

Summary: \_\_\_\_mystery2 swaps values[i] and values[j].\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**int** **mystery3**(**int** x, **int** y) {

**int** s, c;

s = x ^ y;

c = x & y;

**while** (c != 0) {

c = c << 1;

x = s;

y = c;

s = x ^ y;

c = x & y;

}

**return** s;

}

Trace: mystery3(5, 7) returns \_\_\_12\_\_\_

Trace: mystery3(2, 8) returns \_\_\_10\_\_\_

Summary: \_\_\_\_\_\_\_\_mystery3 adds the two numbers.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_