Name: Himanshu Rana Date: 9/21/18

Pledge: “I pledge my honor that I have abided by the Stevens Honor System” – Himanshu Rana (hrana2)

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: **If a is odd then it returns the value of b and if a is even then it returns value of a**

**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: **Swaps values[i] with values[j] within the array**

**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: **Adds x and y**