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Pledge: I pledge my honor that I have abided by the Stevens honor system. - Mitra Modi

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: Returns the greater of the two parameters, where the returning value can be written as a - (a - b)^d, where d is 1 when b is greater than a, and d is 0 when a is greater than b.

```
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 the elements at the indexes “i” and “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: Returns the sum of the two numbers, using a really convoluted method of sum (int s) and carry (int c).