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Pledge: 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?
Requirement: You should assume integers are only **8 bits** for the purpose of this exercise. The sign bit is the leftmost of the 8 bits.

```
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 greatest of the two inputs.
```

```
int mystery2(int x) {
    return (x && !(x & (x - 1)));
}
```

```
Trace: mystery2(1) returns 1
Trace: mystery2(2) returns 1
Trace: mystery2(3) returns 0
Trace: mystery2(4) returns 1
Trace: mystery2(5) returns 0
Trace: mystery2(6) returns 0
Trace: mystery2(7) returns 0
Trace: mystery2(8) returns 1

Summary: if x is a member of $2^x : \forall x \geq 0$, it returns 1. If its not a member, then it
returns 0.
```

```
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 + y and returns that value.
```