Extended GCD
Due 12/22

(a) Implement the Even/Odd GCD algorithm. As discussed in class, this find the greatest common divisor of two positive integers using only addition, subtraction, integer division by 2, and testing whether an integer is odd or even. This should work for 64-bit signed integers.

(b) This is the same as (a) except that the two integers will be input as strings, possibly having as many as 1000 digits!

(c) Using the same ideas as (a), implement the Extended Even/Odd GCD algorithm: Given a and b, find integers x and y such that

$$a\,x + b\,y = gcd(a,b)$$

Again, you are only allowed to use the operations given in (a). You may choose to have your input as 64-bit integers, or as many-digit strings.

You may use C++, Python or Java. These algorithms should take less than a second in any of these languages!