CS 135 Spring 2018: Problem Set 6.

Problem 1. (10 points) Use the Pulverizer (extended Euclidean algorithm) to express $\gcd(1529,14039)$ as a linear combination of 1529 and 14039. Show all steps.

Problem 2. (10 points)

a. Recall the Fibonacci numbers:

$$F_0 = 0, F_1 = 1, \forall n \geq 2: F_n = F_{n-1} + F_{n-2}$$

Find the simplest possible expression for $\gcd(F_n, F_{n-1}), n \geq 1$. Prove the validity of your answer. (Hint: Calculate the gcd by hand for a few small values; then formulate and prove your hypothesis.)

b. The numbers a, b, c are pairwise relative prime if

$$\gcd(a, b) = \gcd(b, c) = \gcd(a, c) = 1.$$

Is it true that three consecutive Fibonacci numbers are always pairwise relatively prime? Prove your answer.