

Homework #3, CS 336

This homework is due September 22 at 2:15, in class (or emailed in pdf form, in advance).

1. Let $F(n, k)$ be defined for $n \geq k \geq 0$, by

- $F(n, n) = 1$ for all $n \geq 0$
- $F(n, 0) = 1$ for all $n \geq 0$
- $F(n, k) = F(n - 1, k) + F(n - 1, k - 1)$ if $n > k > 0$.

(a) What is $F(1, 1)$?

(b) What is $F(2, 1)$?

(c) Prove by induction that $F(n, k) = \frac{n!}{k!(n-k)!}$, for $n \geq k \geq 0$. (Here, $0! = 1$.)