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CS151 Fall 2014
Lecture

Probability
Flashback

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<http://www.cs.uc.edu/~tbrn/view/CS202/WebHome>

"How do you want it—the crystal mumbo-jumbo or statistical probability?"

Bernoulli Trials

A coin is tossed 8 times. What is the probability of exactly 3 heads in the 8 tosses?

THHTTHTT is a tossing sequence...

How many ways of choosing 3 positions for the heads?

What is the probability of a particular sequence?

C(8,3)

.5⁸

In general: The probability of exactly k successes in n independent Bernoulli trials with probability of success p, is

$C(n,k)p^k(1-p)^{n-k}$

Bernoulli Trials

A game of Jewel Quest is played 5 times. You clear the board 70% of the time. What is the probability that you win a majority of the 5 games?

Sanity check: What is the probability the the result is WWLLW?

.7³.3² Assumes independent trials

In general: The probability of exactly k successes in n independent Bernoulli trials with probability of success p, is

$C(n,k)p^k(1-p)^{n-k}$

$C(5,3)0.7^30.3^2 + C(5,4)0.7^40.3^1 + C(5,5)0.7^50.3^0$