

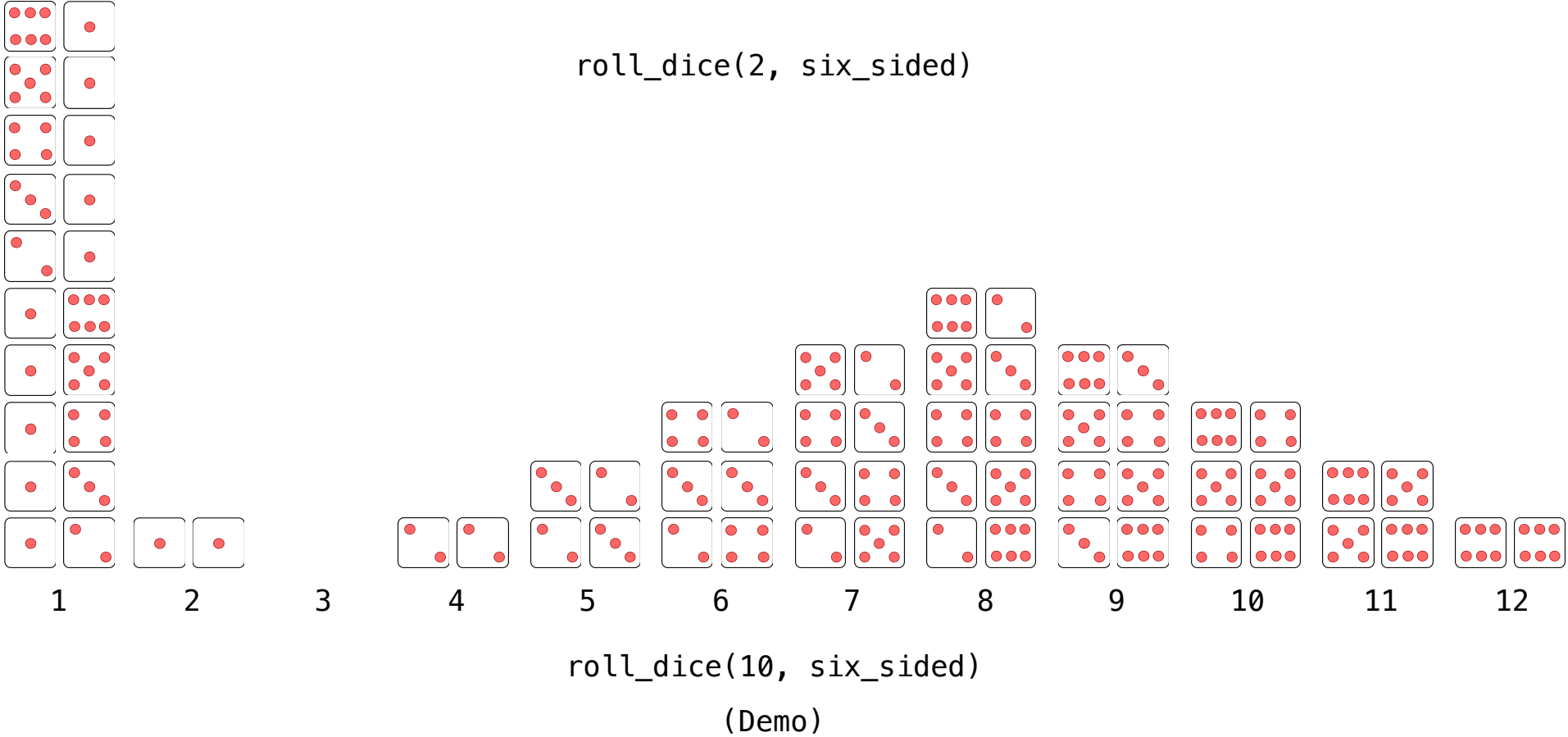
61A Extra Lecture 2

Announcements

cs61a.org/extra.html

Dice

Exact Chances for Rolling Dice



Hog: The End Game

You: 99
Them: 99

You: 92
Them: 99

You: 88
Them: 99

You: 80
Them: 99

What is the chance that I'll score *at least* k points rolling n six-sided dice?

(Demo)

S_n : Score from rolling n dice

t : A single outcome of rolling once

$$P(S_n \geq k) = \sum_{t=2}^6 P(t) \cdot P(S_{n-1} \geq k - t)$$

(assuming no Pig Out!)

Memoization

(Demo)

Fill out bit.ly/61ahere

Twenty-One (Nim)

(Demo)

Twenty-One Rules

Two players alternate turns, on which they can add 1, 2, or 3 to the current total

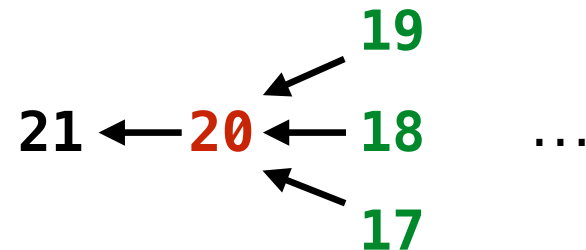
The total starts at 0

The game end whenever the total is 21 or more

The last player to add to the total loses

(Demo)

Some states are good; some are bad



(Demo)

Hog Optimal Strategies

Contest Challenges

Larger state space than Nim &
random transition function

Spring 2015 Optimal Strategy

- Rules: <http://inst.eecs.berkeley.edu/~cs61a/sp15/proj/hog/>
- Designed for what opponent?

Partial information: your
strategy is not a function
of the dice being used

