

BC COMS 1016: Intro to Comp Thinking & Data Science

Lecture 8 – Control Statements, Randomness & Probability

Announcements



- Lab 03 - Functions and Visualizations
 - Due Tonight (Wed 11/11)
- HW03 - Functions, Histograms, and Groups
 - Due Thursday (11/12)
- Lab 04 - Lab 4 – Simulations
 - Due Friday (11/13)
- Checkpoint/Project 1:
 - Paired assignment that covers the previous section of the course material
 - Released this am (11/11) and due Wednesday (11/18)



Control Statements

Control Statements



These statements *control* the sequence of computations that are performed

- The keywords **if** and **for** begin control statements
- The purpose of **if** is to define functions that choose different behavior based on their arguments



Random Selection

Random Selection



`np.random.choice`

- Selects at random
- With replacement
- From an array
- A specific number of times

`np.random.choice(some_array, sample_size)`



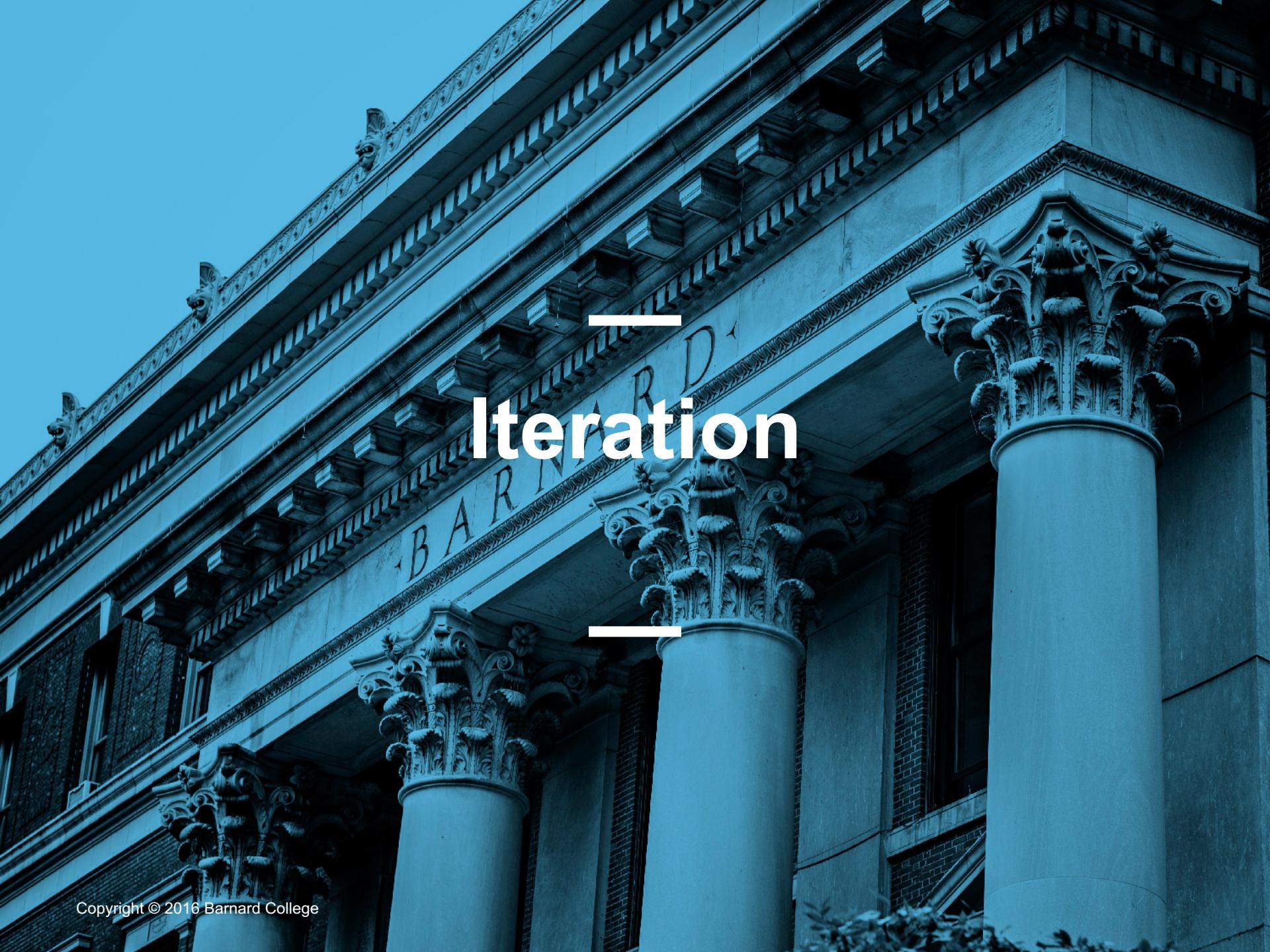
Appending Arrays



A Longer Array

- `np.append(array_1, value):`
 - new array with value appended to array_1
 - value has to be of the same type as elements of array_1

- `np.append(array_1, array_2):`
 - new array with array_2 appended to array_1
 - Elements of array_2 have to be of the same type as elements of array_1



Iteration



for statements

- **for** is a keyword that begins a control statement
- The purpose of **for** is to perform a computation for every element in a list or array

for name in sequence:

BODY where we use the value in the name

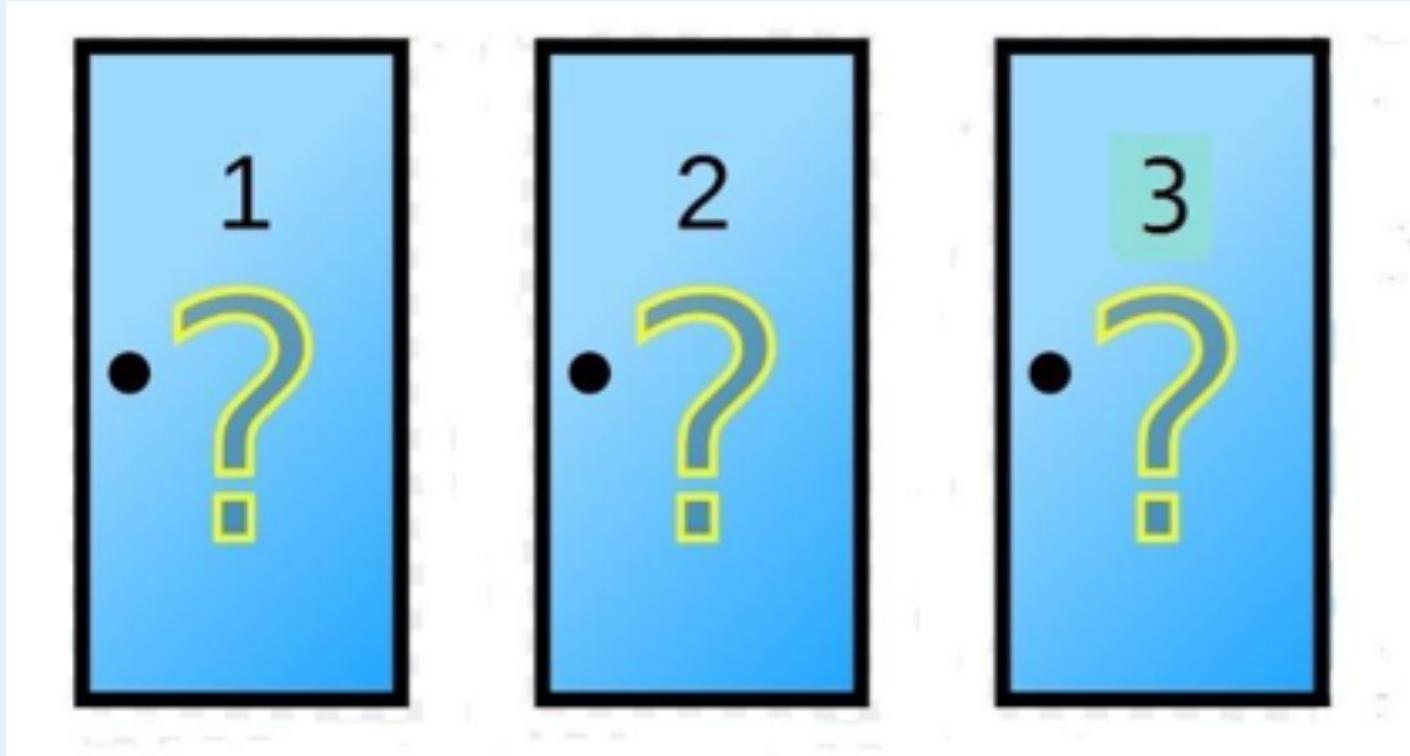


Monty Hall Problem





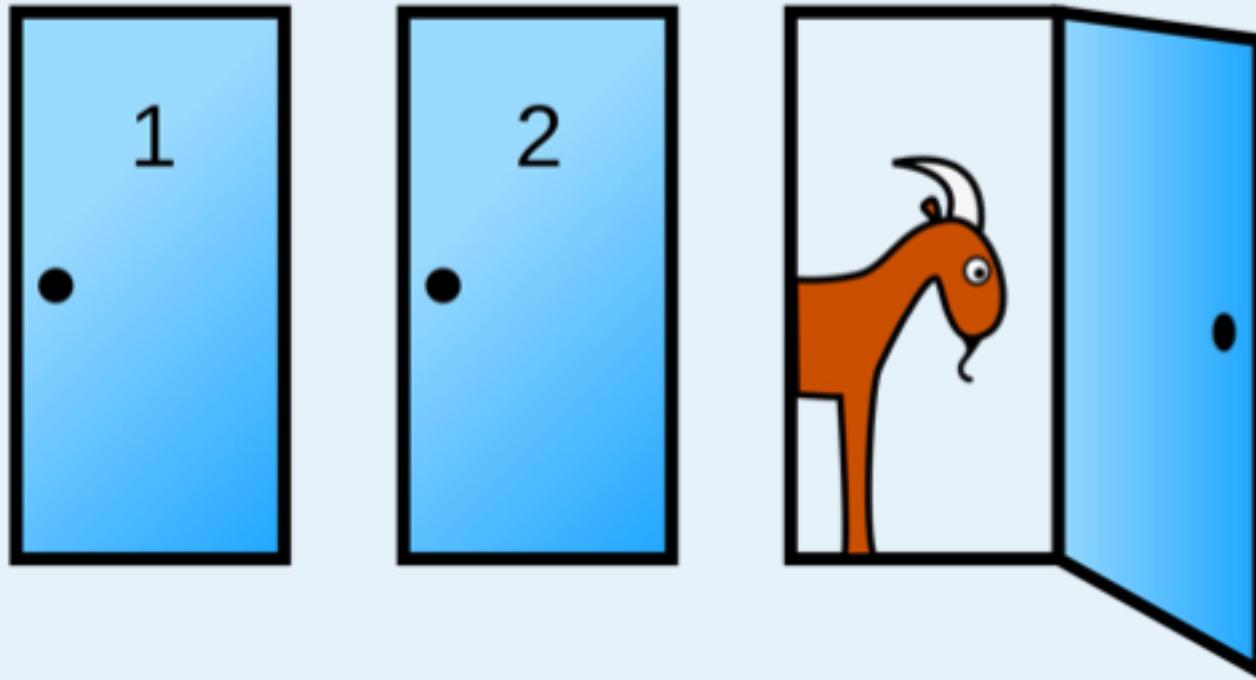
Monty Hall Problem



<https://probabilityandstats.files.wordpress.com/2017/05/monty-hall-pic-1.jpg>



Monty Hall Problem



https://en.wikipedia.org/wiki/Monty_Hall_problem