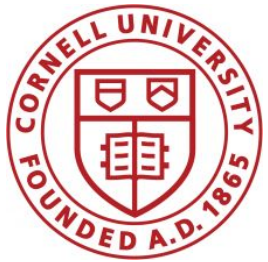


DSFA

Spring 2020

# Lecture 10

Booleans, Controls, and Simulated Randomness

# Announcements

- Prelim 1
  - Next Thursday 2/27, 7:30-9PM, Goldwin Smith G64
  - Practice questions posted on Piazza, review sheet coming
  - You will get a list of functions; you may bring a double-sided sheet of notes you make yourself.

# Announcements

Project 1

- Part 1 due Friday 2/21 5:59PM, Part 2 due Friday 3/6 at 5:59PM.
- You may work together with a partner from your section
- Lab Next Week will be time to work on the Project

# Boolean Operators

## Boolean Values

`True` `False`

## Boolean Operators

`not` `or` `and`

(Demo)

# Comparison

# Comparison Operators

The result of a comparison expression is a **`bool`** value

```
x = 2                    y = 3
```

Assignment statements

```
x > 1                    x > y                    y >= 3

x == y                   x != 2                   2 < x < 5
```

Comparison expressions

(Demo)

# Aggregating Comparisons

Summing an array or list of bool values will count the True values only.

```
1     + 0      + 1              == 2
True + False + True            == 2
sum([1    , 0     , 1    ))   == 2
sum([True, False, True))   == 2
```

(Demo)

# Random Selection

# Random Selection

`np.random.choice`

- Selects at random
- with replacement
- from an array
- a specified number of times

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

(Demo)

# Discussion Question

```
d6 = np.arange(1,6+1)
```

What results from evaluating the following 2 expressions? Are they the same? Do they describe the same process?

```
np.random.choice(d6, 1000) + np.random.choice(d6, 1000)
```

```
2 * np.random.choice(d6, 1000)
```

# Control Statements

# Control Statements

These statements *control* the sequence of computations that are performed in a program

- The keywords `if` and `for` begin control statements
- The purpose of `if` is to define computations that can choose different behaviors
- The purpose of `for` is to perform a computation for every element in a collection

(Demo)