



1301

Spring 2020



## For Loops

- Lists being immutable vs mutable.
- Python implements as arrays.
  - Arrays are based <sup>on</sup> indexing.
- $l[2] \times$

# Definite Iteration

↳ we know how many times the commands in the block will be repeated.

for  $x$  in  $col$ :

commands } block

$y = 0$

for  $x$  in  $\{0, 1, 2\}$ :

$$y = x + y$$

$$0 + y$$

$$1 + y$$

$$2 + y$$

$$y = 0 + 0$$

$$y = 1 + (0 + 0)$$

$$y = 2 + (1 + (0 + 0))$$

$$\boxed{y = 3}$$

e = [t(x) for x in col if b ]

⇓

↓  
e = [ ]

for x in col:

if b:

add t(x) to e



$e = [1, 2, 3, 4]$

$e' = []$

for  $n$  in  $e$ :

$e' = \text{cons}(n, e')$

0:  $e' = []$

1:  $n = 1, e' = [1]$

2:  $n = 2, e' = [2, 1]$

...

$e' = [4, 3, 2, 1]$

for  $n$  in  $e$ :

$e' = \text{append}(e', [n])$   
 ${}[]$

0:  $e' = []$

1:  $n = 1, e' = [1]$

2:  $n = 2, e' = [1, 2]$

...

$[1] + [2] = [1, 2]$

$e' = [1, 2, 3, 4]$