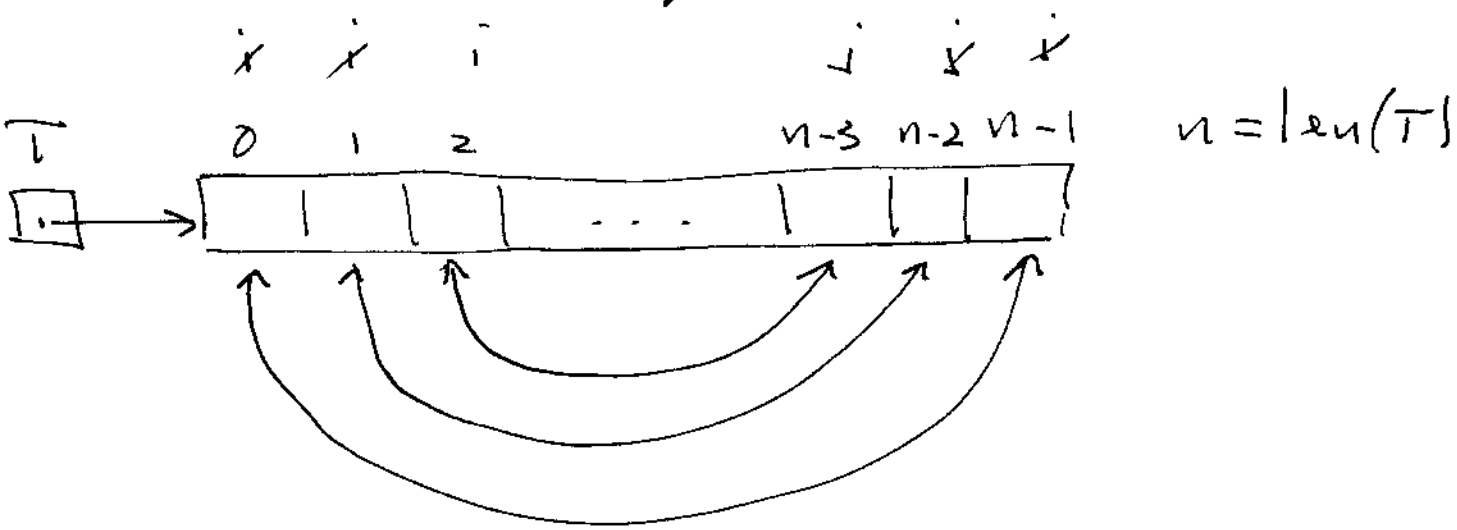
CSE 20 5-26-20

Part 1 ext 1 day

Ex. ReverseList.py



Ex. ReverseSequence.py

1st turn seq. into list

other Built-in list functions

- append()
- insert()
- count()
- reverse()
- pop()
- remove()

square everything in a list

```
for i in range(len(L)):
    L[i] = L[i]**2
```

another way

```
for (i, x) in enumerate(L):
    L[i] = x**2
```

Exercise 1

write a function that concatenates two lists

```
def concat(A, B):
    C = A[:]
    for i in range(len(B)):
        C.append(B[i])
    # end for
    return C
#end concat()
```

Exercise 2

write a fcn. that interleaves two lists,

[1, 2, 3] → [1, a, 2, b, 3, c]
[a, b, c] →

```
def interleave(A, B):
    C = [ ]
    for i in len(A):
        C.append(A[i])
        C.append(B[i])  # will cause error
                        # if len(A)>len(B)
    #end for
    return C
# end interleave( )
```

Exercise

same thing, but return None if not same length

```
def inte-leave(A, B):
    if( len(A)==len(B) ):
        :
        :  as above
        :
    #end if
#end inte-leave()
```

Exercise:

write a fcn that returns a new list, reversal of its input.

```
def listReverse(A):
    R = A[:]
    R.reverse()
    return R
#end listReverse()
```

another way

```
def listReverse(A):
    R = []
    for i in range(len(A)-1, -1, -1):
        R.append(A[i])
    #end for
    return R
#end listReverse()
```

Nested lists (lists of lists)

an array is rectangular table of numbers

$$M = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$ (in math)

in Python

```
M = [ [1, 2, 3], [4, 5, 6], [7, 8, 9] ]
      0  1  2     0  1  2     0  1  2
      0           1           2
```

then

M[1][0] is 4

M[2][1] is 8

Matrix addition:

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix} + \begin{pmatrix} 7 & 8 & 9 \\ 10 & 11 & 12 \end{pmatrix}$$

$$= \begin{pmatrix} 8 & 10 & 12 \\ 14 & 16 & 18 \end{pmatrix}$$

Ex. MatrixAdd.py