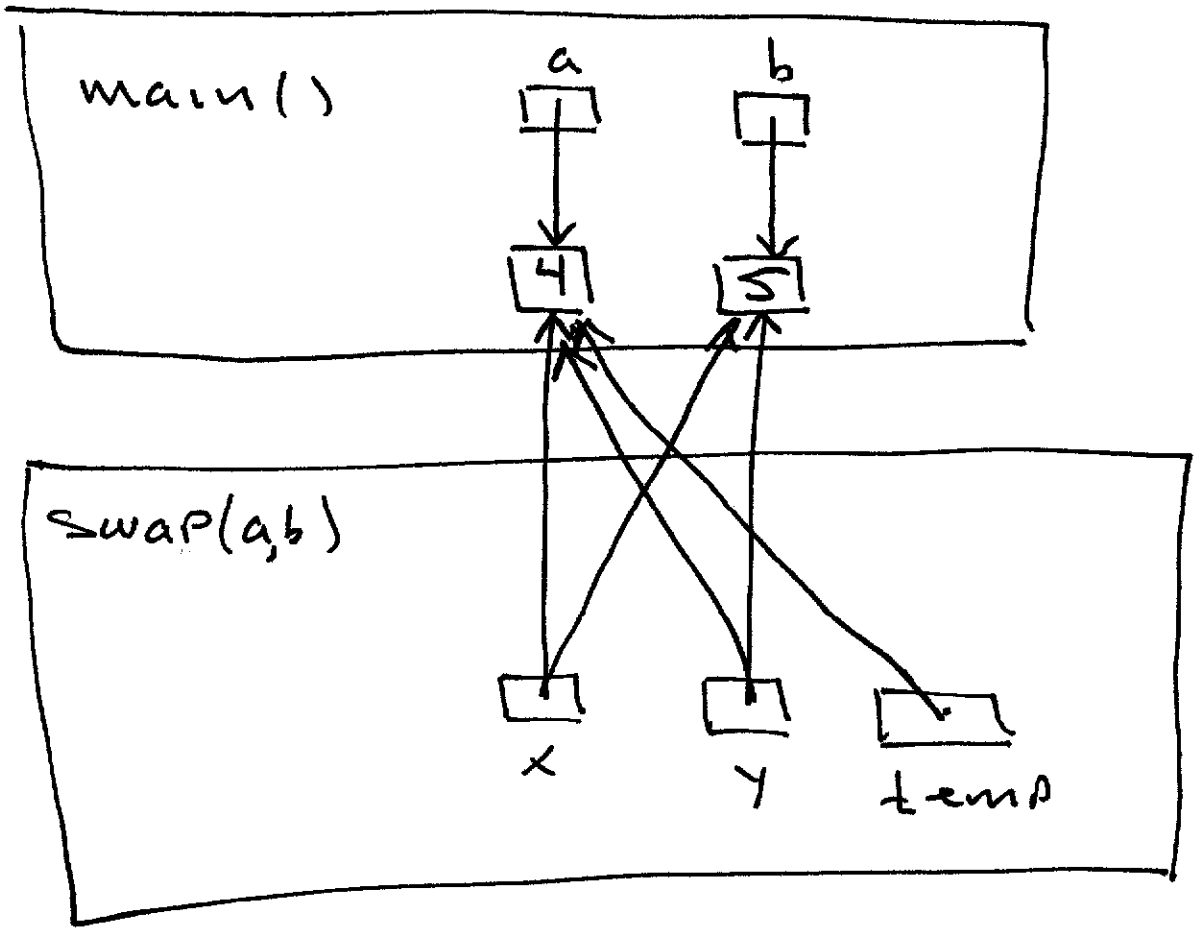
CSE 20 10-14-21

Ex. a swap() fcn. that doesn't work

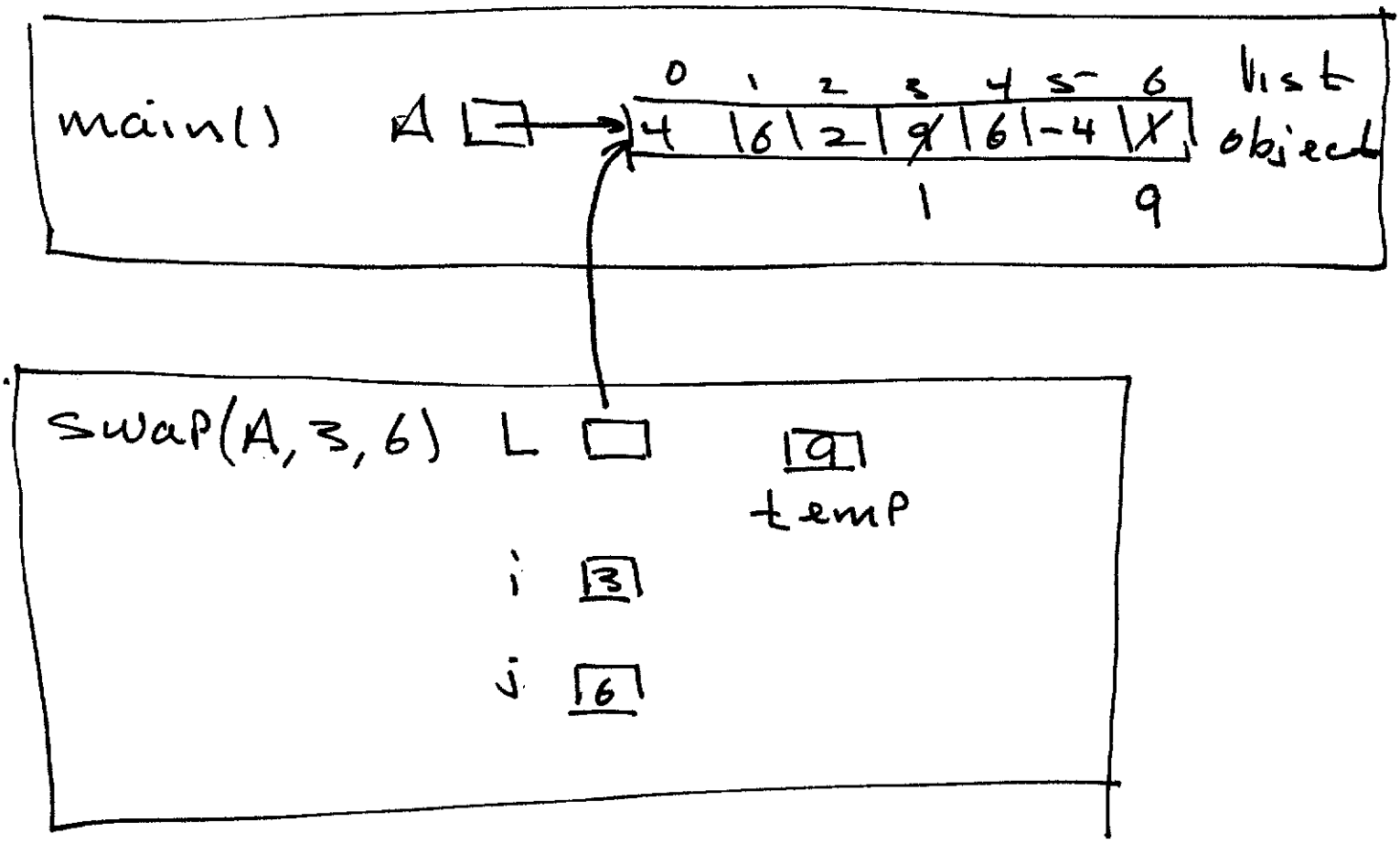
```
def swap(x, y):
    temp = x
    x = y
    y = temp
#end swap()

in main()
    a = 4
    b = 5
    print(a, b)  # 4 5
    swap(a, b)
    print(a, b)  # 4 5
```

Picture of memory:-



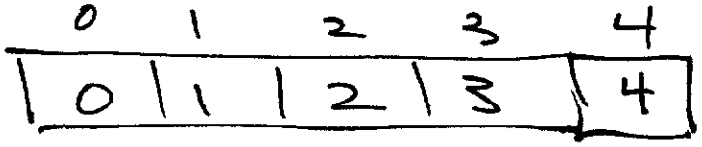
we can do an effective swap by using lists.

Ex. Swap.py



we can turn a range obj. into a list obj

```
list(range(5)) # [0, 1, 2, 3, 4]
```



why have range objects?

Ex.
```
for x in range(10000000):
    pass
```

```
for x in list(range(10000000)):
    pass
```

Variations on range():

range(stop) start=0, step=+1

range(start, stop) step=+1

range(start, stop, step)

Ex.

range(3, 10) # [3, 4, 5, 6, 7, 8, 9]

range(10, 3) # [ ] empty

range(3, 10, 2) # [3, 5, 7, 9]

range(3, 11, 2) # [3, 5, 7, 9]

range(10, 3, -1) # [10, 9, 8, 7, 6, 5, 4]

range(10, 3, -2) # [10, 8, 6, 4]

outer loop iteration

unsorted sec. | sorted sec.

5 4 3 2 1 |

4 5 3 2 1

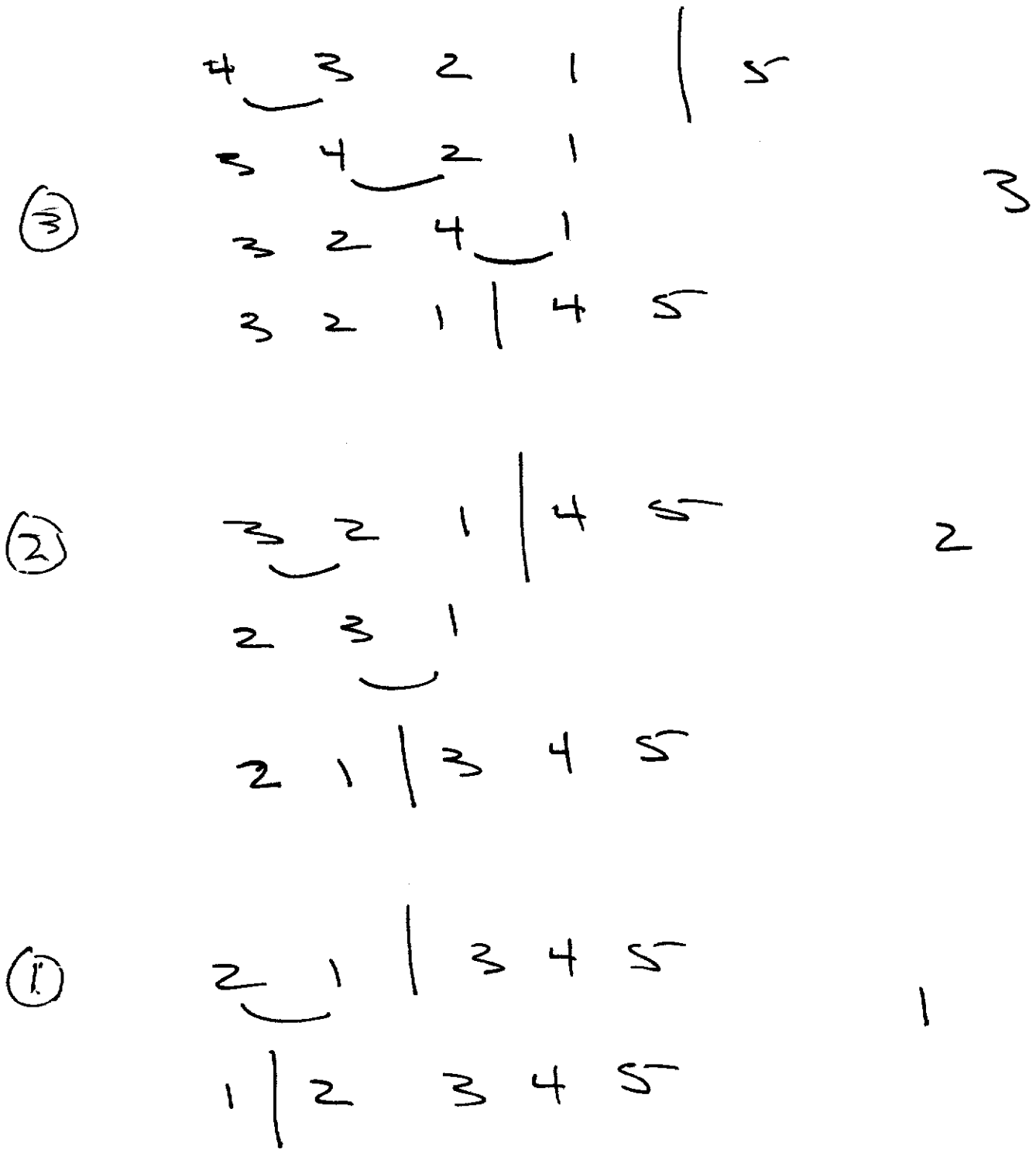
4 3 5 2 1

4 3 2 5 1

4 3 2 1 | 5

④

Comparisons
4



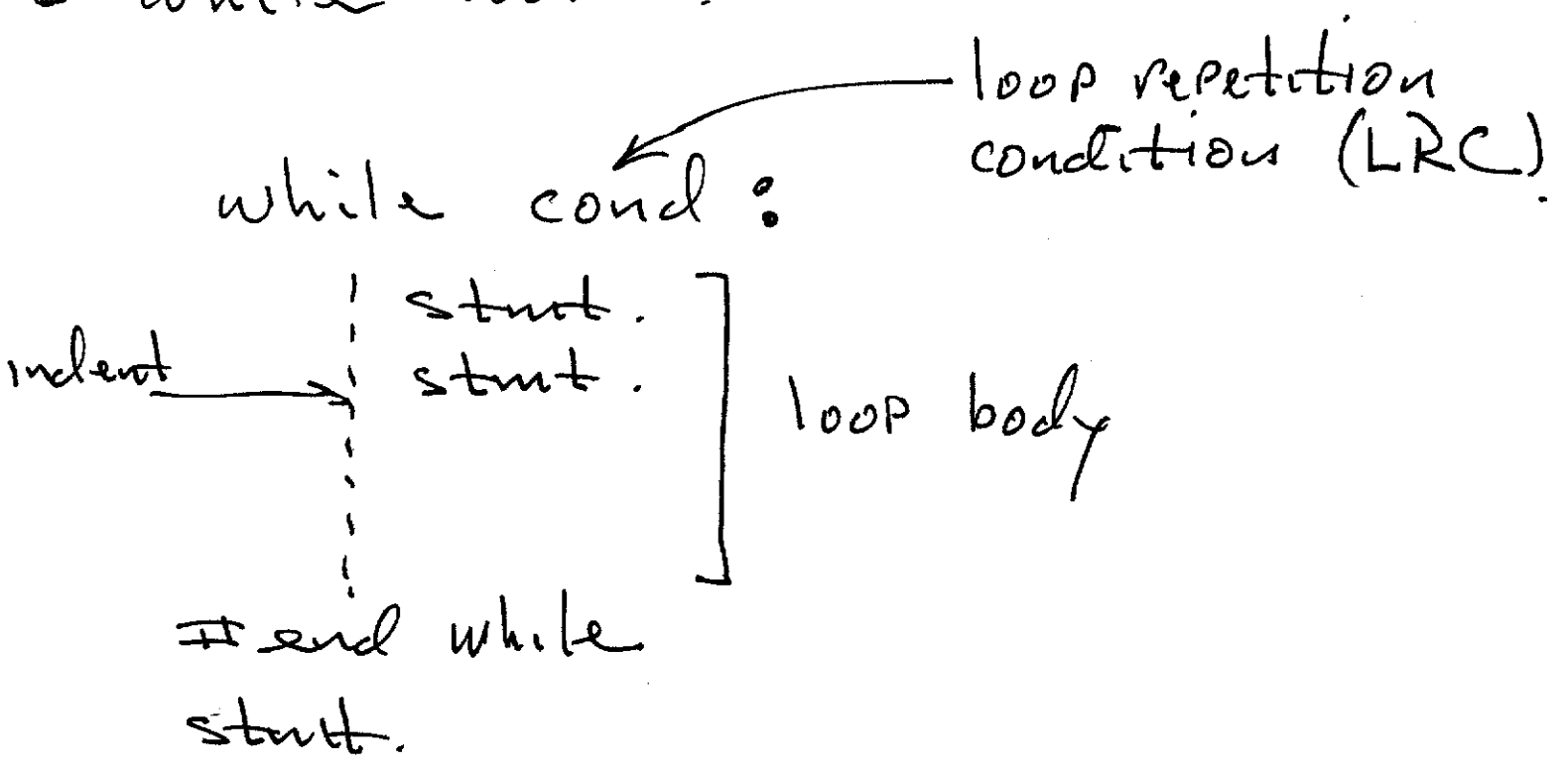
(3) 3

(2) 2

(1) 1

Ex. BubbleSort.py

- while loop :



Two equiv loops :

```
for k in range(1, n):
    do something
#end
```

after → Print(k) # k = n-1

```
k = 1
while k < n :
    do something
    k += 1
#end
```

After → Print(k) # k = n

Ex. Sum.py

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lab 3: ext. 1 day.

Pa3: ext. 1 day.