

CPE/CSC 101

Today

- Nested Loops
- Assignment 4 Tips

- Quiz - map/filter
- Assignment 3
revisions due
tomorrow (2/9)
by 10 pm

fold from typing import Optional

index of maximum

```
def max(L: List[float]) → Optional[int]
```

```
    if L == []:
```

```
        return None
```

```
    else:
```

```
        max_idx = 0
```

```
        for i in range(len(L)):
```

```
            if L[i] > L[max_idx]:
```

```
                max_idx = i
```

```
        return max_idx
```

0 1 2 3
[7, 2, 9, 4]

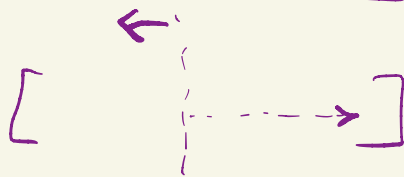
max_idx = 0

[0, 4, 2, 4, 1]

every element? yes

el/idx? idx

accumulator/invariant
→ idx of max value



```
l = list(range(4))
```

```
→ [0, 1, 2, 3]
```

```
def f(nums: List[float]) -> bool:
    for i in range(len(nums)-1):
        if nums[i] < nums[i + 1]:
            pass
        else:
            return False
    return True
```

ascending

$i: 0 \rightarrow \text{len} - 1$
 $i+1: 1 \rightarrow \text{len}$

[
 $\begin{matrix} x & y \\ \uparrow & \uparrow \end{matrix}$
]

$x < y$

$y \leq x$

for i in range(4):

L

i
0
1
2
3

for j in range(3):

L

j
0
1
2

for i in range(4):

for j in range(3):

print(i + j, end=" ")

print()

columns (j)

0	1	2
1	2	3
2	3	4
3	4	5

	cols		
rows	X	X	X
	X	W	X
	X	X	X

0

	0	1	2
--	---	---	---

1

	0	1	2
--	---	---	---

2

	0	1	2
--	---	---	---

3

	0	1	2
--	---	---	---

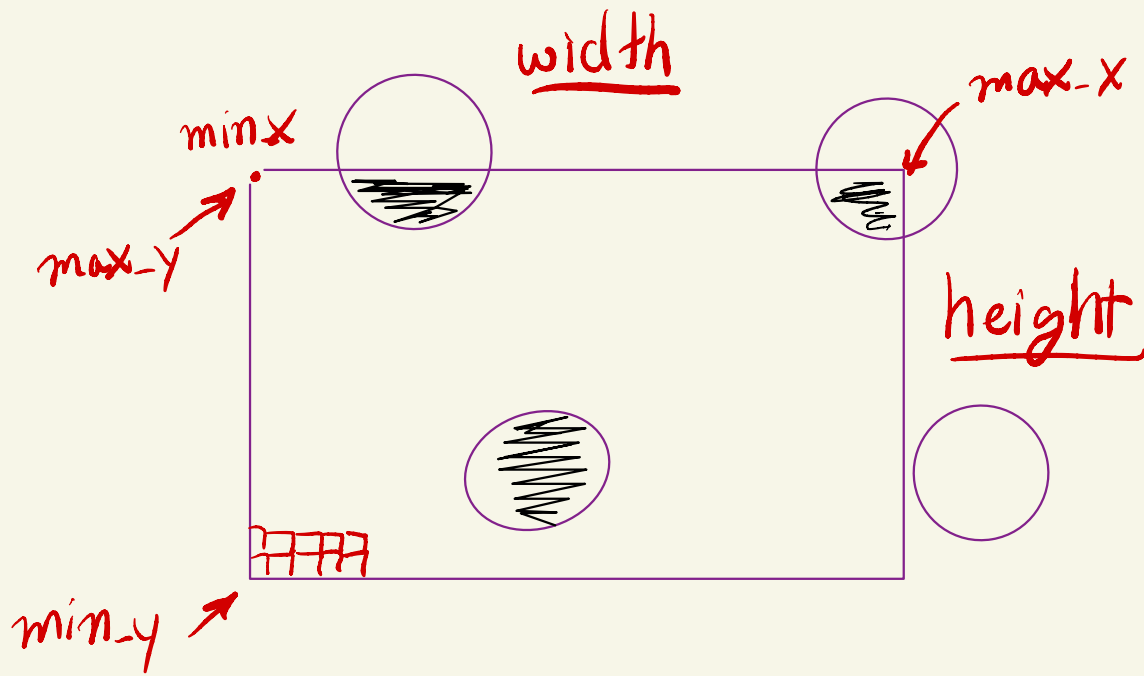
pattern = [

['x', 'x', 'x'],

['x', 'w', 'x'],

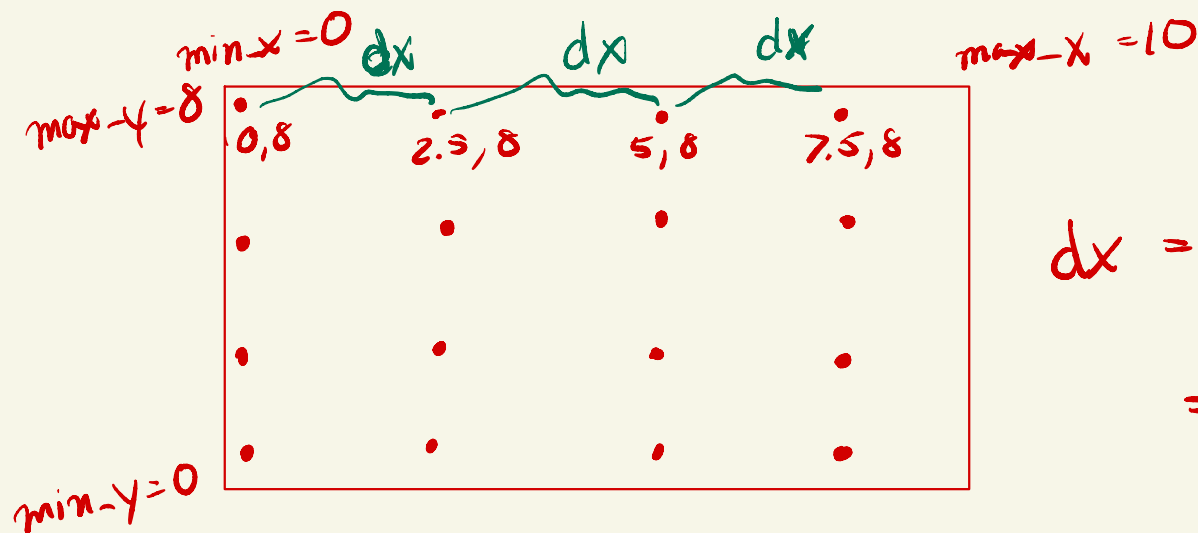
['x', 'x', 'x']

]



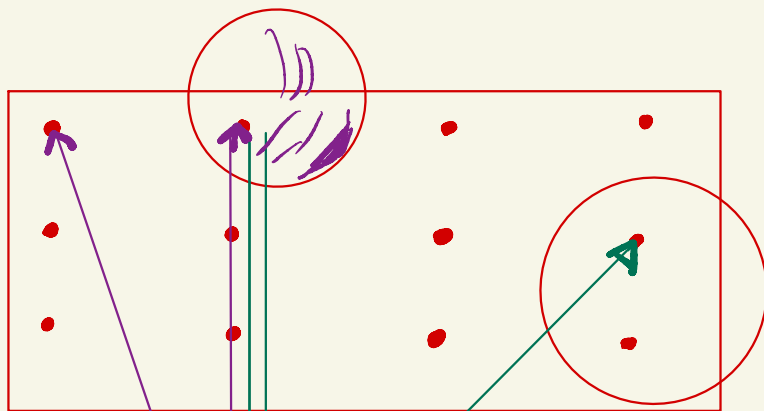
$$\text{width} \times \text{height} = \# \text{ of pixels}$$

width = 4



$$dx = \frac{\max_x - \min_x}{width}$$
$$= 2.5$$

$$\min_x, \max_y = \langle 0, 8 \rangle$$



eye/camera