

PYTHON PROGRAMMING

GATE DA/DSA

Agenda:

- Tuple
- Sets
- Frozen Sets

} Operations in detail

Operations in lists

Tuples of length 1:

tuple length
tuples

$$t = a,$$
$$t = (a,)$$

$$t = a \rightarrow \text{int}$$
$$t = (a) \rightarrow \text{int}$$

Tuple Packing:

→ Tuple packing is the process of combining multiple values in a single tuple.

$$\boxed{a = 1, 2, 3, 4} \Rightarrow$$

$$\boxed{(1, 2, 3, 4)}$$

Tuple Unpacking:

→ Tuple unpacking is process of extracting individual values from a tuple and assigning them to multiple variables.

$$a = (1, 2, 3, 4)$$

$$i, j, k, l = (1, 2, 3, 4)$$

$$i=1, j=2, k=3, l=4$$

$$a, * b = \{1, 2, 3, 4, 5, 6, 7\}$$

$$a=1; b = \{2, 3, 4, 5, 6, 7\}$$

$$(a, * b, c, d) = \{1, 2, 3, 4, 5, 6, 7\}$$

$$a=1, b = \{2, 3, 4, 5\} \quad c=6$$
$$d=7$$

$$*(a, b, c, d) = \{1, 2, 3, 4, 5, 6, 7\}$$

$$a=[1, 2, 3, 4] \quad d=7$$

$$b=5$$

$$c=6$$

$$a, b, * c, d$$

$$a=1 \quad d=7$$

$$b=2 \quad c=\{3, 4, 5, 6\}$$

$$t = (1, 2, 3, 4)$$

values \tilde{t}

$$a, * b, c = (1, 2, 3, 4)$$

$$a=1, b=[2, 3], c=4$$

"Python"

	-5	-4	-3	-2	-1
r	y	t	h	o	u
0	1	2	3	4	5

$t \rightarrow$

$($	1	,	2	,	3	,	$\left[\begin{array}{cccc} 0 & 1 & 2 & 3 \\ 10 & 20 & \cancel{30} & 40 \\ . & . & 50 & . \end{array} \right] \right)$
	0	1	2				

tuple "immutable".

$$t[3] = [100, 200]$$

$$t[3][2] = 50$$

throw error.

$m \rightarrow$

λ	$\left[\begin{array}{cccc} 100 & 200 & 300 & 500 \\ 1 & 2 & 3 & 5 \end{array} \right]$
$m = \lambda$	1235

$$\lambda[0] = 100$$

Can't

$$m = \{100, 200, 300, 500\}$$

$$\lambda = \{100, 200, 300, 500\}$$

$\lambda \rightarrow$

$\left[\begin{array}{cccc} 100 & 200 & 300 & 500 \\ 1 & 2 & 3 & 5 \end{array} \right]$
1235

$$m \rightarrow m = \{1, 2, 3, 5\}$$

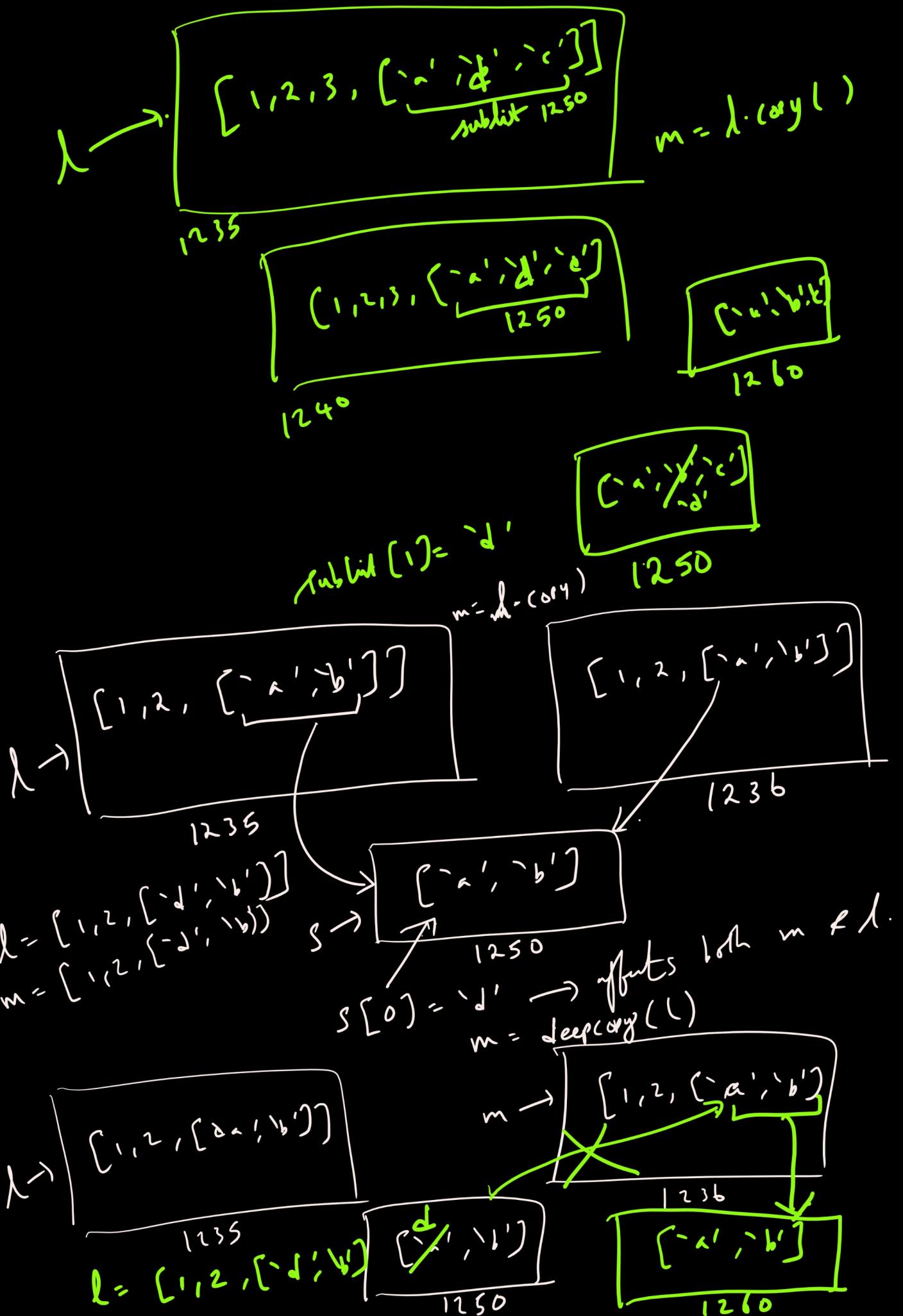
$\lambda \rightarrow$

$\left[\begin{array}{cccc} 100 & 200 & 300 & 500 \\ 1 & 2 & 3 & 5 \end{array} \right]$
1240

$$m = \lambda.\text{copy}()$$

$$\lambda[0] = 100$$

$$\lambda = \{100, 200, 300, 500\}$$



$m = [1, 2, \{ 'a', 'b' \}]$

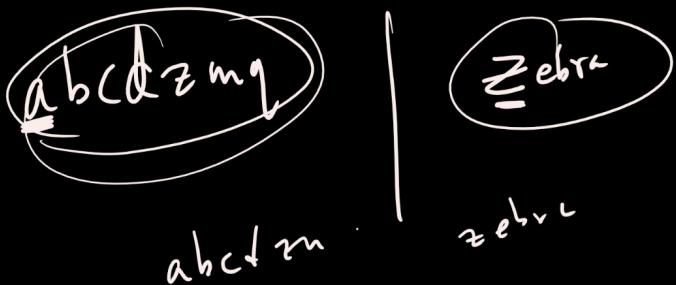
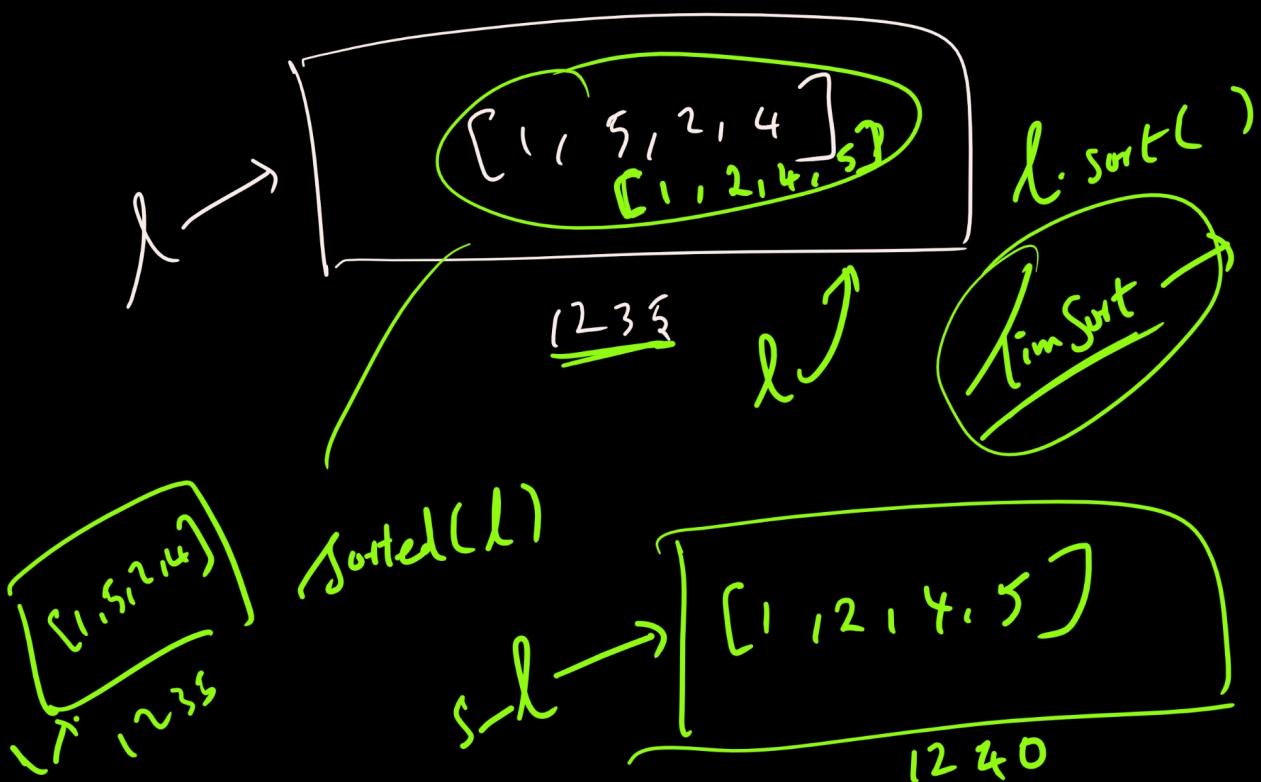
Updating a tuple:

By default, you can't update a tuple because tuple is immutable.

adding/removing elements in tuple.

tuple $\xrightarrow[\text{Convert to}]{\text{Convert}} \text{list} \rightarrow \text{update the list}$

\downarrow Convert to tuple again.



"10" "9"
10, 9

"r"
↓
49
"g"
↓
5x✓

8 9 7 9 9 9 8 7, 9

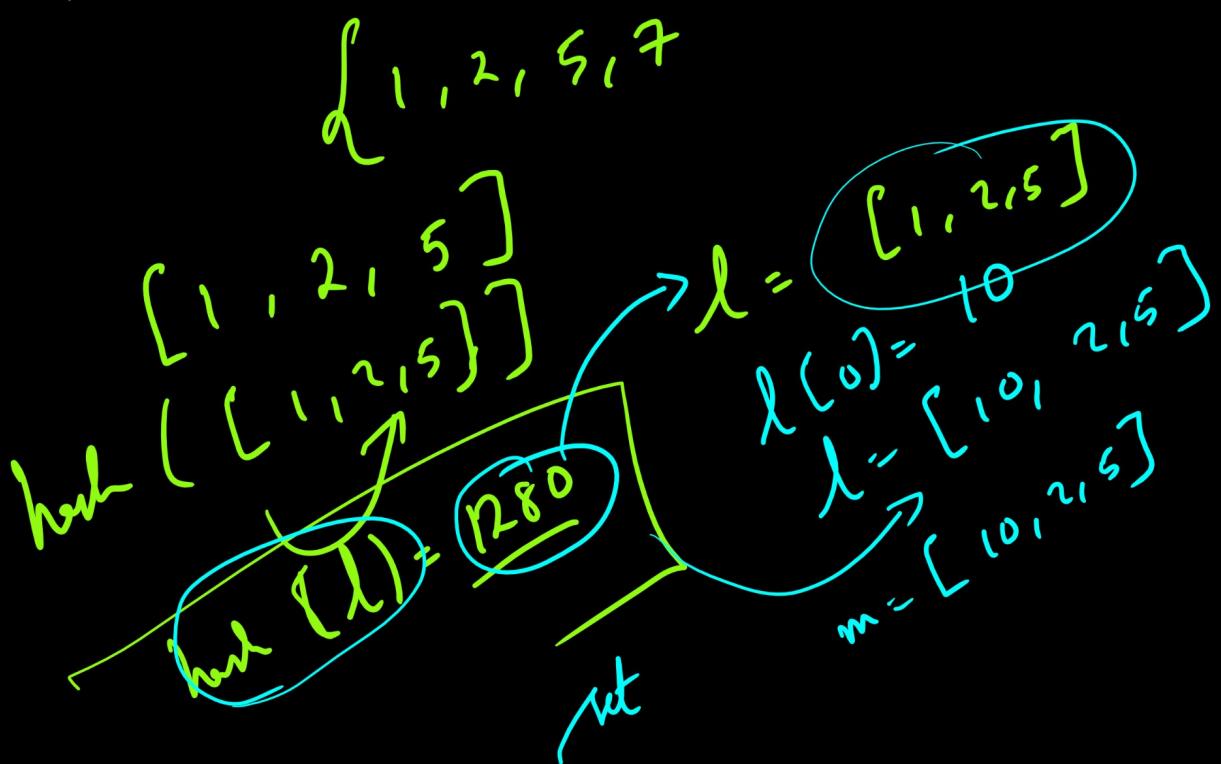
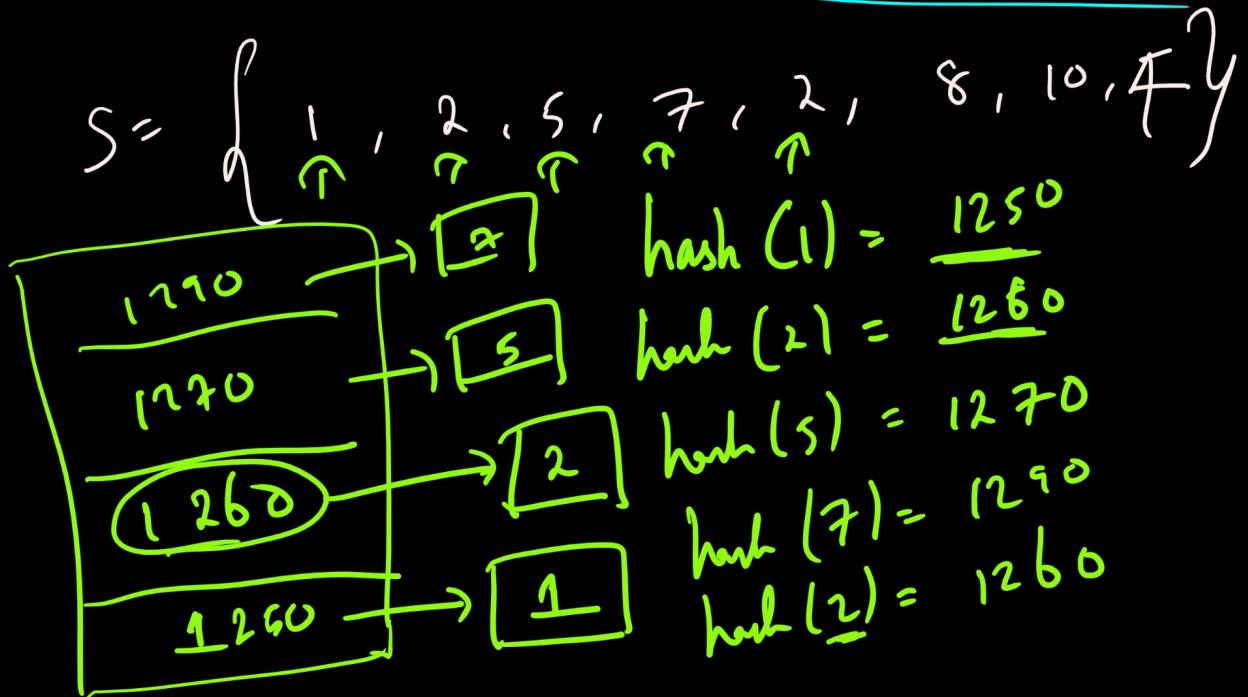
list
tuple
Covered

SET

Set → add / remove items
unordered
unindexed
unchangeable

set { }
List -> can modify
set (python) -> can't modify
Python
C, Java, C++, Python, Java
Cannot Modify.

Set don't allow duplicate values.
 (list, dictionary, set)
 not allowed.
 Set → mutable.



Set won't allow other mutable objects.

Update

$$S = \{1, 2, 3\}$$

$$t = \{4, 5, 6\}$$

$s.\text{update}(t)$

$$S \rightarrow \boxed{\{1, 2, 3, 4, 5, 6\}}$$

print(s)
 $\hookrightarrow \{1, 2, 3, 4, 5, 6\}$

 $t = \{4, 5, 6\}$

Union

$$S = \{1, 2, 3\}$$

$$t = \{4, 5, 6\}$$

$s.\text{union}(t)$

$$S \rightarrow \boxed{\{1, 2, 3\}}$$

$$s.\text{union}(t) \rightarrow \{1, 2, 3, 4, 5, 6\}$$

print(s)

$$\hookrightarrow \{1, 2, 3\}$$

Update:

$s.\text{update}(t)$

did union

set

list

dict

any

iterable

$$S = \{1, 2, 3\}$$

$s.\text{update}("RBR")$

$$S = \{1, 2, 3, R, B\}$$

$s.\text{update}(\{"RBR"\})$

$$\{1, 2, 3, R, B\}$$

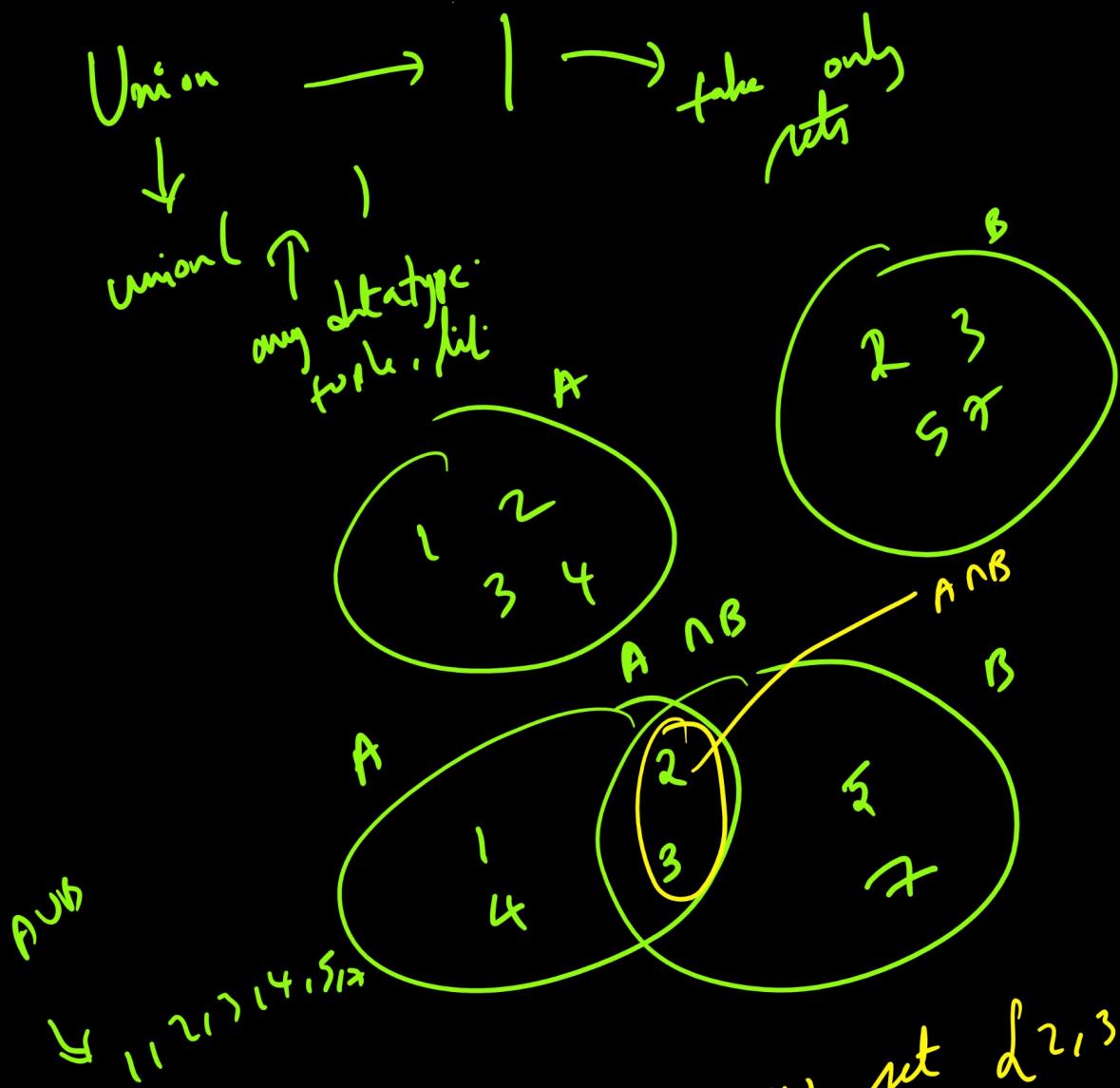
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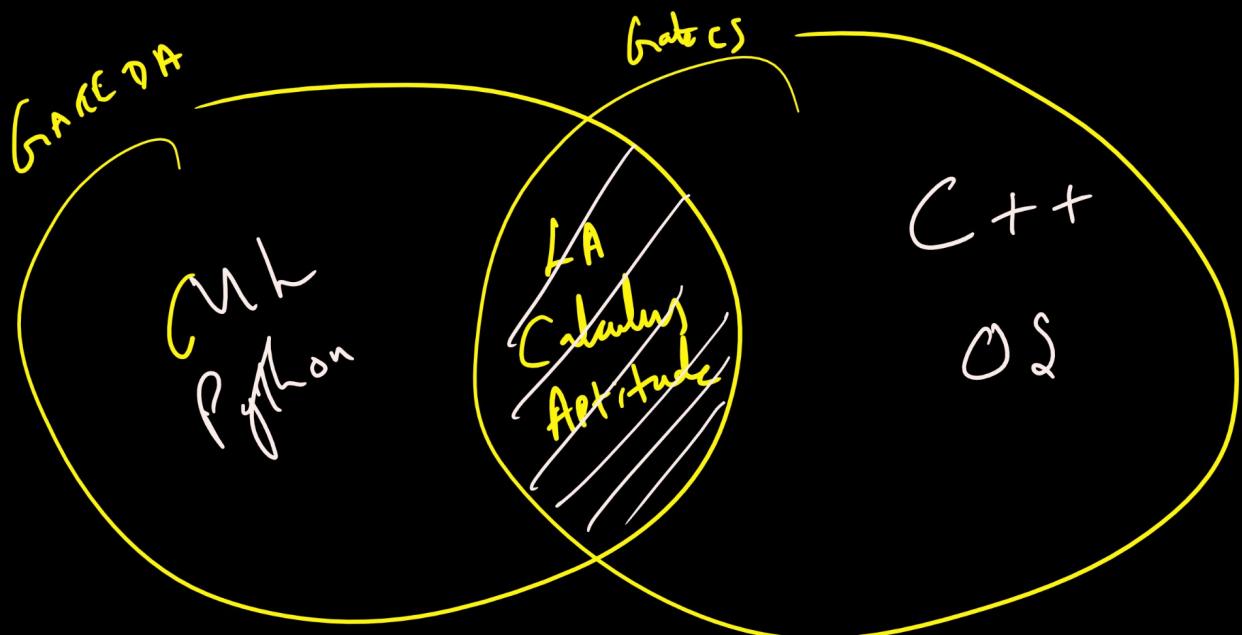
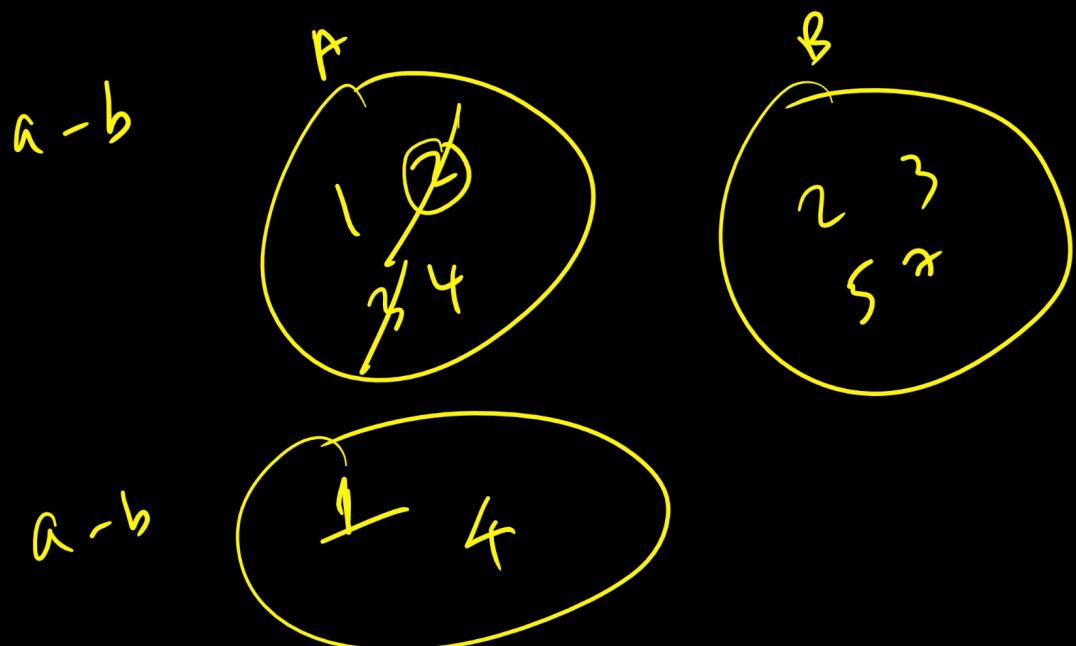
remove
remove(value)
if value in set:
    remove it
else:
    raise error

```

<code>discard</code> <code>discard('value')</code> ↓ if value in set: remove it else: no error
--

`pop()`
 ↓ no arguments
 removes random
 elements from
 the set.





ML, Python, C++, OS

$$(A \cup B) - (A \cap B)$$

`isdisjoint()`: if $A \cap B = \emptyset$

True : if $A \cap B = \emptyset$ and $B \neq \emptyset$.

Set Operations in Over.

