

PYTHON PROGRAMMING  
GATE DA/DSA

Agenda:

- \* Loops - Problem Solving
- \* Break, Continue, Pass

Loops:

for  
while ↙

for: when you know the number of iterations or iterating through list, set, dictionaries, strings etc, its better to use for loop.

$l = [1, 2, 3]$

for  $x$  in  $l$ :  
print  $x$

While <Condition>:

{  
:  
:  
},

below code will get executed.

When no. of iterations is not fixed and you need to run till the condition is satisfied - use While loop.

$$n = \text{len}(l) = 4$$

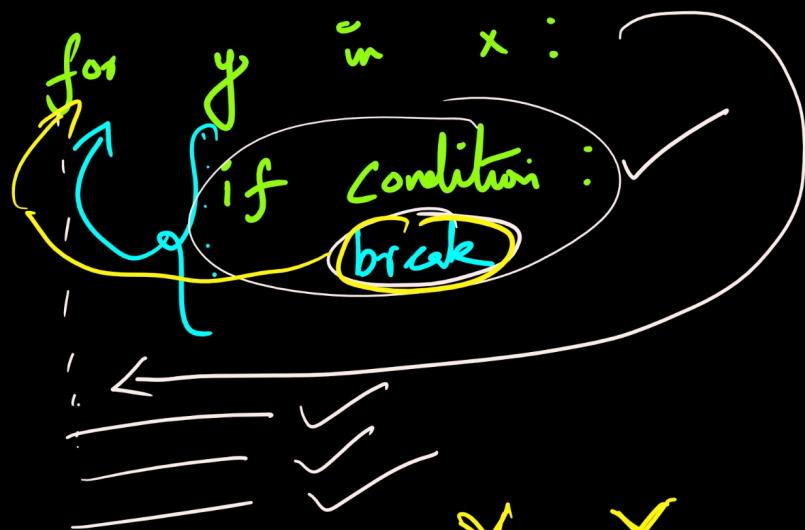
$$i = 0$$

While  $i < n$ :  
print( $l[i]$ ) ↗ go in infinite loop

## Break statement :

\* The break statement is used to stop the iteration and exit the (for / while) loop, when a certain condition is met.

for . x . . in list :



[ 12, 24, 36, 50 ]

total value: 0

$$0 + 12 = 12$$

$$12 < 36$$

it total\_val  $\geq$  36  
break

24

36, 50

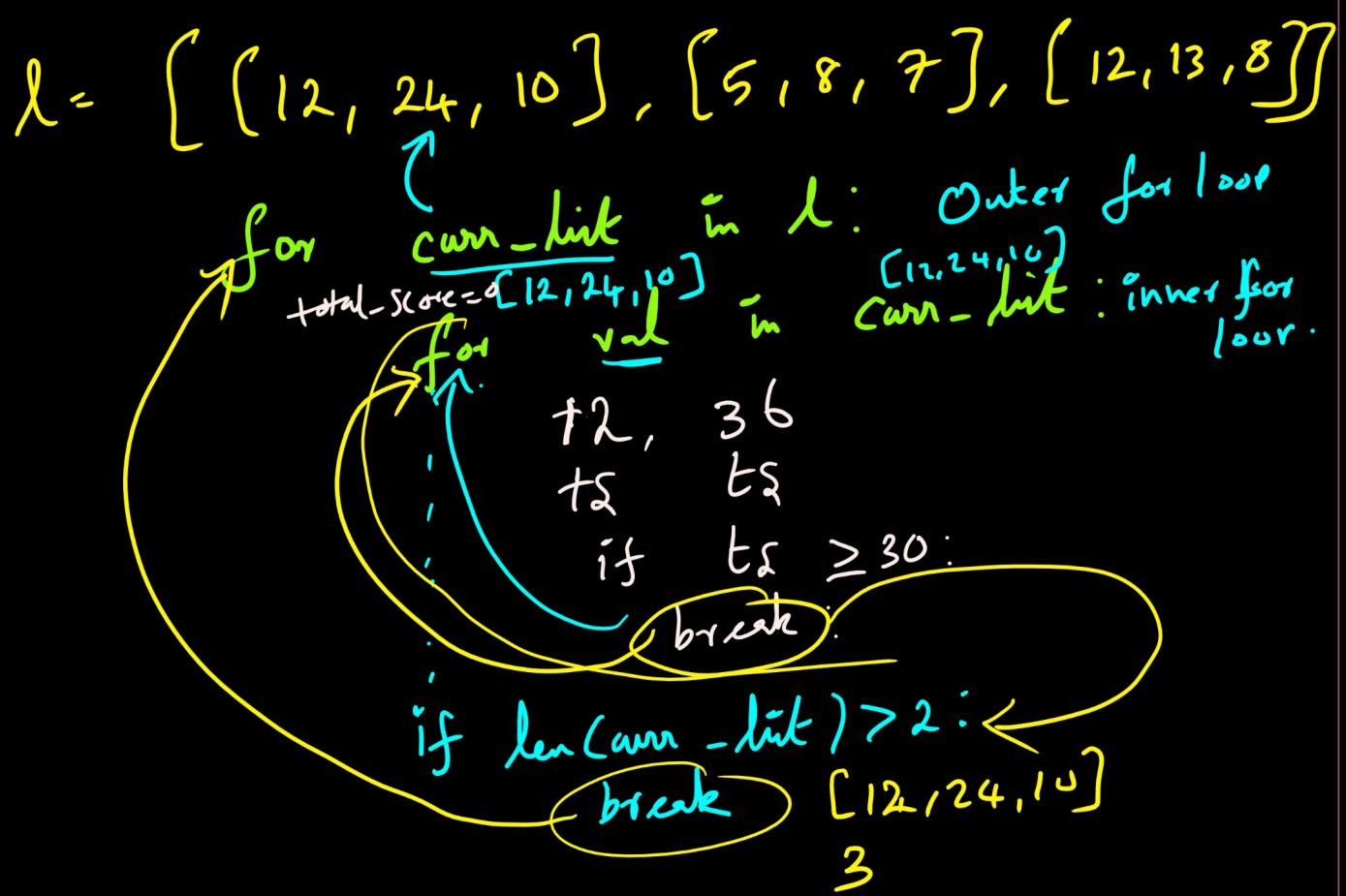
24

$$12 + 24 = 36$$

$$36 \geq 36$$

True

break



Continue Statement :-

\* The continue statement is used to stop the current iteration and jump to the next iteration in the loop. It doesn't terminate the loop.

for  $x$  in  $\lambda$ :  
 if <condition>:  
 Continue

many lines of code. {  
 }  
 if condition is satisfied  
 skip the below lines & jump to next iteration.

Pass statement :- place holder - where you will add piece of code in future.

Continue

Pass

for  $x \in l:$

if  $x \geq 20:$

    Continue

    next iteration

    print(1) *↳ skipped*  
    print(2)

    if  
    Continue  
    Condition is  
    Valid

break:

for  $x \in l:$

if  $x \geq 20:$

    Pass

    print(1)  
    print(2)

    1  
    2

Come out of loop.

Else in Loops:

for  $x \in l:$

if <condition>:

    break

else:

    print("Statement 1")

    print("Outside for")

$i = 1$        $i = 1$   
 while  $i < 10$ :       $i < 10$   
 print( $i$ )  
 $i = i // 2$        $i // 2 = 0$       ...      infinite loop

What will be the output of this program?

count = 0  
 for  $i$  in range(3):  
 for  $j$  in range(3):  
 if  $i+j < 3$ :  
 count += 1  
 print(count)

$i$	$j$	$i+j < 3$	Count
0	0, 1, 2	✓ ✓ ✓	0
1	0, 1, 2	✓ ✓	1
2	0, 1, 2	✓	2

count = 0  
 for  $i$  in range(4):  
 for  $j$  in range(4):  
 if  $i == 2$  and  $j > 1$ :  
 continue  
 count += 1  
 print(count)

$i$	$j$	$i == 2$ and $j > 1$	Count
0	0, 1, 2, 3	X	0
1	0, 1, 2, 3	X	0
2	0, 1, 2, 3	X	0
3	0, 1, 2, 3	✓ ✓ ✓	3

$(16 - 2) / 4 = 14$   
 $16 - 2$  elements  
 $16 - 2$  elements }  
 $16 \rightarrow i == 2$        $i == 2$   
 $i == 2$        $j > 1$   
 $i == 2$        $(i == 2, j == 3)$

$k = 0$

```
for i in range(5)
    for j in range(i, 5):
        k += i+j
```

$i$

$0, 1, 2, 3, 4$

$K$

0
---

print(k)

$i = 0$

$i = 1$

$i = 2$

$\text{range}(i, 5)$   
 $\text{range}(0, 5)$

$\text{range}(i, 5)$   
 $\text{range}(1, 5)$

$\text{range}(i, 5)$   
 $\text{range}(2, 5)$

$j \rightarrow 0, 1, 2, 3, 4$

$1, 2, 3, 4$

$2, 3, 4$

$i + j \rightarrow 0$   
 $0 + 1 \rightarrow 1$   
 $0 + 2 \rightarrow 2$   
 $0 + 3 \rightarrow 3$   
 $0 + 4 \rightarrow 4$

$1 + 1 = 2$   
 $1 + 2 = 3$   
 $1 + 3 = 4$   
 $1 + 4 = 5$

$2 + 2 = 4$   
 $2 + 3 = 5$   
 $2 + 4 = 6$   
 $15$

$K \rightarrow 10$

$K = 24$

$i = 3$

$i = 4$

$K = 39$

$j = \text{range}(i, 5)$   
 $\text{range}(3, 5)$

$3, 4$

$i+j: 3+3=6$   
 $3+4=7$

$j (\text{range}(i, 5))$   
 $\text{range}(4, 5)$

$j \rightarrow 4$

$i+j = 4+4=8$

$52+8$

$K = 60$

find value of K  
= 60

Loops — Order

