

Loops

Loop-the-loop

```
print("Start!")  
for i in range(2):  
    print("YELL")  
print("Over!")
```

Result:

```
Start!  
YELL  
YELL  
Over!
```



More Loops

```
print("Start!")  
for i in range(5):  
    print("YELL")  
print("Over!")
```

Result:

```
Start!  
YELL  
YELL  
YELL  
YELL  
YELL  
Over!
```



Number Counting

```
print("Start counting!")  
for count in range(5):  
    print(count)  
print("Done!")
```

Ending number
(exclusive)

`range(5)`

A sequence of numbers:
0, 1, 2, 3, 4

Start counting from 0

Result:

```
Start counting!  
0  
1  
2  
3  
4  
Done!
```

`range(7)`

A sequence of numbers:
0, 1, 2, 3, 4, 5, 6

Shout Louder!

```
print("Start!")  
for rounds in range(5):  
    print("YELL" + "!" * rounds )  
print("Over!")
```

Result:

```
Start!  
YELL  
YELL!  
YELL!!  
YELL!!!  
YELL!!!!  
Over!
```



Number Counting

```
print("Start counting!")  
for count in range(1,6) :  
    print(count)  
print("Done!")
```

Ending number
(exclusive)

`range(1, 6)`

A sequence of numbers:
1, 2, 3, 4, 5

Result:

```
Start counting!  
1  
2  
3  
4  
5  
Done!
```

Start counting from 1

`range(2, 8)`

A sequence of numbers:
2, 3, 4, 5, 6, 7

200-meter Race

```
print("Get Ready!")  
for count in range(5,0,-1):  
    print(count)  
print("Run!")
```

Difference between
each number

`range(5, 0, -1)`

A sequence of numbers:
5, 4, 3, 2, 1

Start from 5

End at 0 (exclusive)

Result:

```
Get Ready!  
5  
4  
3  
2  
1  
Run!
```



Less Counting

```
print("Get Ready!")  
for count in range(3, 0, -1):  
    print(count)  
print("Run!")
```

Result:

```
Get Ready!  
3  
2  
1  
Run!
```



range()

range(start, stop, step)

start: Starting number of the sequence

stop: Generate numbers up to, but not including this number

step: Difference between each number in the sequence

range(start, stop)

step is 1 by default

range(stop)

start is 0 by default

step is 1 by default

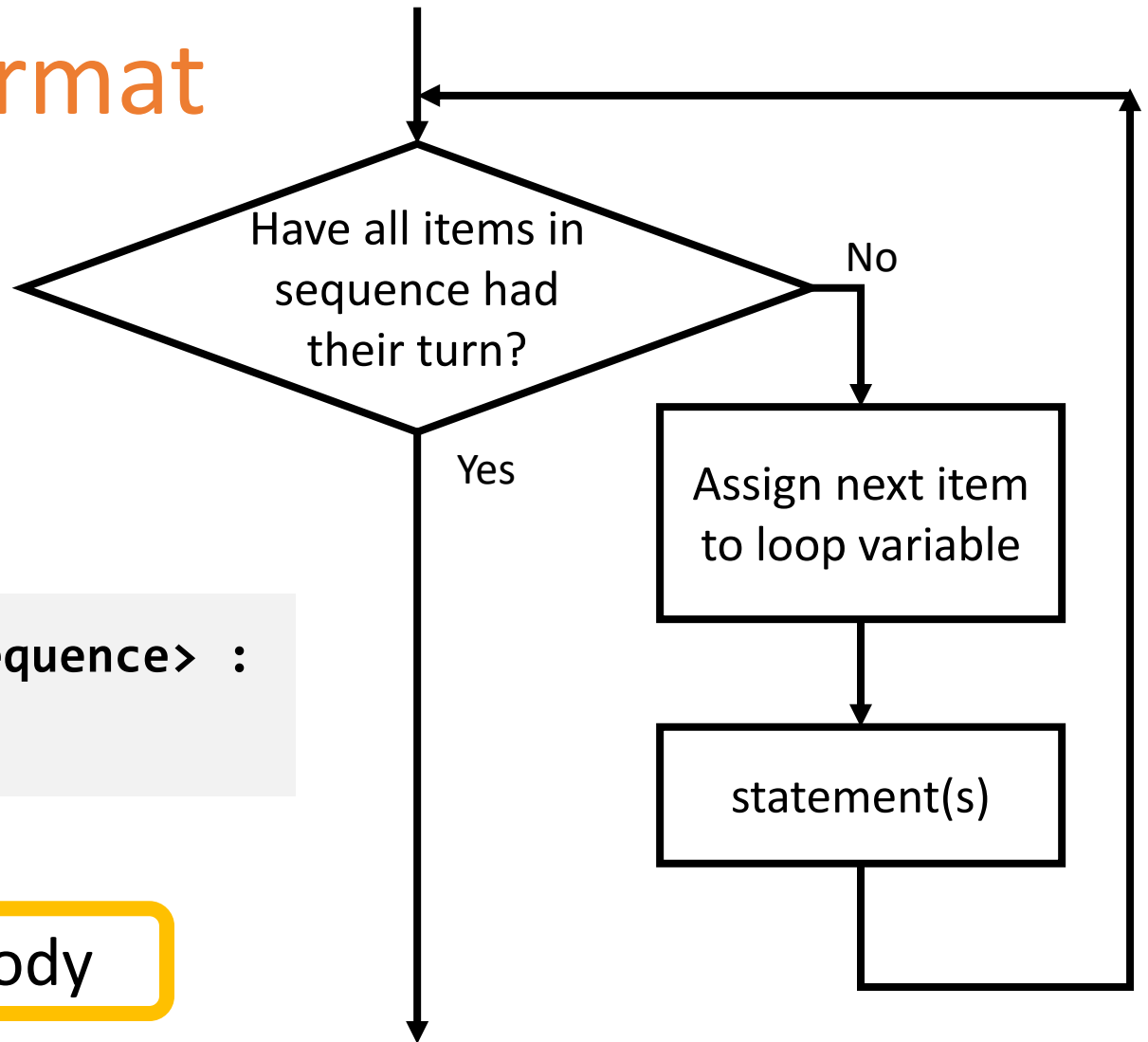
For Loop Format

Loop variable

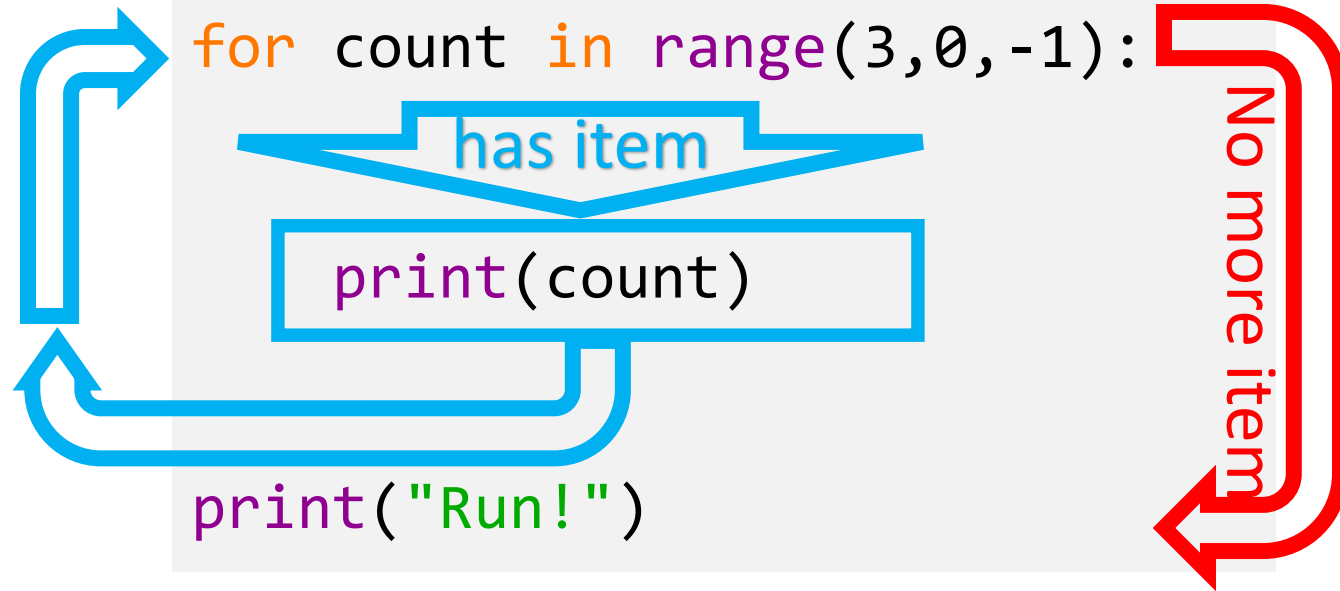
```
for <variable> in <sequence> :
```

```
    statement(s)
```

Indented Body



For Loop Statement Format



`range(3, 0, -1)`

3, 2, 1

count

Result

3

2

1

Run!

Spell a word

```
word = "Hello"  
for letter in word:  
    print(letter)  
print("Done!")
```

Result:

```
H  
e  
l  
l  
o  
Done!
```

Spell a sentence

```
s = "Pokemon Go!"  
for character in s:  
    print(character)  
print("Done!")
```



Result:

```
P  
o  
k  
e  
m  
o  
n  
  
G  
o  
!  
Done!
```

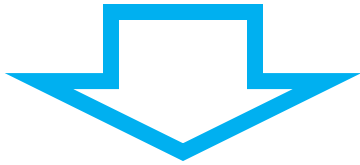
For Loop vs No Loop

Why For Loop?

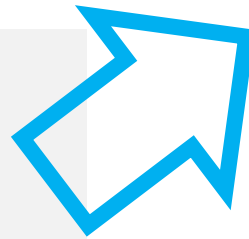
For Loop vs No Loop Example 1

```
for count in range(3,0,-1):  
    print(count)  
print("Run!")
```

3 lines



```
count = 3  
print(count)  
count = 2  
print(count)  
count = 1  
print(count)  
print("Run!")
```



```
print(3)  
print(2)  
print(1)  
print("Run!")
```

4 lines

For Loop vs No Loop Example 2

```
for count in range(10, 0, -1):  
    print(count)  
print("Run!")
```

3 lines



```
count = 10  
print(count)  
count = 9  
print(count)  
...  
count = 1  
print(count)  
print("Run!")
```



```
print(10)  
print(9)  
print(8)  
print(7)  
print(6)  
print(5)  
print(4)  
print(3)  
print(2)  
print(1)  
print("Run!")
```

11 lines

For Loop
=> Code Saving

Summary

Introduction to for loop

Function `range()`

Structure of for loop

How to read/trace a for loop code

For loop vs No Loop

Purpose of loop