

10_In-Class_Python_Loops+PearDeck

ITF-010-10-Python-Loop-1

Training Clarusway

Pear Deck - November 8, 2021 at 7:59PM

Part 1 - Summary

Use this space to summarize your thoughts on the lesson

Part 2 - Responses

Slide 1



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Use this space to take notes:

Slide 2

Table of Contents ➤

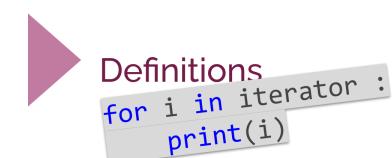
- ▶ Definitions
- ▶ while Loop
- ▶ for Loop
- ▶ Working with the Iterators
- ▶ Operations with for Loop
- ▶ Nested for Loop

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Your Response

Can you explain the importance and logic of the loops?



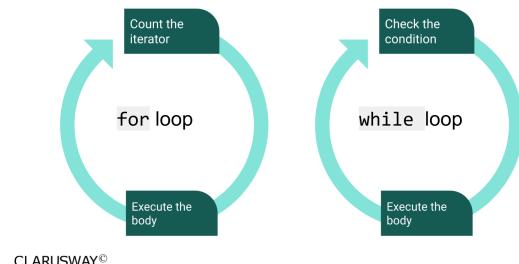
Students, write your response!

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Slide 5

► Definitions - Loops



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► while Loop

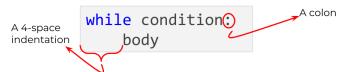
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Slide 7

► while Loop (review the pre-class) ➤

- The simple syntax 🌟 of a **while** loop is :

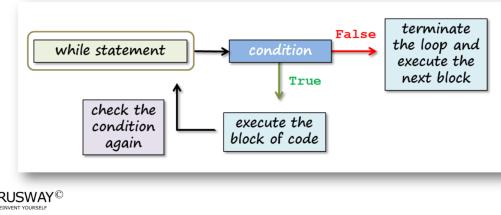


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► while Loop (review the pre-class)

- The basic diagram  of a **while** loop works as follows :



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► while Loop (review the pre-class)

- Let's take a look at the first **while** loop in the pre-class content :

```
1 number = 0
2
3 - while number < 6:
4     print(number)
5     number += 1
6 print('now, number is bigger or equal to 6')
7
```

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► while Loop (review the pre-class) ➤

- The output:

```
1 number = 0
2
3 while number < 6:
4     print(number)
5     number += 1
6 print('now, number is bigger or equal to 6')
7
```

```
1 0
2 1
3 2
4 3
5 4
6 5
7 now, number is bigger or equal to 6
```

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Use this space to take notes:

Slide 11

► while Loop ➤

- Pay attention not to start an infinite loop.



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► while Loop (review the pre-class)

- We can use an iterator object in a `while` loop. Let's call a `list` in this example :

```
1 my_list=["a", "b", "c", "d", "e"]
2
3 a = 0
4
5 while a < len(my_list):
6     print('square of {} is : {}'.format(a, a**2))
7     a+=1
8
```



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Slide 13

► while Loop (review the pre-class)



- The output :

```
1 my_list=["a", "b", "c", "d", "e"]
2
3 a = 0
4
5 while a < len(my_list):
6     print('square of {} is : {}'.format(a, a**2))
7     a+=1
8
```

```
1 square of 0 is : 0
2 square of 1 is : 1
3 square of 2 is : 4
4 square of 3 is : 9
5 square of 4 is : 16
6
```

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Use this space to take notes:

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► while Loop (review the pre-class) ➤

- ▶ **Task:** Take the age of the user using `input()` and `while` loop.
 - ▷ Write a program that ;
 - ▷ Takes the age from user,
 - ▷ Check the age if it is correct numeric format.

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► while Loop (review the pre-class) ➤

- ▶ The code can be like :

```
1 | age = input("Enter your age please : ")
2 |
3 | while not age.isdigit():
4 |     print ("You entered incorrectly!")
5 |     age = input("Enter your age please : ")
6 |
7 | print("Great! You enter valid input : ", age)
8 |
```

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► while Loop (review the pre-class) ➤

► Task:

Let's play famous 'guessing a number game' using `while` loop.

- Write a program that ;
 - Takes the numbers from user,
 - Compares the number the user entered with the number you assigned and then gives a message "Little lower" or "Little higher" till the user knows it.

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► while Loop (review the pre-class) ➤

- The code can be like : In this case, we are trying to find number 28.

```
1 answer = 28
2
3 question = 'What a two-digit number am I thinking of? '
4 print ('Let's play the guessing game!')
5
6 while True:
7     guess = int(input(question))
8
9     if guess < answer:
10         print('Little higher')
11     elif guess > answer:
12         print('Little lower')
13     else: # guess == answer
14         print('Are you a MINOREADER!!!!')
15         break
16
```

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► while Loop

- ▶ Lastly, let's play famous 'guessing game' using **while** loop.

We have written a program that does not exit the **while** loop until you find the correct number.

```
1 answer = 28
2
3 question = 'What a two-digit number am I thinking of? '
4 print ('Let's play the guessing game!')
5
6 while True:
7     guess = int(input(question))
8
9     if guess < answer:
10         print('Little higher')
11     elif guess > answer:
12         print('Little lower')
13     else: # guess == answer
14         print('Are you a MINDREADER!!!!')
15         break
16
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```

When the user knows the answer (28) and enters input, it takes the value of 28 and assigns to variable **guess**, in the end, **else** works and breaks the loop.

We used **break** keyword in order to quit and exit the **while** loop.

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Use this space to take notes:

Slide 19

► while Loop

▶ Task:

Find and print the length of the **longest** word.

- ▶ Write a program that ;
 - ▶ Takes a **string sentence** consisting of a couple of words from the user,
 - ▶ Compares and find out the **longest** word and **prints** the whole sentence and the **length** of the longest word as **int** type.
- ▶ Use **while** loop.

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Slide 20

► while Loop



- The code can be like :

```
1 sentence = input("Give me a sentence :")
2 words = sentence.split()
3 i = 0
4 longest = 0
5 while i < len(words) :
6     if len(words[i]) > longest:
7         longest = len(words[i])
8     i += 1
9 print("the length of the longest word :", longest)
10
11
```

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Slide 21



for Loop

the world and
even life itself are
nothing but loops.

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Use this space to take notes:

Slide 22

▶ for Loop (review the pre-class)



- The simple syntax ⚡ of a `for` loop is :

```
for variable in iterable:  
    body
```

A 4-space indentation
A colon

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Use this space to take notes:

Slide 23

▶ for Loop (review the pre-class)



- To create a `for` loop, you need a variable and an iterable object.
- Let's examine the subject through an example :

```
1 - for i in [1, 2, 3, 4, 5] :  
2     print(i)  
3
```

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Use this space to take notes:

Slide 24

▶ for Loop (review the pre-class) ➤

- ▶ To create a `for` loop, you need a variable and an iterable object.
- ▶ Let's examine the subject through an example :

```
1 ~ for i in [1, 2, 3, 4, 5] :  
2     print(i)  
3
```

```
1  1  
2  2  
3  3  
4  4  
5  5  
6
```

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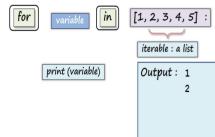
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▶ for Loop (review the pre-class) ➤

- ▶ You can follow the animated diagram of this `for` loop for a better understanding.



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Link(s) on this slide:

- https://docs.google.com/file/d/1zzhZ_QCyrApTleGQRXDZYAgcNtVLUJP2/preview

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Slide 26

▶ for Loop (review the pre-class)



- ▶ Another example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']
2
3 for season in seasons :
4     print(season)
5
```

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Use this space to take notes:

Slide 27

▶ for Loop (review the pre-class)



- ▶ In the structure of the `for` loop, you can use also a variable as an iterable.
- ▶ Let's see it in an example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']
2
3 for season in seasons :
4     print(season)
5
```

```
1 spring
2 summer
3 autumn
4 winter
5
```

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Use this space to take notes:

Slide 28

▶ for Loop



- ▶ In the structure of the `for` loop, you can use also a variable as an iterable.
- ▶ Let's see it in an example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']  
2  
3 - for season in seasons :  
4     print(season)  
5
```

```
1 spring  
2 summer  
3 autumn  
4 winter  
5
```

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Use this space to take notes:

Slide 29

▶ for Loop



- ▶ In the structure of the `for` loop, you can use also a variable as an iterable.
- ▶ Let's see it in an example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']  
2  
3 - for season in seasons :  
4     print(season)  
5
```

```
1 spring  
2 summer  
3 autumn  
4 winter  
5
```

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Use this space to take notes:

Slide 30

▶ for Loop



- ▶ In the structure of the `for` loop, you can use also a variable as an iterable.
- ▶ Let's see it in an example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']  
2  
3 - for season in seasons :  
4     print(season)  
5
```

```
1 spring  
2 summer  
3 autumn  
4 winter  
5
```

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Use this space to take notes:

Slide 31

▶ for Loop



- ▶ In the structure of the `for` loop, you can use also a variable as an iterable.
- ▶ Let's see it in an example :

```
1 seasons = ['spring', 'summer', 'autumn', 'winter']  
2  
3 - for season in seasons :  
4     print(season)  
5
```

```
1 spring  
2 summer  
3 autumn  
4 winter  
5
```

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Use this space to take notes:

Slide 32

▶ for Loop



► Task : Python Program to say "hello name"

- Write a program to say "hello names" from the following list.
- Print the result such as : "hello Samuel"
"hello Victor"

```
names = ["Ahmed", "Aisha", "Adam", "Joseph", "Gabriel"]
```

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Use this space to take notes:

Slide 33

▶ for Loop



► The code might be like :

```
1 names = ["Ahmed", "Aisha", "Adam", "Joseph", "Gabriel"]
2
3 for i in names:
4     print("hello", i)
5
```

Output

```
hello Ahmed
hello Aisha
hello Adam
hello Joseph
hello Gabriel
```

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Use this space to take notes:

Slide 34

▶ for Loop



► Task : Python Program to create numbers using range()

- Write a program to create a **list** consisting of numbers from **1** to **5**.
- Print the result such as : [1, 2, 3, 4, 5]

Use this space to take notes:

Slide 35

▶ for Loop



► The code might be like :

```
1 | numbers = []
2 |
3 v for i in range(1, 6):
4 |     numbers.append(i)
5 |
6 |
```

Output

```
[1, 2, 3, 4, 5]
```

Use this space to take notes:

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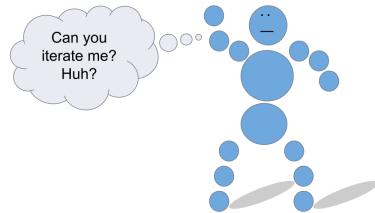
Working with the Iterators

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Use this space to take notes:

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▶ Working with the Iterators



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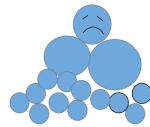
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► Working with the Iterators (review) ➔

- ▶ The most common iterable types :

- str
- list
- tuple
- dict
- set

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Use this space to take notes:

Slide 39

► Working with the Iterators (review) ➔

- ▶ Consider this example of a str type.

```
1 course = 'clarusway'  
2  
3 for i in course :  
4     print(i)  
5
```

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Use this space to take notes:

Slide 40

► Working with the Iterators (review) ➔

- ▶ Consider this example of a `str` type.

```
1 course = 'clarusway'  
2  
3 for i in course:  
4     print(i)  
5
```

```
1 t  
2 l  
3 a  
4 r  
5 u  
6 s  
7 w  
8 a  
9 y  
10
```

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► Working with the Iterators ➔

- ▶ **Task : Python Program to separate the string into its characters.**
 - ▶ Write a program to separate the string taken from the user into its characters using `for` loop.
 - ▶ Print the result such as :

```
input : "Clarusway"  
desired output : c-l-a-r-u-s-w-a-y
```

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► Working with the Iterators

- The code might be like :

```
1 word = input("Give me a word :")
2 count = 0
3 for i in word:
4     count += 1
5     if count < len(word) :
6         i = i + "_"
7     print(i, end="")
8
9
```

input : Clarusway

Output

c-l-a-r-u-s-w-a-y

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Your Response

► Working with the Iterators

- Take a look at the other iterable type : dict.

```
1 user = {
2     "name": "Daniel",
3     "surname": "Smith",
4     "age": 35
5 }
6
7 for attribute in user:
8     print(attribute)
9
```

What is the output? Try to figure out in your mind...

Answer 1:
name surname age

Students, write your response!

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► Working with the Iterators



► The output :

```
1 user = {  
2     "name": "Daniel",  
3     "surname": "Smith",  
4     "age": 35  
5 }  
6  
7 for attribute in user:  
8     print(attribute)
```



Output

```
name  
surname  
age
```

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Use this space to take notes:

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Your Response

► Working with the Iterators



► Take a look at the other iterable type : dict.

```
1 user = {  
2     "name": "Daniel",  
3     "surname": "Smith",  
4     "age": 35  
5 }  
6  
7 for i in user.values():  
8     print (i, end=" ")  
9  
10 |
```

What is the output? Try to figure out in your mind...



Students, write your response!

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Use this space to take notes:

Slide 46

► Working with the Iterators



► The output :

```
1 * user = {  
2 |     "name": "Daniel",  
3 |     "surname": "Smith",  
4 |     "age": 35  
5 | }  
6 |  
7 * for i in user.values():  
8 |     print (i, end=" ")  
9 |  
10 |
```

Output

```
Daniel Smith 35
```

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Use this space to take notes:

Slide 47

Your Response

► Working with the Iterators



► Take a look at the other iterable type : dict.

```
1 * user = {  
2 |     "name": "Daniel",  
3 |     "surname": "Smith",  
4 |     "age": 35  
5 | }  
6 |  
7 * for key, value in user.items():  
8 |     print (key, ":", value)  
9 |
```

What is the output? Try to figure out in your mind...



Students, write your response!

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Use this space to take notes:

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► Working with the Iterators (review) ➔

► The output :

```
1 | user = {  
2 |     "name": "Daniel",  
3 |     "surname": "Smith",  
4 |     "age": 35  
5 | }  
6 | for key, value in user.items():  
7 |     print (key,":",value)  
8 |  
9 |
```

Output

```
name : Daniel  
surname : Smith  
age : 35
```

Cl

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Use this space to take notes: