For Loops

30 November 2024

14:26

Instead of repeating the same code, like the below example:

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We can use a for loop:

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Result:

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For Loop Over a Function

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14:40

A for loop can also be used to execute a function multiple times. For example, below we are executing celsius\_to\_kelvin three times since there are three items in the iterating list:

* 1. def celsius\_to\_kelvin(cels):
  2. return cels + 273.15
  4. for temperature in [9.1, 8.8, -270.15]:
  5. print(celsius\_to\_kelvin(temperature))

The output of that would be:

282.25

281.95

3.0

So, in the first iteration celsius\_to\_kelvin(9.1) was executed, in the second celsius\_to\_kelvin(8.8) and in the third celsius\_to\_kelvin(-270.15).

Looping Through a Dictionary

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14:50

We have to specify what we are looking for in a dictionary in a for loop, for example, keys, values or items:

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**Dictionary Loop and String Formatting**

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14:53

Here is an example that combines a dictionary loop with string formatting. The loop iterates over the dictionary and it generates and prints out a string in each iteration:

* 1. phone\_numbers = {"John": "+37682929928", "Marry": "+423998200919"}
  3. for pair in phone\_numbers.items():
  4. print(f"{pair[0]} has as phone number {pair[1]}")

And here is a better way to achieve the same results by iterating over keys and values:

* 1. phone\_numbers = {"John": "+37682929928", "Marry": "+423998200919"}
  3. for key, value in phone\_numbers.items():
  4. print(f"{key} has as phone number {value}")

In both cases, the output is:

John has as phone number +37682929928

Marry has as phone number +423998200919

While Loops: How and Why

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15:04

A for loop runs until a container is exhausted, but a while loop runs as long as the condition is true

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While Loops with User Input

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15:08

We can pair while loops with user input, for example retying input of a username:

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Result: program only stops when correct username is inputted:

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While Loops with Break and Continue

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15:15

If we want to use break and continue, we can do the same as before.

If the user inputs the correct username "pypy" then the loop will stop, otherwise continue will rerun the code from line 1:

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