Python Loops – I

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Definition

A for loop is used for iterating over a sequence (that is either a list, a tuple, a dictionary, a set, or a string).

Example

Print each fruit in a fruit list:

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
  print(x)
```

Looping Through a String

Even strings are iterable objects, they contain a sequence of characters:

Example

Loop through the letters in the word "banana":

```
for x in "banana":
  print(x)
```

The break Statement

With the break statement we can stop the loop before it has looped through all the items:

Example

Exit the loop when x is "banana":

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
  print(x)
  if x == "banana":
    break
```

The continue Statement

With the continue statement we can stop the current iteration of the loop, and continue with the next:

Example

Do not print banana:

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
  if x == "banana":
    continue
  print(x)
```

Else in For Loop

The else keyword in a for loop specifies a block of code to be executed when the loop is finished:

Example

Print all numbers from 0 to 5, and print a message when the loop has ended:

```
for x in range(6):
  print(x)
else:
  print("Finally finished!")
```

Nested Loops

A nested loop is a loop inside a loop.

The "inner loop" will be executed one time for each iteration of the "outer loop":

Example

Print each adjective for every fruit:

```
adj = ["red", "big", "tasty"]
fruits = ["apple", "banana", "cherry"]


for x in adj:
  for y in fruits:
    print(x, y)
```

The pass Statement

for loops cannot be empty, but if you for some reason have a for loop with no content, put in the pass statement to avoid getting an error.

Example

```
for x in [0, 1, 2]:
  pass
```

Coding Questions

1. Accept a string as input and Print all the letters of a string
2. Find the length of the string without using len()
3. Print all the elements of a list
4. Find the sum of all elements of a list using for loop
5. Find maximum of all elements of a list using for loop
6. Count the number of vowels and consonants in a word
7. Print all the keys and values of a dictionary
8. Accept a string as input and print all the letters of a string such that each letter should be printed n number of times where n is the position of the letter in the string
   For example, if input = Apple
   Output:
   A
   pp

ppp
llll
eeeee