



MANIPAL
ACADEMY of HIGHER EDUCATION
(Institution of Eminence Deemed to be University)

MDS5103/ MSBA5104 Segment 04

ITERABLES AND ITERATORS - TUTORIAL

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Introduction

Any object that can be looped over is called an 'iterable' and it creates an 'iterator'. For example, using a 'for loop', we can iterate over a list, range, dictionary, file connection, or a string. An iterable object can return an iterator. It is an object with an associated 'iter' method. Once 'iter' is applied to an iterable, an iterator object gets created. An iterator object has an associated `next()` method to retrieve one element at a time.

1. Iterables and 'For Loop'

A 'for loop' can be used to iterate over a list, range, or string. In the code below, location is a list of strings, and we can loop over all its values using 'for loop' and 'in' keyword. Therefore, these are iterables.

```
location = ["Delhi", "Mumbai", "Chennai"]  
for places in location:  
    print(places)
```

Output

```
Delhi  
Mumbai
```

Similarly, we can use 'for' and 'in' keywords with a string as shown below.

```
for letter in "Jigsaw":  
    print(letter)
```

Output

```
J  
i  
g  
s  
a  
w
```

Here, every character in the string is printed separately.

'For' and 'in' keywords can be used with a 'range()' as shown below. This will return every element within the range.

```
for i in range (4):  
    print(i)
```

Output

```
0  
1  
2  
3
```

Besides the examples shown above, dictionaries and file connections can also be looped over in a similar manner.

2. Iterators

An iterator object can be created and since it can be looped over, it is also an iterable. In the code below, the string is converted into an iterator object using the 'iter()' function. The 'next()' function can be applied to it, to obtain one element at a time as demonstrated below.

```
course = 'Python'  
it=iter(course)  
next(it)
```

Output

```
'P'
```

```
next(it)
```

Output

```
'y'
```

The '*' operator can be used in combination with an iterator to unpack all the elements in it.

```
course = 'Python'  
it=iter(course)  
print(*it)
```

Output

P y t h o n

3. Conditional Execution

The keyword 'if' and 'else' can be used for conditional execution of statements as shown below.

```
# We can control the flow of execution of code by using conditionals such as if-else  
if 2>3: # Notice that a statement is followed by a:  
print ('Is it possible?')  
else:  
print ('Yay!!')
```

Output

Yay!!

4. Case Study

As a case study, in the given text:

- Count the number of capital letters
- How many times the word "RSS" occurs?
- How many times the word "Modi" occurs?

assign_txt="Narendra Damodardas Modi, born 17 September 1950) is the 15th and \ current Prime Minister of India, in office since 26 May 2014. Modi, a leader \ of the Bharatiya Janata Party was the Chief Minister of Gujarat from 2001 to \ 2014 and is the Member of Parliament from Varanasi. He led the BJP in the \ 2014 general election, which gave the party a majority in the Lok Sabha, the \ first for any political party in India since 1984.As the Chief Minister of \ Gujarat, Modi's economic policies were praised, while his administration was \ also criticised for failing to significantly improve the human development \ in the state, and for failing to prevent the 2002 Gujarat riots. A Hindu \ nationalist and member of the Rashtriya Swayamsevak Sangh, Modi, remains a \ controversial figure domestically and internationally. Modi was born on 17 \ September 1950, to a family of grocers in Vadnagar, Mehsana district, Bombay \ State (present-day Gujarat).Modi's family belonged to the Modh-Ghanchi-Teli \ (oil-presser) community, which is categorised as an Other Backward Class by \ the Indian government.Modi was the third of six children born to Damodardas \ Mulchand (1915–1989) and Heeraben Modi (b. c. 1920). As a child, Modi helped \ his father sell tea at the Vadnagar railway station, and later ran a tea \ stall with his brother near a bus terminus. Modi completed his higher \ secondary education in Vadnagar in 1967, where a teacher described him as an \ average student and a keen debater, with an interest in theatre.Modi had an \ early gift for rhetoric in debates, and this was noted by his teachers and \ students. Modi preferred playing larger-than-life characters in theatrical \ productions, which has influenced his political image.At age eight, Modi \ discovered the Rashtriya Swayamsevak Sangh (RSS), and began attending its \ local shakhas (training sessions). There, Modi met Lakshmanrao Inamdar, \ popularly known as Vakil Saheb, who inducted him as an RSS balswayamsevak \ (junior cadet) and became his political mentor. While Modi was training with \ the RSS, he also met Vasant Gajendragadkar and Nathalal Jaghda, Bharatiya \ Jana Sangh leaders who were founding members of the BJP's Gujarat unit in \ 1980. Engaged while still a child to a local girl, Jashodaben Narendrabhai \ Modi, Modi rejected the arranged marriage at the same time he graduated from \ high school. In interviews, Modi has described visiting Hindu ashrams founded by \ Swami Vivekananda: the Belur Math near Kolkata, followed by the Advaita \ Ashrama in Almora and the Ramakrishna mission in Rajkot. Modi remained only \ a short time at each, since he lacked the required college education."

The '.count()' method can be applied to the text object to find the occurrence of a particular word as shown below.

```
print(assign_txt.count('RSS'))
```

Output

3

```
print(assign_txt.count('Modi'))
```

Output

19

The output shows that there are 19 occurrences of the word 'Modi' in the given text.

```
type(assign_txt)
```

Output

str

To find the capital letters in the text, iterate through the same and check if there are any upper case using the 'isupper()' method, if so, increment the counter by 1.

```
c=0  
  
for l in assign_txt:  
    if l.isupper():  
        c = c+1  
  
print(c)
```

Output

There are 120 capital letters in the given text.



E-references:

- Dive into Python by Mark Pilgrim

Link: <https://diveintopython3.net/>

- Automate the Boring Stuff with Python by Al Sweigart

Link: <https://automatetheboringstuff.com/#toc>