SWINBURNE UNIVERSITY OF TECHNOLOGY
SARAWAK CAMPUS

Lecture 6

Repetition: Python for Loop

KNOWING

for Loop

- In Python for loop is used to iterate over the items of any sequence including the Python list, string, tuple, etc.
- For for loop is also used to access elements from container (for example list, string, tuple) using built-in function range().

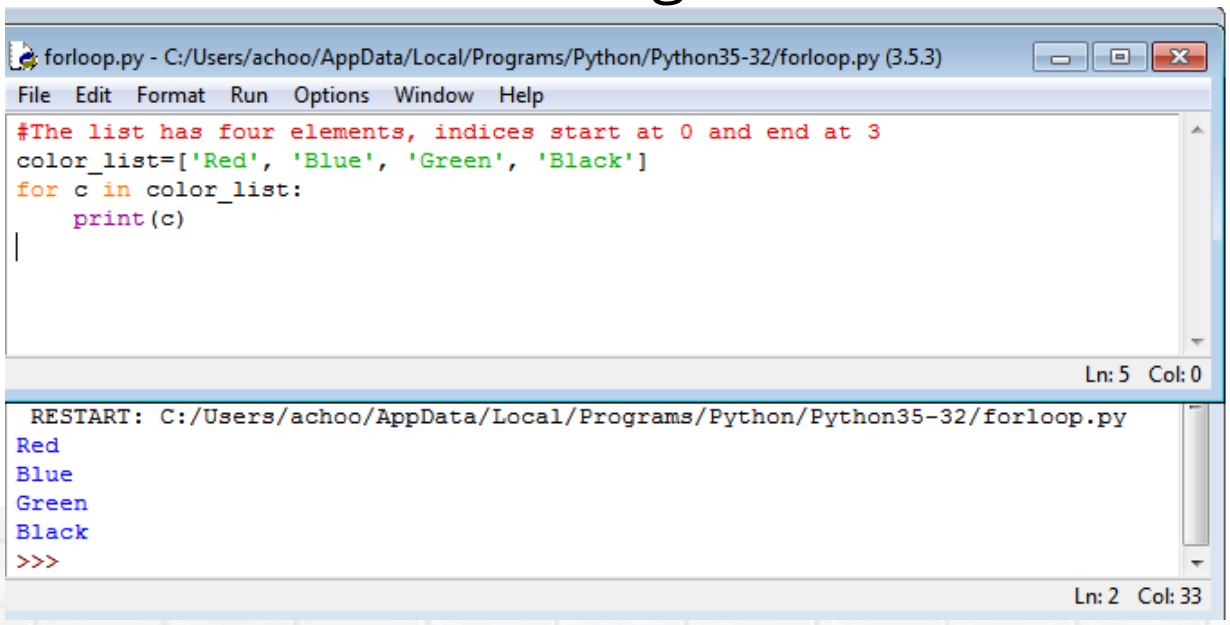
for Loop

- Syntax : for variable_name in sequence:
  statement_1
  statement_2
  ……
- Parameter:

Name	Description
variable_name	It indicates target variable which will set a new value for each iteration of the loop.
sequence	A sequence of values that will be assigned to the target variable variable_name. Values are provided using a list or a string or from the built-in function range().
statement_1, statement_2, ……	Block of program statements.

for Loop

- When the for loop executed the first item (i.e. Red) is assigned to the variable c.
- The print statement will execute and the process will continue until reaching the end of the list.



Python for Loop and range() function

- The range() function returns a list of consecutive integers.
- The function has one, two or three parameters where last two parameters are optional.
- It is widely used in for loops.
- Syntax:

```
range(a)
range(a,b)
range(a,b,c)
```

KNOW ING

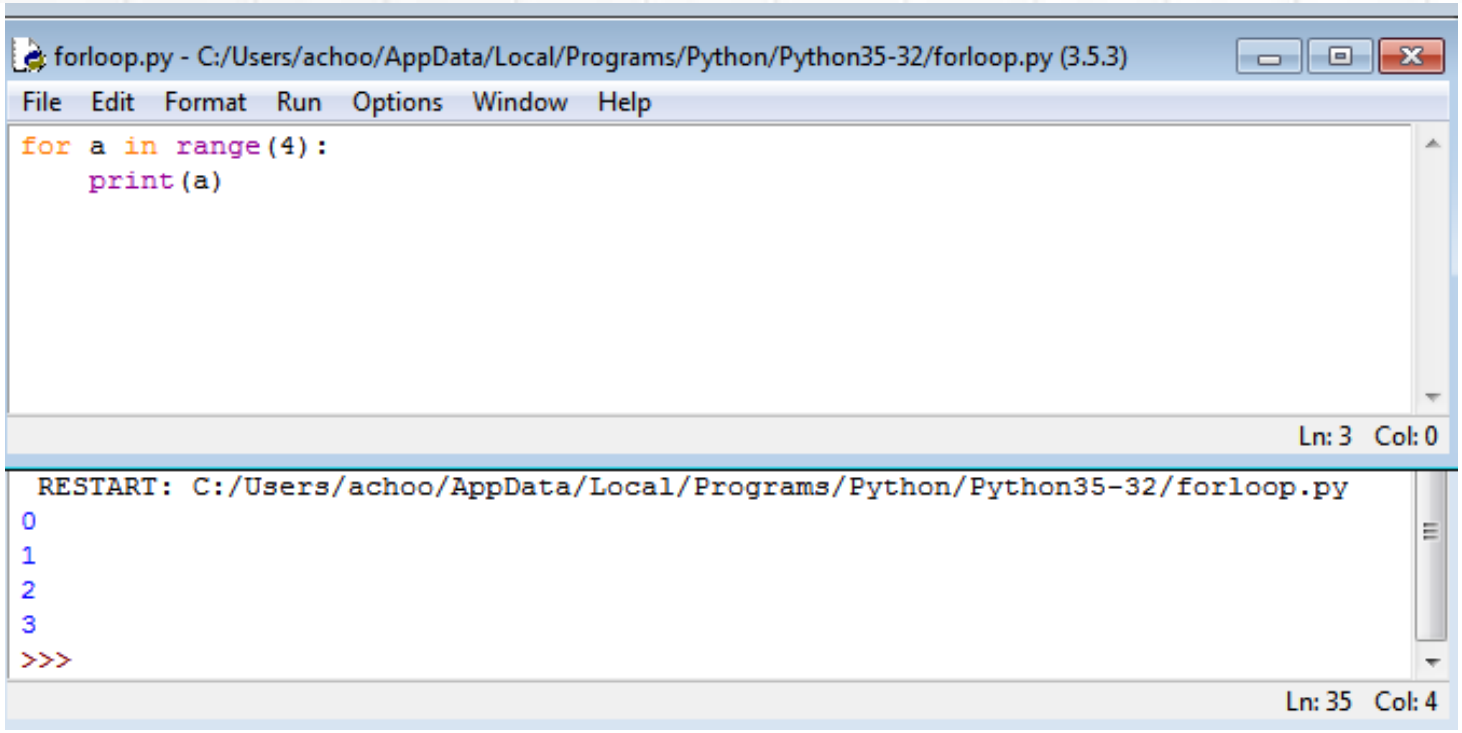
Python for Loop and range() function

- range(a): Generates a sequence of numbers from 0 to a, excluding a, incrementing by 1.
- Syntax:

for<variable> in range(<number>):

KNOW ING

Python for Loop and range() function



KNOW ING

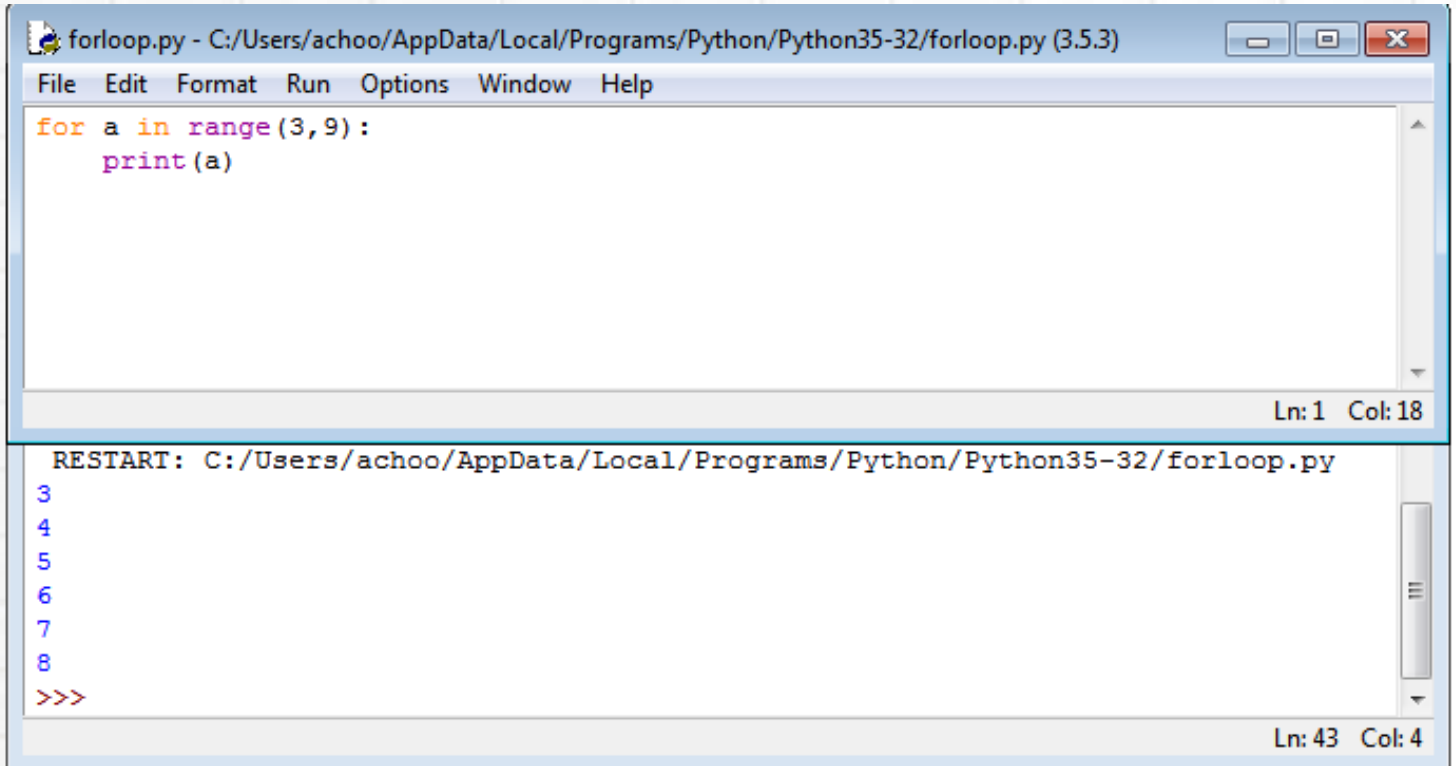
Python for Loop and range() function

- range(a,b): Generates a sequence of number from a to b excluding b, incrementing by 1.
- Syntax:

for<variable> in range(<“start_number”, “end_number”>):

KNOW ING

Python for Loop and range() function



KNOW ING

Python for Loop and range() function

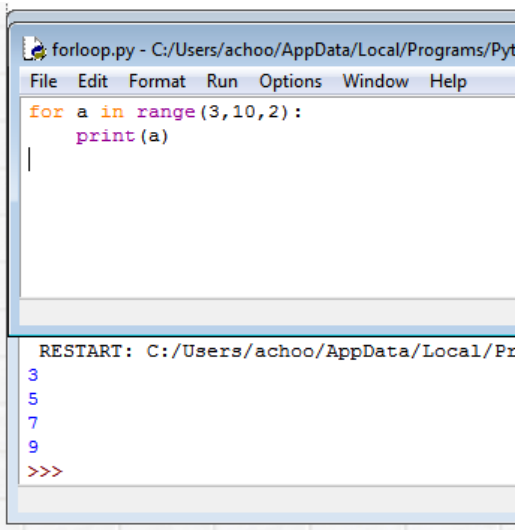
- range(a,b, c): Generates a sequence of number from a to b excluding b, incrementing by c.
- Syntax:

for<variable> in range(<“start_number”, “end_number”, “increase_number”>):

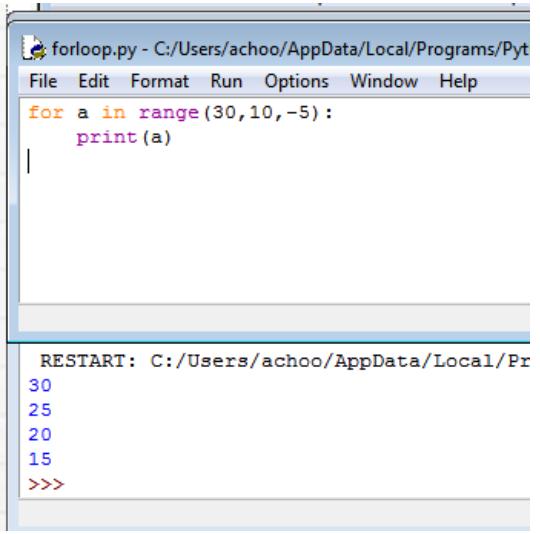
KNOW ING

Python for Loop and range() function

- Increase loop



- Decrease loop



KNOW ING

Demonstrates the range() function

forloop.py - C:/Users/achoo/AppData/Local/Programs/Python/Python35-32/forloop.py (3.5.3)

File Edit Format Run Options Window Help

```
#Demonstrates the range() function

print("Counting:")
for i in range(10):
    print(i, end=" ")

print("\n\nCounting by fives:")
for i in range(0,50,5):
    print(i, end=" ")

print("\n\nCounting backwards:")
for i in range(10,0,-1):
    print(i, end=" ")

input("\n\nPress the enter key to exit.\n")
```

Ln: 18 Col: 0

```
Counting:
0 1 2 3 4 5 6 7 8 9

Counting by fives:
0 5 10 15 20 25 30 35 40 45

Counting backwards:
10 9 8 7 6 5 4 3 2 1

Press the enter key to exit.
```

Ln: 95 Col: 0

KNOWING

Random Access with len() function

forloop.py - C:/Users/achoo/AppData/Local/Programs/Python/Python35-32/forloop.py (3.5.3)

File Edit Format Run Options Window Help

```
#Random Access
#Demonstrates string indexing

import random

word = "index"
print("The world is: ", word, "\n")

high=len(word)
low=-len(word)

for i in range(10):
    position=random.randrange(low,high)
    print("Word[", position, "]\t", word[position])

input("\n\nPress the enter key to exit.")
```

Ln: 6 Col: 0

```
The world is:  index

Word[ -3 ]      d
Word[ 3 ]       e
Word[ 4 ]       x
Word[ -2 ]      e
Word[ 0 ]       i
Word[ 4 ]       x
Word[ 3 ]       e
Word[ 4 ]       x
Word[ 1 ]       n
Word[ 4 ]       x


Press the enter key to exit.
```

KNOW ING

New strings with a for Loop

forloop.py - C:/Users/achoo/AppData/Local/Programs/Python/Python35-32/forloop.py (3.5.3)

File Edit Format Run Options Window Help

```
#No Vowels
#Demonstrates creating new strings with a for loop

message = input("Enter a message: ")
new_message = ""
VOWELS = "aeiou"

print()
for letter in message:
    if letter.lower() not in VOWELS:
        new_message += letter
        print("A new string has been created: ", new_message)

print("\n\nYour message without vowels is: ", new_message)

input("\n\nPress the enter key to exit.")
```

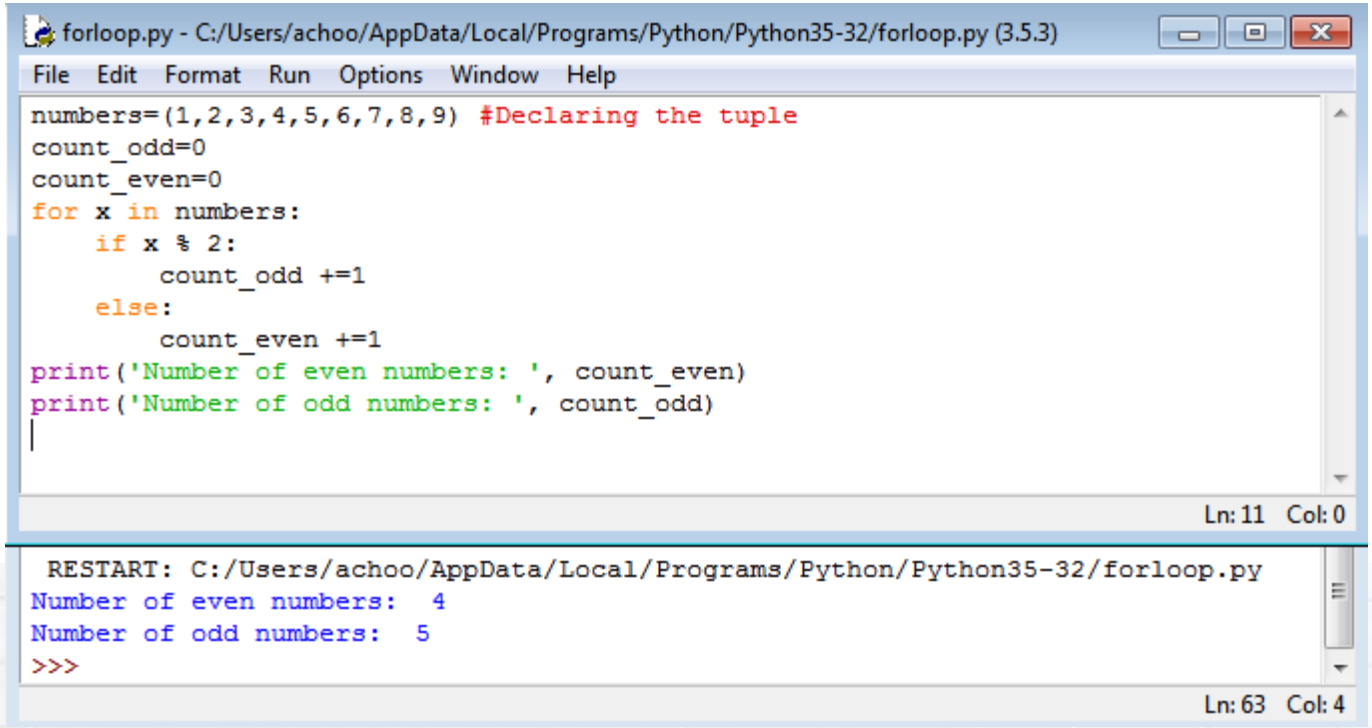
Ln: 16 Col: 41

```
Enter a message: Python Programming

A new string has been created:  P
A new string has been created:  Py
A new string has been created:  Pyt
A new string has been created:  Pyth
A new string has been created:  Pythn
A new string has been created:  Pythn
A new string has been created:  Pythn P
A new string has been created:  Pythn Pr
A new string has been created:  Pythn Prg
A new string has been created:  Pythn Prgr
A new string has been created:  Pythn Prgrm
A new string has been created:  Pythn Prgrmm
A new string has been created:  Pythn Prgrmmn
A new string has been created:  Pythn Prgrmmng


Your message without vowels is:  Pythn Prgrmmng


Press the enter key to exit.
```

KNOW ING

Python for loop: Iterating over tuple, list, dictionary

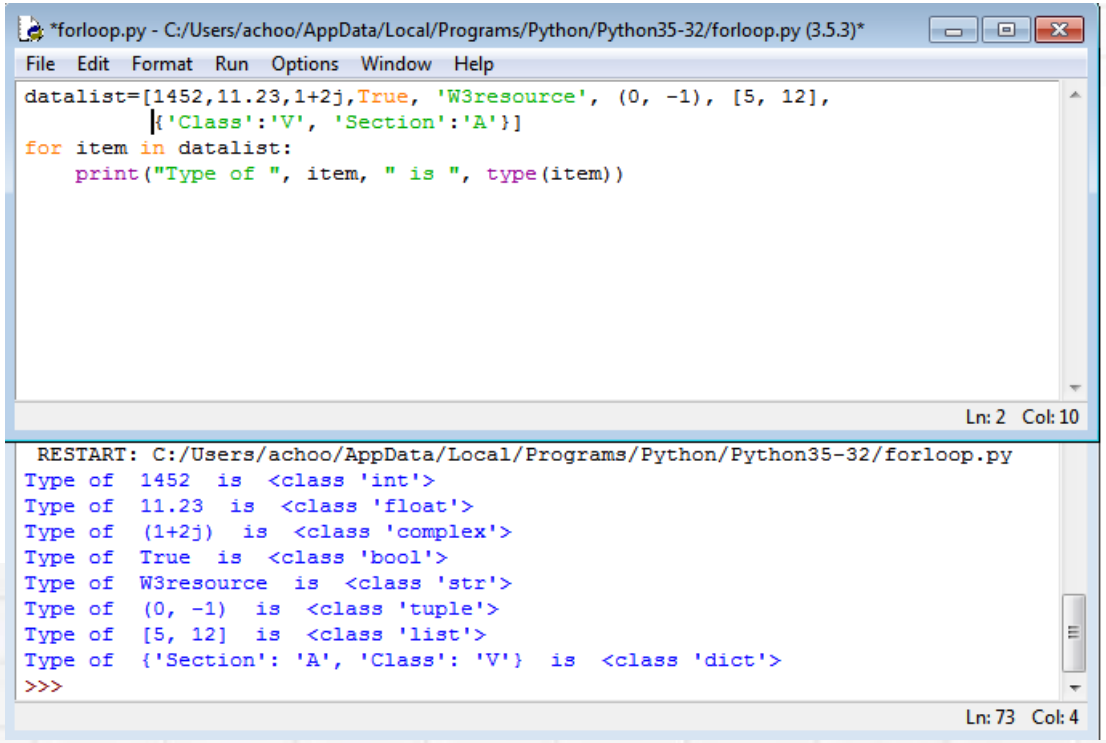
- Iterating over tuple
- The following example counts the number of even and odd numbers from a series of numbers.



KNOW ING

Python for loop: Iterating over tuple, list, dictionary

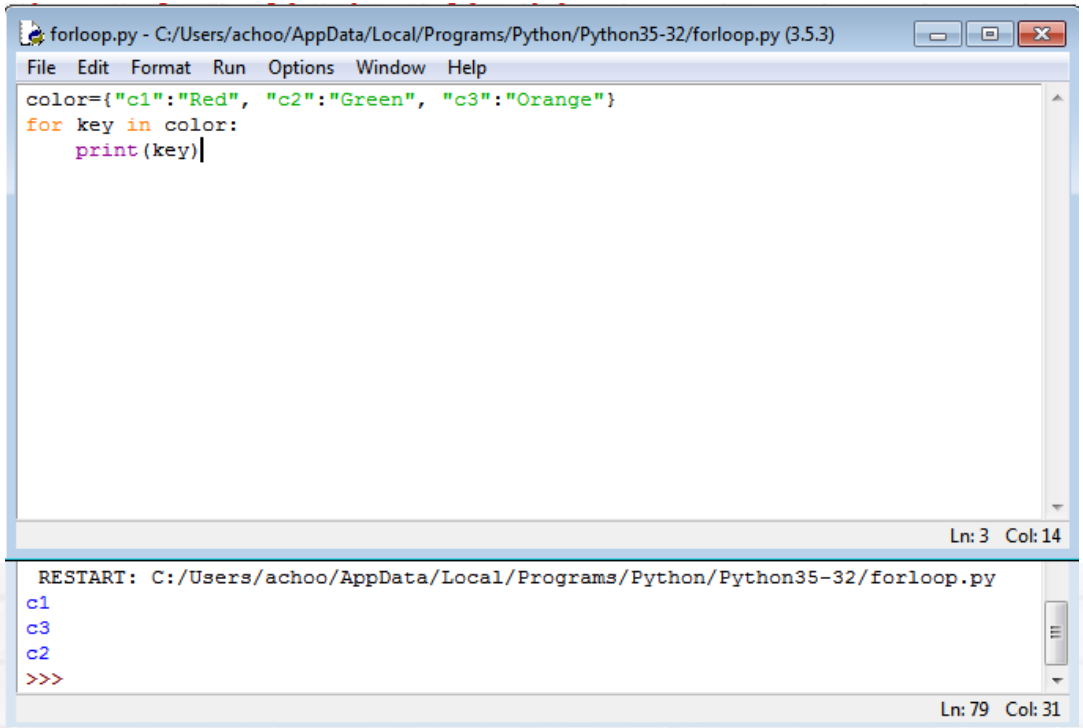
- Iterating over list
- The following example for loop iterates through the list “datalist” and prints each item and its corresponding.



KNOW ING

Python for loop: Iterating over tuple, list, dictionary

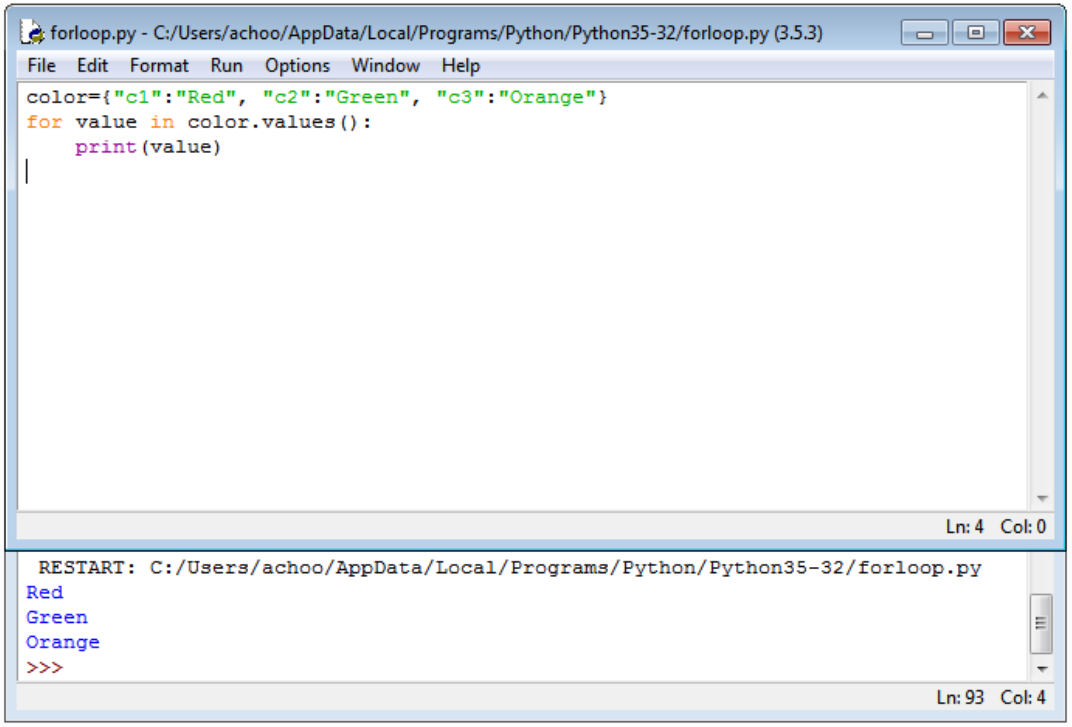
- Iterating over dictionary
- The following example for loop iterates through the dictionary “color” through its keys and prints each key.



KNOW ING

Python for loop: Iterating over tuple, list, dictionary

- Iterating over dictionary
- The following example for loop iterates through the dictionary “color” through its values and prints each value.



KNOW ING