for loop

May 22, 2025

Looping and iteration: repeat something

0.0.1 list,string,tuple,set: iterable objects

1 for loop

[ ]:
```
#range(start,stop,step)
#in string:s[start:stop:step]
```

[29]:
```
l=[1,2,3,3,9,0]
l[0:5:1]
```

[29]:
```
[1, 2, 3, 3, 9]
```

[33]:
```
l[0:5:3]
```

[33]:
```
[1, 3]
```

[1]:
```
s="my name is aditya"
```

[3]:
```
s[3:15:1]
```

[3]:
```
'name is adit'
```

[1]:
```
for i in range(1,4):
    print("hello")
```

```
hello
hello
hello
```

i=1 hello i=2 hello i=3 hello

[3]:
```
for i in range(-1,3):
    print("hello")
```

```
hello
hello
hello
hello
```

[29]:
```
for i in range(1,11):
    print(i)
```

```
1
2
3
4
5
6
7
8
9
10
```

[36]:
```
for hello in range(0,5):
    print("hello")
```

```
hello
hello
hello
hello
hello
```

[1]:
```
for hello in range(0,5):
    print(hello)
```

```
0
1
2
3
4
```

[1]:
```
for num in range(0,11):
    print(num)
```

```
0
1
2
3
4
5
6
7
8
9
10
```

[16]:
```
for i in range(10,0,-1):
    print(i)
```

```
10
9
8
7
6
5
4
3
2
1
```

1.0.1 printing numbers from 50 to 10[50,45,40....]

[4]:
```
for i in range(50,5,-5):
    print(i)
```

```
50
45
40
35
30
25
20
15
10
```

[11]:
```
for i in range(10,35,5):
    print(i)
```

```
10
15
20
25
30
```

2 1.Sum of Numbers:

[31]:
```
1+2+3+4+5+6+7+8+9+10
```

[31]: 55

[42]:
```
total=0 #1 #3 #6
for i in range(1,11):
    total=total+i
print(total)


# #1st for loop
```

```
# i=1
# total=0
# total=total+i
# total=0+1


# #2nd for loop
# i=2
# total=1
# total=total+i
#       =1+2

# #3rd for loop
# i=3
# total=3
# 6
```

```
55
```

[5]:
```
n=int(input("Enter the range:"))
total=0 #initialize
for i in range(1,n+1): #(1,6)
    #total=total+i
    total+=i
print(total)
```

```
Enter the range: 10

55
```

[16]:
```
1+2+3+4+5
```

[16]:
```
15
```

[17]:
```
n = int(input("Enter a number: "))
for i in range(1, n+1):
    print(i)
```

```
Enter a number:  4

1
2
3
4
```

[20]:
```
l=[]
n = int(input("Enter a number: "))
for i in range(1, n+1):#(1,5)
    l.append(i*i)
print(l)
```

```
Enter a number:  4

[1, 4, 9, 16]
```

[ ]:
```
l=[]
n = int(input("Enter a number: "))
for i in range(1, n+1):#(1,5)
    y=i*i
    l.append(y)
print(l)
```

[2]:
```
l=[]
n = int(input("Enter a number: "))
for i in range(1, n+1):#(1,7)
    l.append(i*(i+1))
print(l)
```

```
Enter a number:  6

[2, 6, 12, 20, 30, 42]
```

[4]:
```
l=[]
n = int(input("Enter a number: "))
for i in range(1, n+1):#(1,6)
    l.append(i)
print(l)
```

```
Enter a number:  5

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

[3]:
```
sqaures=[]
for i in range(1,11):
    sqr=i**2
    sqaures.append(sqr)
print(sqaures)
```

```
[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

3 2. Factorial

[39]:
```
5*4*3*2*1=1*2*3*4*5
```

[39]:
```
120
```

[1]:
```
factorial = 1 #initialize  #1 #2
n = int(input("Enter a number: "))
for i in range(1, n+1):#(1,6)
    factorial =factorial*i
print("Factorial:", factorial)
```

```
#1st for loop
f=1
i=1
f=1

#2nd for loop
f=1
i=2
f=2

#3r for loop
f=2
i=3
f=6


#4th for loop
f=6
i=4
f=24


#5th for loop
f=24
i=5
f=120
```

```
Enter a number:  5

Factorial: 120
```

[13]:
```
factorial = 1 #initialize  #1 #2
n = int(input("Enter a number: "))
for i in range(n,0,-1):#(5,0,-1)
    factorial =factorial*i
print("Factorial:", factorial)
```

```
Enter a number:  5

Factorial: 120
```

4 3.Table of a Number:

[ ]:

[24]:
```
n = int(input("Enter a number: ")) #5
for i in range(1, 11):
    #print(n*i)
    print(f"{n} * {i} = {n * i}")


# #1st for loop
# n=5
# i=1
# 5

# #2nd for loop
# n=5
# i=2
# 10
```

```
Enter a number:  2
```

```
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

5 4.Counting Characters in a String:

[2]:
```
s="hello"
for character in s:
    print(character)
```

```
h
e
l
l
o
```

[2]:
```
s="hello"
for character in s:
    if character ==s[1]:#e
```

```
        print(character)
```

```
e
```

[24]:
```
s="hello"
for character in s:
    print(character+"a")
```

```
ha
ea
la
la
oa
```

[4]:
```
s="lookesh"
s.count("o")
```

[4]: 2

[26]:
```
count=0  #2
s=str(input("enter your string:"))  #python
target=str(input("enter the target char:"))#n
for i in s:
    if target==i:
        count=count+1
print(count)


# #first for loop
# i=l
# target="l"
```

```
enter your string: hello
enter the target char: l
```

```
2
```

[10]:
```
s=str(input("enter your sting: "))#python
character_to_count=str(input("Enter the char that uh want to count: "))#y
count=0 #initialize
for c in s:
    if c==character_to_count:
        count=count+1

print("the count of",character_to_count,"is:",count)
```

```
enter your sting: python
Enter the char that uh want to count: a
```

```
the count of a is: 0
```

[13]:
```
text = str(input("Enter a string: "))  #python
target_char = str(input("Enter a character to count: "))#p
count = 0

for i in text:
    if i == target_char:
        count += 1  #count=count+1
print(f"Occurrences of '{target_char}': {count}")
```

```
Enter a string: piuh
Enter a character to count: a
Occurrences of 'a': 0
```

6 5.Calculating the average grade for a list of student grades.

[6]:
```
grades = [85, 90, 78, 92, 88,89,90,100]
sum(grades)
```

[6]: 712

[7]:
```
712/8
```

[7]: 89.0

[9]:
```
sum1=0   #85  #175
for num in grades:
    #sum1=sum1+num
    sum1+=num
print(sum1)
print(len(grades))
average=sum1/len(grades)
print(average)
```

```
712
8
89.0
```

[12]:
```
grades = eval(input("Enter the marks:"))
total = 0  #initialize
for marks in grades:
    total += marks  #total=total+marks
average = total / len(grades)
print("total:",total,"Average Grade:", average)
print(f"total:{total} Average Grade: {average}")
```

```
Enter the marks [23,45,34,67,89]
```

```
total: 258 Average Grade: 51.6
total:258 Average Grade: 51.6
```

6.1 Nested for loop

7 Printing Patterns

We require 5 things - Input : How many Rows - for loops : one for rows and one for columns - range(start,stop,step) - print() - end=" "

7.0.1 use of end=" "

[1]:
```
print("hello")
print("hi")
```

```
hello
hi
```

[3]:
```
print("hello", end=" ")  #end provide the space after the text,by default its /
  ↪n==>newline
print("hi")
```

```
hello hi
```

[13]:
```
print("#",end=" ")
print("#",end=" ")
print("#",end=" ")
print("#",end=" ")
```

```
# # # #
```

[14]:
```
print("#")  #end=""  by default \n==>newloine
print("#")
print("#")
print("#")
```

```
#
#
#
#
```

[19]:
```
for i in range(1,6):
    print("hello", end=" ")
    print("a")
    print("chetana")
    print()
```

```
hello a
chetana

hello a
chetana

hello a
chetana

hello a
chetana

hello a
chetana
```

[7]:
```
size = 5
for i in range(1,size+1): #(1,6) #outer for loop for rows
    #print("*" * size)
    print("+" * size)
    print()
```

```
+++++

+++++

+++++

+++++

+++++
```

[19]:
```
for i in range(4): #(0,4)
    print("#",end=" ")
print()
for i in range(4):
    print("#",end=" ")
print()
for i in range(4):
    print("#",end=" ")
print()
for i in range(4):
    print("#",end=" ")
```

```
# # # #
# # # #
```

```
# # # #
# # # #
```

[6]:
```
for i in range(4):
    print("#",end=" ")
```

```
# # # #
```

[1]:
```
for i in range(1,5):  #row
    for j in range(1,5):  # col
        print("#",end=" ")
    print() #new line
```

```
# # # #
# # # #
# # # #
# # # #
```

[ ]:
```

```

[ ]:
```

```

[14]:
```
for i in range(1, 6):   #row
    for j in range(i):    #column(0,1),(0,2),(0,3),(0,4),(0,5)
        print("*", end=" ")
    print("\n")
```

```
*

* *

* * *

* * * *

* * * * *
```

[18]:
```
for i in range(1, 6):
    for j in range(i+1): #range=(0,2),(0,3),(0,4),(0,5),(0,6)
        print("*", end=" ")
    print()
```

```
* *
* * *
* * * *
* * * * *
* * * * * *
```

[ ]:
```

```

[57]:
```
for i in range(1, 6):
    print("chetana " * i,end=" ")
    print()
```

```
chetana
chetana chetana
chetana chetana chetana
chetana chetana chetana chetana
chetana chetana chetana chetana chetana
```

[3]:
```
num_rows = int(input("Enter the number of rows: "))
for i in range(1,num_rows + 1): #range(1,5)
    for j in range(i):
        print("*", end=" ")
    print()   ##new line
```

```
Enter the number of rows:  4
```

```
*
* *
* * *
* * * *
```

[60]:
```
num_rows = int(input("Enter the number of rows: "))
for i in range(0,num_rows + 1):#range(0,6)
    for j in range(i):
        print("*", end=" ")
    print()   ##new line
```

```
Enter the number of rows: 5
```

```
*
* *
* * *
* * * *
* * * * *
```

[5]:
```
num_rows = int(input("Enter the number of rows: "))
for i in range(1,num_rows + 1):#(1,6)
    for j in range(num_rows -i):#(0,4),(0,3),(0,2),(0,1)
        print("*", end=" ")
       ##new line
    print()
    #print("\n")
```

```
Enter the number of rows:  5
```

```
* * * *
* * *
* *
```

```
*
```

[5]:
```
num_rows = int(input("Enter the number of rows: "))
for i in range(num_rows,1,-1):#(1,6)
    for j in range(i-1):#(0,4),(0,3),(0,2),(0,1)
        print("*", end=" ")
       ##new line
    print()
    #print("\n")
```

```
Enter the number of rows:  5
* * * *
* * *
* *
*
```

[7]:
```
for i in range(1,6):
    for j in range(i): #range of j (0,1),(0,2),(0,3),(0,4)
        print(i+1,end=" ")
    print()
```

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

[19]:
```
for i in range(-1,4):
    for j in range(i+2):#range(0,1),(0,2),(0,3)
        print(i+1,end=" ")
    print()
```

```
0
1 1
2 2 2
3 3 3 3
4 4 4 4 4
```

[1]:
```
for i in range(1,5):
    for j in range(i):#(0,1)
        print(i,end=" ")
    print()
```

```
1
2 2
3 3 3
4 4 4 4
```

8 For loop with if

9 1.Even

[23]:
```
for i in range(0,10,2):
    print(i)
```

```
0
2
4
6
8
```

[1]:
```
for i in range(1,11):
    if i%2==0:
        print(i)
```

```
2
4
6
8
10
```

[2]:
```
for i in range(0,11):
    if i%2==0:

print(i)
```

```
  Cell In[2], line 4
    print(i)
          ^
IndentationError: expected an indented block after 'if' statement on line 2
```

10 2.odd

[3]:
```
for i in range(1,11):
    if i%2!=0:
        print(i)
```

```
1
3
5
```

```
7
9
```

[10]:
```
for num in range(1, 11):
    if num % 2 == 0:
        print(num, "is even")
    else:
        print(num, "is odd")
```

```
1 is odd
2 is even
3 is odd
4 is even
5 is odd
6 is even
7 is odd
8 is even
9 is odd
10 is even
```

11 3. Check Vowels

[ ]:
```
#aeiou
```

[3]:
```
text =str(input("Enter the text:")) #pythoon
vowels = "aeiouAEIOU"
l=[]  #initialize
for char in text:
    if char in vowels:
        if char not in l:
            l.append(char)
print(l)
```

```
Enter the text: helloo
['e', 'o']
```

[5]:
```
text =str(input("Enter the text:")) #helloo
vowels = "aeiouAEIOU"
l=[]  #initialize
count=0
for char in text:
    if char in vowels:
        #count=count+1
        if char not in l:
            l.append(char)
```

```
            count=count+1
print(l)
print(count)
```

```
Enter the text: helloo
['e', 'o']
2
```

12 4.Filtering Positive numbers

[5]:
```
n=[1,2,1,2,-4,-8,7,-9,0,-0.2]
positive=[]
negative=[]
for i in n:
    if i>0:
        if i not in positive:
             positive.append(i)
    elif i<0:
        if i not in negative:
            negative.append(i)
    else :
        s="0 is in the list which is nuetral"


print(positive)
print(negative)
print(s)
```

```
[1, 2, 7]
[-4, -8, -9, -0.2]
0 is in the list which is nuetral
```

[68]:
```
numbers = [5, -2, 10, -8, 7, 3]
print("Positive Numbers are:")
for num in numbers:
    if num > 0:
        print(num)
```

```
Positive Numbers are:
5
10
7
3
```

[17]:
```
numbers =eval(input("enter the list"))
print("Positive Numbers are:")
for num in numbers:
    if num > 0:
        print(num)
```

```
enter the list 7,8,7,5
```

```
Positive Numbers are:
7
8
7
5
```

13 5.Identifying Palindromes:

[6]:
```
words = ["level", "hello", "radar", "python","nayan","level"]
palindromes=[]
for w in words:
    if w == w[::-1]:   #forward word==reverse of that word
        palindromes.append(w)
palindromes
```

[6]:
```
['level', 'radar', 'nayan', 'level']
```

14 Iterating over list

[9]:
```
n=123,124,125,120
l=[]
for i in n:
    s=str(i)  #convert to string==>'123','124'
    reverse=s[::-1]  #'321','421'
    n=int(reverse) #321,421
    l.append(n)
print(l)
```

```
[321, 421, 521, 21]
```

[23]:
```
fruits = ["apple", "banana", "orange", "grape","ahjhsa","bhg","bgdjhgsad"]
for i in fruits:
    if i.startswith("b"):
        print(i)
```

```
banana
bhg
bgdjhgsad
```

15 Calculating Total Expenses:

[24]:
```
expenses = [45.50, 12.75, 30.25, 5.00, 22.30]
total = 0
for i in expenses:
    total += i   #total=total+i
print("Total expenses:", total)
```

```
Total expenses: 115.8
```

[30]:
```
45.50+12.75+30.25+5+22.30
```

[30]:
```
115.8
```

16 Finding Maximum and Minimum Values:

17 max no

[25]:
```
numbers = [25, 18, 32, 47, 12, 9,100,120]
max(numbers)
```

[25]:
```
120
```

[26]:
```
min(numbers)
```

[26]:
```
9
```

[1]:
```
numbers = [25, 18, 32, 47, 12, 9,100,120,190]
max_no=numbers[0]  #25,#32
for i in numbers:
    if i>max_no:
        max_no=i
print(max_no)
```

```
190
```

[11]:
```
numbers =eval(input())
min_no=numbers[3]  #47
for i in numbers:
    if i<min_no:
        min_no=i
print(min_no)
```

```
 1,3,4,5,90,4
1
```

[2]:
```
min(numbers)
```

[2]: 9

[1]:
```
numbers = [25, 18, 32, 47, 12, 9,100]
max_value = numbers[0]  #25
min_value = numbers[0]  #25
for num in numbers:
    if num > max_value:
        max_value = num
    if num < min_value:
        min_value = num
print("Maximum value:", max_value)
print("Minimum value:", min_value)
```

```
Maximum value: 100
Minimum value: 9
```

18 Searching for an Item:

[9]:
```
items = ["apple", "banana", "orange", "grape"]
target_item = str(input("Enter the item you want to find: "))#apple
found = False  #initialization
for t in items:
    if t == target_item:
        found = True
        print(target_item, "is in the list.")
        break



else:
    print(target_item, "is not in the list.")
```

```
Enter the item you want to find:  cherry
```

```
cherry is not in the list.
```

19 Printing Elements with Specific Property:

[33]:
```
words = ["apple", "banana", "orange", "grape", "watermelon", "kiwi"]
for word in words:
    if len(word) > 5:
        print("Long word:", word)
```

```
Long word: banana
Long word: orange
Long word: watermelon
```

20 Iterable objects

- List,tuple,range,dict: orderd, we can apply for loop
- set: unorderd, we can apply for loop

[48]:
```
s1={"name":"chetana","city":"ratnagiri"}
for i in s1:
    if i=="name":
        print(i)
```

```
name
```

[49]:
```
s1 = {"name": "chetana", "city": "ratnagiri"}

for key in s1:
    print(key)
```

```
name
city
```

[52]:
```
s1 = {"name": "chetana", "city": "ratnagiri"}

for key in s1.keys():
    print(key)
```

```
name
city
```

[50]:
```
s1 = {"name": "chetana", "city": "ratnagiri"}

for value in s1.values():
    print(value)
```

```
chetana
ratnagiri
```

[5]:
```
s1 = {"name": "chetana", "city": "ratnagiri"}

for item in s1.items():
    print(item)
```

```
('name', 'chetana')
('city', 'ratnagiri')
```

[39]:
```
words = ["apple", "banana", "orange", "grape", "watermelon", "kiwi"]
l=[]
for i in words:
    if len(i) > 5:
```

```
        l.append(i)
print(l)
```

```
['banana', 'orange', 'watermelon']
```

[17]:
```
s="python"
"p" in s
```

[17]:
```
True
```

[3]:
```
s="Hello 5 python"
sp=s.split()
sp
```

[3]:
```
['Hello', '5', 'python']
```

[7]:
```
#without using for loop
s = "Hello python"

# Input from user
find = str(input("Enter the character or word you want to find: ")) #e, hello

# Check if the input is a single character or a word
if len(find) == 1:
    # Search for a character
    if find in s:
        print(find, "Found in the string")
    else:
        print(find, "Not found in the string")
else:
    # Search for a word
    sp = s.split(" ")
    if find in sp:
        print(find, "Found in the string")
    else:
        print(find, "Not found in the string")
```

```
Enter the character or word you want to find:  Hello
```

```
Hello Found in the string
```

[7]:
```
#using a for loop
# Define the string
s = "Hello python world, welcome to the world of programming"

# Input from user
find = str(input("Enter the word you want to find: "))  #hello

# Split the string into words
```

```
words = s.split()
#print(words)
# Flag to check if word is found
found = False

# Iterate through each word in the list
for word in words:
    if word == find:
        print(find, "Found in the string")
        found = True
        break  # Exit the loop once the word is found

# If the word is not found, print a message
if not found:
    print(find, "Not found in the string")
```

```
Enter the word you want to find:  Hello
```

```
Hello Found in the string
```

[5]:
```
list_of_strings = ["apple,banana,orange", "cat,dog,mouse"]
result = []

# Using a for loop to split each string
for s in list_of_strings:
    result.append(s.split(','))

print(result)
```

```
[['apple', 'banana', 'orange'], ['cat', 'dog', 'mouse']]
```

21 While loop

[1]:
```
bill=int(input("enter your current bill:"))
sum1=bill
while bill!=0:
    bill=int(input("Enter your next bill:"))
    sum1=sum1+bill
print(sum1)
```

```
enter your current bill: 600
Enter your next bill: 500
Enter your next bill: 100
Enter your next bill: 0
```

```
1200
```

[3]:
```
vote="M"
acount=0
```

```
mcount=0
while vote!="Quit":
    vote=str(input("enter your vote:"))
    if vote=="M":
        mcount=mcount+1
    elif vote=="A":
        acount=acount+1

    else:
        print("enter the proper vote:")

print("Alex votes:",acount)
print("Manu votes:",mcount)
```

```
enter your vote: A
enter your vote: A
enter your vote: M
enter your vote: A
enter your vote: M
enter your vote: Quit

enter the proper vote:
Alex votes: 3
Manu votes: 2
```

[15]:
```
choice="yes"
while choice!="no":
    distance=int(input("enter distance:"))
    if distance<0:
        print("Invalid distance ,enter positive distance")
        break
    else:
        time=int(input("enter time:"))
        speed=distance/time

    print(speed)
    choice=str(input("enter your choice:"))
```

```
enter distance: 500
enter time: 5

100.0

enter your choice: yes
enter distance: -9

Invalid distance ,enter positive distance
```

[17]:
```
choice="yes"
while choice!="no":
    distance=int(input("enter distance:"))
    if distance<0:
        print("Invalid distnace ,enter positive distance")
        continue
    else:
        time=int(input("enter time:"))
        speed=distance/time

    print(speed)
    choice=str(input("enter your choice:"))
```

```
enter distance: -9

Invalid distnace ,enter positive distance

enter distance: 67
enter time: 8

8.375

enter your choice: no
```

22 Prime number

[7]:
```
num=int(input("Enter number:"))
if num==1:
    print("not a prime number")
else:
    for i in range(2,num):#(2,7)
        if num%i==0:
            print("not a prime number")
            break

    else:
        print("prime")
```

```
Enter number: 3

prime
```

[7]:
```
num = int(input("Enter number:"))

if num == 1:
    print("Not a prime number")
```

```
else:
    for i in range(2, int(num ** 0.5) + 1): #(2,7) # Only check up to the␣
 ↪square root of num
        if num % i == 0:
            print("Not a prime number")
            break
    else:
        print("Prime")
```

```
Enter number: 41
```

```
Prime
```

(int(num ** 0.5) + 1)==>(int(45**0.5)+1)==>int(6.7+1)==>int(7.7)==>7

range(2,7)

factors of 45==>9*5,5*9,15*3,3*15,1*45,45*1

i=2 ==> 45/2==22.5