

for loop

for loop is used with collection data types or iterables.
For loop read each time one value generated by iterable or collection and perform operations.

Syntax:

for variable-name in iterable:

 statement-1

 statement-2

statement-3

<pre>str1="python" for char in str1: print(char)</pre>	<pre>p y t h o n</pre>
<pre>for a in 10: print(a)</pre>	<pre>Traceback (most recent call last): File "E:/python5pmjun/test83.py", line 1, in <module> for a in 10: TypeError: 'int' object is not iterable</pre>
<pre>str1="" for x in str1: print("Hello") str2="ABC" for x in str2: print("Hello")</pre>	<pre>Hello Hello Hello</pre>
<pre># Write a program to input string and count alphabets,digits and special characters # abc\$#12de ac=0</pre>	<pre>Output Enter any string ab12\$%34ab\$ Alpha Count 4 Digit Count 4 Special Character Count 3</pre>

<pre> dc=0 sc=0 str1=input("Enter any string ") for ch in str1: if ch>='A' and ch<='Z' or ch>='a' and ch<='z': ac+=1 elif ch>='0' and ch<='9': dc+=1 else: sc+=1 print(f'Alpha Count {ac}') print(f'Digit Count {dc}') print(f'Special Character Count {sc}')</pre>	
<p># Write a program to count vowels in given string</p> <pre> str1=input("Enter any String ") vc=0 for ch in str1: if ch in "aeiouAEIOU": vc+=1 print(f'Vowel Count {vc}')</pre>	<p>Output</p> <p>Enter any String java Vowel Count 2</p> <p>Enter any String python Vowel Count 1</p>
<p># Write a program to convert input string from upper case to lower case</p> <pre> str1=input("Enter any string ") # AbC str2="" for ch in str1: if ch>='A' and ch<='Z':</pre>	<p>Enter any string abc123DEFgh abc123DEFgh abc123defgh</p>

<pre> str2=str2+chr(ord(ch)+32) else: str2=str2+ch print(str1) print(str2) </pre>	
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range() data type

range is an immutable sequence data type.

The **range** type represents an immutable sequence of numbers and is commonly used for looping a specific number of times in for loops.

Syntax1: range(stop)

Syntax2: range(start,stop,step)

Range data type required 3 values

1. Start : starting value of range
2. Stop : ending value of range, which is not included
3. Step : difference between values within range
(increment/decrement value)

Syntax1: range(stop)

This syntax is used to generate sequence of +ve integer values

In this syntax default values of,

Start=0, step=1

If step is +ve the start<stop

If step is -ve the start>stop

<pre> for a in range(10): # start=0,stop=10,step=1 print(a,end=' ') print() for b in range(-5): #start=0,stop=- </pre>	<pre> 0 1 2 3 4 5 6 7 8 9 Traceback (most recent call last): File "E:/python5pmjun/test88.py", line 9, in <module> for c in range(10.5): # start=0 </pre>
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<pre> 5,step=1 print(b) print() for c in range(10.5): # start=0 stop=10.5 step=1 print(c) </pre>	<pre> stop=10.5 step=1 TypeError: 'float' object cannot be interpreted as an integer </pre>
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Syntax-2: range(start,stop,[step])

This allows 3 inputs,

1. Start value
2. Stop value
3. Step value (Optional → default -1)

This syntax generates sequence of integers in increment order and decrement order.

Example	Output
<pre> for a in range(1,11,1): print(a,end=' ') print() for a in range(10,0,-1): print(a,end=' ') print() for a in range(-1,-11,-1): print(a,end=' ') print() for a in range(-10,0,1): print(a,end=' ') print() for a in range(2,21,2): print(a,end=' ') </pre>	<pre> 1 2 3 4 5 6 7 8 9 10 10 9 8 7 6 5 4 3 2 1 -1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 2 4 6 8 10 12 14 16 18 20 1 3 5 7 9 11 13 15 17 19 1 4 9 16 25 36 49 64 81 100 -5 -4 -3 -2 -1 0 1 2 3 4 5 5 4 3 2 1 0 -1 -2 -3 -4 -5 </pre>

<pre> print() for a in range(1,20,2): print(a,end=' ') print() for a in range(1,11): print(a**2,end=' ') print() for a in range(-5,6,1): print(a,end=' ') print() for a in range(5,-6,-1): print(a,end=' ') </pre>	
<p># Write a program to generate math table for input number</p> <pre> num=int(input("Enter any number ")) for i in range(1,11): # 1 2 3 4 5 6 7 8 9 10 p=num*i print(f'{num}x{i}={p}') </pre>	<p>Output</p> <p>Enter any number 5</p> <p>5x1=5 5x2=10 5x3=15 5x4=20 5x5=25 5x6=30 5x7=35 5x8=40 5x9=45 5x10=50</p>
<p># Write a program to find input number is prime or not</p> <pre> num=int(input("Enter any number ")) c=0 for i in range(1,num+1): if num%i==0: </pre>	<p>Enter any number 7 prime</p> <p>Enter any number 4 not prime</p>

<pre>c+=1 if c==2: print("prime") else: print("not prime")</pre>	
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