

## **Nested for loop :**

A for loop inside another for loop is known as Nested for loop.

### **Syntax:**

```
for var1 in coll:
    for var2 in coll:
        [S.B]
```

--> It is possible to write n number of for loops.

NOTE: Untill and unless inner for loop get executed completely, it doesn't go back to the outer for loop.

### **#EXAMPLES :**

#EX:01)

'''

x=[10,20]

y=[7,8,9]

```
for i in x:
    for j in y:
        print(i,j)
```

#output :

10 7

10 8

10 9

20 7

20 8

20 9

'''

```
#EX:02)
```

```
'''
```

```
for i in range(1,4):
```

```
    for j in 'abc':
```

```
        print(i,j)
```

```
#output:
```

```
1 a
```

```
1 b
```

```
1 c
```

```
2 a
```

```
2 b
```

```
2 c
```

```
3 a
```

```
3 b
```

```
3 c
```

```
'''
```

```
#EX:03)
```

```
'''
```

```
for i in range(9,10):
```

```
    for j in range(2,5):
```

```
        print(i+j)
```

```
#output:
```

```
11
```

```
12
```

```
13
```

```
'''
```

## #PROGRAMS

#01) WAP to get the following output without using len() function

```
#input : 'we love python'
#output : { 'we':2 , 'love':4 , 'python':6 }
'''
s=input()
x=s.split()
out={}
for i in x:
    count=0
    for j in i:
        count+=1
    out[i]=count
print(out)
'''
```

#02) WAP to get the following output

```
#input : 'we love python'
#output : { 'we':1 , 'love':2 , 'python':1 }

s=input()
x=s.split()
out={}
for i in x:
    count=0
    for j in i:
        if j in 'AEIOUaeiou':
            count+=1
    out[i]=count
print(out)
```



#02)

'''

\* \* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

\* \* \* \* \*

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

print('\*', end=' ')

print()

'''

#03)

'''

\*

\*

\*

\*

\*

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

if i==j:

print('\*', end=' ')

else:

print(' ', end=' ')

print()

'''

#04)

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

```
n=int(input())  
for i in range(1,n+1):  
    for j in range(1,n+1):  
        if i==j or i>j:  
            print('*', end=' ')  
        else:  
            print(' ', end=' ')  
    print()
```

#05)

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

```
n=int(input())  
for i in range(1,n+1):  
    for j in range(1,n+1):  
        if i==j or i<j:  
            print('*', end=' ')  
        else:  
            print(' ', end=' ')  
    print()
```

#06)

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

```
n=int(input())  
for i in range(1,n+1):  
    for j in range(1,n+1):  
        if i==j or j==1 or i==n:  
            print('*', end=' ')  
        else:  
            print(' ', end=' ')  
    print()
```

#07)

```
""  
* * * * *  
*   *  
*   *  
* *  
*  
*  
*  
*
```

```
n=int(input())  
for i in range(1,n+1):  
    for j in range(1,n+1):  
        if i==j or j==n or i==1:  
            print('*', end=' ')  
        else:  
            print(' ', end=' ')  
    print()
```

#08)

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

```
n=int(input())
for i in range(1,n+1):
    for j in range(1,n+1):
        if i==1 or i==n or j==1 or j==n:
            print('*', end=' ')
        else:
            print(' ', end=' ')
    print()
```

#09)

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

```
n=int(input())
for i in range(1,n+1):
    for j in range(1,n+1):
        if i==1 or i==n or j==1 or j==n or i==j:
            print('*', end=' ')
        else:
            print(' ', end=' ')
    print()
```



#10)

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

```
n=int(input())
```

```
for i in range(1,n+1):
```

```
    for j in range(1,n+1):
```

```
        if i==1 or i==n or j==1 or j==n or j==(n//2)+1:
```

```
            print('*', end=' ')
```

```
        else:
```

```
            print(' ', end=' ')
```

```
    print()
```

#11)

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

```
n=int(input())
```

```
for i in range(1,n+1):
```

```
    for j in range(1,n+1):
```

```
        if i==1 or i==n or j==1 or j==n or j==(n//2)+1 or i==(n//2)+1:
```

```
            print('*', end=' ')
```

```
        else:
```

```
            print(' ', end=' ')
```

```
    print()
```

#12)

```
    *
  *
*
*
*
```

```
n=int(input())
for i in range(1,n+1):
    for j in range(1,n+1):
        if i+j==n+1:
            print('*', end=' ')
        else:
            print(' ', end=' ')
    print()
```

#13)

```
'''
    *
  * *
* * *
* * * *
* * * * *
```

```
n=int(input())
for i in range(1,n+1):
    for j in range(1,n+1):
        if i+j==n+1 or i+j>n+1:
            print('*', end=' ')
        else:
            print(' ', end=' ')
    print()
```

#14)

'''

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

if i+j==n+1 or i+j<n+1:

print('\*', end=' ')

else:

print(' ', end=' ')

print()

'''

#15)

'''

\*

\* \*

\* \*

\* \*

\* \* \* \* \*

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

if i+j==n+1 or i==n or j==n:

print('\*', end=' ')

else:

print(' ', end=' ')

print()

'''

#16)

'''

\* \* \* \* \*

\*     \*

\*   \*

\* \*

\*

n=int(input())

for i in range(1,n+1):

    for j in range(1,n+1):

        if i+j==n+1 or i==1 or j==1:

            print('\*', end=' ')

        else:

            print(' ', end=' ')

    print()

'''

#17)

'''

\* \* \* \* \*

\* \*   \* \*

\*   \*   \*

\* \*   \* \*

\* \* \* \* \*

n=int(input())

for i in range(1,n+1):

    for j in range(1,n+1):

        if i==1 or i==n or j==1 or j==n or i==j or i+j==n+1:

            print('\*', end=' ')

        else:

            print(' ', end=' ')

    print()

#18)

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

```
n=int(input())
```

```
for i in range(1,n+1):
```

```
    for j in range(1,n+1):
```

```
        if i+j==n+1 or i+j>n+1:
```

```
            print('*', end=' ')
```

```
        else:
```

```
            print(' ', end=' ')
```

```
    for j in range(1,n+1):
```

```
        if i==j or i>j:
```

```
            print('*', end=' ')
```

```
        else:
```

```
            print(' ', end=' ')
```

```
    print()
```

```
'''
```

#19)Assignment question : Diamond shape

#PATTERNS

#NUMBERS

#01)

'''

1 1 1 1 1

2 2 2 2 2

3 3 3 3 3

4 4 4 4 4

5 5 5 5 5

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

print(i , end=' ')

print()

'''

#02)

'''

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

n=int(input())

for i in range(1,n+1):

for j in range(1,n+1):

print(j , end=' ')

print()

'''

#03)

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

```
n=int(input())
```

```
for i in range(1,n+1):
```

```
    for j in range(1,n+1):
```

```
        if i==j or i>j:
```

```
            print(j , end=' ')
```

```
        else:
```

```
            print(' ' , end=' ')
```

```
    print()
```

#04)variable = starting value + row - 1

'''

1

2 3

3 4 5

4 5 6 7

5 6 7 8 9

```
n=int(input())
```

```
for i in range(1,n+1):
```

```
    k=1+i-1
```

```
    for j in range(1,n+1):
```

```
        if i==j or i>j:
```

```
            print( k , end=' ')
```

```
            k+=1
```

```
        else:
```

```
            print(' ' , end=' ')
```

```
    print()
```

'''

#ALPHABETS

#01)

```
    B
  B C
B C D
B C D E
B C D E F
n=int(input())
for i in range(1,n+1):
    k=ord('B')
    for j in range(1,n+1):
        if i+j==n+1 or i+j>n+1:
            print( chr(k) , end=' ')
            k+=1
        else:
            print(' ' , end=' ')
    print()
```

#02)variable = ord(starting alphabet) + row - 1

```
m n o p q
 n o p q
  o p q
   p q
    q
n=int(input())
for i in range(1,n+1):
    k=ord('m')+i-1
    for j in range(1,n+1):
        if i==j or i<j:
            print( chr(k) , end=' ')
            k+=1
        else:
            print(' ' , end=' ')
    print()
```