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## Assignment 1 - Pattern Programming

**Write code in python to print following patterns:-**

## 1

In [88]:

```python
#n=int(input())
n=5
for i in range(n):
    for j in range(n-i):
        print(n,end=' ')
    print()
```

```
5 5 5 5 5
5 5 5 5
5 5 5
5 5
5
```

## 2

In [89]:

```python
#n=int(input())
n=5
for i in range(n):
    for j in range(n-i+1):
        print(j,end=' ')
    print()
```

```
0 1 2 3 4 5
0 1 2 3 4
0 1 2 3
0 1 2
0 1
```

## 3

In [90]:

```python
#n=int(input())
n=5
for i in range(1,n+1):
    for j in range(i):
        print(2*i-1,end=' ')
    print()
```

```
1
3 3
5 5 5
7 7 7 7
9 9 9 9 9
```

# 4

In [91]:

```python
#n=int(input())
n=5
for i in range(1,n+1):
    for j in range(i,0,-1):
        print(j,end=' ')
    print()
```

```
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
```

# 5

In [92]:

```python
#n=int(input())
n=4
count=0
for i in range(1,n+1):
    count+=i
    x=count
    for j in range(i):
        print(x,end=' ')
        x-=1
    print()
```

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

# 6

In [93]:

```python
#n=int(input())
n=7
count=1
for i in range(0,n):
    for j in range(i+1):
        if j==0 or j==i:
            count=1
        else:
            count*=(i-j+1)/j
        print(int(count),end=' ')
    print()
```

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
```

# 7

In [94]:

```python
#n=int(input())
n=5
for i in range(1,n+1):
    for j in range(1,n+1):
        if j<=i:
            print(i,end=' ')
        else:
            print(j,end=' ')
    print()
```

```
1 2 3 4 5
2 2 3 4 5
3 3 3 4 5
4 4 4 4 5
5 5 5 5 5
```

# 8

In [95]:

```python
#n=int(input())
n=8
for i in range(1,n+1):
    for j in range(1,i+1):
        print(i*j,end=' ')
    print()
```

```
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
6 12 18 24 30 36
7 14 21 28 35 42 49
8 16 24 32 40 48 56 64
```

# 9

In [96]:

```python
#n=int(input())
n=5
for i in range(1,n+1):
    for k in range(i):
        print(end=' ')
    for j in range(n+1,i,-1):
        print('*',end=' ')
    print()
```

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

# 10

In [97]:

```python
#n=int(input())
n=7
for i in range(1,n+1):
    for k in range(n-i):
        print(end=' ')
    for j in range(i):
        print('*',end='  ')
    print()
```

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

# 11

In [98]:

```python
#n=int(input())
n=6
for i in range(n):
    for j in range(i+1):
        print('*',end=' ')
    print()
print()
for i in range(n):
    for j in range(n-i):
        print('*',end=' ')
    print()
```

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

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

# 12

In [99]:

```python
#n=int(input())
n=5
for i in range(n):
    for j in range(i+1):
        print('*',end=' ')
    print()
for i in range(n-1):
    for j in range(n-i-1):
        print('*',end=' ')
    print()
```

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

# 13

In [100]:

```python
#n=int(input())
n=5
for i in range(n):
    for k in range(n-i-1):
        print(' ',end=' ')
    for j in range(i+1):
        print('*',end=' ')
    print()
for i in range(n-1):
    for k in range(i+1):
        print(' ',end=' ')
    for j in range(n-i-1):
        print('*',end=' ')
    print()
```

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

# 14

In [101]:                                                                        ▶|

```python
#n=int(input())
n=5
for i in range(1,n+1):
    for k in range(i):
        print(end=' ')
    for j in range(n+1,i,-1):
        print('*',end=' ')
    print()
for i in range(1,n+1):
    for k in range(n-i+1):
        print(end=' ')
    for j in range(1,i+1):
        print('*',end=' ')
    print()
```

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

# 15

In [4]:                                                                          ▶|

```python
#n=int(input())
n=8
for i in range(0,n):
    for j in range(n-i):
        print('*',end='')
    for j in range(2*i):
        print('_',end='')
    for j in range(n-i):
        print('*',end='')
    print()
```

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