Data Science Intern - Task 1

Pattern Programming

Pattern: 1

In [2]:
```
for i in range(5,0,-1):
    print('5 '*i)
```

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

Pattern: 2

In [3]:
```
for i in range(5,0,-1):
    for j in range(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
```

Pattern: 3

In [9]:
```
for i in range(1,6):
    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
```

Pattern: 4

In [10]:
```
for i in range(5):
    for j in range(i+1,0,-1):
        print(j,end=' ')
    print('')
```

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

Pattern: 5

In [16]:
```
start =1
stop = 2
temp = stop
for i in range(2,6):
    for j in range(start,stop):
        temp-=1
```

```
        print(temp,end=' ')
    print('')
    start=stop
    stop+=i
    temp= stop
```

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

Pattern: 6

In [19]:

```
def fact(n):
    factorial = 1
    for i in range(1,n+1):
        factorial *= i
    return factorial
row = 7
for i in range(row):
    for j in range(0,i+1):
        print(int(fact(i) / (fact(j)*fact(i-j))),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
```

Pattern: 7

In [20]:

```
for i in range(1,6):
    for j in range(1,6):
        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
```

Pattern: 8

In [21]:

```
for i in range(1,9):
    for j in range(i,i*i+1,i):
        print(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
```

Pattern: 9

In [22]:

```
k=6
for i in range(6,0,-1):
```

```
    for j in range(k,-1,-1):
        print(end=' ')
    k+=1
    for j in range(i):
        print('*',end=' ')
    print('')
```

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

Pattern: 10

In [24]:

```
r = 7
for i in range(1,r+1):
    for k in range(i,r+1):
        print(end=" ")
    for j in range(0,i):
        print("*",end=" ")
    print()
```

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

Pattern: 11

In [25]:

```
for i in range(6):
    for j in range(i+1):
        print('*',end=' ')
    print('')
print('')
for i in range(6,0,-1):
    for j in range(i):
        print('*',end=' ')
    print('')
```

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

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

Pattern: 12

In [26]:

```
for i in range(5):
    for j in range(i+1):
        print('*',end=' ')
    print('')
for i in range(4,0,-1):
    for j in range(i):
        print('*',end=' ')
    print('')
```

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

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

Pattern: 13

In [28]:

```
r = 5
k = 2 * r-2
for i in range(0,r):
    for s in range(0,k):
        print(end=" ")
    k -= 2
    for j in range(0,i+1):
        print("*",end=" ")
    print()
k = 2
for i in reversed(range(0,r-1)):
    for s in range(k,0,-1):
        print(end=" ")
    k += 2
    for j in range(0,i+1):
        print("*",end=" ")
    print()
```

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

Pattern: 14

In [29]:

```
k=1
for i in range(5,0,-1):
    for j in range(k-1):
        print(end=' ')
    k+=1
    for j in range(i):
        print('*',end=' ')
    print('')
k=5
for i in range(5):
    for j in range(k-1):
        print(end=' ')
    k-=1
    for j in range(i+1):
        print('*',end=' ')
    print('')
```

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

Pattern: 15

In [32]:

```
z = 16
print("*" * z, end="\n")
x=z//2 - 1
y=2
```

```
for i in range(x):
    print("*" * x ,end='')
    print("_" * y ,end='')
    print("*" * x ,end='\n')
    x-=1
    y+=2
```

```
****************
*******__*******
******____******
*****______*****
****________****
***__________***
**____________**
*______________*
```