In [1]:
```
rows=5
```

In [18]:
```
r=5
```

star pyramid pattern

In [3]:
```
for i in range(1, rows+1):
    print(" "*(rows-i)+"*"*(2*i-1)) # " "*(row-i) = number of spaces
```

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

In [5]:
```
r = 5
for i in range(1, r+1):
    print("*"*(2*i-1)+" "*(r-i))
```

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

inverted pyramid pattern

In [7]:
```
r=5
for i in range(r, 0, -1):
    print(i)
```

```
5
4
3
2
1
```

In [9]:
```
r=5
for i in range(r, 0, -1):
    print(" " * (r-i) + "*" * (2*i-1))
```

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

Right-Angled Triangle (Left-Aligned)

In [10]:
```
r=5
for i in range(i, r+1):
    print("*")
```

```
*
*
*
*
*
```

In [16]:
```
rows = 5
for i in range(1, rows + 1):
    print("*" * i)
```

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

Right-Angled Triangle (Right-Aligned)

In [4]:
```
for i in range(1, rows+1):
    print(" " * (rows-i) + "*"*i)
```

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

Inverted Right-Angled Triangle

In [19]:
```
for i in range(r, 0, -1):
    print(" " * (r-i) + "*"*i)
```

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

In [21]:
```
for i in range(r, 0, -1):
    print("*"*i)
```

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

Increasing Number Triangle

In [16]:
```
rows =5
for i in range(1, rows+1):
    for j in range(1, i+1):
        print(j, end=" ")
    print()
```

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

Repeated Row Number

In [27]:
```
for i in range(1, r+1):
    print((str(i)+" ")*i)
```

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

In [24]:
```
n=8
num=1
for i in range(1, n+1):
    for j in range(i):
        print(num, end=" ")
        num+=1
    print()
```

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
```

Floyd’s Triangle

In [38]:
```
n = 5
num = 1
for i in range(1, n + 1):
    for j in range(i):
        print(num, end=" ")
        num += 1
    print()
```

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

pascal triangle

In [29]:
```
from math import comb
r=5
for i in range(1, r+1):
    for j in range(i):
        print(comb(i, j), end=" ")
```

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

In [48]:
```
r=5
for i in range(r+1):
    n=1
    print(" " * (r-i), end=" ")
    for j in range(i+1):
        print(n, end=" ")
        n= n * (i-j) // (j+1)
    print()
```

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

In [43]:
```
rows = int(input("Enter the row size for the pattern: "))
for i in range(rows ):  # Outer loop for rows
    num = 1
    for j in range(rows - i):  # Inner loop for spaces
        print(" ", end=" ")
    for k in range(i + 1):  # Inner loop for numbers
        print(num, end="   ")
        num = num * (i - k) // (k + 1)  # Calculate Pascal's number
    print()
```

```
Enter the row size for the pattern: 7
              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
```

In [36]:
```
from math import comb

rows = 5
for i in range(rows+1):
    print(" " * (rows - i), end="")
    for j in range(i + 1):
        print(comb(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
```

In [ ]: