In [1]:

```python
"""Write code in python to print following patterns:-
1.

5 5 5 5 5
5 5 5 5
5 5 5
5 5
5
"""

for i in range(1,6):
    for j in range(1,7-i):
        print("5",end=" ")
    print()
```

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

In [3]:

```python
"""
3.
1
3 3
5 5 5
7 7 7 7
9 9 9 9 9
"""

rows = 5
i = 1
while i <= rows:
    j = 1
    while j <= i:
        print((i * 2 - 1), end=" ")
        j = j + 1
    i = i + 1
    print('')
```

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

In [5]:

```python
"""
2.

1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
"""

rows = 6
for i in range(1, rows):
    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
```

In [6]:

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

start = 1
stop = 2
current_num = stop
for row in range(2, 6):
    for col in range(start, stop):
        current_num -= 1
        print(current_num, end=' ')
    print("")
    start = stop
    stop += row
    current_num = stop
```

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

In [ ]:

```python
"""
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
"""

def print_pascal_triangle(size):
    for i in range(0, size):
        for j in range(0, i + 1):
            print(decide_number(i, j), end=" ")
        print()


def decide_number(n, k):
    num = 1
    if k > n - k:
        k = n - k
    for i in range(0, k):
        num = num * (n - i)
        num = num // (i + 1)
    return num

# set rows
rows = 7
print_pascal_triangle(rows)
```

In [2]:

```python
"""
2.
0 1 2 3 4 5
0 1 2 3 4
0 1 2 3
0 1 2
```

```
0 1
0
"""
```

```python
for i in range(0,6):
  for j in range(0,6-i):
    print(j,end=" ")
  print()
```

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

In [7]:

```python
"""
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
"""

rows = 5
for i in range(1, rows + 1):
    for j in range(1, rows + 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
```

In [9]:

```python
"""
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
"""

rows = 8
# rows = int(input("Enter the number of rows "))
for i in range(1, rows + 1):
    for j in range(1, i + 1):
        # multiplication current column and row
        square = i * j
        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
```

In [10]:

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

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

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

In [11]:

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

print("Print equilateral triangle Pyramid using asterisk symbol ")
# printing full Triangle pyramid using stars
size = 7
m = (2 * size) - 2
for i in range(0, size):
    for j in range(0, m):
        print(end=" ")
    # decrementing m after each loop
    m = m - 1
    for j in range(0, i + 1):
        print("* ", end=' ')
    print(" ")
```

```
Print equilateral triangle Pyramid using asterisk symbol
        *
       *   *
      *   *   *
     *   *   *   *
    *   *   *   *   *
   *   *   *   *   *   *
  *   *   *   *   *   *   *
```

In [12]:

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

```python
* * * * * *
* * * * *
* * * *
* * *
* *
*
"""

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

print(" ")

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

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

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

In [13]:

```python
"""
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
"""

rows = 5
for i in range(0, rows):
    for j in range(0, i + 1):
        print("*", end=' ')
    print("\r")

for i in range(rows, 0, -1):
    for j in range(0, i - 1):
        print("*", end=' ')
    print("\r")
```

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

In [14]:

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

rows = 5
i = 1
while i <= rows:
    j = i
    while j < rows:
        # display space
        print(' ', end=' ')
        j += 1
    k = 1
    while k <= i:
        print('*', end=' ')
        k += 1
    print()
    i += 1

i = rows
while i >= 1:
    j = i
    while j <= rows:
        print(' ', end=' ')
        j += 1
    k = 1
    while k < i:
        print('*', end=' ')
        k += 1
    print('')
    i -= 1
```

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


In [ ]:

```
"""
* * * * *
 * * * *
  * * *
   * *
    *
    *
   * *
  * * *
 * * * *
* * * * *
"""
rows = 5
i = 0
while i <= rows - 1:
    j = 0
    while j < i:
```

```python
            # display space
            print('', end=' ')
            j += 1
        k = i
        while k <= rows - 1:
            print('*', end=' ')
            k += 1
        print()
        i += 1

i = rows - 1
while i >= 0:
    j = 0
    while j < i:
        print('', end=' ')
        j += 1
    k = i
    while k <= rows - 1:
        print('*', end=' ')
        k += 1
    print('')
    i -= 1
```

In [15]:

```python
"""
* * * * *
 * * * *
  * * *
   * *
    *
    *
   * *
  * * *
 * * * *
* * * * *
"""
rows = 5
i = 0
while i <= rows - 1:
    j = 0
    while j < i:
        # display space
        print('', end=' ')
        j += 1
    k = i
    while k <= rows - 1:
        print('*', end=' ')
        k += 1
    print()
    i += 1

i = rows - 1
while i >= 0:
    j = 0
    while j < i:
        print('', end=' ')
        j += 1
    k = i
    while k <= rows - 1:
        print('*', end=' ')
        k += 1
    print('')
    i -= 1
```

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

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

```python
"""
* * * * * * * * * * * * * * * *
* * * * * * *   * * * * * * *
* * * * * *       * * * * * *
* * * * *           * * * * *
* * * *               * * * *
* * *                   * * *
* *                       * *
*                           *
"""
rows = 14
print("*" * rows, end="\n")
i = (rows // 2) - 1
j = 2
while i != 0:
    while j <= (rows - 2):
        print("*" * i, end="")
        print("_" * j, end="")
        print("*" * i, end="\n")
        i = i - 1
        j = j + 2
```

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