

## patterns in Python

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### ◆ Pattern 1

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

**Using for loop:**

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

**Using while loop:**

```
i = 1  
while i <= 5:  
    j = 1  
    while j <= 5:  
        print(i, end="\t")  
        j += 1  
    print()  
    i += 1
```

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### ◆ Pattern 2

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

**Using for loop:**

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

**Using while loop:**

```
i = 1  
while i <= 5:  
    j = 1  
    while j <= 5:  
        print(j, end="\t")  
        j += 1  
    print()  
    i += 1
```

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**◆ Pattern 3 (Triangle with stars)**

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

**Using for loop:**

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

**Using while loop:**

```
i = 1  
while i <= 5:
```

```
j = 1
while j <= i:
    print("*", end=" ")
    j += 1
print()
i += 1
```

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#### ◆ Pattern 4 (Inverted triangle)

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

#### Using for loop:

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

#### Using while loop:

```
i = 5
while i > 0:
    j = 1
    while j <= i:
        print("*", end=" ")
        j += 1
    print()
    i -= 1
```

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#### ◆ Pattern 5 (Hollow Square)

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

### Using for loop:

```
rows = 5
```

```
cols = 5
```

```
for i in range(rows):
```

```
    for j in range(cols):
```

```
        if i == 0 or i == rows - 1 or j == 0 or j == cols - 1:
```

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

```
        else:
```

```
            print(" ", end=" ")
```

```
    print()
```

### Using while loop:

```
rows = 5
```

```
cols = 5
```

```
i = 0
```

```
while i < rows:
```

```
    j = 0
```

```
    while j < cols:
```

```
        if i == 0 or i == rows - 1 or j == 0 or j == cols - 1:
```

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

```
        else:
```

```
            print(" ", end=" ")
```

```
        j += 1
```

```
    print()
```

```
    i += 1
```

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