

Patterns Programming

Pattern 1

```
In [6]: for x in range(1,6):
        print('5' * (6 - x))

55555
5555
555
55
5
```

Pattern 2

```
In [31]: r = 6
        for y in range(1,r):
            for x in range(r):
                if x == r - 1:
                    print(x )
                    r-=1
                else:
                    print(x , end = '')

012345
01234
0123
012
01
```

Patter 3

```
In [68]: import math
        print("Enter the limit for numbers to be checked:",end = '')
        len = int(input())

        for x in range(1,len):
            if (x % 2) != 0:
                print(str(x) * math.ceil(x/2))

Enter the limit for numbers to be checked:10
1
33
555
7777
99999
```

Pattern 4

```
In [48]: r = 6
        j = 2
        for y in range(1,r):
            for x in range(1,j):
                if x == j - 1:
                    print(j - x )
                    r-=1
                    j += 1
                else:
                    print(j - x , end = '')

1
21
321
4321
54321
```

Pattern 5

```
In [70]: print("Enter the number of rows to be printed:",end = '')
        len = int(input())

        x = 1
        for p in range(2,(len + 2)):
            z = x
            for n in range(x):
                if n == x - 1:
                    print(str(z))
                    x += p
                else:
                    print(str(z), end = '')

            z-=1

Enter the number of rows to be printed:4
1
321
654321
19987654321
```

Pattern 6

```
In [6]: n=int(input("Enter number of rows: "))
        a=[]
        for i in range(n):
            a.append([])
            a[i].append(1)
            for j in range(1,i):
                a[i].append(a[i-1][j-1]+a[i-1][j])
            if(i!=0):
                a[i].append(1)

        # print(a)
        # print(len(a))
        for x in range(len(a)):
            for y in range(len(a[x])):
                if (y == (len(a[x]) - 1)):
                    print(a[x][y])
                else:
                    print(a[x][y], end = ' ')

Enter number of rows: 6
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

Pattern 7

```
In [4]: rows = int(input("Enter the number of rows: "))
        for i in range(1, rows + 1):
            for j in range(i, rows + 1):
                if j <= i:
                    print(i, end=' ')
                else:
                    print(j, end=' ')
            print()

Enter the number of rows: 5
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 [5]: rows = int(input("Enter the number of rows: "))
        for i in range(1, rows+1):
            for j in range(1, i + 1):
                print(i * j, end=' ')
            print()

Enter the number of rows: 6
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
6 12 18 24 30 36
```

Pattern 9

```
In [7]: def stars(n):
        p = 2*n -2
        for i in range(n,-1,-1):
            for j in range(p,0,-1):
                print(end=" ")
            p = p +1
            for j in range(0, i+1):
                print("++", end=" ")
            print("\r\n")

        stars(5)

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```

Pattern 10

```
In [10]: r = int(input("Enter the number of rows: "))
        s = (2 * r) - 2
        for i in range(0, r):
            for j in range(0, s):
                print(end=" ")
            s = s - 1
            for j in range(0, i + 1):
                print("++", end=' ')
            print(" ")

Enter the number of rows: 7

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```

Pattern 11

```
In [11]: 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(" ")

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Pattern 12

```
In [13]: def stars(n):
        for i in range(0, n):
            for j in range(0, i + 1):
                print("++", end=" ")
            print("\r\n")
        for i in range(n, -1, -1):
            for j in range(0, i + 1):
                print("++", end=" ")
            print("\r\n")

        stars(5)

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```

Pattern 13

```
In [14]: rows = 5
        i = 1
        while i <= rows:
            j = i
            while j < rows:
                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

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```

Pattern 14

```
In [15]: 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

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```

Pattern 15

```
In [16]: 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

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