Python code for printing the Hollow pattern (right angle triangle)

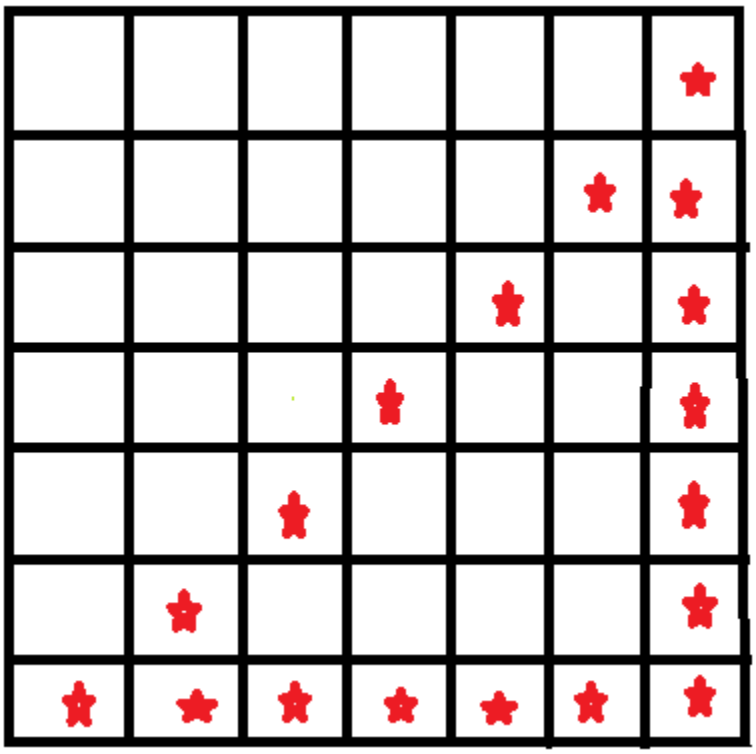
In this cheat sheet, let's see how to print the Hollow right-angled triangle pattern

Below is the pattern of the Hollow right-angled triangle

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

Now, let's see how to print the 7x7 hollow right-angled triangle pattern.

Logical approach:



Note

In the above image, each empty box contains 2 spaces (double space ' '), and each star is followed by a space ('* ').

While writing the code,

you need to print * as '* '(star followed by space).

you need to print 2 spaces(' ') in place of a single space.

The above image is the 7x7 pattern of the hollow right-angled triangle

The first row has 6 spaces and has one star.

The second row has 5 spaces and the first star and the second star.

The third, fourth, fifth, and sixth rows have decreasing spaces, followed by the first star with increasing hollow spaces, then the second star.

The last row has 7 stars.

Here in this problem

space is denoted as the ' ' (Double Spaces)

star set denoted as the '* ' (Star is followed by space)

Let's now discuss line by line

Now, let's see how to print the above pattern using a python program.

We can divide the above pattern logic into 3 parts

Part 1: we have spaces and star('*') in first line

Part 2: we have spaces, star, hollow spaces, star (middle lines)

Part 3: we have star set('* ') in the last line

Code:

We can use the For loop and if-elif-else statement to execute the particular part.

```
N = 7

for i in range(0, N):

    if i == 0: # part- 1 logic

        print('  '* (N-1) + '*')

    elif i == N - 1: # part- 3 logic

        print('* ' * N)

    else:  # part- 2 logic
        left_spaces = '  ' * (N -i-1)

        hollow_spaces = ('  ' * ( i - 1))

        print(left_spaces + '* ' + hollow_spaces + '*')
```

Now let's see the explanation of the for loop execution, step by step:

Part - 1 (first line):

i = 0

The first row has 6 spaces followed by one star. In order to get 6 no. of spaces, we must subtract 1 from the N value.

```
spaces = '  ' * (N-1)  =  6 // Here N
```

Output is

```
    *
```

Part - 2 (logic to print the Second line to Sixth line):

i = 1

In the second row, we have 5 spaces followed by the first star and hallow spaces followed by the second star. In order to get 5 no.of spaces, we must subtract 1 and i value from the N value.

spaces = ' ' * (N-i-1) = 5

hollow_spaces = (' ' * (i - 1)) = 0

Output is

```
    *
   * *
```

i = 2

In the third row, we have 4 spaces followed by the first star and hallow spaces followed by the second star. In order to get 4 no.of spaces, we must subtract 1 and i value from the N value.

spaces = ' ' * (N-i-1) = 4

hollow_spaces = (' ' * (i - 1)) = 1

Output is

```
    *
   * *
```

```
    *   *
```

i = 3

In the fourth row, we have 3 spaces followed by the first star and hallow spaces followed by the second star. In order to get 3 no.of spaces, we must subtract 1 and i value from the N value.

```
spaces = '  ' * (N-i-1)    =   3
hollow_spaces = ('  ' * ( i - 1 )) = 2
```

Output is

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

i = 4

In the fifth row, we have 2 spaces followed by the first star and hallow spaces followed by the second star. In order to get 2 no.of spaces, we must subtract 1 and i value from the N value.

```
spaces = '  ' * (N-i-1)    =   2
hollow_spaces = ('  ' * ( i - 1 )) = 3
```

Output is

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

i = 5

In the sixth row, we have 1 space followed by the first star and hallow spaces followed by the second star. In order to get 1 space, we must subtract 1 and i value from the N value.

spaces = ' ' * (N-i-1) = 1

hollow_spaces = (' ' * (i - 1)) = 4

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

Part - 3 (Seventh line):

i = 6

stars = '* ' * N

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