

Nested for loop (pattern program)

	C=1	2	3	4	5	6
T=1	x					
T=2	x	x				
T=3	x	x	x			
T=4	x	x	x	x		
T=5	x	x	x	x	x	
T=6	x	x	x	x	x	x

```

for (T=1; T<=n; T++)
{
    for (C=1; C<=T; C++)
    {
        printf("*");
    }
    printf("\n");
}

```

- ① row is responsible for changing the line
- ② column is responsible for printing the value
- ③ inner for loop is column and outer for loop is row
- ④ row always depends on no of lines
- ⑤ column always depends on value of row

Dry Run

T=1	C=X2	n=6
T=2	C=X23	
T=3	C=X234	
T=4	C=X2345	
T=5	C=X23456	
T=6	C=X234567	

Nested for loop (pattern program)

	C=1	2	3	4	5
$r=5$	x	x	x	x	x
$r=4$	x	x	x	x	
$r=3$	x	x	x		
$r=2$	x	x			
$r=1$	x				

```

for(r=n; r>=1; r--)
{
    for(c=1; c<=r; c++)
    {
        printf(" * ");
    }
    printf("\n");
}

```

- (1) row is responsible for changing the line
- (2) column is responsible for printing the value
- (3) inner for loop is column and outer for loop is row
- (4) row always depends on no of lines
- (5) column always depends on value of row

Dry Run

$r=5$	$c = 1 \ 2 \ 3 \ 4 \ 5$	$n = 5$
$r=4$	$c = 1 \ 2 \ 3 \ 4$	
$r=3$	$c = 1 \ 2 \ 3$	
$r=2$	$c = 1 \ 2$	
$r=1$	$c = 1$	

```

* * * * *
* * * *
* * *
* *
*

```

(1) x x x x x
 x x x x
 x x x x
 x x x x

(2) 

(3)

(5)

A 5x5 grid of 'x' characters, representing a 5x5 matrix. The grid is as follows:

x				
	x	x	x	
x	x	x	x	x
x	x	x	x	x
x	x	x	x	x

A 5x5 grid of 'x' marks, representing a 5x5 matrix. The grid is composed of five rows and five columns of 'x' characters.

(8) x x x x x x x x
 x x x x x x x x
 x x x x x x x x
 x x x x x x x x

(9) $\begin{array}{cccc} 1 & & & \\ | & 2 & & \\ | & 2 & 3 & \\ | & 2 & 3 & 4 \\ | & 2 & 3 & 4 & 5 \end{array}$

(10) 1 2 3 4 5
1 2 3 4
1 2 3
1 2
1

(11) 1 2 3 4 5
2 3 4 5
3 4 5
4 5
5

$$\textcircled{12} \quad \begin{matrix} 1 & 2 & 3 & 4 & 5 \\ & 1 & 2 & 3 & 4 \\ & & 1 & 2 & 3 \\ & & & 1 & 2 \\ & & & & 1 \end{matrix}$$

$$\begin{array}{r} \textcircled{12} \quad 5 \ 4 \ 3 \ 2 \ 1 \\ \qquad \quad 4 \ 3 \ 2 \ 1 \\ \qquad \qquad \qquad 3 \ 2 \ 1 \\ \qquad \qquad \qquad 2 \ 1 \\ \qquad \qquad \qquad 1 \end{array}$$

$$\textcircled{14} \quad \begin{matrix} 5 & 5 & 5 & 5 \\ 4 & 4 & 4 & 4 \\ 3 & 3 & 3 \\ 2 & 2 \end{matrix}$$

$$(15) \quad \begin{array}{r} 1 \\ 101 \\ 10101 \\ 1010101 \\ 101010101 \end{array}$$

$$\textcircled{17} \quad \begin{matrix} & 1 \\ & 1 & 1 \\ 1 & 2 & 1 \\ 1 & 3 & 3 & 1 \\ 1 & 4 & 6 & 4 & 1 \end{matrix}$$

(Pascal triangle)

(18) 1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

(19) 1
 0 1
 1 0 1
 0 1 0 1
 1 0 1 0

(Floyd
Triangle)

2
1 (20) 5 5 5 5 5
5 4 4 4 4
5 4 3 3 3
5 4 3 2 2
5 4 3 2 1

$$(2) \begin{array}{r} 54321 \\ 12345 \end{array}$$

(22)

1
1 2 3
1 2 3 4 5
1 2 3 4 5 6

5
 (Floyd Triangle)