

③ Half pyramid:-

input = $n = 4$

*

1st row $\rightarrow 1$

* *

2nd row $\rightarrow 2$

* * *

3rd row $\rightarrow 3$

* * * *

4th row = 4

row no = total columns.

for ($i = 1$ to n)

for ($j = 1$ to i)

④ 'inverted half pyramid' input = 4

* * * *

* * *

* *

*

for ($i = n$ to 1)

for ($j = 1$ to i)

⑤ Print inverted half pyramid rotated by 90°

$n = 4$

	$n-i$	i	$\frac{n}{2}$
- - - *	3 space	1 star = 4	
- - * *	2 space	2 star = 4	
- * * *	1 space	3 star = 4	
* * * *	0 space	4 star = 4	

for (i=1; i<=n; i++){

Print space

for (j=1; j<=n-i; j++){

cout (" ")

Print stars

for (j=1; j<=i; j++){

cout ("*")

③ Half pyramid with numbers : $n = 5$

1	row no 1	no 1 to 1
1 2	row no 2	no 1 to 2
1 2 3	row no 3	no 1 to 3
1 2 3 4	row no 4	no 1 to 4
1 2 3 4 5	row no 5	no 1 to 5

for (i=1; i<=n; i++){

for (j=1; j<=i; j++){

cout (j)

invert half

⑦ Print the [^] pyramid with numbers:—

1 2 3 4 5	$r = 1$	1 to 5
1 2 3 4	$r = 2$	1 to 4
1 2 3	$r = 3$	1 to 3
1 2	$r = 4$	1 to 2
1	$r = 5$	1 to 1

for (i to n)
for (j to n-i+1)

⑧ Floyd's Triangle:—

1	$r = 1$	1
2 3	$r = 2$	2 val (2, 3)
4 5 6	$r = 3$	3 val (4, 5, 6)
7 8 9 10	$r = 4$	4 val (7, 8, 9, 10)
11 12 13 14 15	$r = 5$	5 val (11, 12, 13, 14, 15)

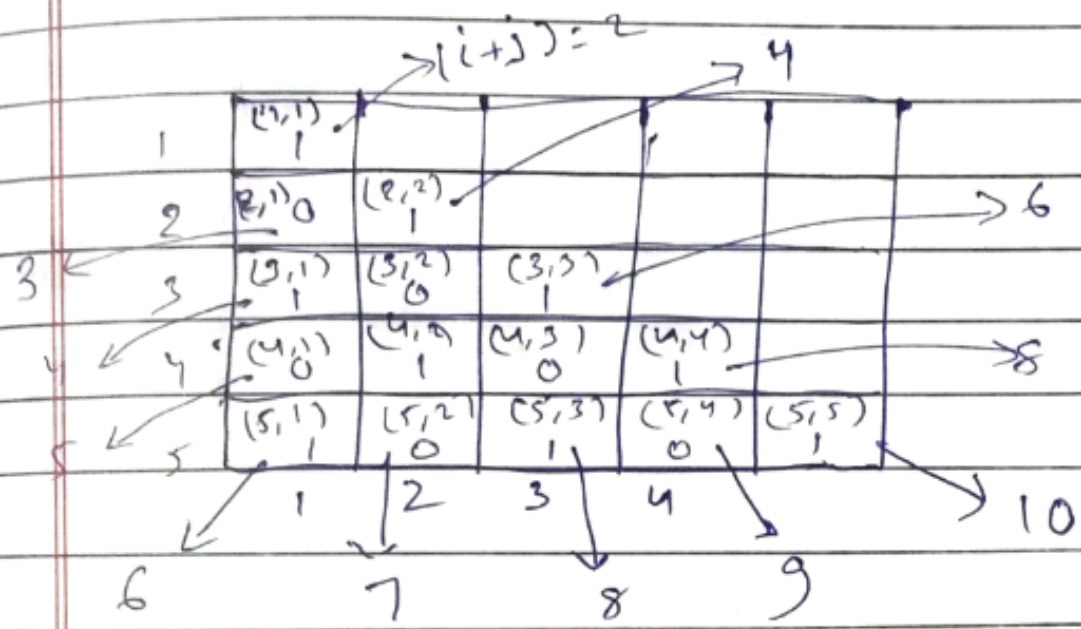
$n = 5$
number = 1 $r = i$

for (i to n)
for (j to i) {
 Sout (number)
 number++

n=5

⑨ 0-1 Triangle

1	$x=1$	val	1	(1)
0 1	$x=2$	2	(0, 1)	
1 0 1	$x=3$	3	(1, 0, 1)	
0 1 0 1	$x=4$	4	(0, 1, 0, 1)	
1 0 1 0 1	$x=5$	5	(1, 0, 1, 0, 1)	



(i+j)
Even = 1
odd = 0

for (i to n) {
 for (j to i) {

~~int sum = i+j;~~

int sum = i+j;

if (sum % 2 == 0) { // even

 cout << "1";

else {
 cout << "0";

10

$n=4$

Butterfly pattern:

row

* - - - - *	1 1 star 6 spaces 1 star
* * * *	2 2 star 4 spaces 2 star
* * * * * *	3 3 star 2 spaces 3 star
* * * * * * * *	4 4 star 0 spaces 4 star
* * * * * * * *	
* * * *	
* * * *	
* *	

repeat

$i=1$ $2 * (3) \rightarrow n-i = (4-1)$
 $i=2$ $2 * (2) \rightarrow n-i = (4-2)$
 $i=3$ $2 * (1) \rightarrow n-i = (4-3)$
 $i=4$ $2 * (0) \rightarrow n-i = (4-4)$

Spaces = $2 * (n-i)$

//outer

→ 1st half

for ($i=1$ to n)

// 1st part stars

for ($j=1$ to i)

spaces = $2 * (n-i)$

for ($j=1$ to spaces)

// 2nd part stars

for (int $i=1$ to i)

incl left

for (i=n to 1)

⑩ Solid Rhombus: $n=5$

										row	spaces	stars
-	-	-	-	*	*	*	*	*	*	$\leftarrow i=1$	4	5
-	-	-	*	*	*	*	*	*	*	$\leftarrow i=2$	3	5
-	-	*	*	*	*	*	*			$\leftarrow i=3$	2	5
-	*	*	*	*	*	*				$\leftarrow i=4$	1	5
*	*	*	*	*	*					$\leftarrow i=5$	0	5

$$\text{Space} = n - i$$

⑩ Print the pattern Number Pyramid

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

-	-	-	-	-	1			
-	-	-	2	-	2			
-	-	3	-	3	-	3		
-	4	-	4	-	4	-	4	
5	-	5	-	5	-	5	-	5

palindromic pattern

18. n = 5

ex BOB, 121

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- - - - 1
- - - 2 1 2
- - 3 2 1 2 3
- 4 3 2 1 2 3 4
5 4 3 2 1 2 3 4 5
  
```

spaces = $n - i$

Row	spaces	first half	2nd half
1	4	1 to 1	X
2	3	2 to 1	2
3	2	3 to 1	2 to 3
4	1	4 to 1	2 to 4
5	0	5 to 1	2 to 5
	↓	↓	↓
	$j = n - i$	for ($j = i + 1$) backward	for ($j = 2$ to i) forward

(14)

Diamond pattern

n=4

```

- - - *
- - * * *
- * * * *
* * * * *
* * * * *
  * * * *
    * * *
      *
  
```

stars
 1
 3
 5
 7

Stars = 1

Stars = $2 \times 2 - 1 = 3$

Stars = $2 \times 3 - 1 = 5$

Stars = $2 \times 4 - 1 = 7$

$j = 2 \times i - 1$

row

spaces

stars

i=1

3

1

i=2

2

3

i=3

1

5

i=4

0

7

↓

↓

$j = n - i$

$j = 2 \times i - 1$