

C programming Bangla Tutorial | Pattern_type1

Pattern Type-1

2

Pattern-1

N=3

```
1
1 2
1 2 3
```

Pattern-3

N=3

```
1
1 0
1 0 1
```

Pattern-5

N=3

```
A
A B
A B C
```

Pattern-7

N=3

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

Pattern-2

N=3

```
1
2 2
3 3 3
```

Number right angle triangle

Pattern-4

N=3

```
1
0 0
1 1 1
```

Binary right angle triangle

Pattern-6

N=3

```
A
B B
C C C
```

Alphabetic right angle triangle

Pattern-8

N=3

```
#
# #
# # #
```

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```

#include <stdio.h>           //pattern 1
int main(){
    int n, row, col;
    scanf("%d", &n);
    printf("\n");

    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        } printf("\n");
    }
    return 0;
}

```

```

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5

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

```

#include <stdio.h>           //pattern 2
int main(){
    int n, row, col;
    scanf("%d", &n);
    printf("\n");

    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%d ", row);
        } printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
5

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

```

#include <stdio.h>           //pattern 3
int main(){
    int n, row, col;
    printf("Enter N:");
    scanf("%d", &n);
    printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%d ", col%2);
        } printf("\n");
    }
    return 0;
}

```

```

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Enter N:5

1
1 0
1 0 1
1 0 1 0
1 0 1 0 1
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```

```

#include <stdio.h>           //pattern 4
int main(){
    int n, row, col;
    printf("Enter N:");
    scanf("%d", &n);
    printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%d ", row%2);
        } printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N:5

1
0 0
1 1 1
0 0 0 0
1 1 1 1 1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>           //pattern 5

int main(){
    int n, row, col;
    printf("Enter N:");
    scanf("%d", &n);
    printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%c ", col+64);
        } printf("\n");
    }
    return 0;
}

```

```

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Enter N:5

```

```

A
A B
A B C
A B C D
A B C D E
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```

```

#include <stdio.h>           //pattern 6

int main(){
    int n, row, col;
    printf("Enter N:");
    scanf("%d", &n);
    printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        } printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N:5

```

```

a
b b
c c c
d d d d
e e e e e
PS D:\CSE 1121-22\

```

```

#include <stdio.h>           //pattern 7 & 8
int main(){
    int n, row, col;
    printf("Enter N:");
    scanf("%d", &n);
    printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("@*$$#\t");
        } printf("\n");
    }
    return 0;
}

```

```

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Enter N:5

@*$$#
@*$$#   @*$$#
@*$$#   @*$$#   @*$$#
@*$$#   @*$$#   @*$$#   @*$$#
@*$$#   @*$$#   @*$$#   @*$$#   @*$$#
PS D:\CSE 1121-22\1st finals\Pattern P

```

C programming Bangla Tutorial | Pattern_type2

Pattern Type-2

5

Pattern-1

N=3

```
1 2 3
1 2
1
```

Pattern-3

N=3

```
1 0 1
1 0
1
```

Pattern-5

N=3

```
A B C
A B
A
```

Pattern-7

N=3

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

Pattern-2

N=3

```
3 3 3
2 2
1
```

Pattern-4

N=3

```
1 1 1
0 0
1
```

Pattern-6

N=3

```
C C C
B B
A
```

Pattern-8

N=3

```
# # #
# #
#
```

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```
#include <stdio.h>          //pattern 2.1
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        } printf("\n");
    } printf("\n");
return 0;
}
```

```
PS D:\CSE 1121-22\
Enter:5

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

PS D:\CSE 1121-22\
```

```
#include <stdio.h>          //pattern 2.2
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", row);
        } printf("\n");
    } printf("\n");
return 0;
}
```

```
PS D:\CSE 1121-22\
Enter:5

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

PS D:\CSE 1121-22\
```

```

#include <stdio.h>          //pattern 2.3
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", col%2);
        } printf("\n");
    } printf("\n");
    return 0;
}

```

```

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Enter:5

1 0 1 0 1
1 0 1 0
1 0 1
1 0
1

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```

```

#include <stdio.h>          //pattern 2.4
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", row%2);
        } printf("\n");
    } printf("\n");
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter:5

1 1 1 1 1
0 0 0 0
1 1 1
0 0
1

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```



```
#include <stdio.h>          //pattern 2.5
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%c ", col+64);
        } printf("\n");
    } printf("\n");
return 0;
}
```

```
PS D:\CSE 1121-22\
Enter:5

A B C D E
A B C D
A B C
A B
A

PS D:\CSE 1121-22\
```

```
#include <stdio.h>          //pattern 2.6
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        } printf("\n");
    } printf("\n");
return 0;
}
```

```
PS D:\CSE 1121-22\
Enter:5

e e e e e
d d d d
c c c
b b
a

PS D:\CSE 1121-22\
```

```

#include <stdio.h>          //pattern 2.7 & 2.8
int main(){
    int n, row, col;
    printf("Enter:"); scanf("%d", &n);
    printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("@*$#\t");
        } printf("\n");
    } printf("\n");
    return 0;
}

```

```

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Enter:5

@*$#    @*$#    @*$#    @*$#    @*$#
@*$#    @*$#    @*$#    @*$#
@*$#    @*$#    @*$#
@*$#    @*$#
@*$#

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```

C programming Bangla Tutorial | Pattern_type3

Pattern Type-3

8

Pattern-1

N=3

```
1
1 2
1 2 3
```

Pattern-2

N=3

```
1 2 3
1 2
1
```

Pattern

N=3

```
1
1 2
1 2 3
1 2 3
1 2
1
```

Pattern-1

N=3

```
1
1 2
1 2 3
1 2
1
```

Pattern-2

N=3

```
1
2 2
3 3 3
2 2
1
```

Pattern-3

N=3

```
A
A B
A B C
A B
A
```

Pattern-4

N=3

```
A
B B
C C C
B B
A
```

Pattern-5

N=3

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

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```

#include <stdio.h>
int main(){
    int N, row, col;
    printf("Enter N: ");
    scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        }printf("\n");
    }

    for (row=N; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        }printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>          //pattern 3.1
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        }printf("\n");
    }for (row=N-1; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", col);
        }printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>          //pattern 3.2
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf("%d ", row);
        }printf("\n");
    }
    for (row=N-1; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%d ", row);
        }printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
4 4 4 4
3 3 3
2 2
1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>          //pattern 3.3
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf("%c ", col+64);
        }printf("\n");
    }
    for (row=N-1; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%c ", col+64);
        }printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
A
A B
A B C
A B C D
A B C D E
A B C D
A B C
A B
A
PS D:\CSE 1121-22\

```

```

#include <stdio.h>          //pattern 3.4
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        }printf("\n");
    }
    for (row=N-1; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        }printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
a
b b
c c c
d d d d
e e e e e
d d d d
c c c
b b
a
PS D:\CSE 1121-22\

```

```

#include <stdio.h>          //pattern 3.4
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    for (row=1; row<=N; row++){
        for (col=1; col<=row; col++){
            printf(">");
        }printf("\n");
    }
    for (row=N-1; row>=1; row--){
        for (col=1; col<=row; col++){
            printf(">");
        }printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
Enter N: 5
>
>>
>>>
>>>>
>>>>>
>>>>
>>>
>>
>
PS D:\CSE 1121-22\

```

C programming Bangla Tutorial | Pattern_type4

Pattern Type-4

9

Pattern-1

N=3

```
1
1 2
1 2 3
```

Pattern-3

N=3

```
1
1 0
1 0 1
```

Pattern-5

N=3

```
A
A B
A B C
```

Pattern-7

N=3

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

Pattern-2

N=3

```
1
2 2
3 3 3
```

Pattern-4

N=3

```
1
0 0
1 1 1
```

Pattern-6

N=3

```
A
B B
C C C
```

Pattern-8

N=3

```
#
# #
# # #
```

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SIMULATION

when n=3

row = 1 <=(n=3) ↴ //outer most loop for 3 of rows

col = 1 <=(3-1(row)) print " " col++

col = 2 <=(3-1(row)) print " " col++

col = 3 <=(3-1(row)) ✕ //1st inner loop ends

col = 1 <=row=1 print "1" col++

col = 2 <=row=1 ✕ //2nd inner loop ends

row++

↻ //back to beginning of the mother loop

row =2 <=(n=3) ↴

col = 1 <=(3-2(row)) col++

col = 2 <=(3-2(row)) ✕

col = 1 <=row=2 print "1" col++

col = 2 <=row=2 print "2" col++

col = 3 <=row=2 ✕

row++

row = 3 <=(n=3) ↴

col = 1 <=(3-3(row)) ✕

col = 1 <=row=3 print "1" col++

col = 2 <=row=3 print "2" col++

col = 3 <=row=3 print "3" col++

col = 4 <=row=3 ✕

row++

row = 4 <=(n=3) ✕

		1
	1	2
1	2	3


```

#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);

    for (row=1; row<=n; row++){
        //printing space
        for (col=1; col<=n-row; col++)
            printf(" ");

        //printing the number
        for (col=1; col<=row; col++)
            printf("%d", col);

        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
N=5
    1
   12
  123
 1234
12345
PS D:\CSE 1121-22\

```

REST ARE AS FOLLOWS:

```

    printf("%d", row);
    printf("%d", col%2);
    printf("%d", row%2);
    printf("%c", col+64);
    printf("%c", row+64);
    printf("%c", col+96);
    printf("%c", row+96);
    printf("*");
    printf("#");

```

C programming Bangla Tutorial | Pattern_type5

Pattern Type-5

12

Pattern-1

N=3

```
1 2 3
1 2
1
```

Pattern-3

N=3

```
1 0 1
1 0
1
```

Pattern-5

N=3

```
A B C
A B
A
```

Pattern-7

N=3

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

Pattern-2

N=3

```
3 3 3
2 2
1
```

Pattern-4

N=3

```
1 1 1
0 0
1
```

Pattern-6

N=3

```
C C C
B B
A
```

Pattern-8

N=3

```
###
##
#
```

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SIMULATION

when n=3

(descending)

```
row = 3    >=1    ↴
    col = 1    <=(3-3(row))    ✗
    col = 1    <=row=3    print "1"    col++
    col = 2    <=row=3    print "2"    col++
    col = 3    <=row=3    print "3"    col++
col = 4    <=row=3    ✗
row--
```

↺ //back to beginning of the mother loop

```
row = 2    >=1    ↴
    col = 1    <=(3-2(row))    col++
    col = 2    <=(3-2(row))    ✗    //same as before XD
    col = 1    <=row=2    print "1"    col++
    col = 2    <=row=2    print "2"    col++
    col = 3    <=row=2    ✗
row--
```

```
row = 1    >=1    ↴
    col = 1    <=(3-3(row))    print " "    col++
    col = 2    <=(3-1(row))    print " "    col++
    col = 3    <=(3-1(row))    ✗
    col = 1    <=row=1    print "1"    col++
    col = 2    <=row=1    ✗
row--
```

```
row = 0    >=1    ✗
```

1	2	3
	1	2
		1

```

#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);
    printf("\n");

    for (row=n; row>=1; row--){
        //printing spaces
        for (col=1; col<=n-row; col++)
            printf(" ");

        //printing the numbers
        for (col=1; col<=row; col++)
            printf("%d ", col);

        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
N=5

12345
 1234
   123
    12
     1
PS D:\CSE 1121-22\

```

REST ARE AS FOLLOWS:

```

    printf("%d", row);
    printf("%d", col%2);
    printf("%d", row%2);
    printf("%c", col+64);
    printf("%c", row+64);
    printf("%c", col+96);
    printf("%c", row+96);
    printf("*");
    printf("#");

```

C programming Bangla Tutorial | Pattern_type6

Pattern Type-6

14

Pattern-1
N=3

```
1
1 2
1 2 3
```

Pattern-2
N=3

```
1 2 3
1 2
1
```

Pattern
N=3

```
1
1 2
1 2 3
1 2 3
1 2
1
```

Pattern-1
N=3

```
1
1 2
1 2 3
1 2
1
```

Pattern-2
N=3

```
1
2 2
3 3 3
2 2
1
```

Pattern-3
N=3

```
A
A B
A B C
A B
A
```

Pattern-4
N=3

```
A
B B
C C C
B B
A
```

Pattern-5
N=3

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

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```

#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);

    for (row=1; row<=n; row++){
        for (col=1; col<=n-row; col++)
        {
            printf(" ");
        }
        for (col=1; col<=row; col++)
        {
            printf("%d", col);
        }
        printf("\n");
    }

    for (row=n; row>=1; row--){
        for (col=1; col<=n-row; col++)
        {
            printf(" ");
        }
        for (col=1; col<=row; col++){
            printf("%d", col);
        }
        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
N=5
    1
   12
  123
 1234
12345
12345
 1234
   123
    12
     1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);

    for (row=1; row<=n; row++){
        for (col=1; col<=n-row; col++)
            printf(" ");

        for (col=1; col<=row; col++)
            printf("%d", col);

        printf("\n");
    }

    for (row=n-1; row>=1; row--){
        for (col=1; col<=n-row; col++)
            printf(" ");

        for (col=1; col<=row; col++)
            printf("%d", col);

        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
N=5
    1
   12
  123
 1234
12345
 1234
   123
    12
     1
PS D:\CSE 1121-22\

```

REST ARE AS FOLLOWS:

```

{printf("%d", row);
...
printf("%d", row);}

{printf("*");
...
printf("*");}

{printf("#");
...
printf("@");}

```

```

{printf("%d", col%2);
...
printf("%d", col%2);}

{printf("%d", row%2);
...
printf("%d", row%2);}

{printf("%d", col%2);
...
printf("%d", row%2);}

{printf("%d", row%2);
...
printf("%d", col%2);}

```

```

{printf("%d",row+64);
...
printf("%d",row+96);}

{printf("%d",col+96);
...
printf("%d",row+96);}

{printf("%d",row+96);
...
printf("%d",col+64);}

{printf("%d",col+96);
...
printf("%d",col+96);}

```

C programming Bangla Tutorial | Pattern_type7

Pattern Type-7

15

Pattern-1
N=5

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

Pattern-2
N=5

```
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
```

Pattern-3
N=5

```
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
```

Pattern-4
N=5

```
A A A A A  
B B B B B  
C C C C C  
D D D D D  
E E E E E
```

Pattern-5
N=5

```
A B C D E  
A B C D E  
A B C D E  
A B C D E  
A B C D E
```

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```
#include <stdio.h>  
int main(){ // rows:5   columns:4  
  
    for (int r=1; r<=5; r++){  
        for (int c=1; c<=4; c++){  
            printf("* ");  
        } printf("\n");  
    }  
  
    return 0;  
}
```

```
PS D:\CSE 1121-22\  
* * * *  
* * * *  
* * * *  
* * * *  
* * * *  
PS D:\CSE 1121-22\
```


C programming Bangla Tutorial | Pattern_type

row × col

Pattern

17

Pattern-1

N=4

1
2 4
3 6 9
4 8 16 20

×	Column 1	Column 2	Column 3	Column 4
Row 1	1			
Row 2	2	4		
Row 3	3	6	9	
Row 4	4	8	12	16

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```

#include <stdio.h>
int main(){
    int n, r, c;
    printf("# of rows:");
    scanf("%d", &n);

    for (r=1; r<=n; r++)
    {
        for (c=1; c<=r; c++)
            printf("%d ", c*r);
        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
# of rows:5
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
PS D:\CSE 1121-22\

```

C programming Bangla Tutorial | Pattern_type8

Pyramid |

Pattern Type-8 (Pyramid-I)

18

Pattern-1

N=3

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

Pattern-2

N=3

```
  1
 2 2 2
3 3 3 3 3
```

Pattern-3

N=3

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

Pattern-4

N=3

```
  A
 B B B
C C C C C
```

Pattern-5

N=3

```
  A
 A B C
A B C D E
```

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19

Pattern-1

N=4

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

N = 4

	Col=1	Col=2	Col=3	Col=4	Col=5	Col=6	Col=7
Row=1				*			
Row=2			*	*	*		
Row=3		*	*	*	*	*	
Row=4	*	*	*	*	*	*	*

Loop1 : number of rows
`for(row=1; row<=n; row++)`

Loop2 : number of spaces
`for(col=1; col<=n-row; col++)`
`printf(" ");`

Loop3 : number of stars
`for(col=1; col<=2*row-1; col++)`
`printf("*");`

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(exclusively for Loop 3 - 2nd inner loop)

Step 1: look for the pattern/relationship between number of stars and number of rows for 'condition'.

Step 2: SIMULATION

row 1; print ' '(× 3); ↴
col=1 <=(2*1-1=1) print ' * ' col++
col=2 <=(2*1-1=1) **✗**

row 2; print ' '(× 2); ↴
col=1 <=(2*2-1=3) print ' * ' col++
col=2 <=(2*2-1=3) print ' * ' col++
col=3 <=(2*2-1=3) print ' * ' col++
col=4 <=(2*2-1=3) **✗**

row 3; print ' '(× 1); ↴
col=1 <=(2*3-1=5) print ' * ' col++
col=2 <=(2*3-1=5) print ' * ' col++
col=3 <=(2*3-1=5) print ' * ' col++
col=4 <=(2*3-1=5) print ' * ' col++
col=5 <=(2*3-1=5) print ' * ' col++
col=6 <=(2*3-1=5) **✗**

row 3; ↴
col=1 <=(2*4-1=7) print ' * ' col++
col=2 <=(2*4-1=7) print ' * ' col++
col=3 <=(2*4-1=7) print ' * ' col++
col=4 <=(2*4-1=7) print ' * ' col++
col=5 <=(2*4-1=7) print ' * ' col++
col=6 <=(2*4-1=7) print ' * ' col++
col=7 <=(2*4-1=7) print ' * ' col++
col=8 <=(2*4-1=7) **✗**

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("^");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
    ^
   ^^^
  ^^^^^
 ^^^^^^^
^^^^^^^^
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%d", c);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
    1
   123
  12345
 1234567
123456789
PS D:\CSE 1121-22\

```

```
#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%d", r);

        printf("\n");
    }
}
```

```
PS D:\CSE 1121-22\
#of rows 5
1
222
33333
4444444
555555555
PS D:\CSE 1121-22\
```

```
#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%c", r+96);

        printf("\n");
    }
}
```

```
PS D:\CSE 1121-22\
#of rows 5
a
bbb
cccc
ddddddd
eeeeeeee
PS D:\CSE 1121-22\
```

Give it a shot with Binary as well. C'mon, go ahead. It's not a suggestion. Do. It. And then let me know.

C programming Bangla Tutorial | Pattern_type9

Pattern Type-9

21

Pattern-1

N=3

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

Pattern-2

N=3

```
3 3 3 3 3  
2 2 2  
1
```

Pattern-3

N=3

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

Pattern-4

N=3

```
C C C C C  
B B B  
A
```

Pattern-5

N=3

```
A B C D E  
A B C  
A
```

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```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=n; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("*");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
*****
*****
*****
***
*
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=n; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%d", r);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
555555555
4444444
33333
222
1
PS D:\CSE 1121-22\

```



```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=n; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%d", c);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
123456789
 1234567
   12345
    123
     1
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=n; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%c", c+96);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
abcdefghi
 abcdefg
  abcde
   abc
    a
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=n; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("%c", r+64);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
EEEEEEEEEE
DDDDDDDD
CCCCC
BBB
A
PS D:\CSE 1121-22\

```

No need to bother with the Binary. But please do give me a proper explanation.

C programming Bangla Tutorial | Pattern_type10

Pattern Type-10

22

Pattern-3

N=3

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

Pattern-4

N=3

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

Pattern-1

N=3

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

Pattern-1

N=3

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

Pattern-2

N=3

```
1  
2 2 2  
3 3 3 3 3  
2 2 2  
1
```

Pattern-3

N=3

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

Pattern-4

N=3

```
A  
A B C  
A B C D E  
A B C  
A
```

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```

#include <stdio.h>
int main(){

    int n, r, c;

    printf("#of rows ");
    scanf("%d", &n);

    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=2*r-1; c++)
            printf("^");

        printf("\n");
    }

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

        for (c=1; c<=2*r-1; c++)
            printf("*");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
      ^
     ^^
    ^^^
   ^^^^^
  ^^^^^^^
 ^^^^^^^^^
*****
*****
*****
***
*
PS D:\CSE 1121-22\

```

```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");
        for (c=1; c<=2*r-1; c++)
            printf("^");
        printf("\n");
    }

    for (r=n-1; r>=1; r--)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");
        for (c=1; c<=2*r-1; c++)
            printf("*");
        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
  ^
 ^^^
 ^^^^^
 ^^^^^^^
 ^^^^^^^^
 *****
  *****
   *****
    *****
PS D:\CSE 1121-22\

```

REST ARE AS FOLLOWS:

```

{printf("%d", row);
...
printf("%d", row);}

{printf("%d", col);
...
printf("%d", col);}

{printf("*");
...
printf("#");}

```

```

{printf("%d", col%2);
...
printf("%d", col%2);}

{printf("%d", row%2);
...
printf("%d", row%2);}

{printf("%d", col%2);
...
printf("%d", row%2);}

{printf("%d", row%2);
...
printf("%d", col%2);}

```

```

{printf("%d",row+64);
...
printf("%d",row+96);}

{printf("%d",col+96);
...
printf("%d",row+96);}

{printf("%d",row+96);
...
printf("%d",col+64);}

{printf("%d",col+96);
...
printf("%d",col+96);}

```

C programming Bangla Tutorial|Pattern_type11

Pyramid ||

Pattern Type-11 (Pyramid II)

23

Pattern-1

N=4

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

Pattern-2

N=4

```
1
2 2
3 3 3
4 4 4 4
```

Pattern-3

N=4

```
1
1 2
1 2 3
1 2 3 4
```

Pattern-4

N=4

```
A
A B
A B C
A B C D
```

Pattern-5

N=4

```
A
B B
C C C
D D D D
```

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24

Pattern-1

N=4

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

N = 4

	C1	C2	C3	C4	C5	C6	C7
R1				*			
R2			*		*		
R3		*		*		*	
R4	*		*		*		*

Loop1 : number of rows
for(row=1; row<=n; row++)

Loop2 : number of spaces
for(col=1; col<=n-row; col++)
printf(" ");

Loop3 : number of stars
for(col=1; col<=row; col++)
printf("*");

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```

#include <stdio.h>
int main(){
    int n, r, c;
    printf("#of rows ");
    scanf("%d", &n);

    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=r; c++)
            printf("^ ");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
#of rows 5
      ^
     ^ ^
    ^ ^ ^
   ^ ^ ^ ^
  ^ ^ ^ ^ ^
PS D:\CSE 1121-22\

```

You may revise type-4 for this.

C programming Bangla Tutorial | Pattern_type12

Pattern Type-12

25

Pattern-1

N=4

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

Pattern-2

N=4

```
4 4 4 4  
3 3 3  
2 2  
1
```

Pattern-3

N=4

```
1 2 3 4  
1 2 3  
1 2  
1
```

Pattern-4

N=4

```
A B C D  
A B C  
A B  
A
```

Pattern-5

N=4

```
D D D D  
C C C  
B B  
A
```

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```

#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);
    printf("\n");

    for (row=n; row>=1; row--){

        for (col=1; col<=n-row; col++)
            printf(" ");

        for (col=1; col<=row; col++)
            printf("* ");

        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
N=5

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

PS D:\CSE 1121-22\

```

You may revise type-5 for this.

C programming Bangla Tutorial | Pattern_type13

27

N = 4

	C1	C2	C3	C4	C5	C6	C7
R1				*			
R2			*		*		
R3		*		*		*	
R4	*		*		*		*
R5		*		*		*	
R6			*		*		
R7				*			

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Upper part

Loop1 : number of rows
for(row=1; row<=n; row++)

Loop2 : number of spaces
for(col=1; col<=n-row; col++)
printf(" ");

Loop3 : number of stars
for(col=1; col<=row; col++)
printf("* ");

Lower part

Loop1 : number of rows
for(row=n-1; row>=1; row--)

Loop2 : number of spaces
for(col=1; col<=n-row; col++)
printf(" ");

Loop3 : number of stars
for(col=1; col<=row; col++)
printf("* ");

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Pattern Type-13

26

Pattern-1

N=3

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

Pattern-2

N=3

```
1
2 2
3 3 3
2 2
1
```

Pattern-3

N=3

```
1
1 2
1 2 3
1 2
1
```

Pattern-4

N=3

```
A
A B
A B C
A B
A
```

Pattern-5

N=3

```
A
B B
C C C
B B
A
```

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```

#include <stdio.h>
int main(){
    int n, r, c; printf("#of rows ");
    scanf("%d", &n);
    for (r=1; r<=n; r++)
    {
        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=r; c++)
            printf(": ");

        printf("\n");
    }

    for (r=n-1; r>=1; r--){

        for (c=1; c<=n-r; c++)
            printf(" ");

        for (c=1; c<=r; c++)
            printf(": ");

        printf("\n");
    }
    return 0;
}

```

```

PS D:\CSE 1121-22\
#of rows 5
:
: :
: : :
: : : :
: : : : :
: : : :
: : :
: :
:
PS D:\CSE 1121-22\

```

PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'
#of rows 5	#of rows 5	#of rows 5	#of rows 5
1	1	a	A
2 2	1 0	b b	B B
3 3 3	1 0 1	c c c	C C C
4 4 4 4	1 0 1 0	d d d d	D D D D
5 5 5 5 5	1 0 1 0 1	e e e e e	E E E E E
4 4 4 4	1 0 1 0	d d d d	D D D D
3 3 3	1 0 1	c c c	C C C
2 2	1 0	b b	B B
1	1	a	A
PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'
PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'
#of rows 5	#of rows 5	#of rows 5	#of rows 5
1	1	a	A
1 2	0 0	a b	A B
1 2 3	1 1 1	a b c	A B C
1 2 3 4	0 0 0 0	a b c d	A B C D
1 2 3 4 5	1 1 1 1 1	a b c d e	A B C D E
1 2 3 4	0 0 0 0	a b c d	A B C D
1 2 3	1 1 1	a b c	A B C
1 2	0 0	a b	A B
1	1	a	A
PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'	PS D:\CSE 1121-22\'

```
printf("...");
```

```
#of rows 5
  .:
 .: .:
.: .: .:
.: .: .: .:
.: .: .: .: .:
.: .: .: .: .: .:
.: .: .: .: .: .:
.: .: .: .: .:
.: .: .: .:
.: .:
.:
```

C programming Bangla Tutorial | Pattern_type

rectangle border

Rectangle star Pattern

28

N=5

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

N = 5

	C1	C2	C3	C4	C5
R1	*	*	*	*	*
R2	*				*
R3	*				*
R4	*				*
R5	*	*	*	*	*

Loop1 : number of rows
for(row=1; row<=n; row++)

Loop2 : iterate through column
for(col=1; col<=n; col++)

Inside inner loop print star for first and last row or for first and last column.

```
if(row==1 || row==n || col==1 || col==n)
    printf("*");
```

```
else
    printf(" ");
```

```
printf("\n");
```

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```

#include <stdio.h>
int main(){
    int N, R, C;
    printf("iterate "); scanf("%d", &N);

    for (R=1; R<=N; R++)
    {
        for (C=1; C<=N; C++)

            if (R==1 || R==N || C==1 || C==N)
                printf("=");
            else printf(" ");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
iterate 5
=====
=           =
=           =
=           =
=====
PS D:\CSE 1121-22\

```

C programming Bangla Tutorial | Pattern_type

triangle border

Triangle star Pattern

29

N=5

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

N = 5

	C1	C2	C3	C4	C5
R1	*				
R2	*	*			
R3	*		*		
R4	*			*	
R5	*	*	*	*	*

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```

#include <stdio.h>
int main(){
    int N, R, C;
    printf("iterate "); scanf("%d", &N);

    for (R=1; R<=N; R++)
    {
        for (C=1; C<=R; C++)

            if (C==1 || R==N || C==R)
                printf("\\ ");
            else printf(" ");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
iterate 5
\
\ \
\   \
\     \
\ \ \ \ \
PS D:\CSE 1121-22\
PS D:\CSE 1121-22\
iterate 5
/
/ /
/   /
/     /
/ / / / /
PS D:\CSE 1121-22\

```


C programming Bangla Tutorial | Pattern_type



X star Pattern

31



N = 5

	C1	C2	C3	C4	C5
R1	*				*
R2		*		*	
R3			*		
R4		*		*	
R5	*				*

Loop1 : number of rows
for(row=1; row<=n; row++)

Loop2 : iterate through column
for(col=1; col<=n; col++)

if(row==col || row+col==n+1)
printf("*");

else
printf(" ");

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```

#include <stdio.h>
int main(){
    int N, R, C;
    printf("iterate "); scanf("%d", &N);

    for (R=1; R<=N; R++)
    {
        for (C=1; C<=N; C++)

            if (C+R==N+1 || C==R)
                printf("X ");
            else printf("  ");

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
iterate 5
X      X
  X    X
    X
  X    X
X      X
PS D:\CSE 1121-22\

```

C programming Bangla Tutorial | Pattern_type

Floyd's triangle

Floyd's Triangle

32

- N = 4

1
2 3
4 5 6
7 8 9 10

- N = 4

*
* *
* * *
* * * *

- N = 4

1
1 2
1 2 3
1 2 3 4

- It is a right angled triangular array of natural number.

- It is defined by filling the rows of the triangle with consecutive numbers, starting with the number one in the top left corner.

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Floyd's Triangle

33

- N = 4

1
2 3
4 5 6
7 8 9 10

N = 4

	C1	C2	C3	C4
R1	1			
R2	2	3		
R3	4	5	6	
R4	7	8	9	10

```
count=0;
for(row=1; row<=n; row++)
{
    //number of columns
    for(col=1; col<=row; col++)
    {
        printf("%d",++count);
    }

    printf("\n");
}
```

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```

#include<stdio.h>
int main(){
    int N, R, C;
    printf("iterate ");
    scanf("%d", &N);

    int count=0;
    for (R=1; R<=N; R++){
        for (C=1; C<=R; C++)

            printf("%d ", ++count);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
iterate 5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
PS D:\CSE 1121-22\

```

C programming Bangla Tutorial | Pattern_type

the last triangle

34

N = 4

	C1	C2	C3	C4	C5	C6	C7
R1				1			
R2			1	2	1		
R3		1	2	3	2	1	
R4	1	2	3	4	3	2	1

N = 4

	C1	C2	C3	C4	C5	C6	C7
R1				1			
R2			1	2	1		
R3		1	2	3	2	1	
R4	1	2	3	4	3	2	1

N = 4

	C1	C2	C3	C4	C5	C6	C7
R1				1			
R2			1	2	1		
R3		1	2	3	2	1	
R4	1	2	3	4	3	2	1

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```
#include<stdio.h>
int main(){
    int N,R,C; printf("height=");
    scanf("%d", &N);

    for (R=1; R<=N; R++){
        for (C=1; C<=N-R; C++)
            printf(" ");
        for (C=1; C<=R; C++)
            printf("%d", C);

        for (C=R-1; C>=1; C--)
            printf("%d", C);

        printf("\n");
    }
}
```

```
PS D:\CSE 1121-22\
height=5
    1
   121
  12321
 1234321
123454321
PS D:\CSE 1121-22\
```

```
#include<stdio.h>
int main(){
    int N,R,C; printf("height=");
    scanf("%d", &N);

    for (R=N; R>=1; R--){
        for (C=1; C<=N-R; C++)
            printf(" ");
        for (C=1; C<=R; C++)
            printf("%d", C);

        for (C=R-1; C>=1; C--)
            printf("%d", C);

        printf("\n");
    }
}
```

```
PS D:\CSE 1121-22\
height=5
123454321
 1234321
  12321
   121
    1
PS D:\CSE 1121-22\
```

C programming Bangla Tutorial | Pattern_type

the last diamond

35

```
•      1      1 2 3 4 3 2 1 •      1      •      1
      1 2 1      1 2 3 2 1      1 2 1      1 2 1
      1 2 3 2 1      1 2 1      1 2 3 2 1      1 2 3 2 1
      1 2 3 4 3 2 1      1      1 2 3 4 3 2 1      1 2 3 4 3 2 1
                                1 2 3 2 1      1 2 3 2 1
                                1 2 1      1 2 1
                                1      1
```

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```

#include<stdio.h>
int main(){
    int N,R,C;
    printf("height=");
    scanf("%d", &N);

    for (R=1; R<=N; R++){
        for (C=1; C<=N-R; C++)
            printf(" ");
        for (C=1; C<=R; C++)
            printf("%d", C);

        for (C=R-1; C>=1; C--)
            printf("%d", C);

        printf("\n");
    }

    for (R=N-1; R>=1; R--){
        for (C=1; C<=N-R; C++)
            printf(" ");
        for (C=1; C<=R; C++)
            printf("%d", C);

        for (C=R-1; C>=1; C--)
            printf("%d", C);

        printf("\n");
    }
}

```

```

PS D:\CSE 1121-22\
height=5
    1
   121
  12321
 1234321
123454321
 1234321
   12321
    121
     1
PS D:\CSE 1121-22\

```


Sources:

[Anisul Islam — Pattern printing in C programming \(Bangla\)](#)

[Techcrashcourse.com – C Programming Examples](#)

[Techcrashcourse.com – C program to print triangle, pyramid, geometrical shapes and star patterns](#)