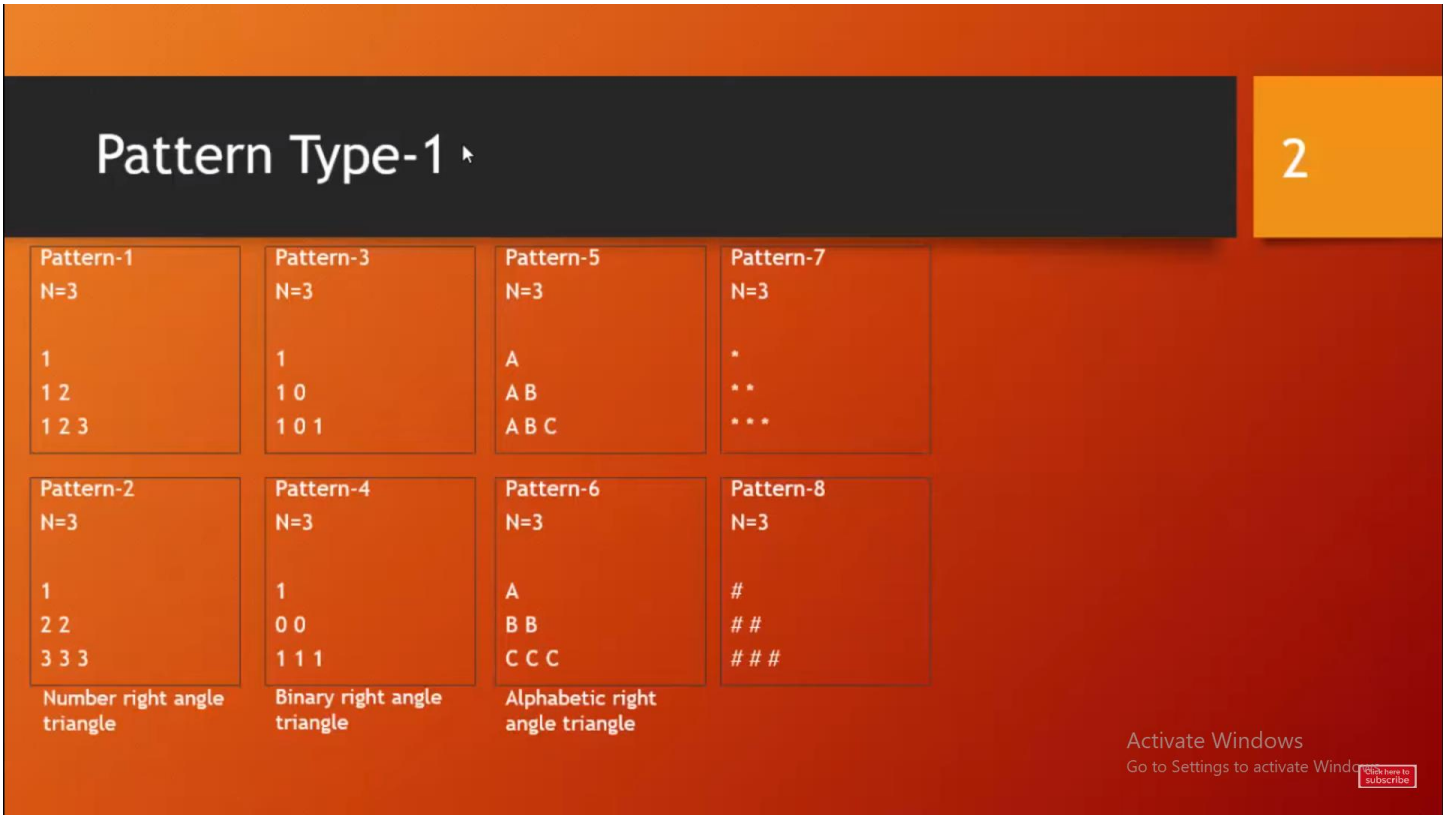
# C programming Bangla Tutorial | Pattern_type1



```c
#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;
}
```

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

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

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

```c
#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;
}
```

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

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

```c
#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\
```

```c
#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;
}
```

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

A
A B
A B C
A B C D
A B C D E
PS D:\CSE 1121-22\
```

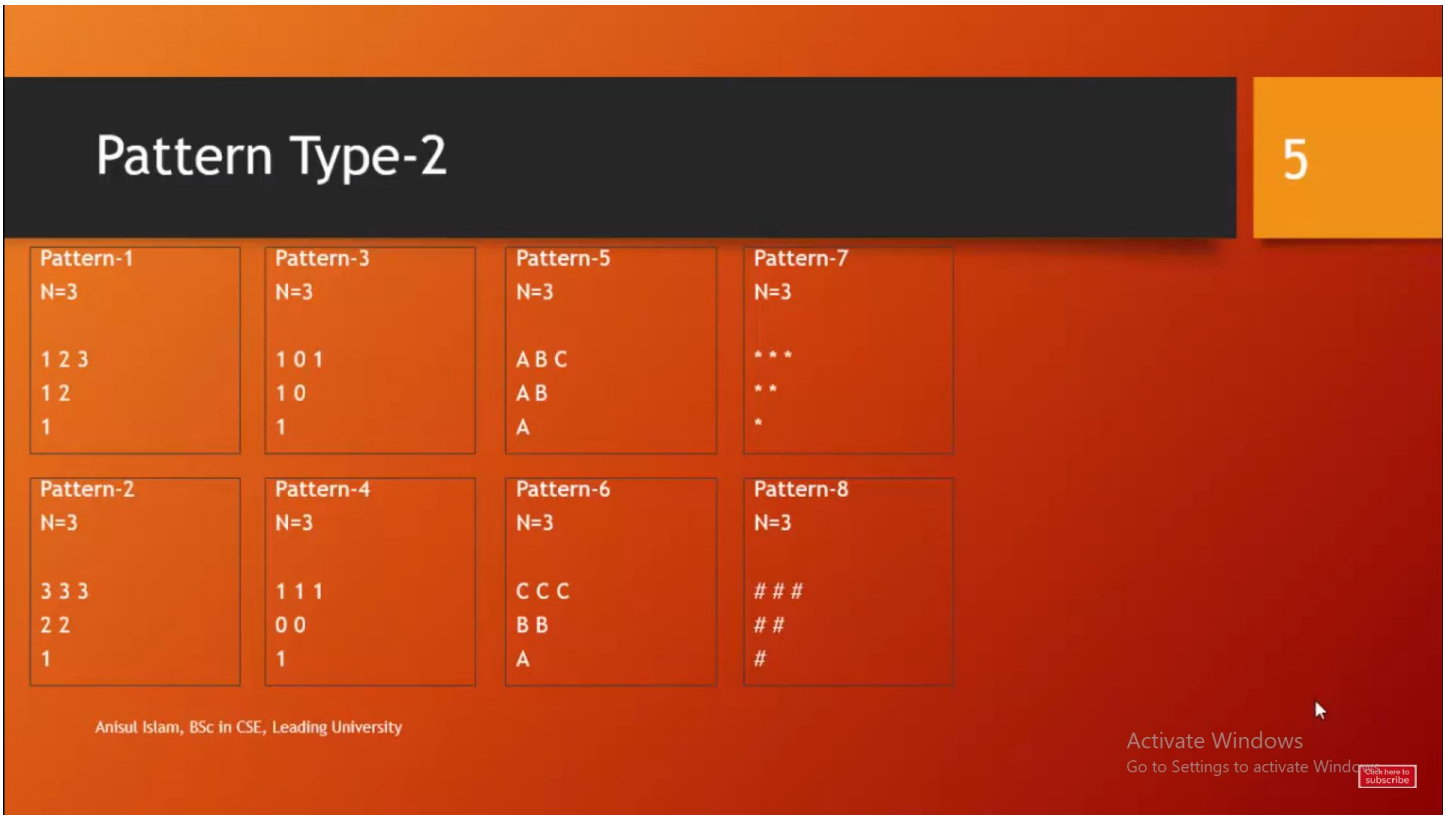
```c
#include <stdio.h>      //pattern 6
int main(){
    int n, row, col;
printf("Enter N:");
scanf("%d", &n);
printf("\n");
    for (row=1; row<=n; row++){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        } printf("\n");
}
return 0;
}
```

```
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\
```

```c
#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;
}
```

```
PS D:\CSE 1121-22\1st finals\Pattern P
Enter N:5

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

# C programming Bangla Tutorial | Pattern_type2



```c
#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\
```

```c
#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\
```

```c
#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;
}
```

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

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

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

```c
#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

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

```c
#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\
```

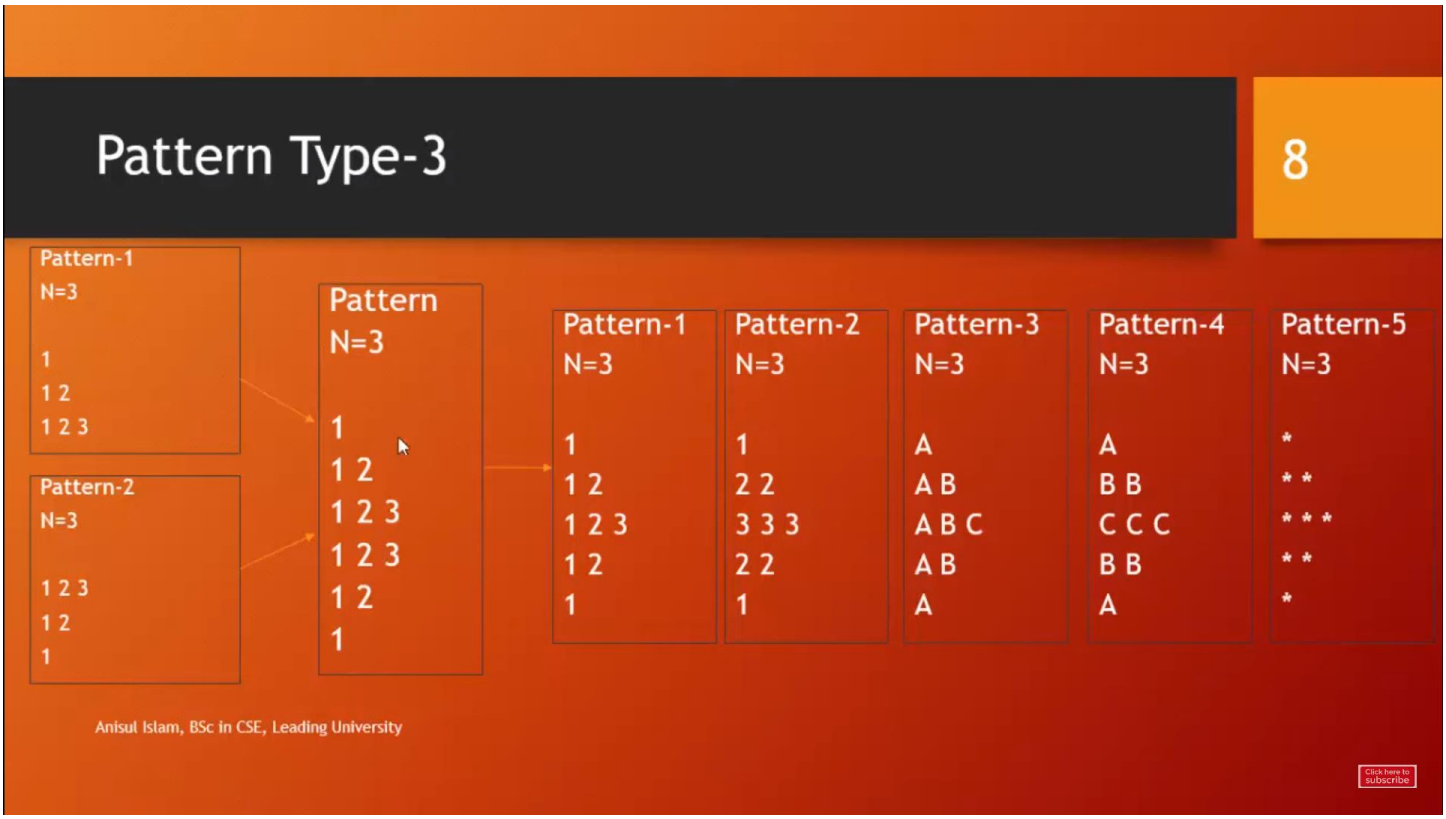
```c
#include <stdio.h>      //pattern 2.6
int main(){
    int n, row, col;
printf("Enter:"); scanf("%d", &n);
printf("\n");
    for (row=n; row>=1; row--){
        for (col=1; col<=row; col++){
            printf("%c ", row+96);
        } printf("\n");
    } printf("\n");
return 0;
}
```

```
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\
```

```c
#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;
}
```

```
PS D:\CSE 1121-22\1st finals\Pattern Pri
Enter:5

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

PS D:\CSE 1121-22\1st finals\Pattern Pri
```

# C programming Bangla Tutorial | Pattern_type3



```c
#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\
```

```c
#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\
```

```c
#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\
```

```c
#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\
```

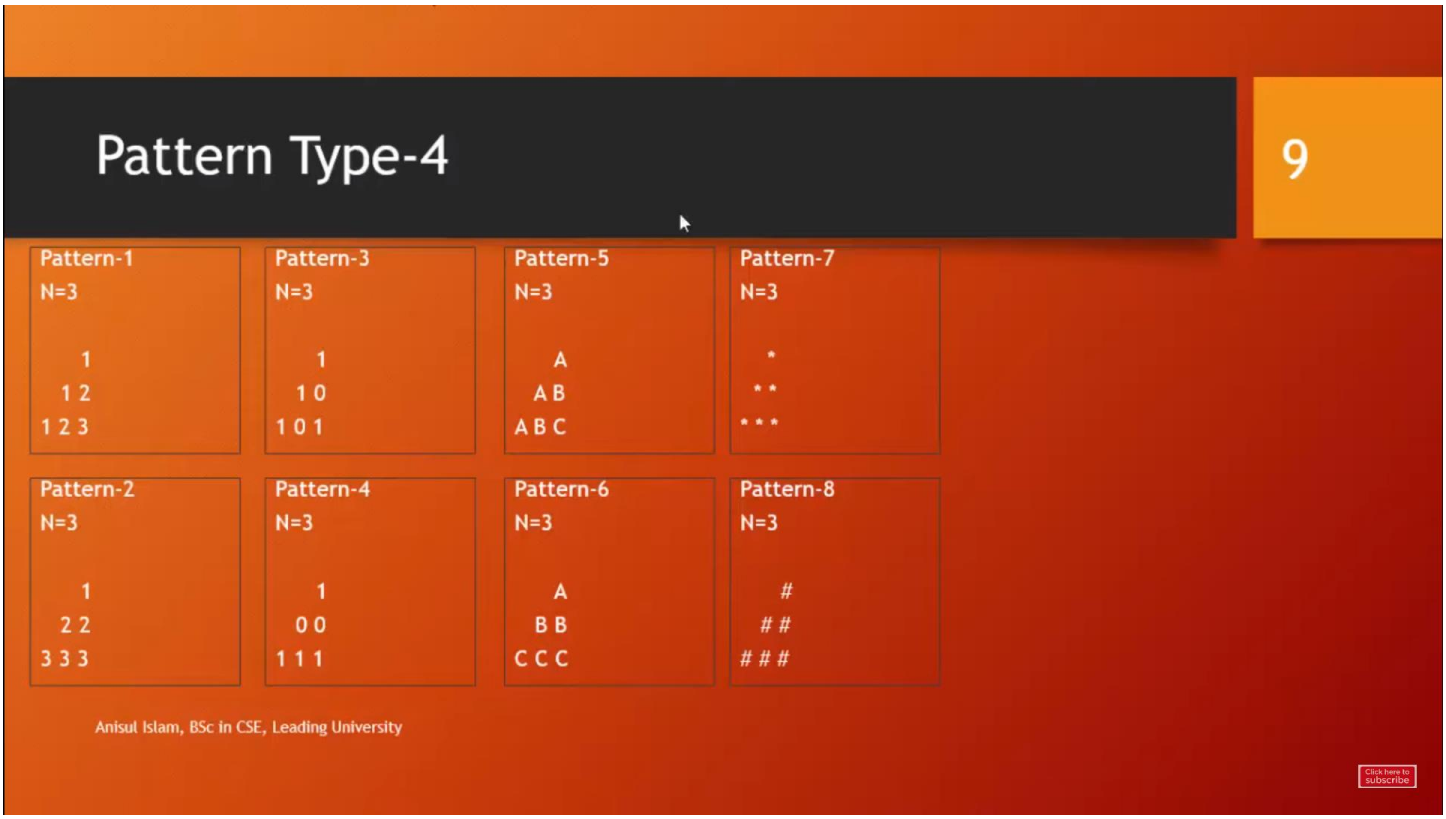
```c
#include <stdio.h>      //pattern 3.4
int main(){
    int N, row, col;
    printf("Enter N: "); scanf("%d", &N);

    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\
```

```c
#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



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 |

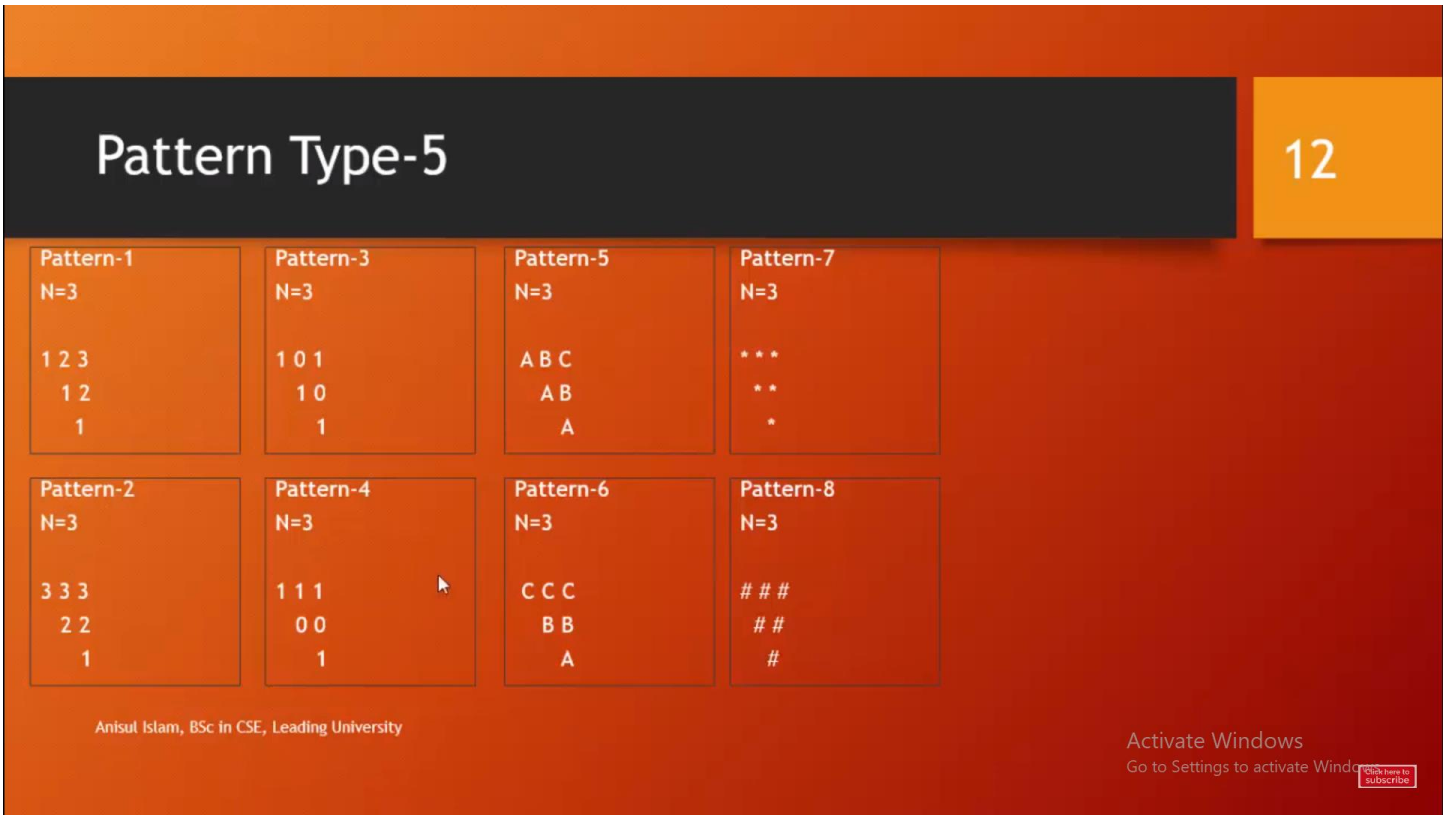
```c
#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);

    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:**

```c
    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



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 |

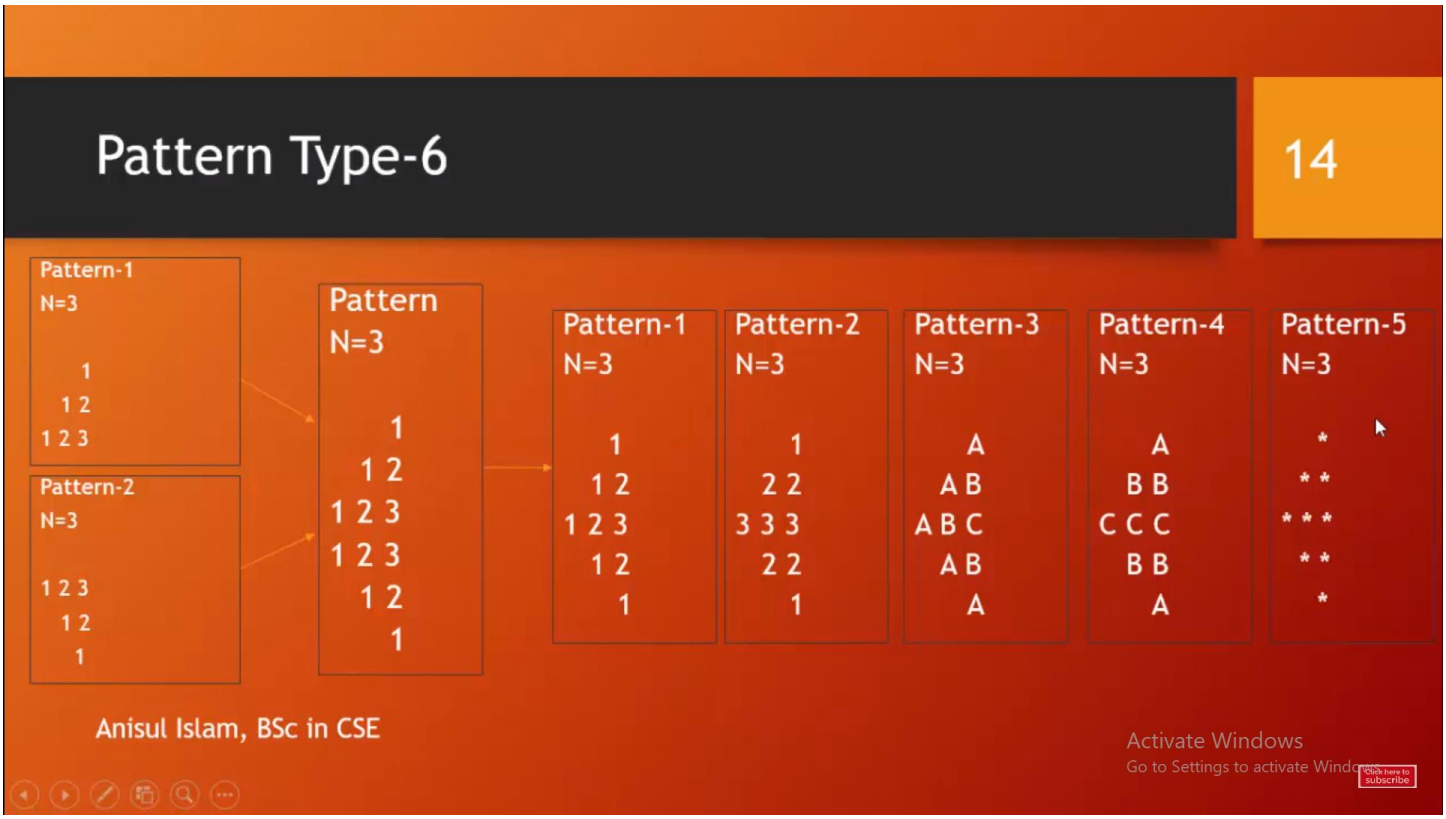
```c
#include <stdio.h>
int main(){
    int n, row, col;
    printf("N="); scanf("%d", &n);
    printf("\n");

    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:**

```c
    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



```c
#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\
```

```c
#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\
```

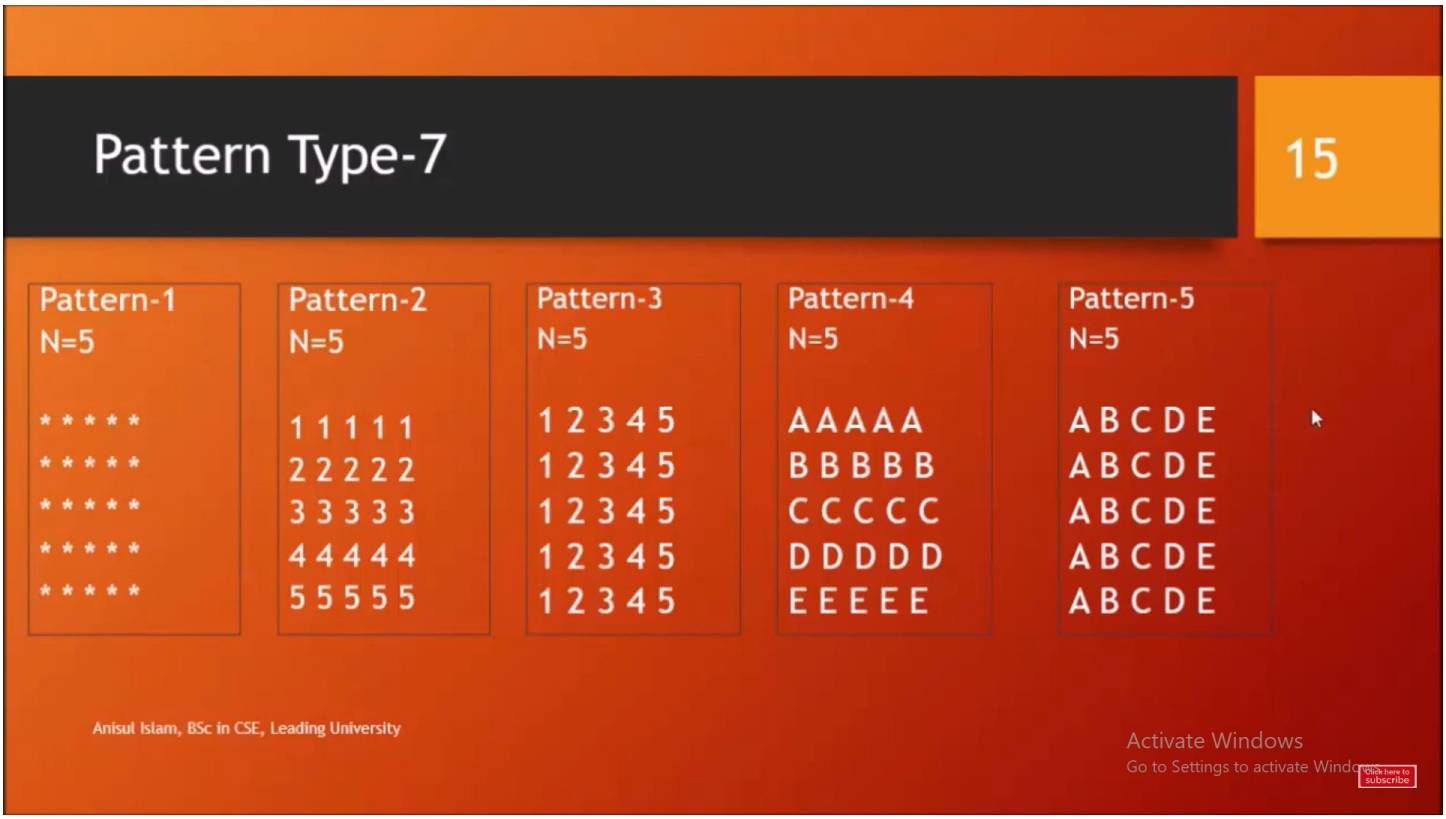
**REST ARE AS FOLLOWS:**

```c
{printf("%d", row);
…
printf("%d", row);}

{printf("*");
…
printf("*");}


{printf("#");
…
printf("@");}
```

```c
{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);}
```

```c
{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

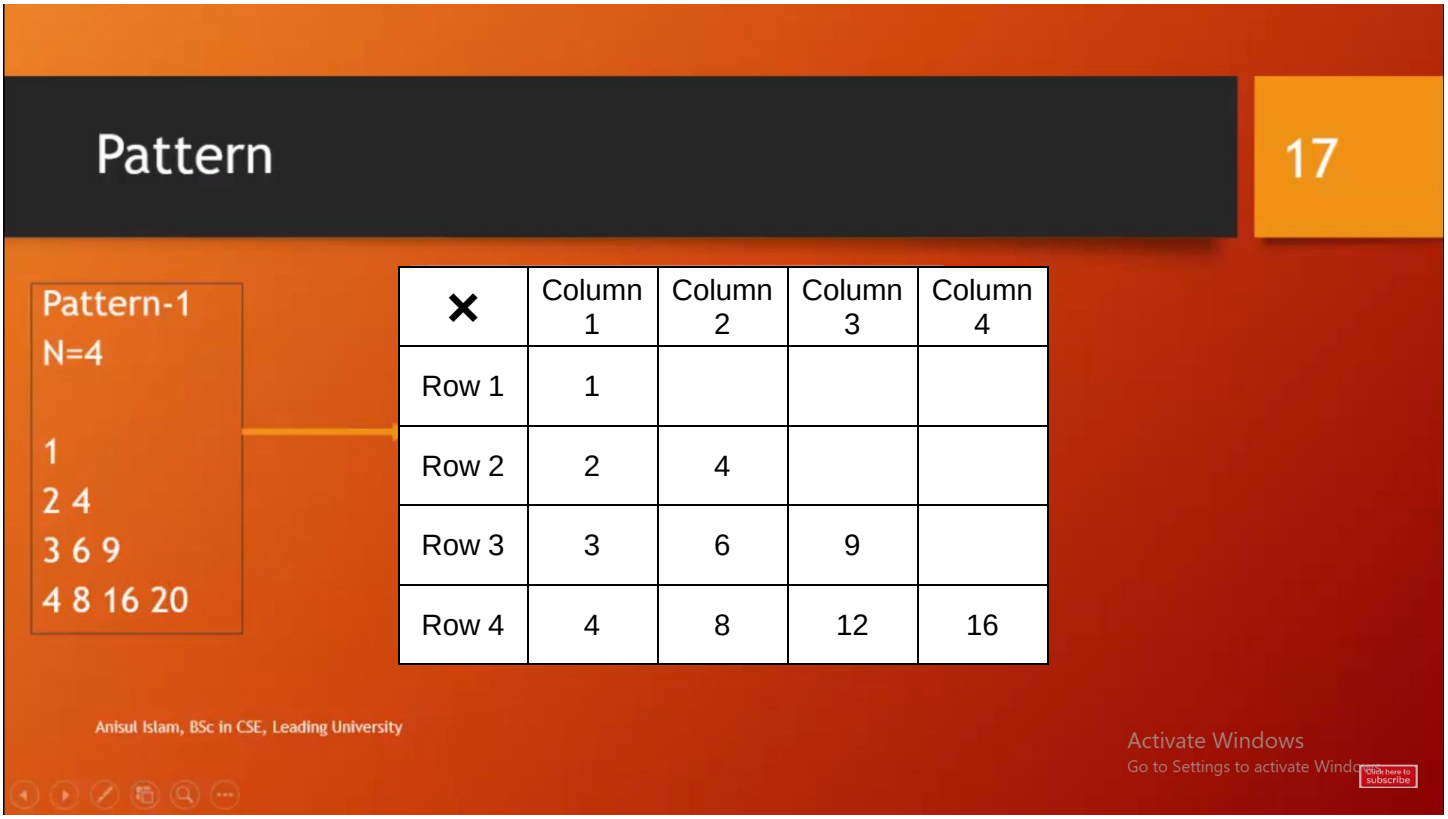



```c
#include <stdio.h>
int main(){ // rows:5   columns:4

    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

$$row \times col$$

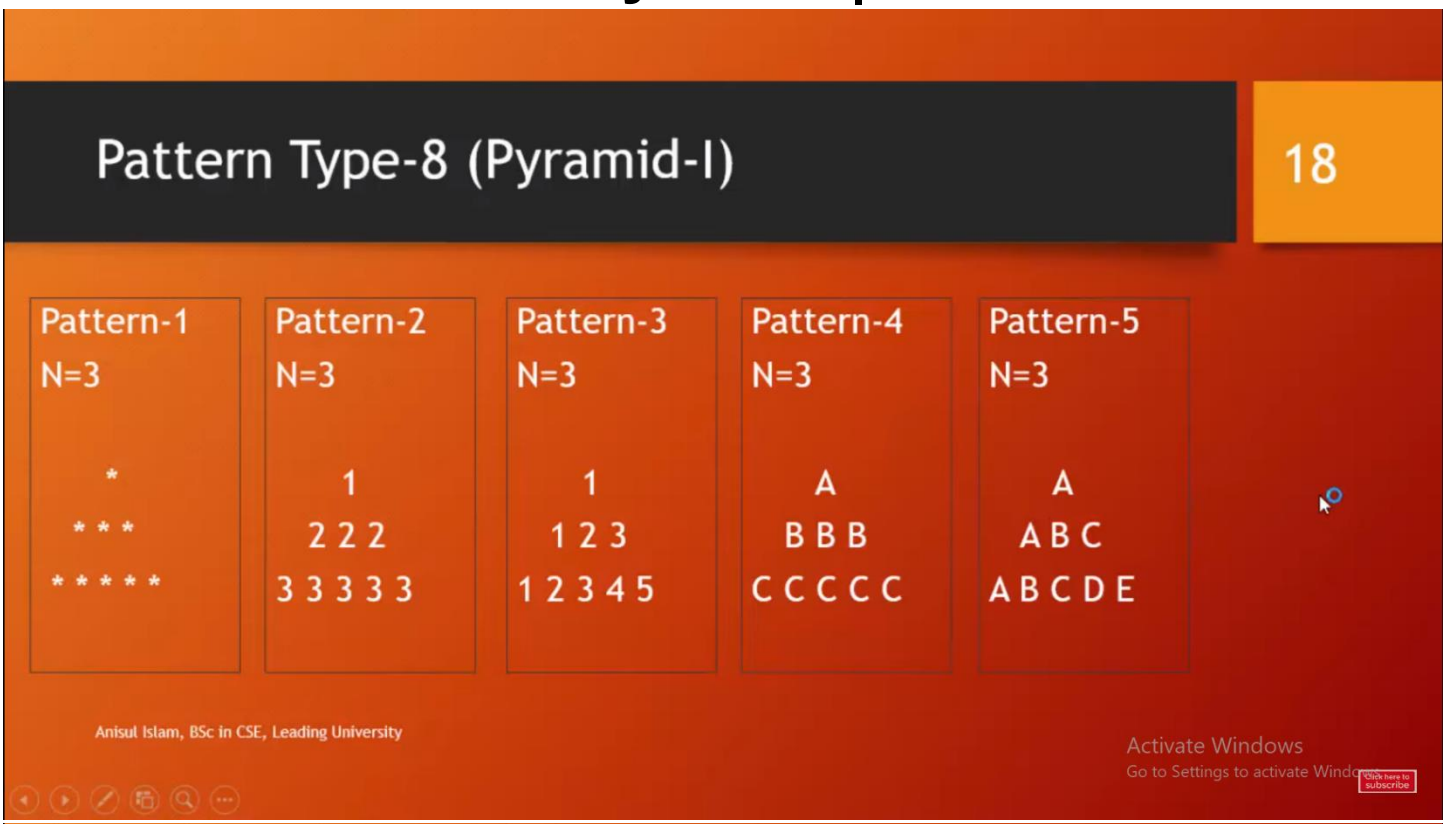


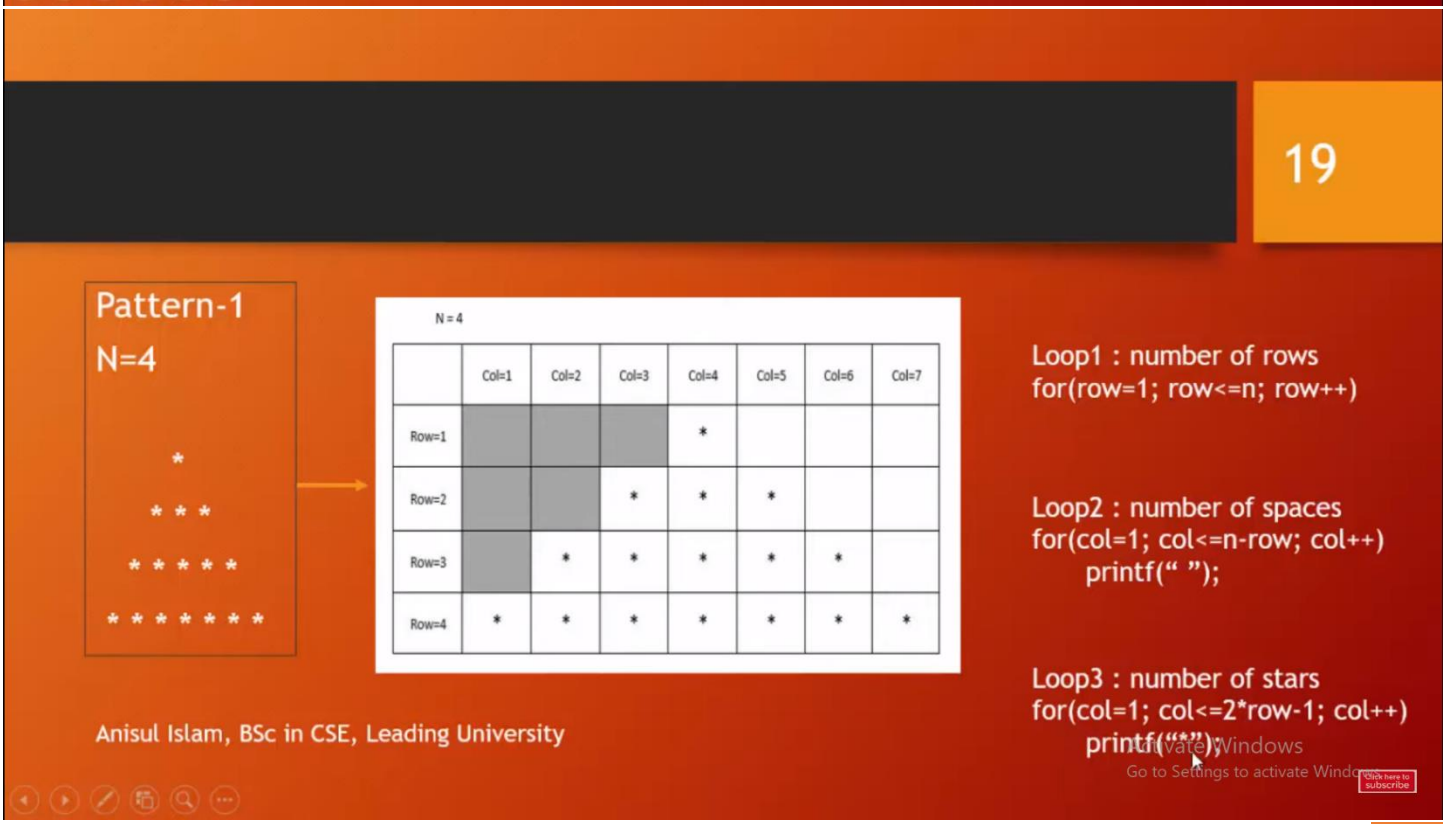

| × | Column 1 | Column 2 | Column 3 | Column 4 |
|---|---|---|---|---|
| Row 1 | 1 | | | |
| Row 2 | 2 | 4 | | |
| Row 3 | 3 | 6 | 9 | |
| Row 4 | 4 | 8 | 12 | 16 |

```c
#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 |



*(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) ✕

```c
#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\
```

```c
#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\
```

```c
#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");
    }
}
```

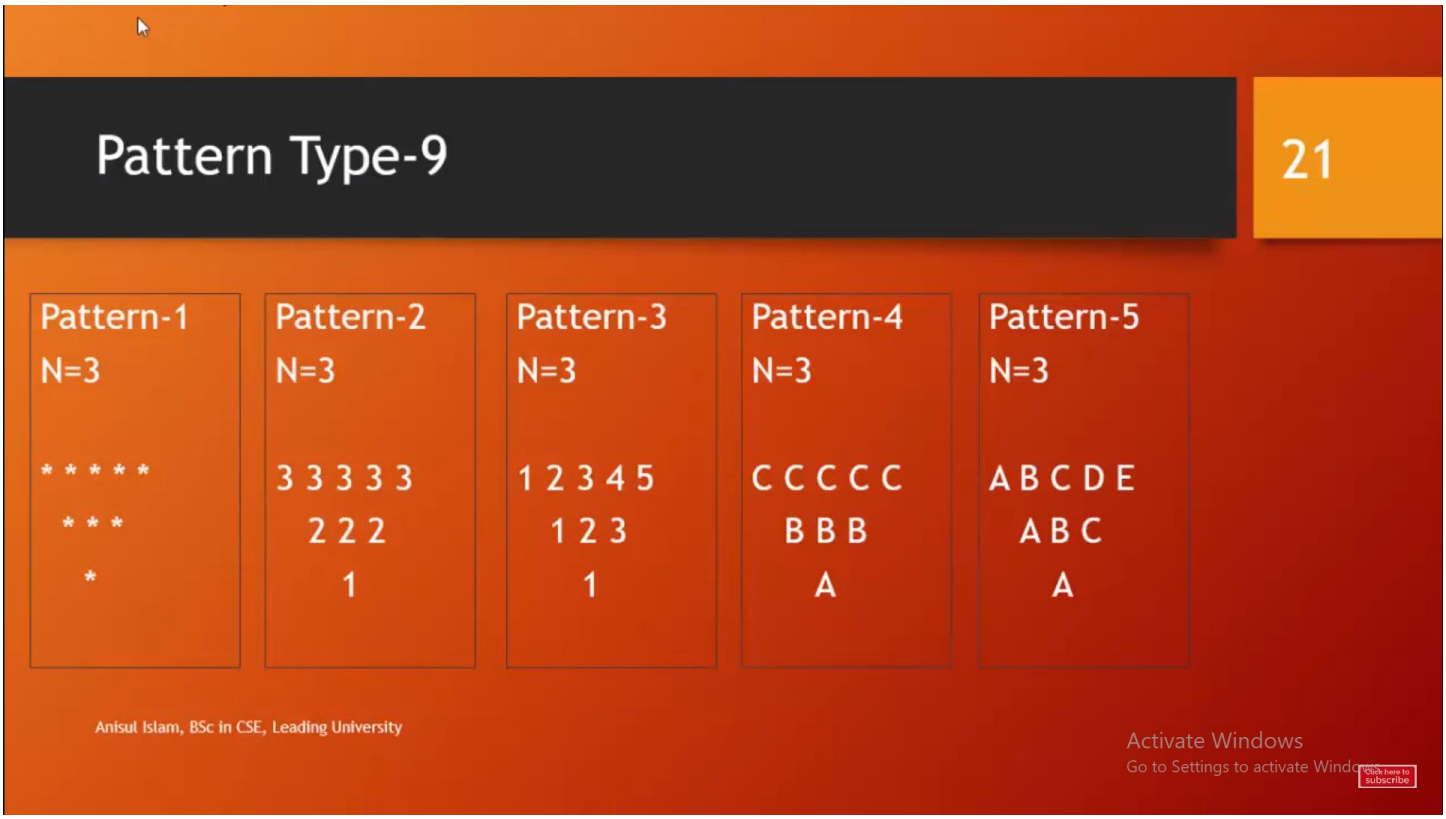
```
PS D:\CSE 1121-22\
#of rows 5
    1
   222
  33333
 4444444
555555555
PS D:\CSE 1121-22\
```

```c
#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
  ccccc
 ddddddd
eeeeeeeee
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



```c
#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\
```

```c
#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\
```

```c
#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\
```

```c
#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");
    }
}
```

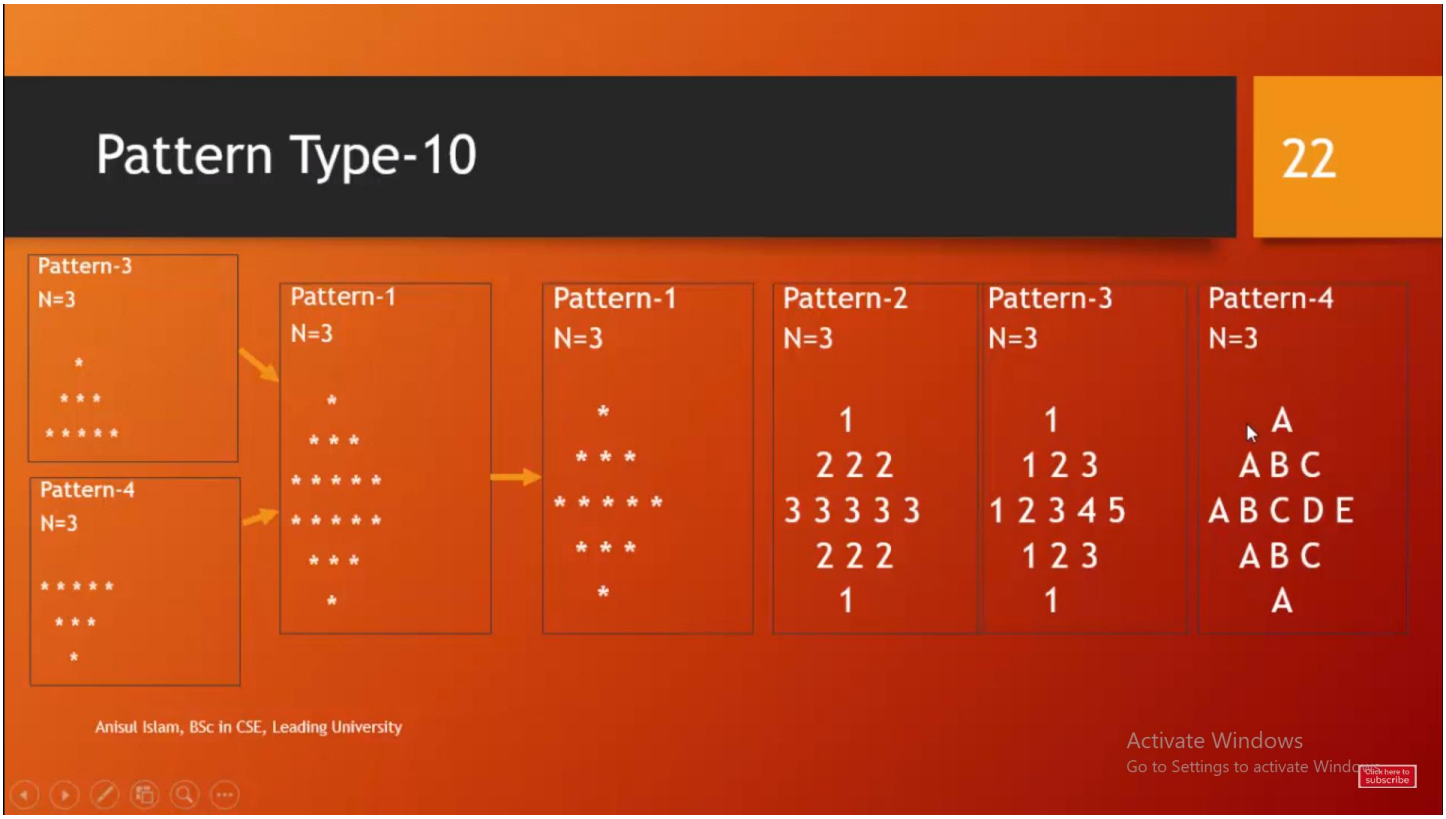
```
PS D:\CSE 1121-22\
#of rows 5
abcdefghi
 abcdefg
  abcde
   abc
    a
PS D:\CSE 1121-22\
```

```c
#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
EEEEEEEEE
 DDDDDDD
  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



```c
#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\
```

```c
#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:**

```c
{printf("%d", row);
…
printf("%d", row);}


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


{printf("*");
…
printf("#");}
```

```c
{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);}
```

```c
{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 | Pattern-2 | Pattern-3 | Pattern-4 | Pattern-5 |
|---|---|---|---|---|
| N=4 | N=4 | N=4 | N=4 | N=4 |
| * | 1 | 1 | A | A |
| * * | 2 2 | 1 2 | A B | B B |
| * * * | 3 3 3 | 1 2 3 | A B C | C C C |
| * * * * | 4 4 4 4 | 1 2 3 4 | A B C D | D D D D |

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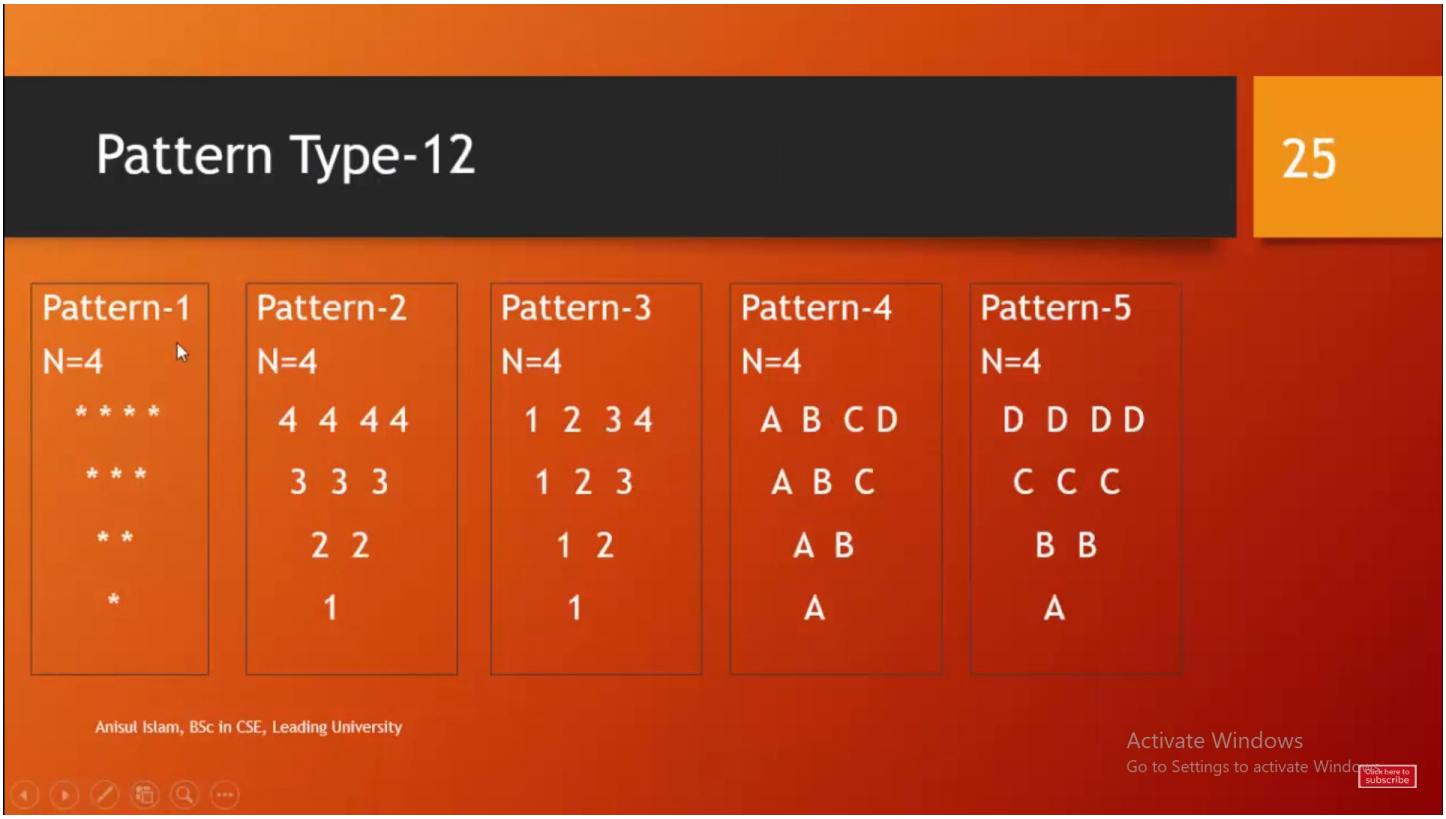
```c
#include <stdio.h>
int main(){
    int n, r, c;
    printf("#of rows ");
    scanf("%d", &n);

    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



```c
#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

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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("* ");



## Pattern Type-13

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

```
PS D:\CSE 1121-22\
#of rows 5
    1
   1 0
  1 0 1
 1 0 1 0
1 0 1 0 1
 1 0 1 0
  1 0 1
   1 0
    1
PS D:\CSE 1121-22\
PS D:\CSE 1121-22\
#of rows 5
    1
   0 0
  1 1 1
 0 0 0 0
1 1 1 1 1
 0 0 0 0
  1 1 1
   0 0
    1
PS D:\CSE 1121-22\
```

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

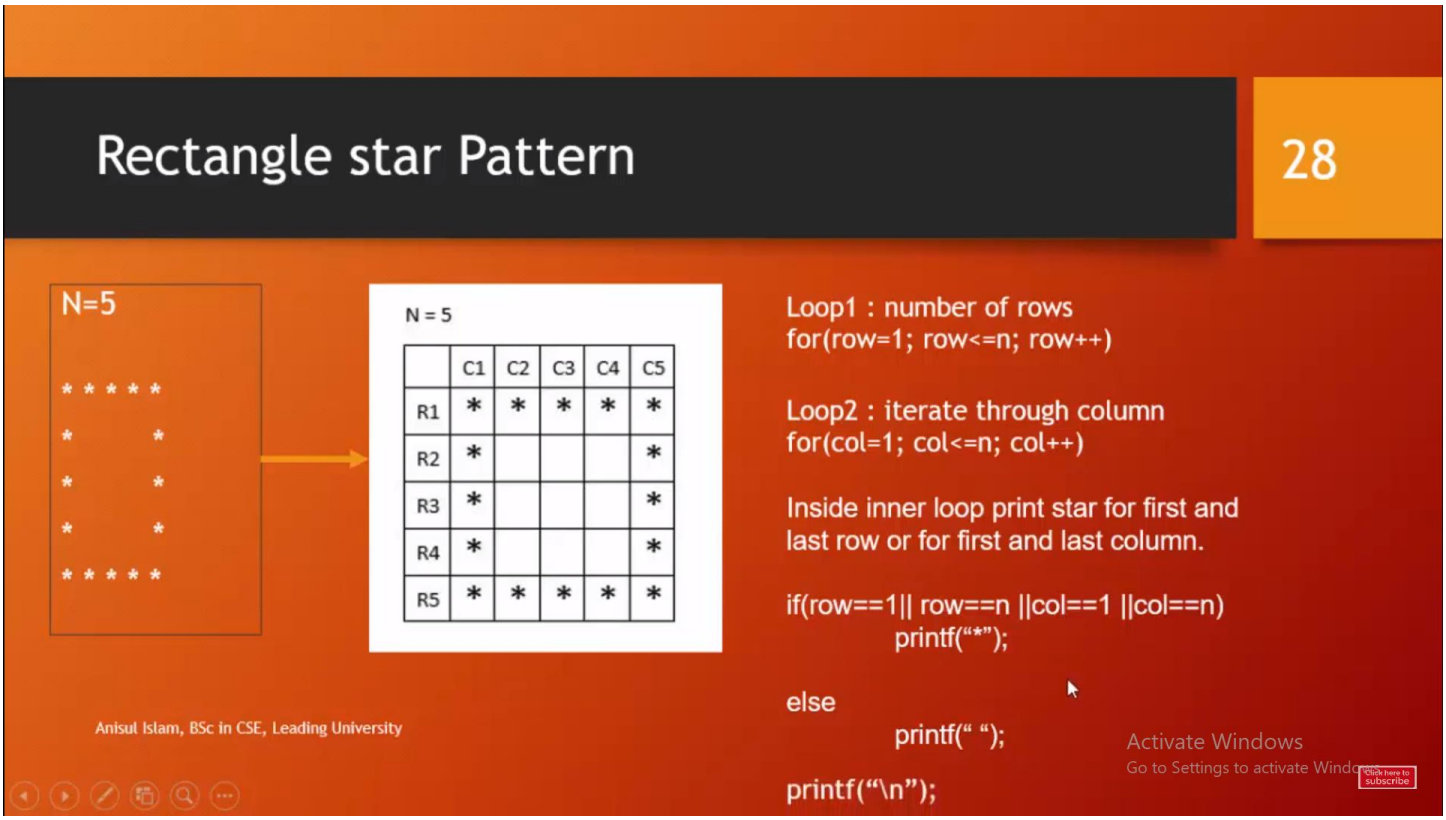
```
PS D:\CSE 1121-22\
#of rows 5
    A
   B B
  C C C
 D D D D
E E E E E
 D D D D
  C C C
   B B
    A
PS D:\CSE 1121-22\
PS D:\CSE 1121-22\
#of rows 5
    A
   A B
  A B C
 A B C D
A B C D E
 A B C D
  A B C
   A B
    A
PS D:\CSE 1121-22\
```

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

```
#of rows 5
    .:.
   .:. .:.
  .:. .:. .:.
 .:. .:. .:. .:.
.:. .:. .:. .:. .:.
 .:. .:. .:. .:.
  .:. .:. .:.
   .:. .:.
    .:.
PS D:\CSE 1121-22\1st
PS D:\CSE 1121-22\1st
```

# C programming Bangla Tutorial | Pattern_type

## *rectangle border*

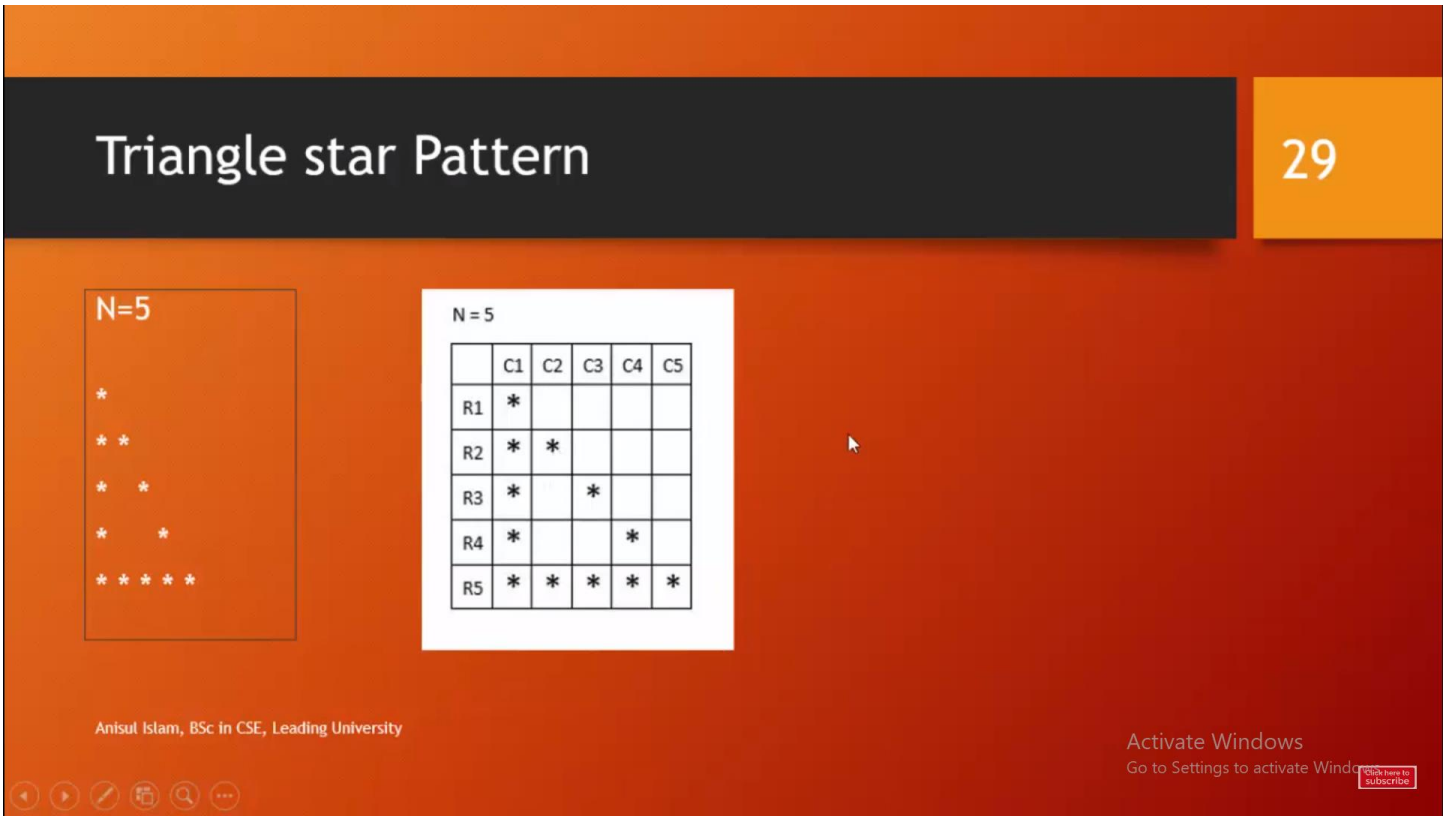


```c
#include <stdio.h>
int main(){
    int N, R, C;
    printf("iterate "); scanf("%d", &N);

    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*



```c
#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

## X star Pattern

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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++)


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

else
        printf(" ");
```

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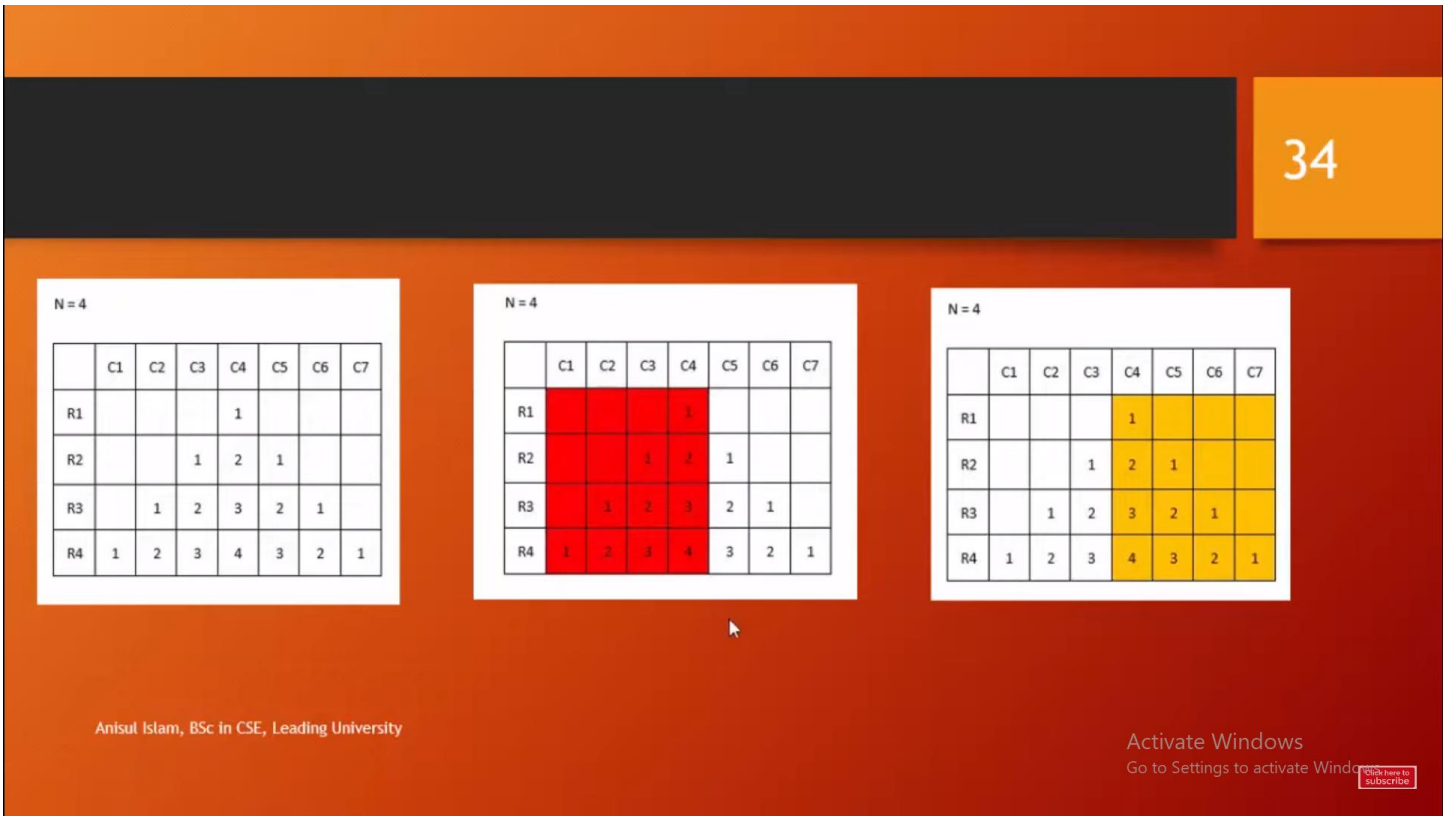
```c
#include<stdio.h>
int main(){
    int N, R, C;
    printf("iterate ");
    scanf("%d", &N);

    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*



```c
#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");
    }
}
```

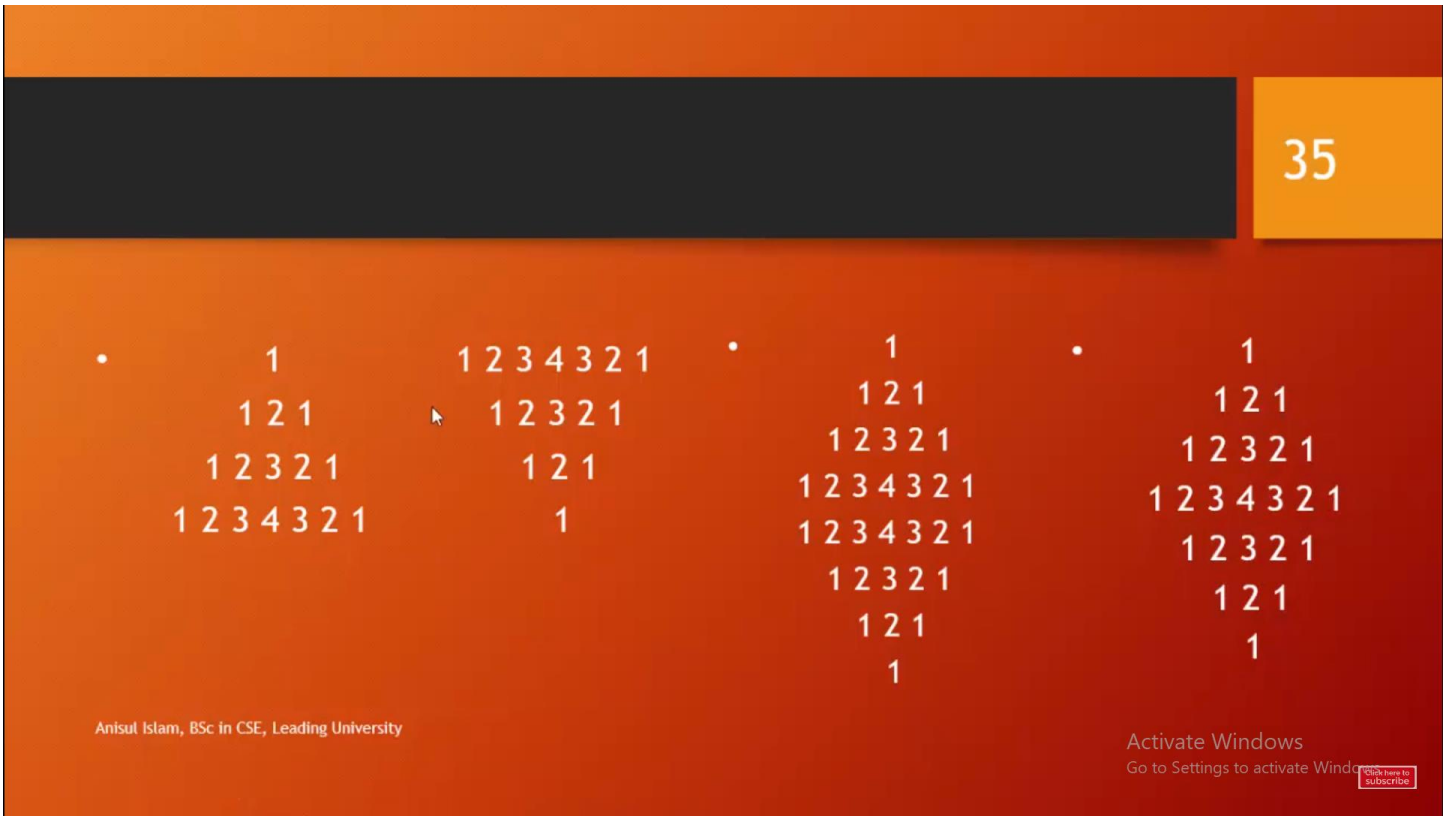
```
PS D:\CSE 1121-22\
height=5
    1
   121
  12321
 1234321
123454321
PS D:\CSE 1121-22\
```

```c
#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*



```c
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int main(){
    int N,R,C;
    printf("height=");
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        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