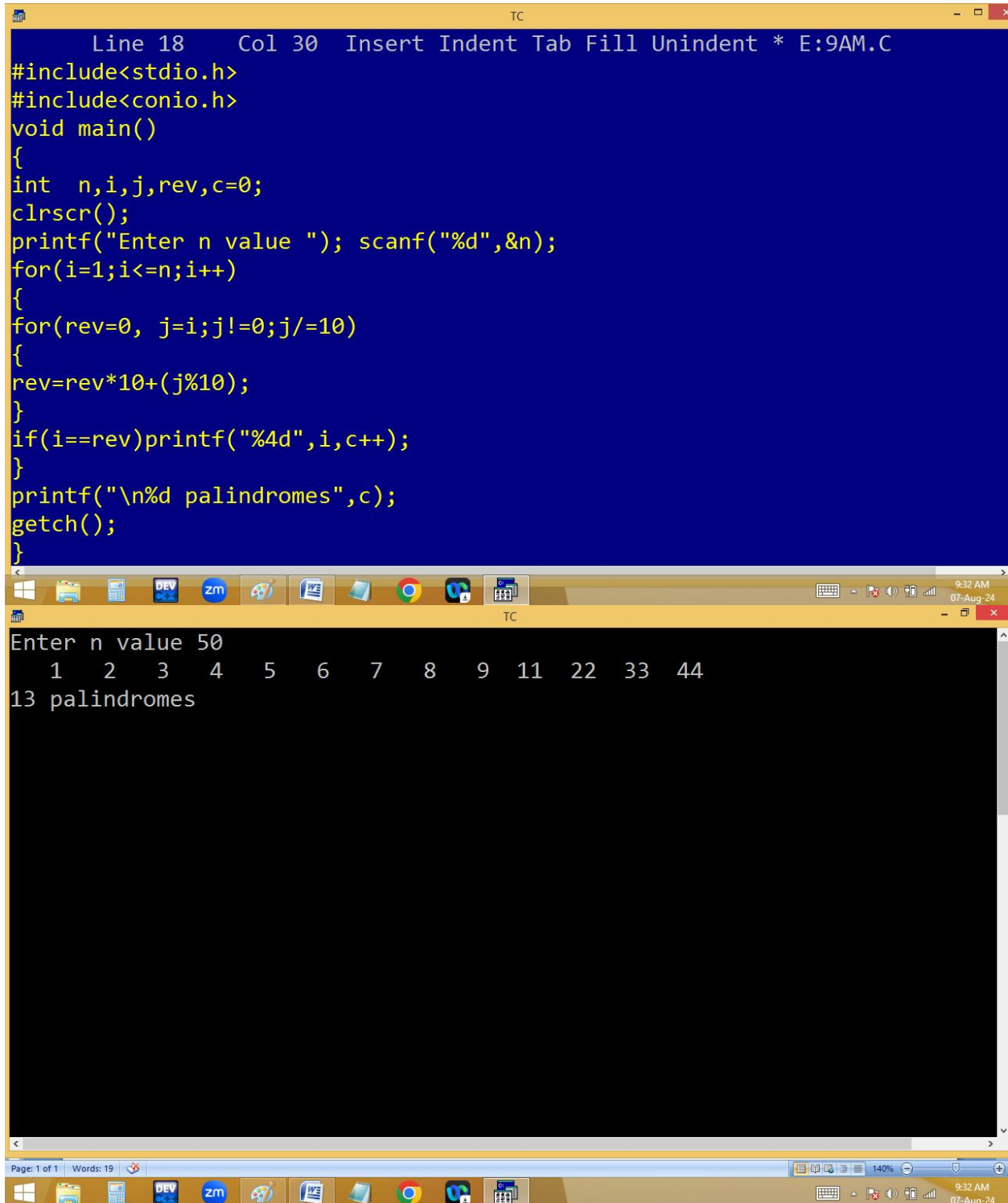


Printing 1..n palindrome no's and count:

Eg: 1-50 → 1 to 9, 11, 22, 33, 44 → 13 palindromes



```
Line 18    Col 30    Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int  n,i,j,rev,c=0;
clrscr();
printf("Enter n value "); scanf("%d",&n);
for(i=1;i<=n;i++)
{
for(rev=0, j=i;j!=0;j/=10)
{
rev=rev*10+(j%10);
}
if(i==rev)printf("%4d",i,c++);
}
printf("\n%d palindromes",c);
getch();
}
```

Enter n value 50

1 2 3 4 5 6 7 8 9 11 22 33 44

13 palindromes

Page: 1 of 1 Words: 19 140% 9:32 AM 07-Aug-24

```

Enter n value 500
 1  2  3  4  5  6  7  8  9 11 22 33 44 55 66 77 88 99 1
121 131 141 151 161 171 181 191 202 212 222 232 242 252 262 272 282 292 3
323 333 343 353 363 373 383 393 404 414 424 434 444 454 464 474 484 494
58 palindromes

```

```

for( i=1; i<=n; i++)
{
  for( j=i, rev=0; j!=0; j/=10)
  {
    rev=rev*10+(j%10);
  }
  if(i==rev)p(i,c++);
}

```

n	$i \rightarrow j$	rev	c
50	✓ 1	$1 \% 10 = 1$ $0 \times 10 + 1 = 1$	0
	✓ 2	$2 \% 10 = 2$ $0 \times 10 + 2 = 2$	2
	X 10	$10 \% 10 = 0$ $0 \times 10 + 0 = 0$ $1 \% 10 = 1$ $0 \times 10 + 1 = 1$	9
	✓ 11	$11 \% 10 = 1$ $1 \times 10 + 1 = 11$ $1 \% 10 = 1$ $1 \times 10 + 1 = 11$	10

Printing 1..n prime no's and count:

```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
int  n,i,j,rev,c,cnt=0;
clrscr();
printf("Enter n value "); scanf("%d",&n);
for(i=2;i<=n;i++)
{
for(c=0, j=1;j<=i;j++)
{
if(i%j==0)c++;
}
if(c==2)printf("%4d",i,cnt++);
}
printf("\n%d primes",cnt);
getch();
}
```

Enter n value 10
2 3 5 7
4 primes

```

Enter n value 100
 2  3  5  7 11 13 17 19 23 29 31 37 41 43 47 53 59 61
73 79 83 89 97
25 primes_

```

```

for( i=2; i<=n; i++ )
{
  for( j=1, c=0; j<=i; j++ )
  {
    if(i%j==0) c++; ✓
  }
  if(c==2) p("%d", i, cnt++);
}

```

<u>n</u>	<u>i</u>	<u>j</u>	<u>c</u>	<u>cnt</u>
10	2 % 1 = 0	1	0 1 2	0
	2 % 2 = 0	2		1
	3 % 1 = 0	1	0 1 2	2
	3 % 3 = 0	3		3
	4 % 1 = 0	1	0 1 2 3	
	4 % 2 = 0	2		
	4 % 4 = 0	4		
	✓ 5 % 1 = 0	1	0 1 2	
	5 % 5 = 0	5		

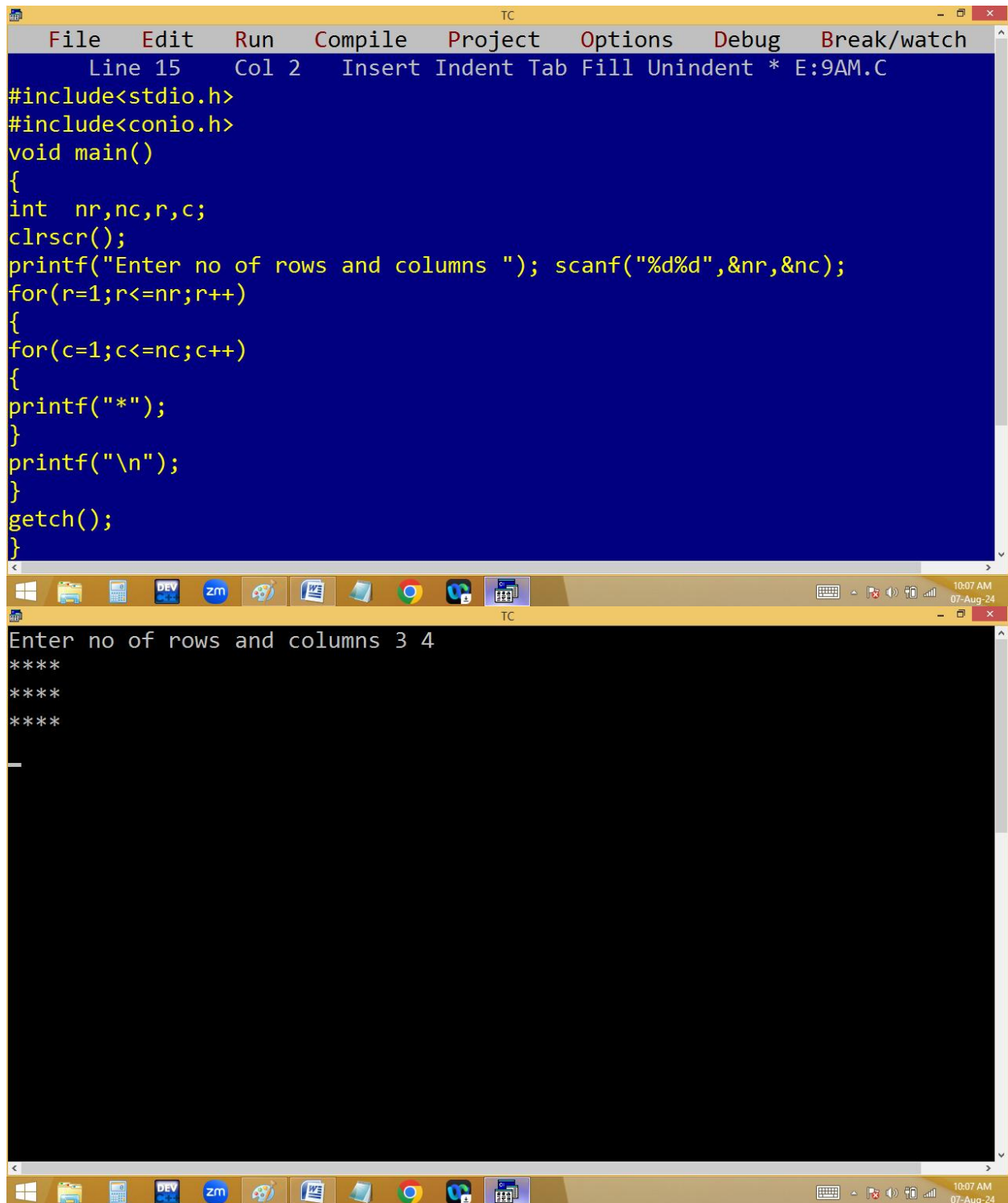
Printing n to n primes:

```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
int  n,i,j,rev,c,cnt=0;
clrscr();
printf("Enter starting and ending values "); scanf("%d%d",&i,&n);
if(i>n){int t=i; i=n;n=t;}
for( ;i<=n;i++)
{
for(c=0, j=1;j<=i;j++)
{
if(i%j==0)c++;
}
if(c==2)printf("%4d",i,cnt++);
}
printf("\n%d primes",cnt);
getch();
}
```

Enter starting and ending values 20 10
11 13 17 19
4 primes_

```
TC
Enter starting and ending values 100 250
101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 1
199 211 223 227 229 233 239 241
28 primes_
```

Patterns:



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code for a C program. The code includes headers for `stdio.h` and `conio.h`, and defines a `main` function. Inside `main`, it declares variables `nr`, `nc`, `r`, and `c` as integers. It calls `clrscr()` to clear the screen. A `printf` statement prompts the user to enter the number of rows and columns. A `scanf` statement reads these values into `nr` and `nc`. Two nested `for` loops are used: the outer loop iterates over rows from 1 to `nr`, and the inner loop iterates over columns from 1 to `nc`. Inside the inner loop, a `printf` statement prints an asterisk (`*`). After each row is completed, a `printf` statement prints a newline character (`\n`). Finally, a `getch()` statement is used to pause the program before exiting.

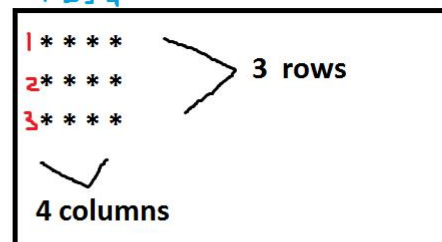
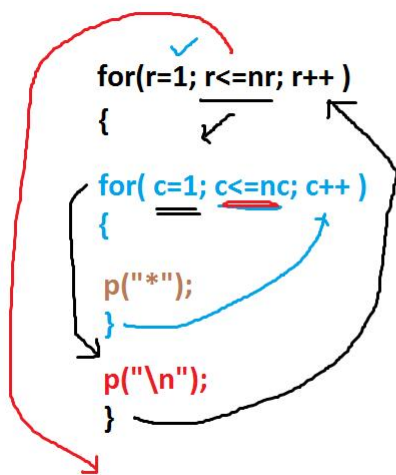
```
File Edit Run Compile Project Options Debug Break/watch
Line 15 Col 2 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int nr,nc,r,c;
    clrscr();
    printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
    for(r=1;r<=nr;r++)
    {
        for(c=1;c<=nc;c++)
        {
            printf("*");
        }
        printf("\n");
    }
    getch();
}
```

The bottom window shows the output of the program. It displays the prompt "Enter no of rows and columns 3 4", followed by three lines of four asterisks each, representing the star pattern for 3 rows and 4 columns.

```
Enter no of rows and columns 3 4
****
****
****
```



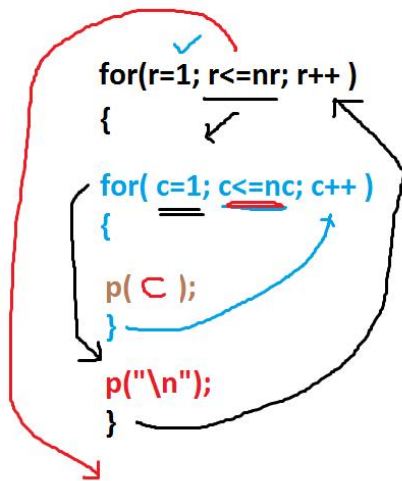
```
TC
Enter no of rows and columns 5 8
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
```



$\frac{nr}{3}$	$\frac{nc}{4}$	$r \leq 3$	$c \leq 4$
1	1	1	2 3 4 5
2	1	2	2 3 4 5
3	1	3	2 3 4 5
4			

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
for(r=1;r<=nr;r++)
{
for(c=1;c<=nc;c++)
{
printf("%3d",c);
}
printf("\n");
}
getch();
}
```

```
TC
Enter no of rows and columns 5 7
1 2 3 4 5 6 7
1 2 3 4 5 6 7
1 2 3 4 5 6 7
1 2 3 4 5 6 7
1 2 3 4 5 6 7
```



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

> 3 rows

✓ 4 columns

$$\frac{nr}{3}$$

$$\frac{nc}{4}$$

$$\frac{r \leq 3}{1}$$

$$\frac{c \leq 4}{1}$$

2

1 2 3 4 5

3

1 2 3 4 5

4

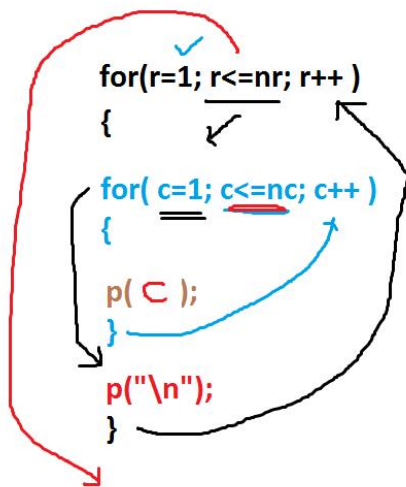
1 2 3 4 5

```

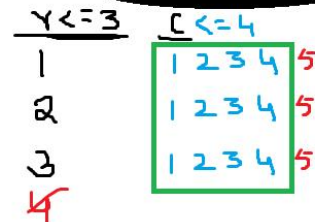
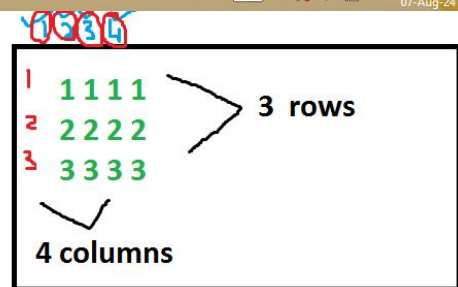
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int nr,nc,r,c;
    clrscr();
    printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
    for(r=1;r<=nr;r++)
    {
        for(c=1;c<=nc;c++)
        {
            printf("%3d",r);
        }
        printf("\\n");
    }
    getch();
}

```

```
TC
Enter no of rows and columns 10 20
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10
```



$$\frac{nr}{3} \quad \frac{nc}{4}$$



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 17 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
for(r=1;r<=nr;r++)
{int a=r;
for(c=1;c<=nc;c++)
{
printf("%3d",a++);
}
printf("\n");
}
getch();
}
```

Enter no of rows and columns 3 4

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

```

Enter no of rows and columns 12 15
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

```

```

for(r=1; r<=nr; r++)
{
    a=r;
    for( c=1; c<=nc; c++)
    {
        p(a++);
    }
    p("\n");
}

```

$\delta \rightarrow \alpha++$

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

$\frac{n_r}{3}$

$\frac{n_c}{4}$

~~0 3 3 4~~

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

3 rows

4 columns

$\frac{n_r}{3}$

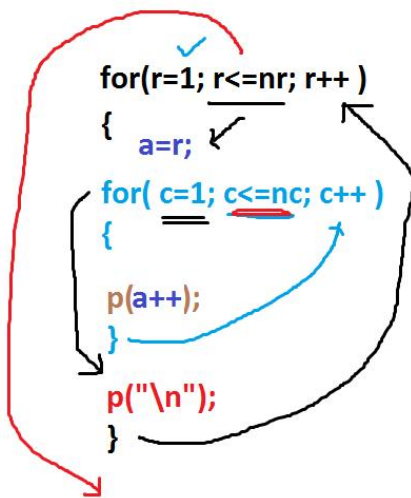
$\frac{n_c}{4}$

Method 2:


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
for(r=1;r<=nr;r++)
{
for(c=r;c<=nc+r-1;c++)
{
printf("%3d",c);
}
printf("\n");
}
getch();
}
```

Enter no of rows and columns 4 5

1	2	3	4	5
2	3	4	5	6
3	4	5	6	7
4	5	6	7	8



$\frac{n_r}{1}$ $c=r$ to $nc+r-1$
 $\frac{2}{1}$ $\underline{1}$ to $4+1-1=\underline{4}$
 $\frac{3}{2}$ $\underline{2}$ to $4+2-1=\underline{5}$
 $\frac{4}{3}$ $\underline{3}$ to $4+3-1=\underline{6}$

$\frac{n_r}{3}$ $\frac{n_c}{4}$

~~1~~~~2~~~~3~~~~4~~

1	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	> 3 rows
2	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
3	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	

✓
4 columns

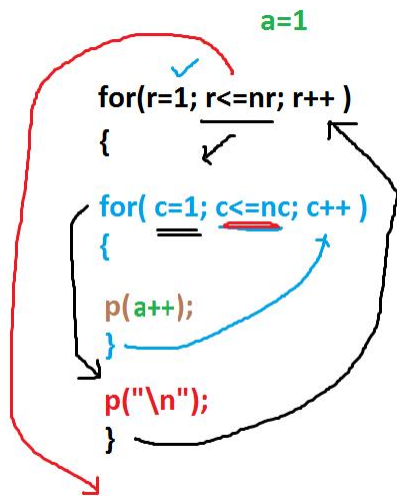
$r <= 3$ $c <= 4$

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

4


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 14 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int nr,nc,r,c,a=1;
clrscr();
printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
for(r=1;r<=nr;r++)
{
for(c=1;c<=nc;c++)
{
printf("%3d",a++);
}
printf("\n");
}
getch();
}

Enter no of rows and columns 10 10
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100
```



$$\frac{nr}{3}$$

$$\frac{nc}{4}$$

~~1~~ ~~2~~ ~~3~~ ~~4~~

1	1	2	3	4
2	5	6	7	8
3	9	10	11	12

3 rows

4 columns

$$r <= 3$$

$$c <= 4$$

1

2

3

~~4~~

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

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 53 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int nr,nc,r,c,a=0;
clrscr();
printf("Enter no of rows and columns "); scanf("%d%d",&nr,&nc);
for(r=1;r<=nr;r++)
{
for(c=1;c<=nc;c++)
{
if(r%2==0)printf("%3d",a--); else printf("%3d",++a);
}
printf("\n");
}
getch();
}
```

Enter no of rows and columns 10 20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

```

a=0
for(r=1; r<=nr; r++)
{
    ✓
    for( c=1; c<=nc; c++)
    {
        if(r%2==0) p(a--);
        else p(++a);
    }
    p("\n");
}

```

$\frac{n}{2}$
 1 - odd
 2 - Even
 3

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

$\frac{n \times}{3}$ $\frac{n \times}{4}$

1 2 3 4

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

3 rows

4 columns

$r \leq 3$ $c \leq 4$

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