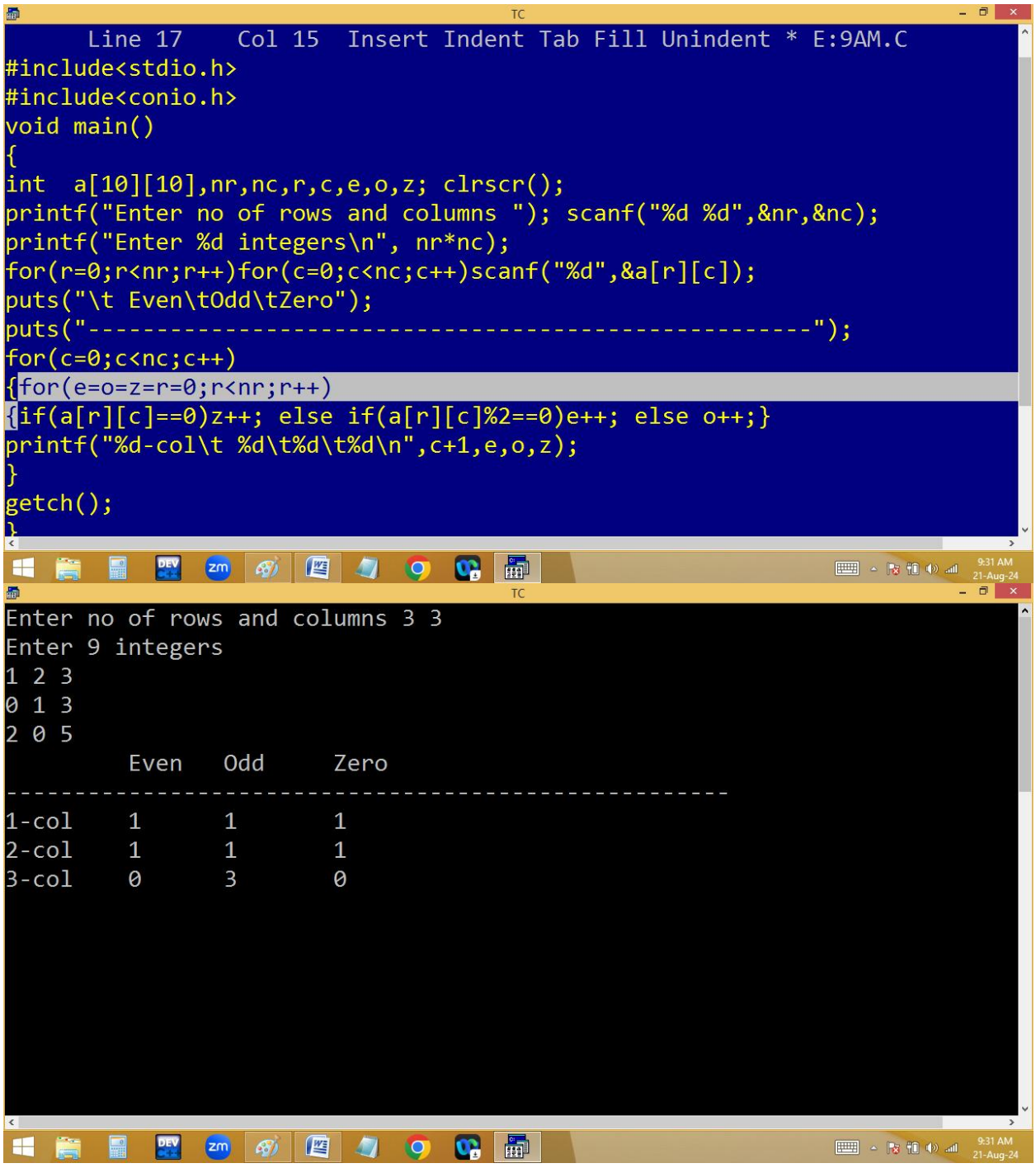
Finding no of even/odd/zero's column wise:



```
for( c=0;c<3;c++)
{
for( e=o=z=r=0; r<3;r++)
{
if(a[r][c]==0)z++;
else if(a[r][c]%2==0)e++;
else o++;
}
p("%d-col\t%d\t%d\t%d\n",c+1,e,o,z);
}
```

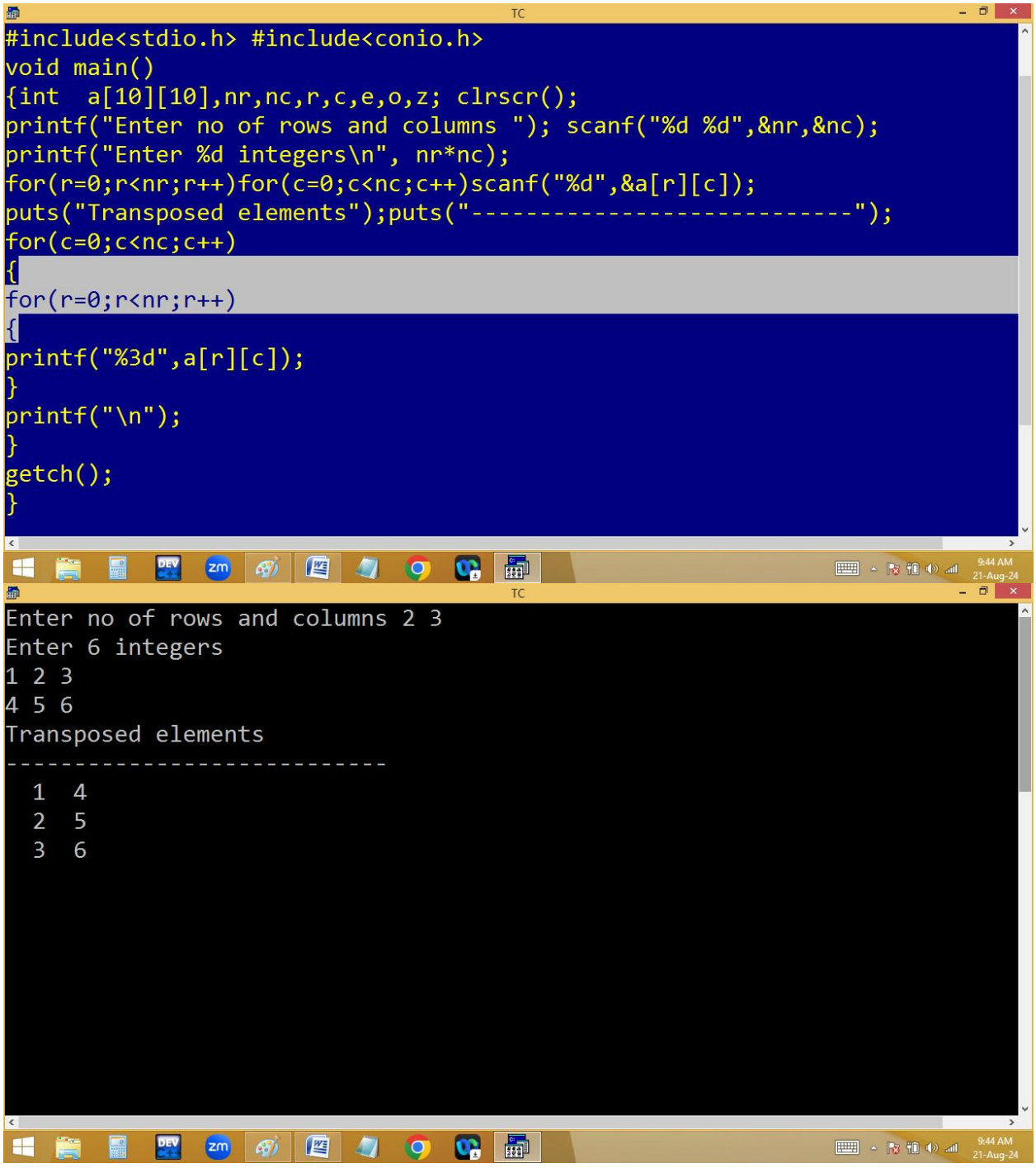
r	c	e	o	z
0 1 2	0	0 1	0 1 2	0
0 1 2	1	0 1	0 1	0 1
0 1 2	2	0 1	0 1	0 1

4 0,0	7 0,1	0 0,2
9 1,0	0 1,1	2 1,2
1 2,0	4 2,1	7 2,2

	e	o	z
1-col	1	2	0
2-col	1	1	1
3-col	1	1	1

Transpose of n*n matrix:

Swap of rows and columns


TC
#include<stdio.h> #include<conio.h>
void main()
{int a[10][10],nr,nc,r,c,e,o,z; clrscr();
printf("Enter no of rows and columns "); scanf("%d %d",&nr,&nc);
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed elements");puts("----------");
for(c=0;c<nc;c++)
{
for(r=0;r<nr;r++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
9:44 AM
21-Aug-24
TC
Enter no of rows and columns 2 3
Enter 6 integers
1 2 3
4 5 6
Transposed elements
----
1 4
2 5
3 6
9:44 AM
21-Aug-24

```
for(c=0;c<3;c++)
{
for(r=0;r<2;r++)
{
p(a[r][c]);
}
p("\n");
}
```

4 0,0	7 0,1	0 0,2
9 1,0	0 1,1	2 1,2

4	9
7	0
0	2

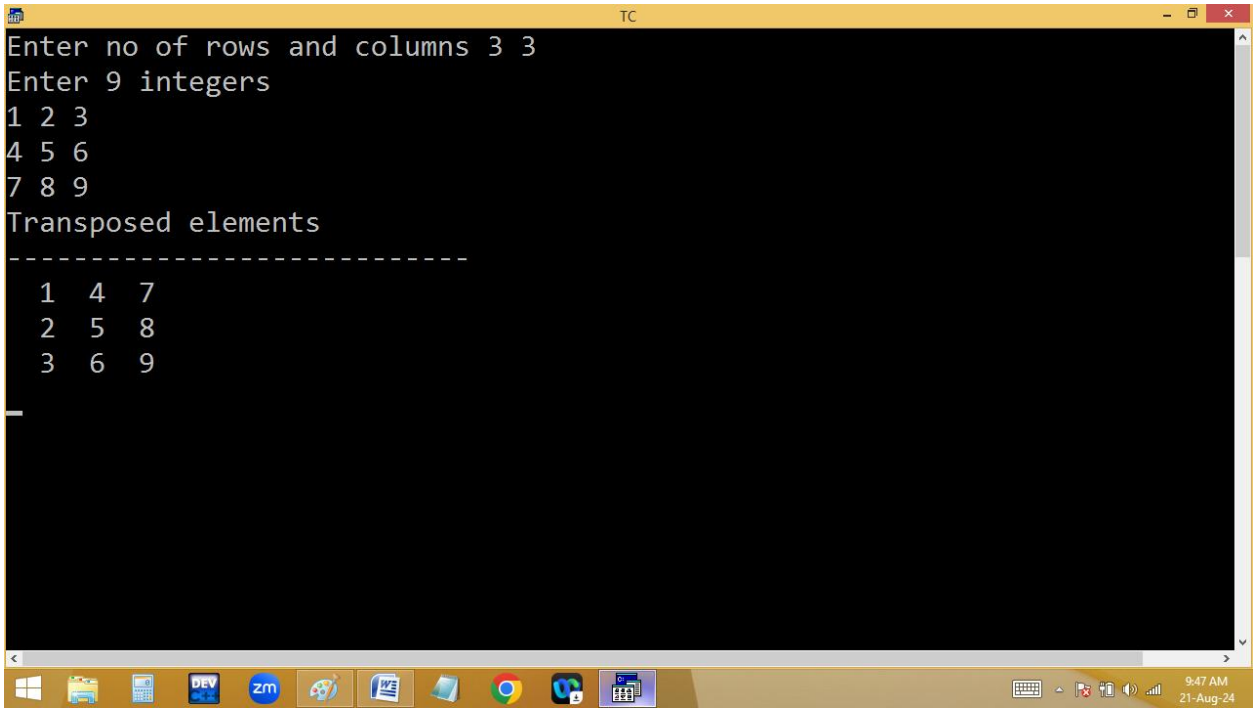
Method2:

TC

```
#include<stdio.h> #include<conio.h>
void main()
{int  a[10][10],nr,nc,r,c,e,o,z; clrscr();
printf("Enter no of rows and columns "); scanf("%d %d",&nr,&nc);
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed elements");puts("----------------------------");
for(r=0;r<nc;r++)
{
for(c=0;c<nr;c++)
{
printf("%3d",a[c][r]);
}
printf("\n");
}
getch();
}
```

TC

```
Enter no of rows and columns 2 3
Enter 6 integers
1 0 9
3 8 1
Transposed elements
----------------------------
  1  3
  0  8
  9  1
```

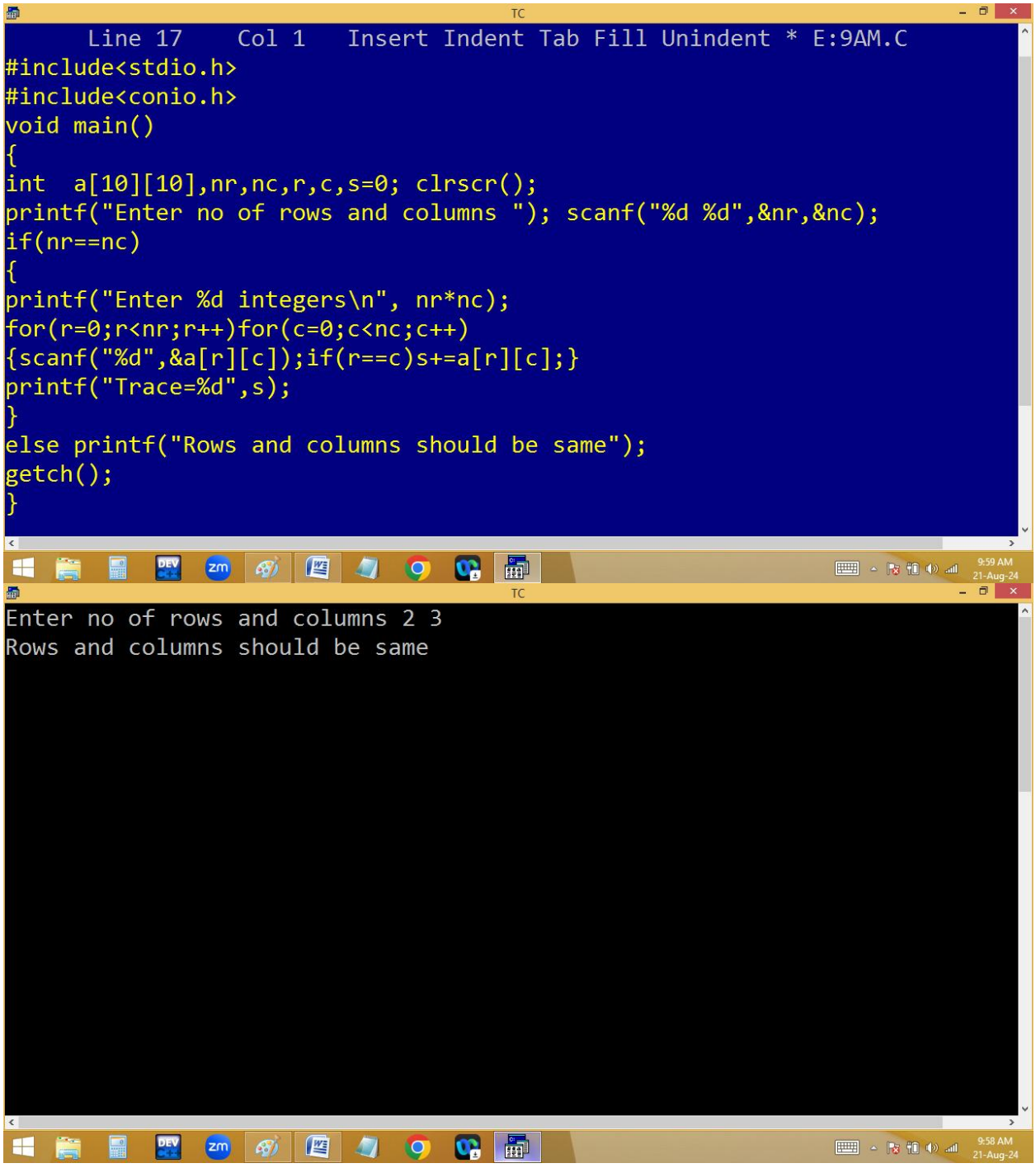


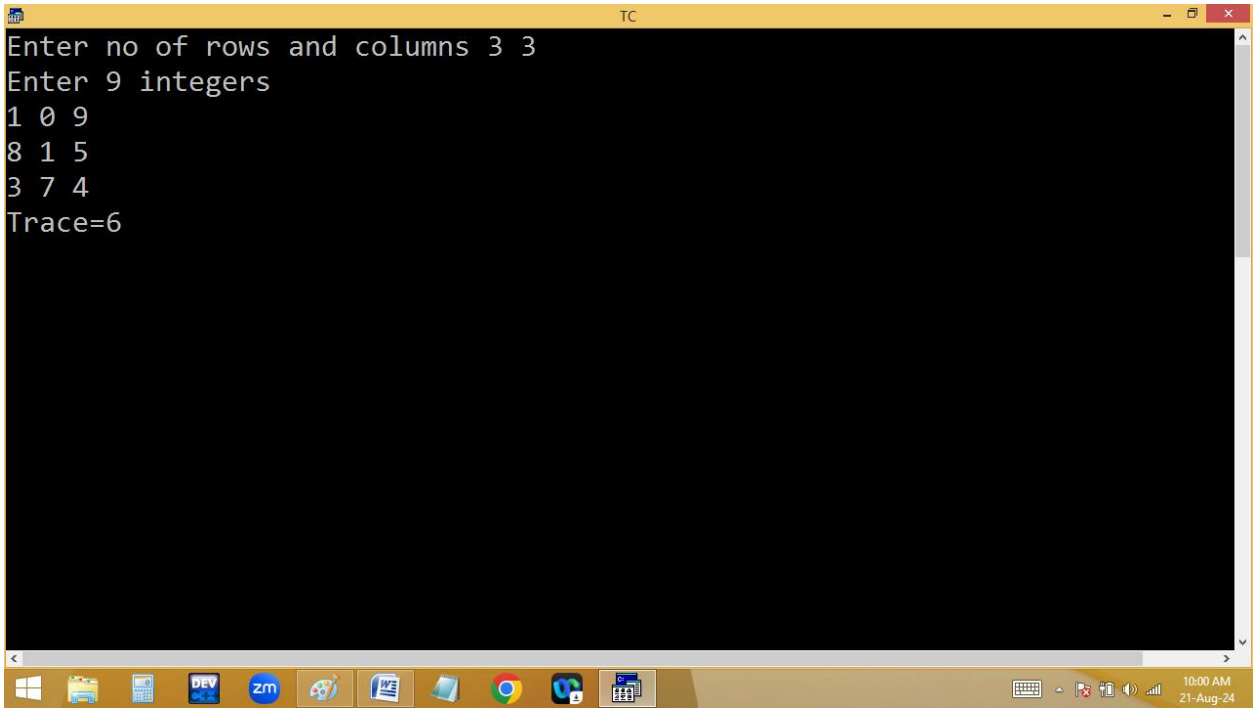

```
for(r=0;r<3 ;r++)
{
for(c=0;c<2;c++)
{
p(a[c][r]);
}
p("\n");
}
```

4 (0,0)	7 (0,1)	0 (0,2)
9 (1,0)	0 (1,1)	2 (1,2)

4	9
7	0
0	2

Finding trace of n*n matrix:


TC
Line 17 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c,s=0; clrscr();
printf("Enter no of rows and columns "); scanf("%d %d",&nr,&nc);
if(nr==nc)
{
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)
{scanf("%d",&a[r][c]);if(r==c)s+=a[r][c];}
printf("Trace=%d",s);
}
else printf("Rows and columns should be same");
getch();
}
9:59 AM
21-Aug-24
TC
Enter no of rows and columns 2 3
Rows and columns should be same
9:58 AM
21-Aug-24



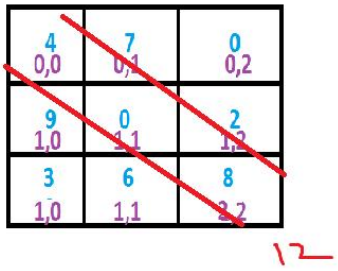
Sum of principle diagonal is called trace

```
for(r=0;r<3;r++)
{
for(c=0;c<3;c++)
{
scanf("%d",&a[r][c]);
if(r==c)s+=a[r][c];
}
}
p("Trace=%d",s);
```

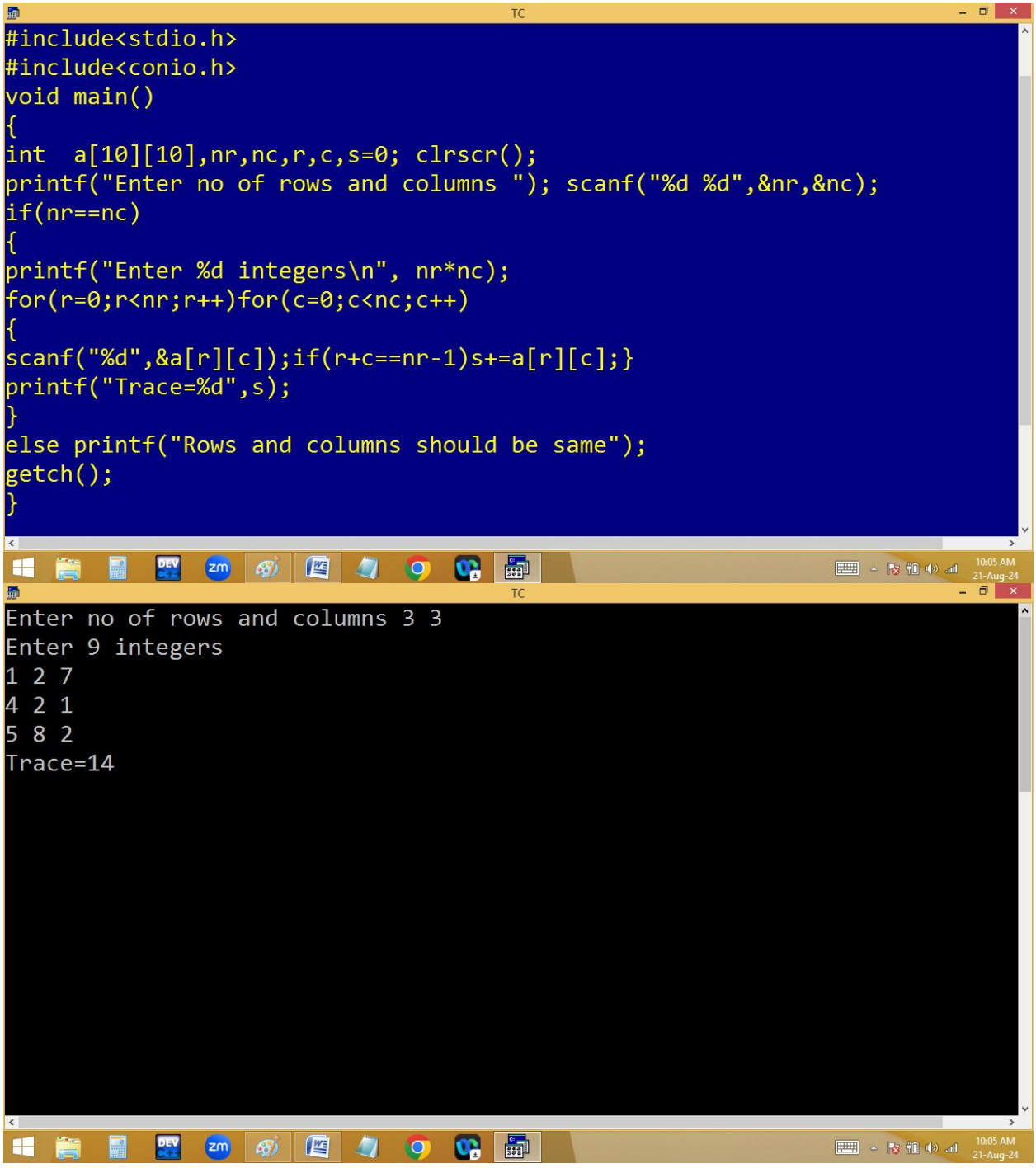
r: 0 | 1 | 2

c: 0 1 2 | 0 1 2 | 0 1 2

s: 0 + 4 + 0 + 8 = 12



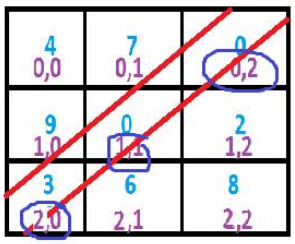
Finding sum of right diagonal elements:


TC
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c,s=0; clrscr();
printf("Enter no of rows and columns "); scanf("%d %d",&nr,&nc);
if(nr==nc)
{
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)
{
scanf("%d",&a[r][c]);if(r+c==nr-1)s+=a[r][c];}
printf("Trace=%d",s);
}
else printf("Rows and columns should be same");
getch();
}
TC
Enter no of rows and columns 3 3
Enter 9 integers
1 2 7
4 2 1
5 8 2
Trace=14

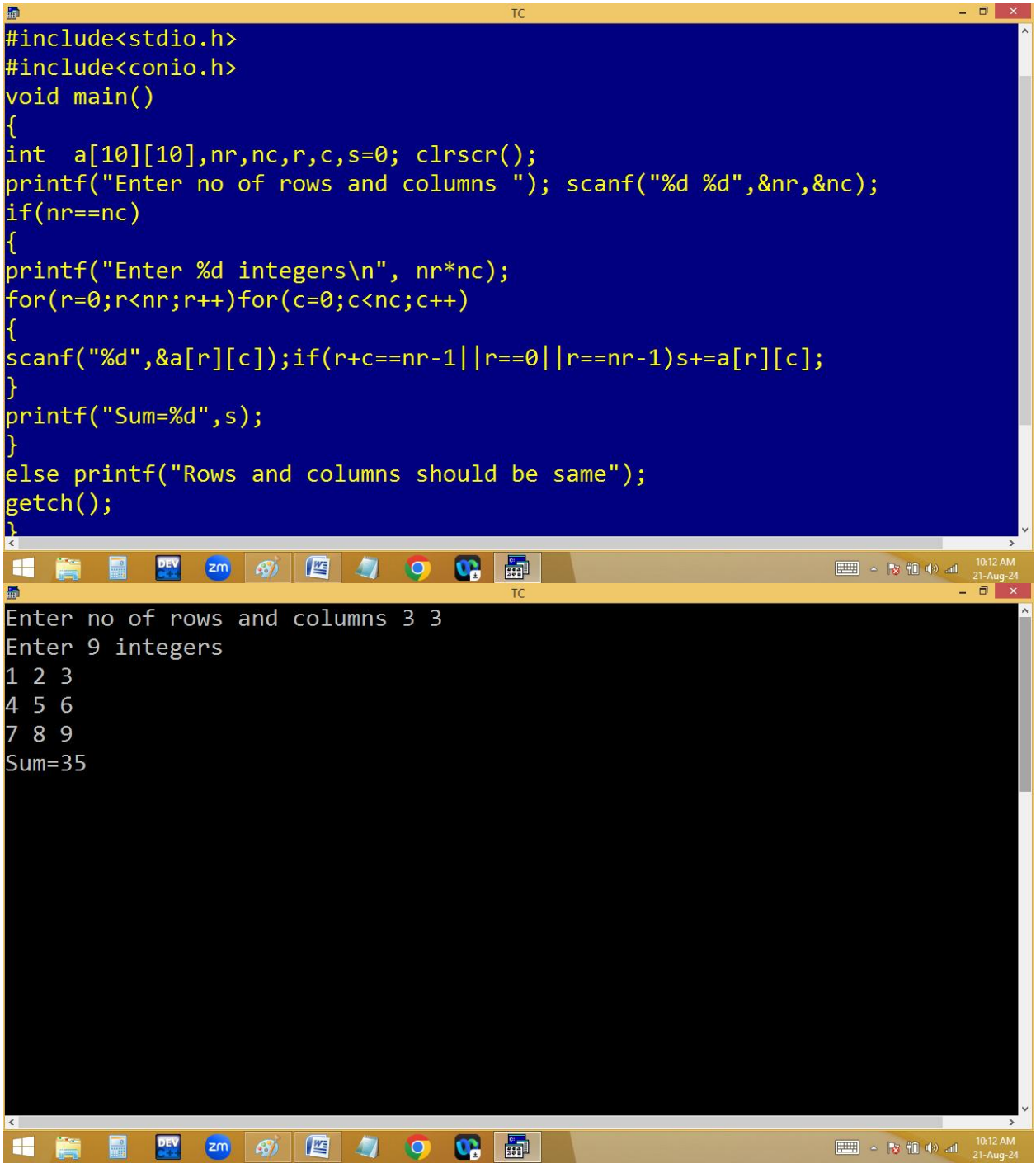
```
if(r+c==nr-1) s+=a[r][c];
```

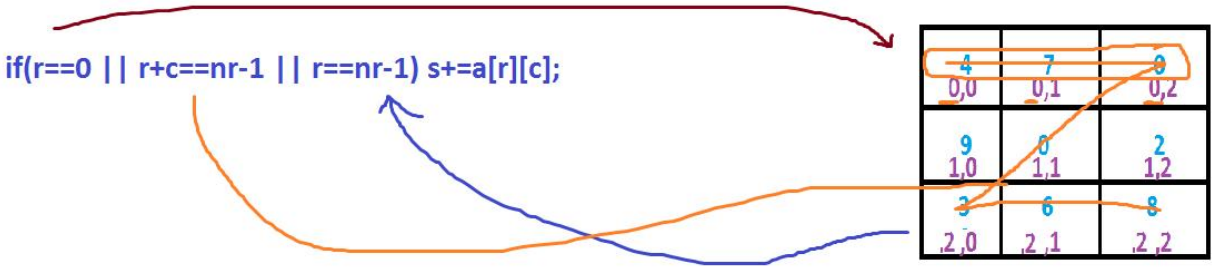
nr

3 - 1 = 2

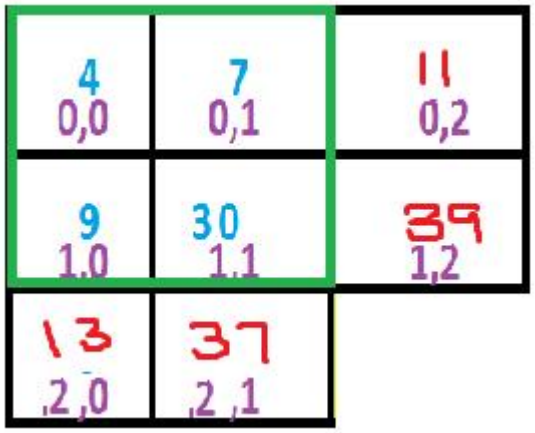


sum=3


TC
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c,s=0; clrscr();
printf("Enter no of rows and columns "); scanf("%d %d",&nr,&nc);
if(nr==nc)
{
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)
{
scanf("%d",&a[r][c]);if(r+c==nr-1||r==0||r==nr-1)s+=a[r][c];
}
printf("Sum=%d",s);
}
else printf("Rows and columns should be same");
getch();
}
10:12 AM
21-Aug-24
TC
Enter no of rows and columns 3 3
Enter 9 integers
1 2 3
4 5 6
7 8 9
Sum=35
10:12 AM
21-Aug-24



Finding row sum and columns sum:



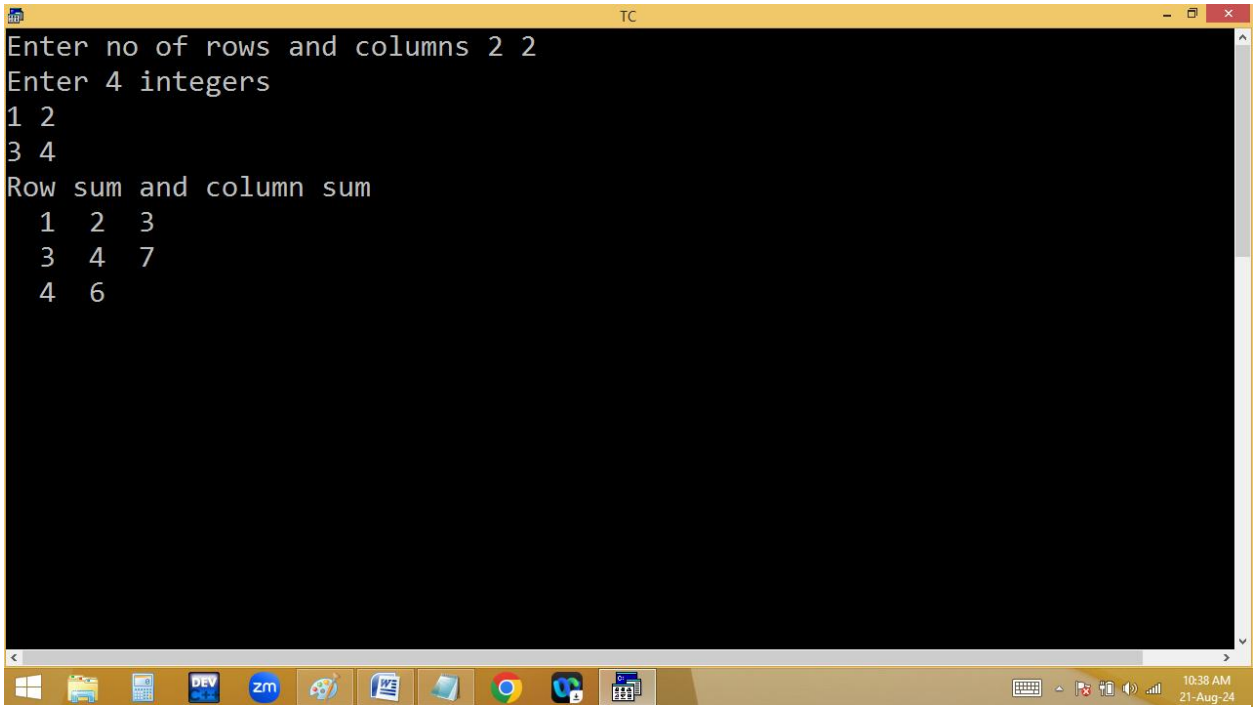
central gov budget

	ag	edu	med	tot
ap	2	1	0.5	X
ts	1.5	2	3	X
mh	4	0.25	1.25	X
tot	X	X	X	

```
#include<stdio.h>

#include<conio.h>

void main()

{

int  a[10][10],nr,nc,r,c,rs,cs; clrscr();

printf("Enter no of rows and columns ");
scanf("%d %d",&nr,&nc);

if(nr==nc)
```

```
{
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][
c]);
for(r=0;r<nr;r++)
{
for(rs=cs=c=0;c<nc;c++){rs+=a[r][c];cs+=a[c][r];}
a[r][c]=rs; a[c][r]=cs;
}
printf("Row sum and column sum\n");
for(r=0;r<=nr;r++)
{for(c=0;c<=nc;c++)
{if(r==nr&&c==nc)continue; else
printf("%3d",a[r][c]);}
printf("\n");
}
```

```
}
else printf("Rows and columns should be same");
getch();
}
```




```
for(r=0;r<2;r++)
{
for(rs=cs=c=0;c<2;c++)
{
rs+=a[r][c];cs+=a[c][r];
}
a[r][c]=rs; a[c][r]=cs;
}
```

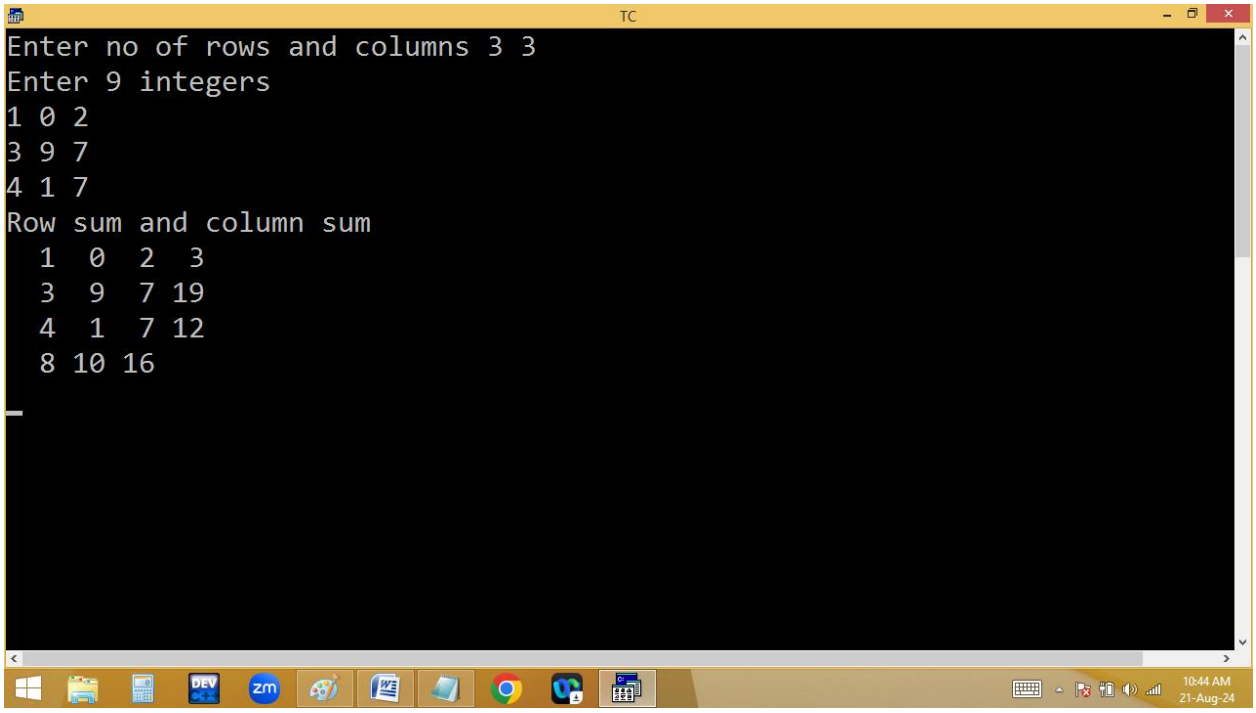
r	c	rs	cs
0	0 | 2	0+4+7=11	0+4+0=13
1	0 | 2	0+9+30	0+7+30
		39	37
2			

4 (0,0)	7 (0,1)	11 (0,2)
9 (1,0)	30 (1,1)	39 (1,2)
13 (2,0)	37 (2,1)	2,2

```
#include<stdio.h>
```

```
#include<conio.h>
void main()
{
int  a[10][10],nr,nc,r,c,rs,cs; clrscr();
printf("Enter no of rows and columns ");
scanf("%d %d",&nr,&nc);
if(nr==nc)
{
printf("Enter %d integers\n", nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][
c]);
for(r=0;r<nr;r++)
{
for(rs=cs=c=0;c<nc;c++){rs+=a[r][c];cs+=a[c][r];}
a[r][c]=rs; a[c][r]=cs;
}
```

```
printf("Row sum and column sum\n");
for(r=0;r<=nr;r++)
{for(c=0;c<=nc;c++)
{if(!(r==nr&&c==nc))printf("%3d",a[r][c]);}
printf("\n");
}
}
else printf("Rows and columns should be same");
getch();
}
```


TC
Enter no of rows and columns 3 3
Enter 9 integers
1 0 2
3 9 7
4 1 7
Row sum and column sum
1 0 2 3
3 9 7 19
4 1 7 12
8 10 16
10:44 AM
21-Aug-24