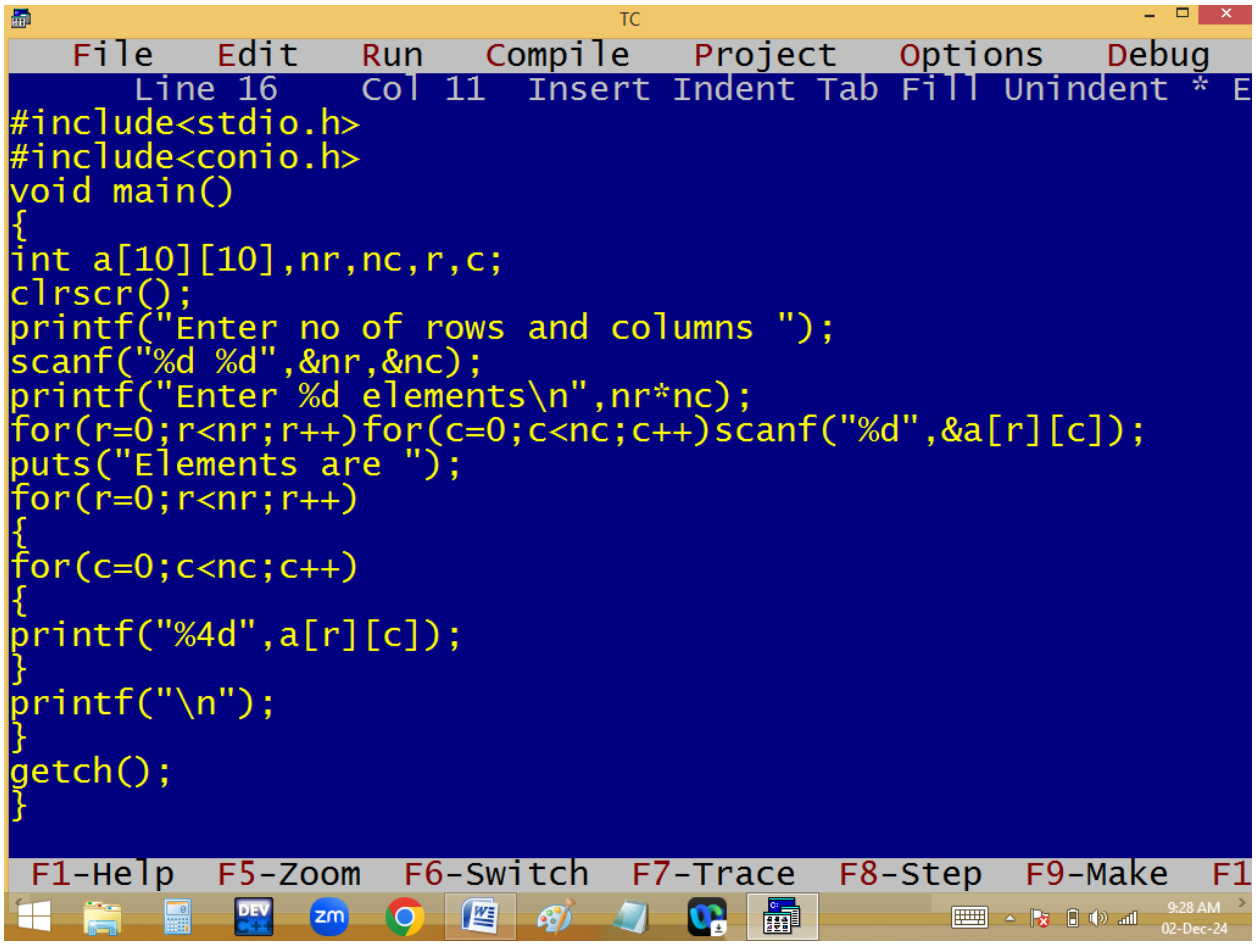
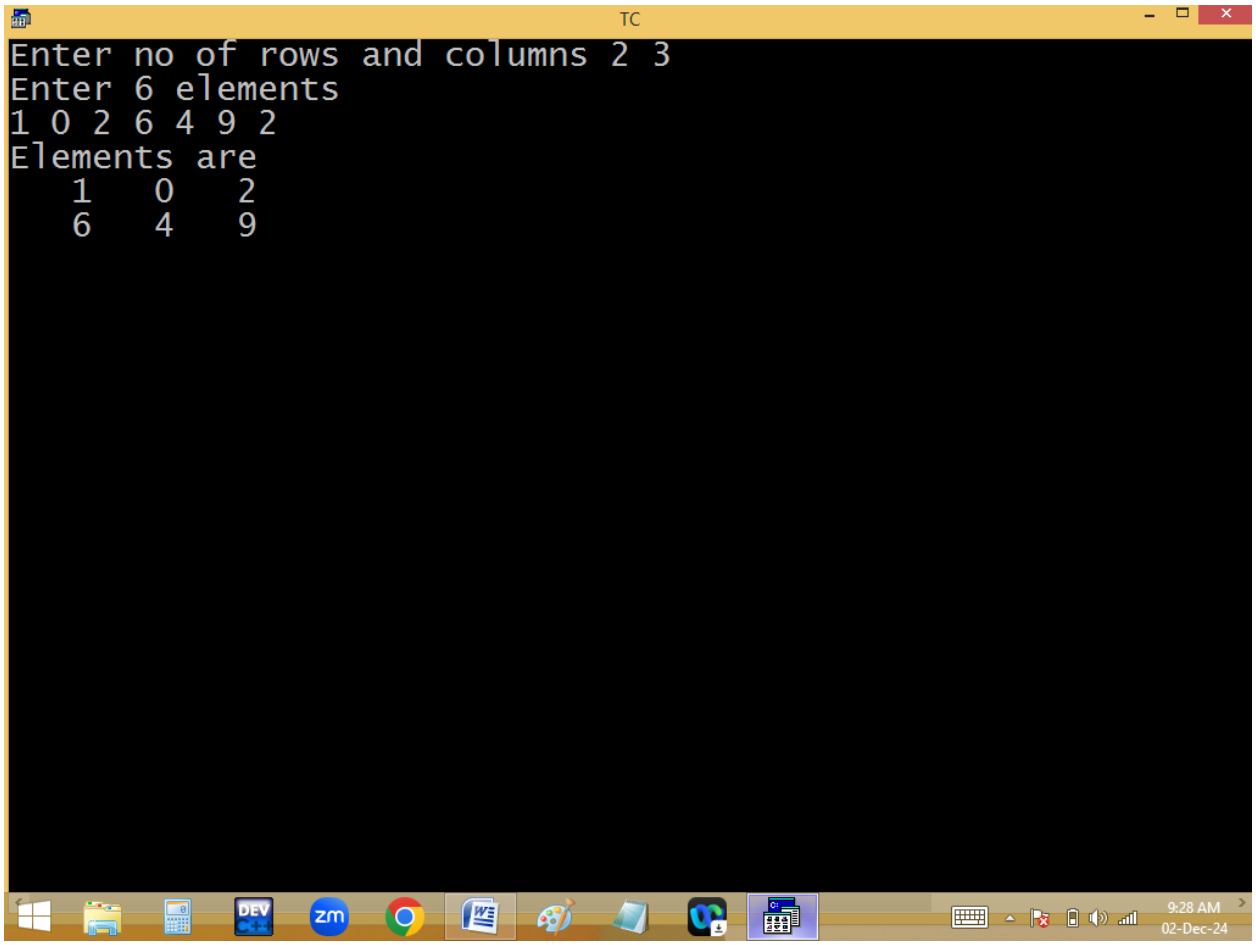
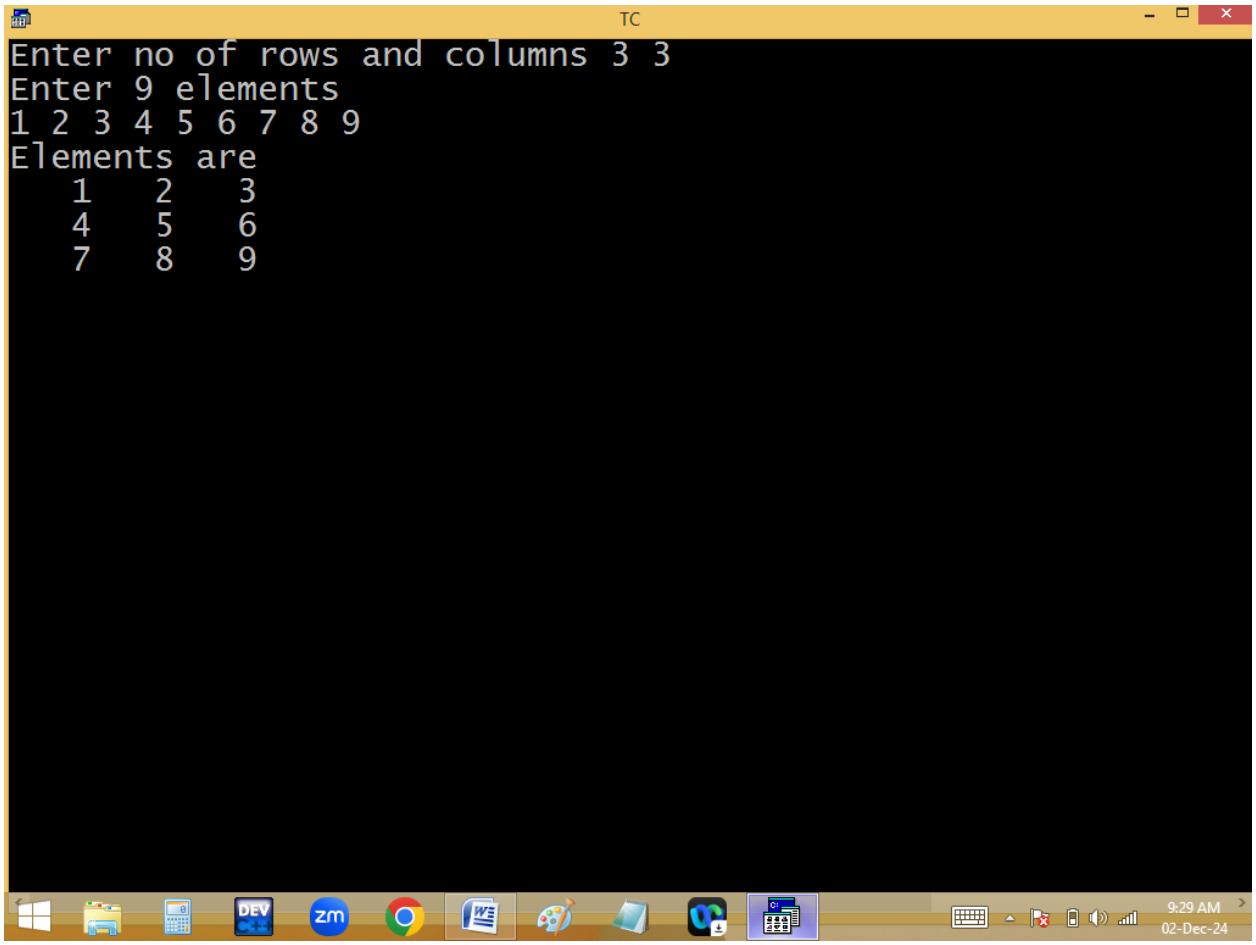
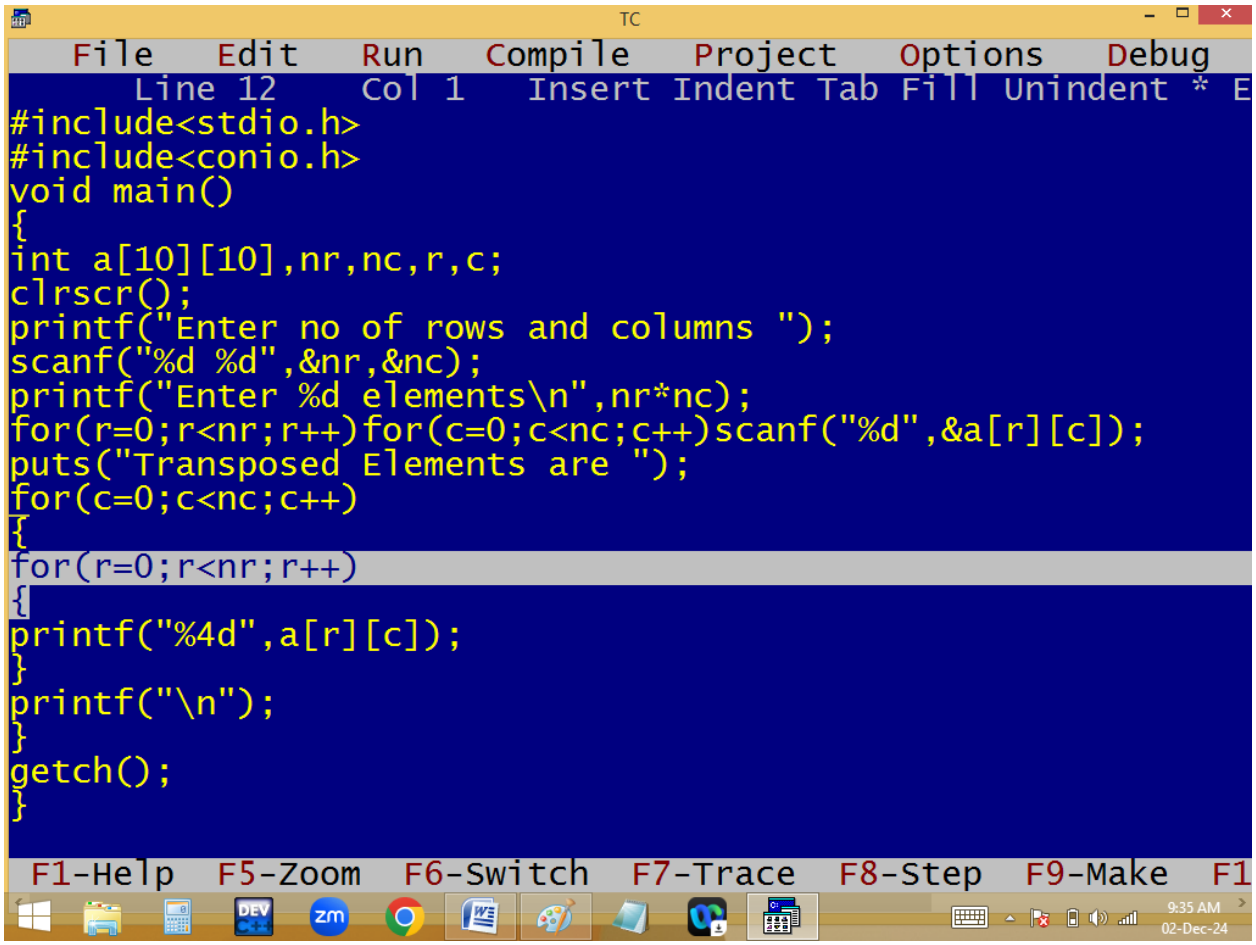
Reading and printing elements of a n*n matrix:

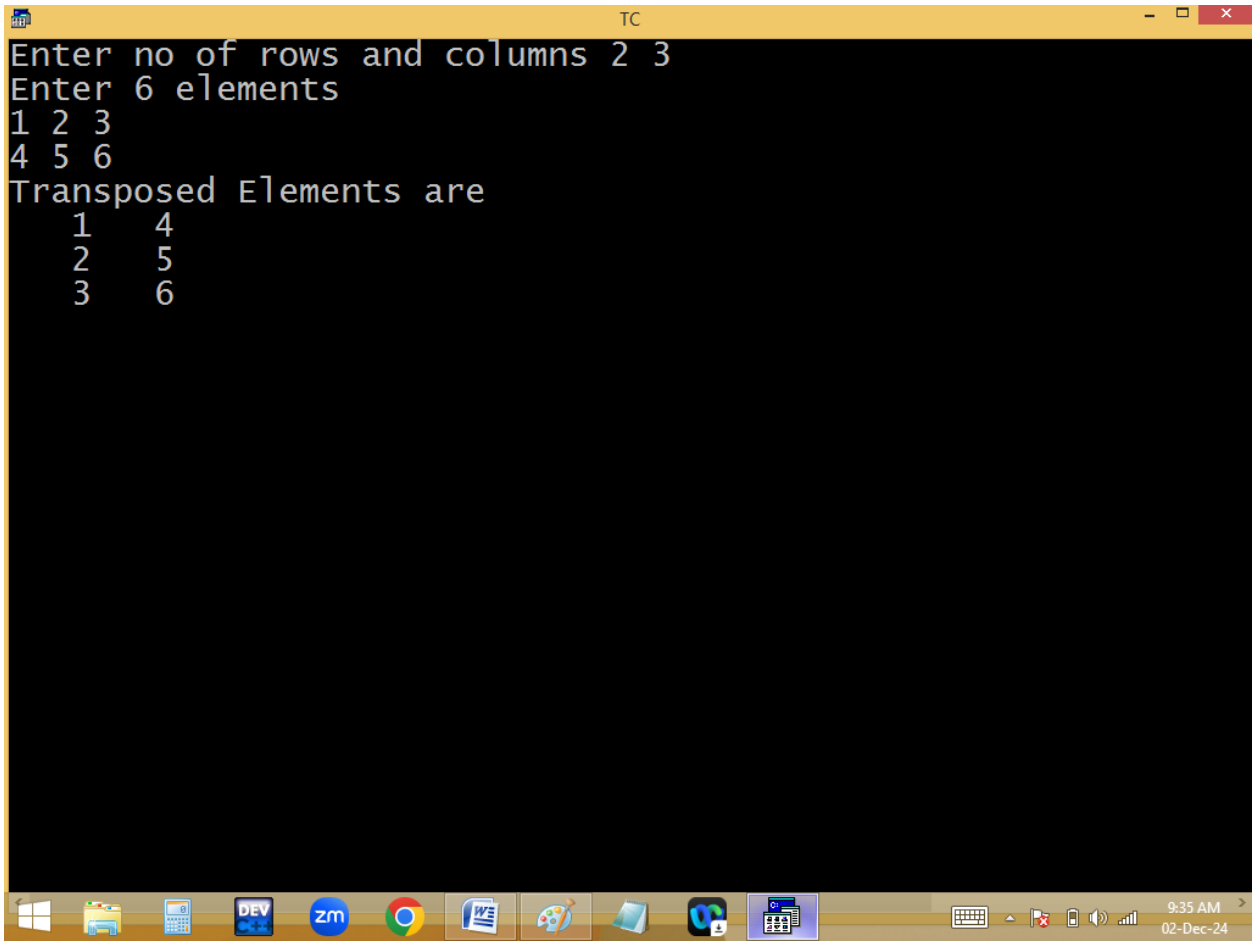

TC
File Edit Run Compile Project Options Debug
Line 16 Col 11 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns ");
scanf("%d %d",&nr,&nc);
printf("Enter %d elements\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Elements are ");
for(r=0;r<nr;r++)
{
for(c=0;c<nc;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F1
9:28 AM
02-Dec-24

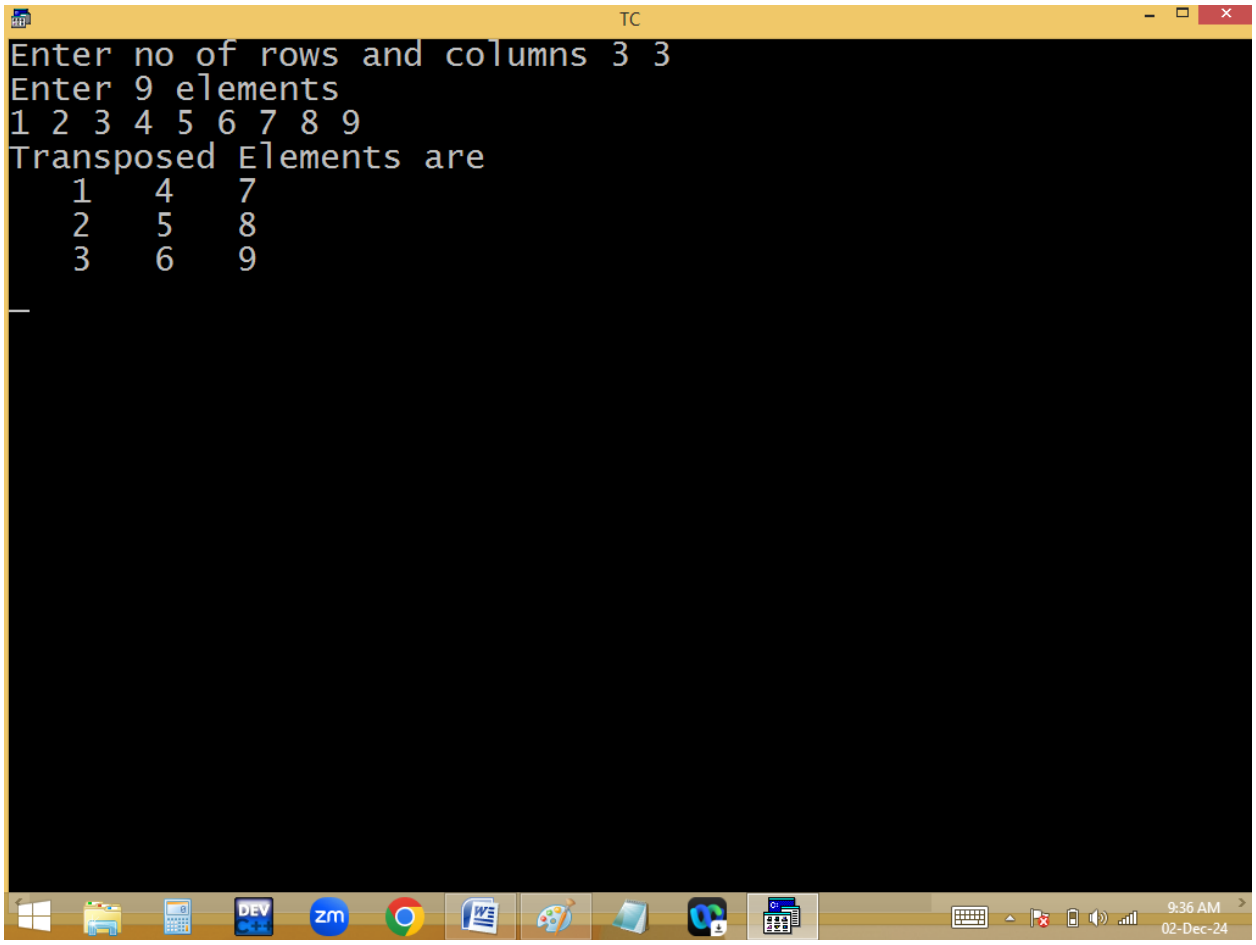

TC
Enter no of rows and columns 2 3
Enter 6 elements
1 0 2 6 4 9 2
Elements are
1 0 2
6 4 9
9:28 AM
02-Dec-24



Transpose of n*n matrix:


TC
File Edit Run Compile Project Options Debug
Line 12 Col 1 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns ");
scanf("%d %d",&nr,&nc);
printf("Enter %d elements\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed Elements are ");
for(c=0;c<nc;c++)
{
for(r=0;r<nr;r++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F1
9:35 AM
02-Dec-24


TC
Enter no of rows and columns 2 3
Enter 6 elements
1 2 3
4 5 6
Transposed Elements are
1 4
2 5
3 6
9:35 AM
02-Dec-24




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

1 0,0	2 0,1	3 0,2
4 1,0	5 1,1	6 1,2

1	4
2	5
3	6

r c

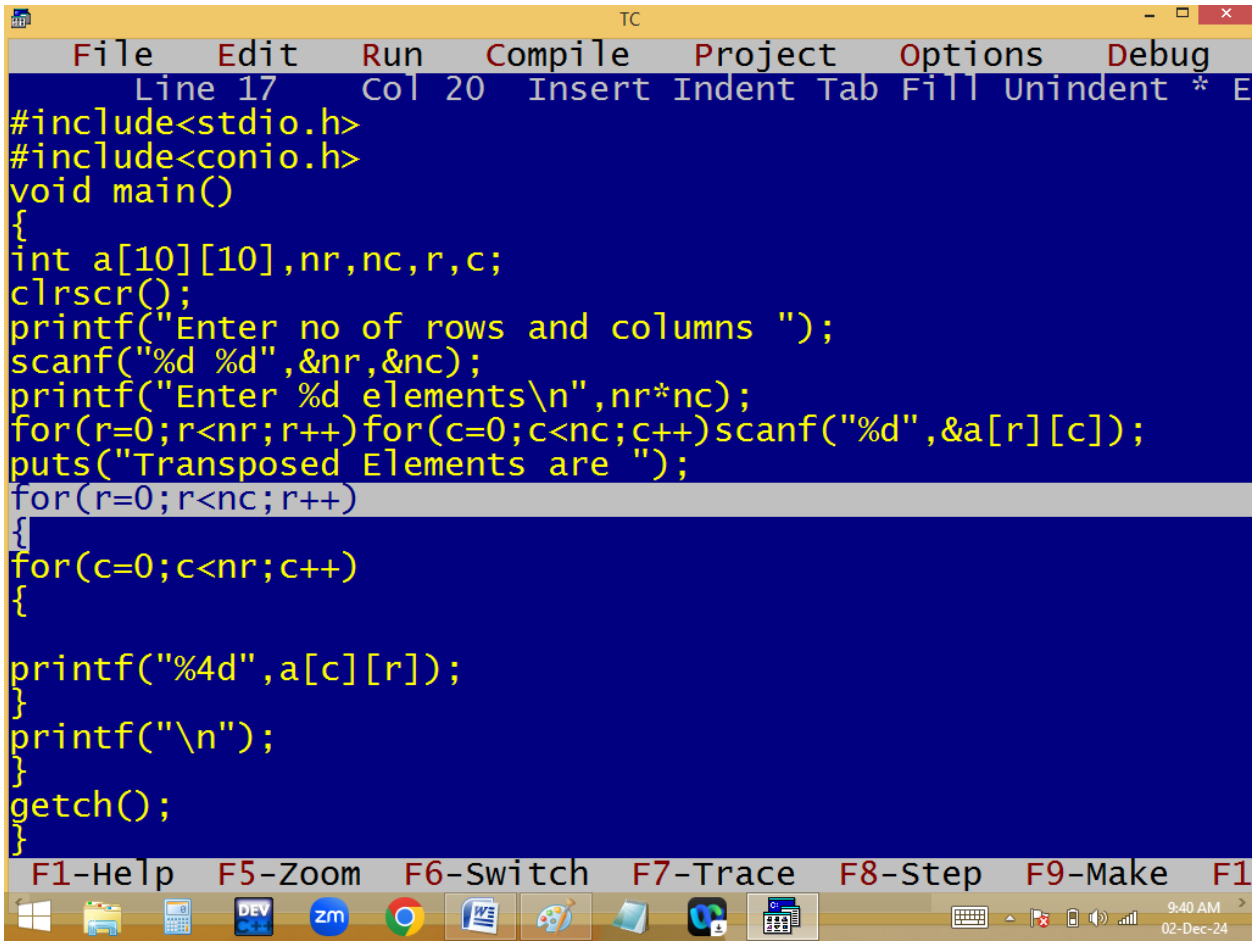
0 1 2 0

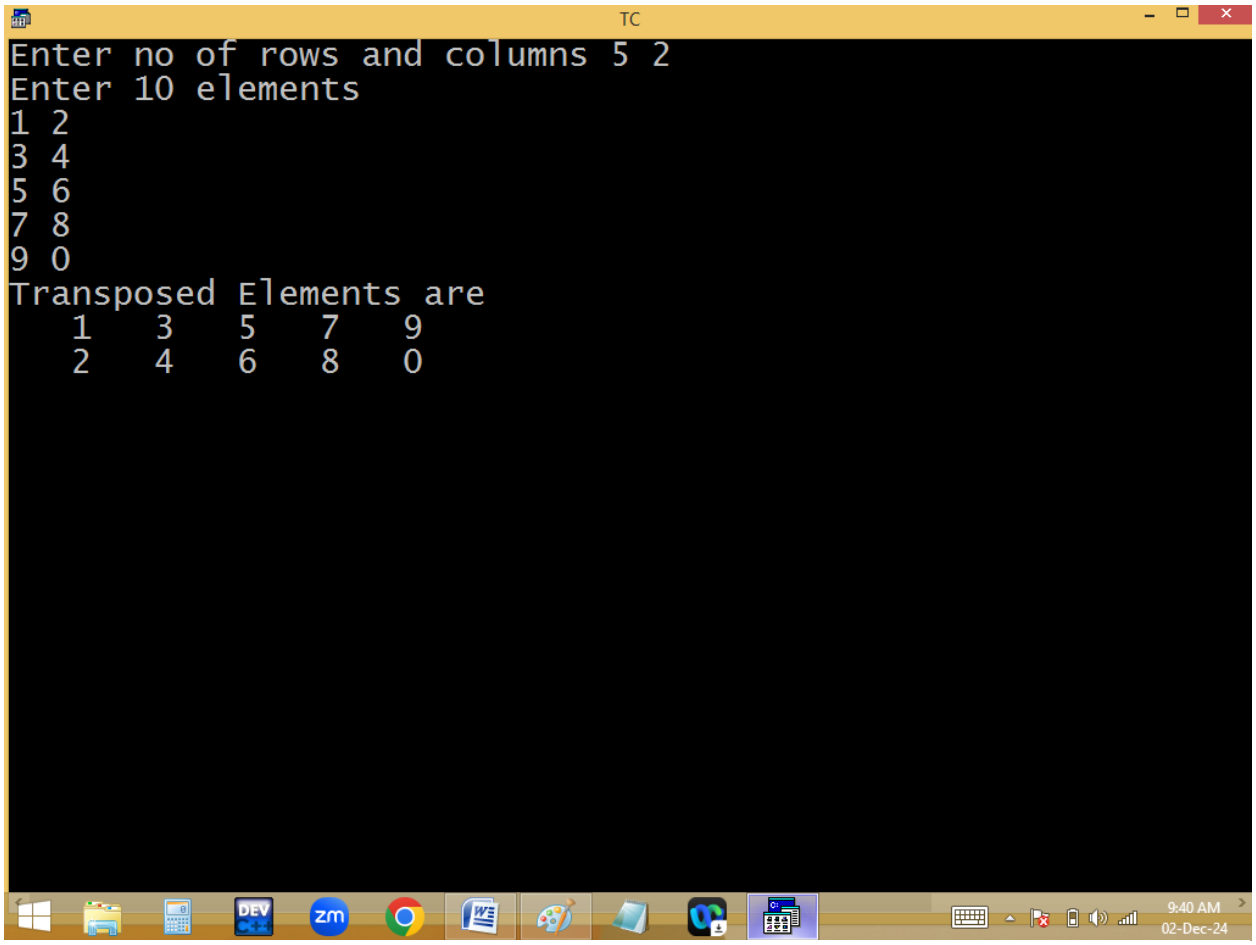
0 1 2 1

0 1 2

3

Method2:


TC
File Edit Run Compile Project Options Debug
Line 17 Col 20 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,nc,r,c;
clrscr();
printf("Enter no of rows and columns ");
scanf("%d %d",&nr,&nc);
printf("Enter %d elements\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed Elements are ");
for(r=0;r<nc;r++)
{
for(c=0;c<nr;c++)
{
printf("%4d",a[c][r]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F1
9:40 AM
02-Dec-24




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

1 0,0	2 0,1	3 0,2
4 1,0	5 1,1	6 1,2

c r

0 1 2 0

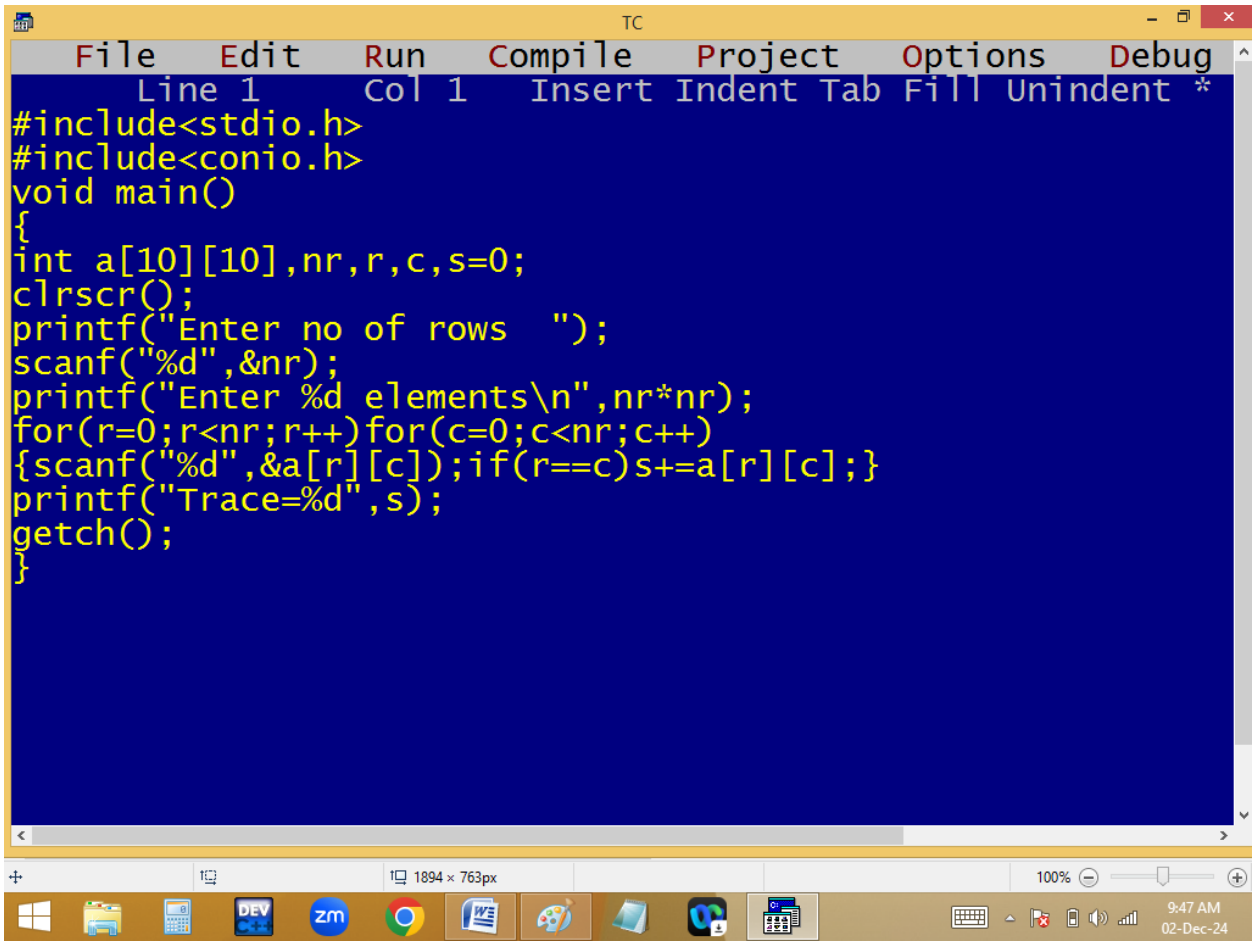
0 1 2 1

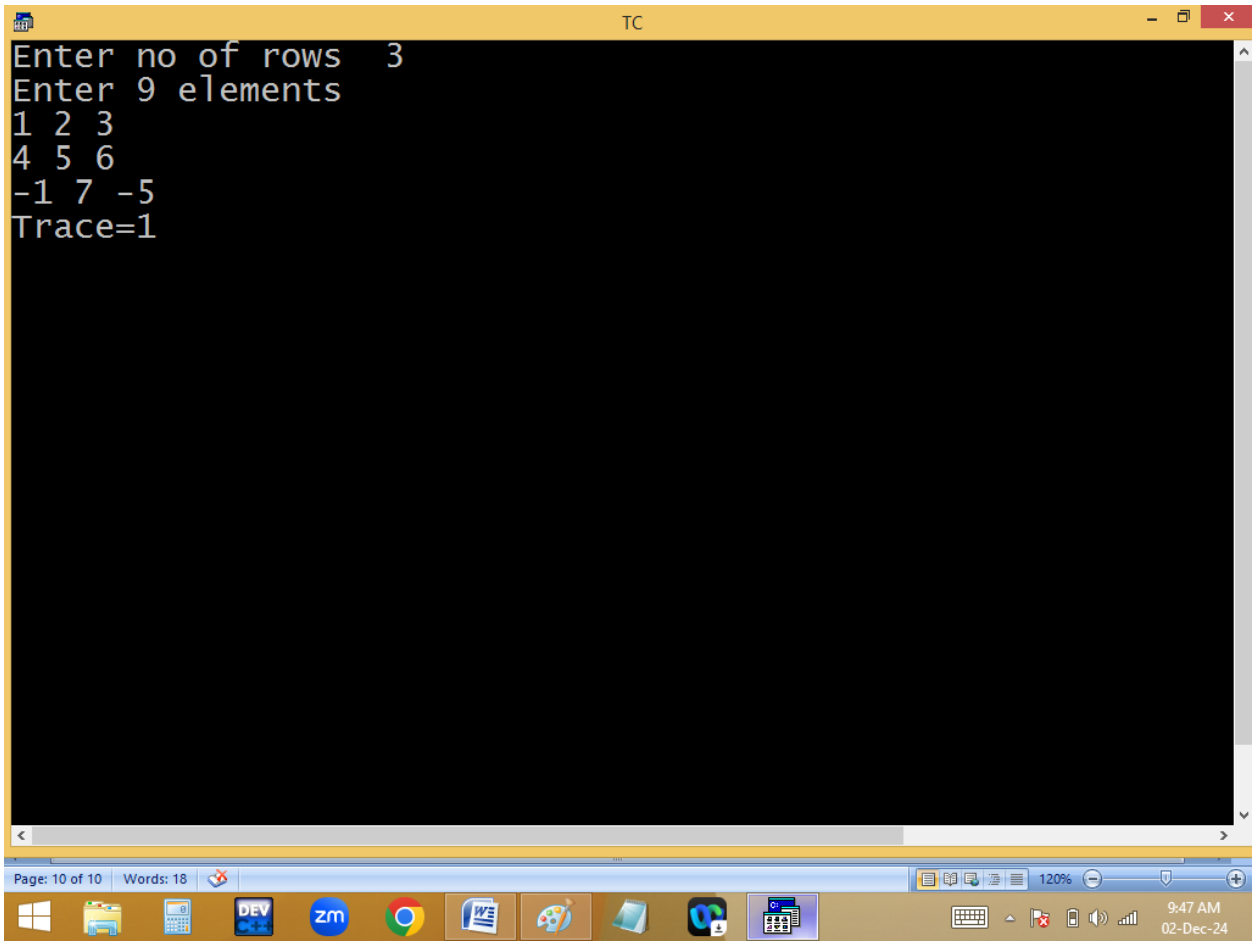
0 1 2 2

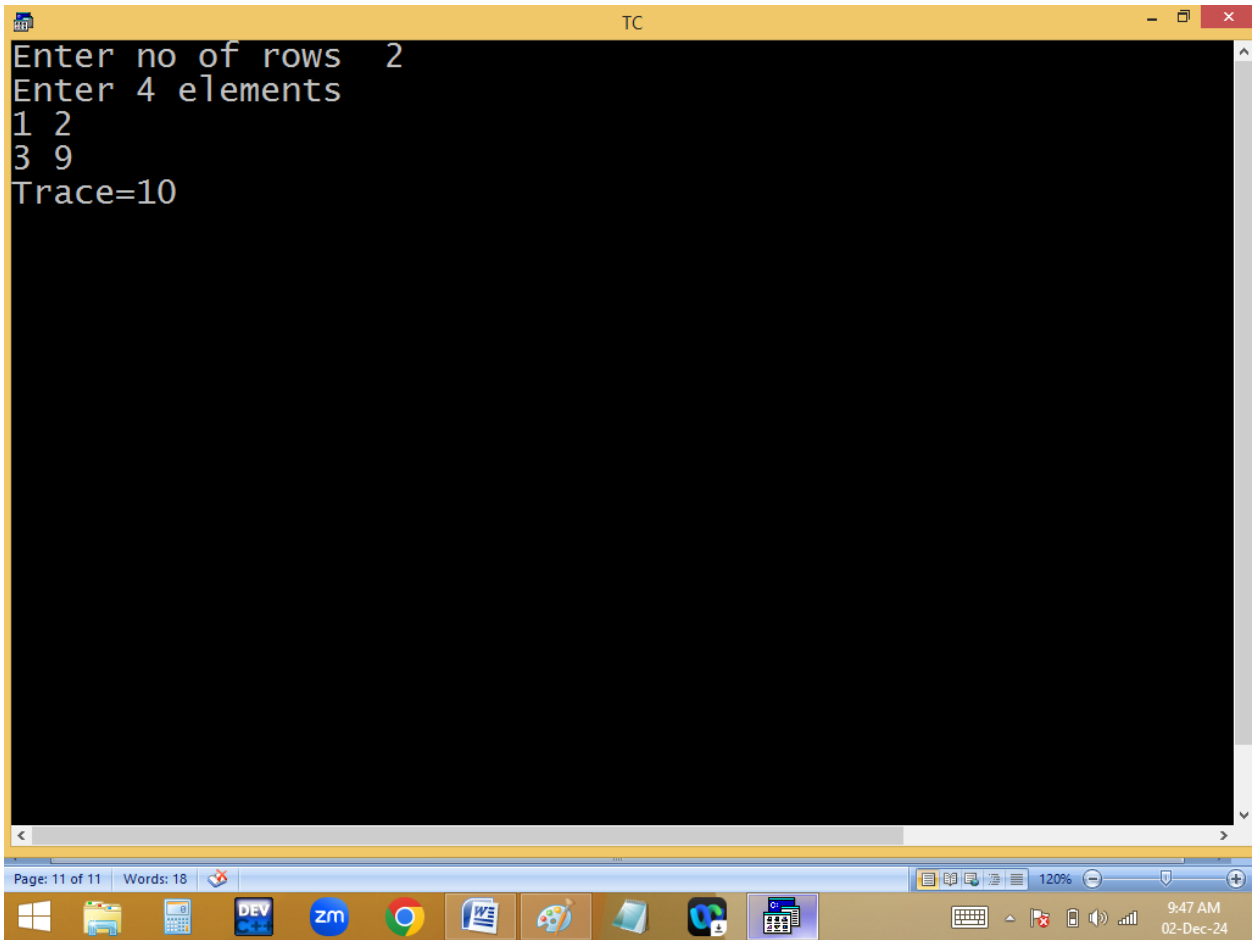
3

1	4
2	5
3	6

Finding trace of n*n matrix:


TC
File Edit Run Compile Project Options Debug
Line 1 Col 1 Insert Indent Tab Fill Unindent *
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,r,c,s=0;
clrscr();
printf("Enter no of rows ");
scanf("%d",&nr);
printf("Enter %d elements\n",nr*nr);
for(r=0;r<nr;r++)for(c=0;c<nr;c++)
{scanf("%d",&a[r][c]);if(r==c)s+=a[r][c];}
printf("Trace=%d",s);
getch();
}
1894 × 763px
100%
9:47 AM
02-Dec-24


TC
Enter no of rows 3
Enter 9 elements
1 2 3
4 5 6
-1 7 -5
Trace=1
Page: 10 of 10
Words: 18
120%
9:47 AM
02-Dec-24



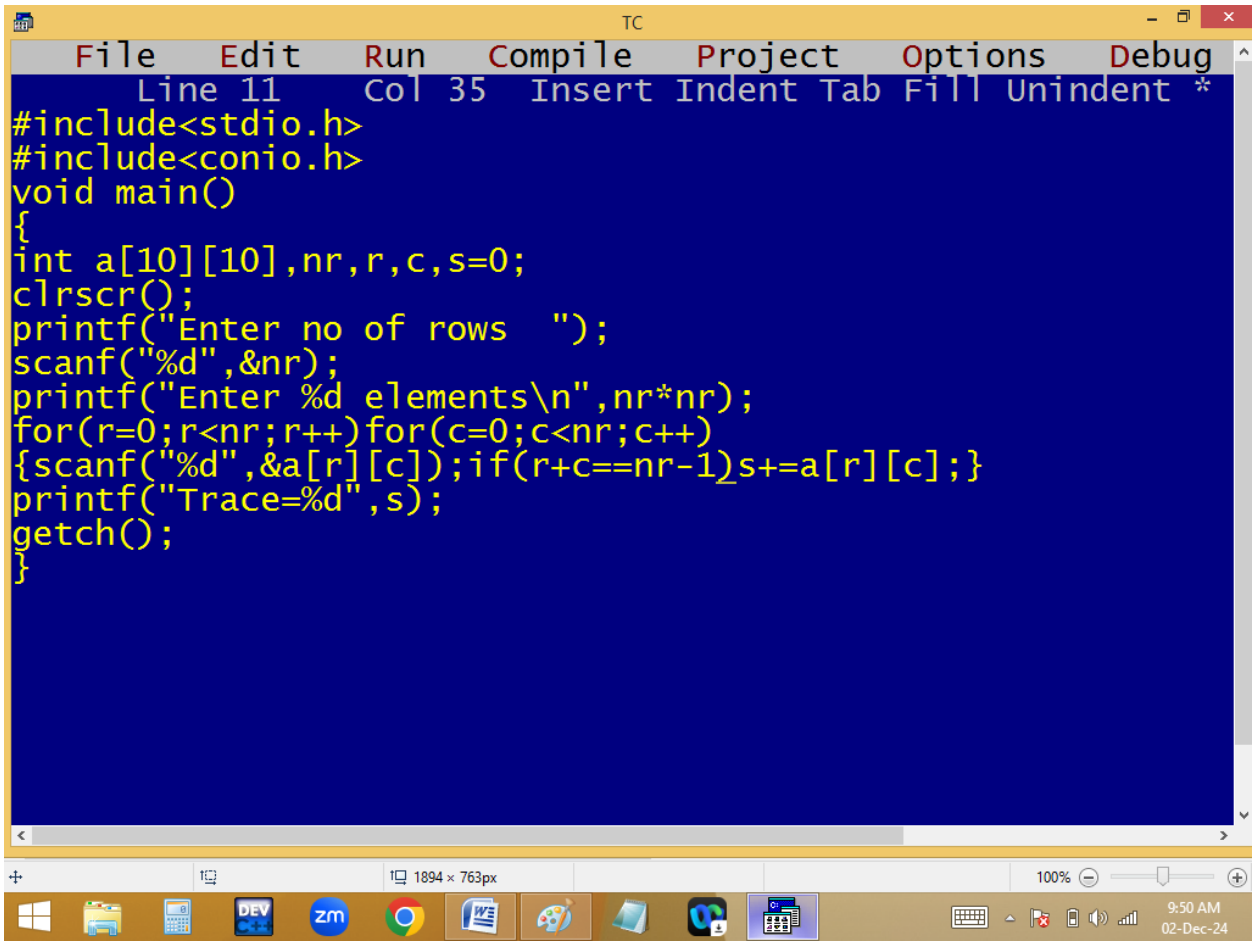
Sum of principle diagonal elements:

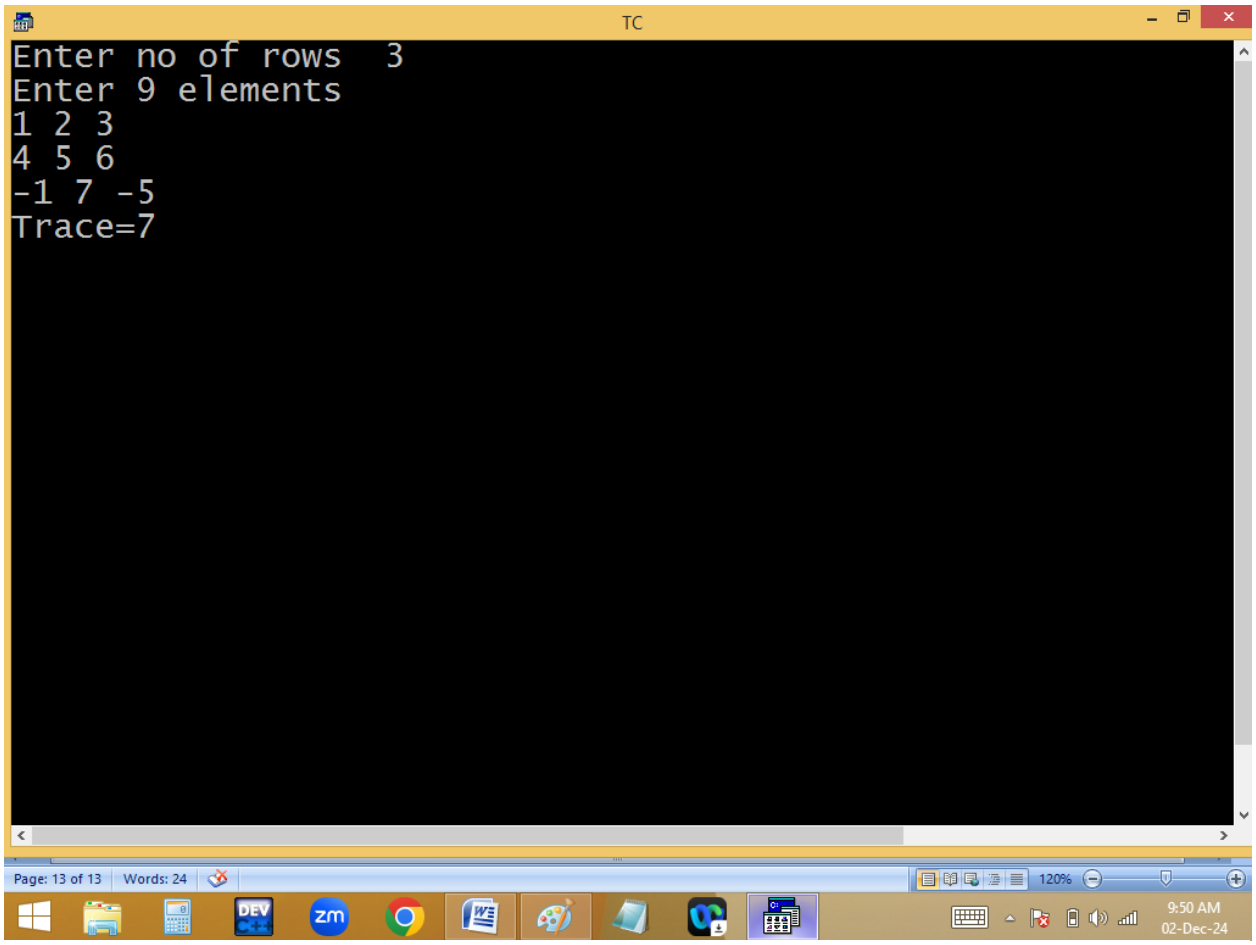
```
if(r==c)s+=a[r][c];
```

1 0,0	2 0,1	3 0,2
4 1,0	5 1,1	6 1,2
-1 2,0	7 2,1	-5 2,2

r	c	s
0 ✓	0 1 2	0+1+5+-5 ⇒ trace = 1
1	0 1 2	
2	0 1 2	

Finding sum of right diagonal elements:


TC
File Edit Run Compile Project Options Debug
Line 11 Col 35 Insert Indent Tab Fill Unindent *
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,r,c,s=0;
clrscr();
printf("Enter no of rows ");
scanf("%d",&nr);
printf("Enter %d elements\n",nr*nr);
for(r=0;r<nr;r++)for(c=0;c<nr;c++)
{scanf("%d",&a[r][c]);if(r+c==nr-1)s+=a[r][c];}
printf("Trace=%d",s);
getch();
}
1894 × 763px
100%
9:50 AM
02-Dec-24



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

1 0,0	2 0,1	3 0,2
4 1,0	5 1,1	6 1,2
-1 2,0	7 2,1	-5 2,2

sum=7

nr

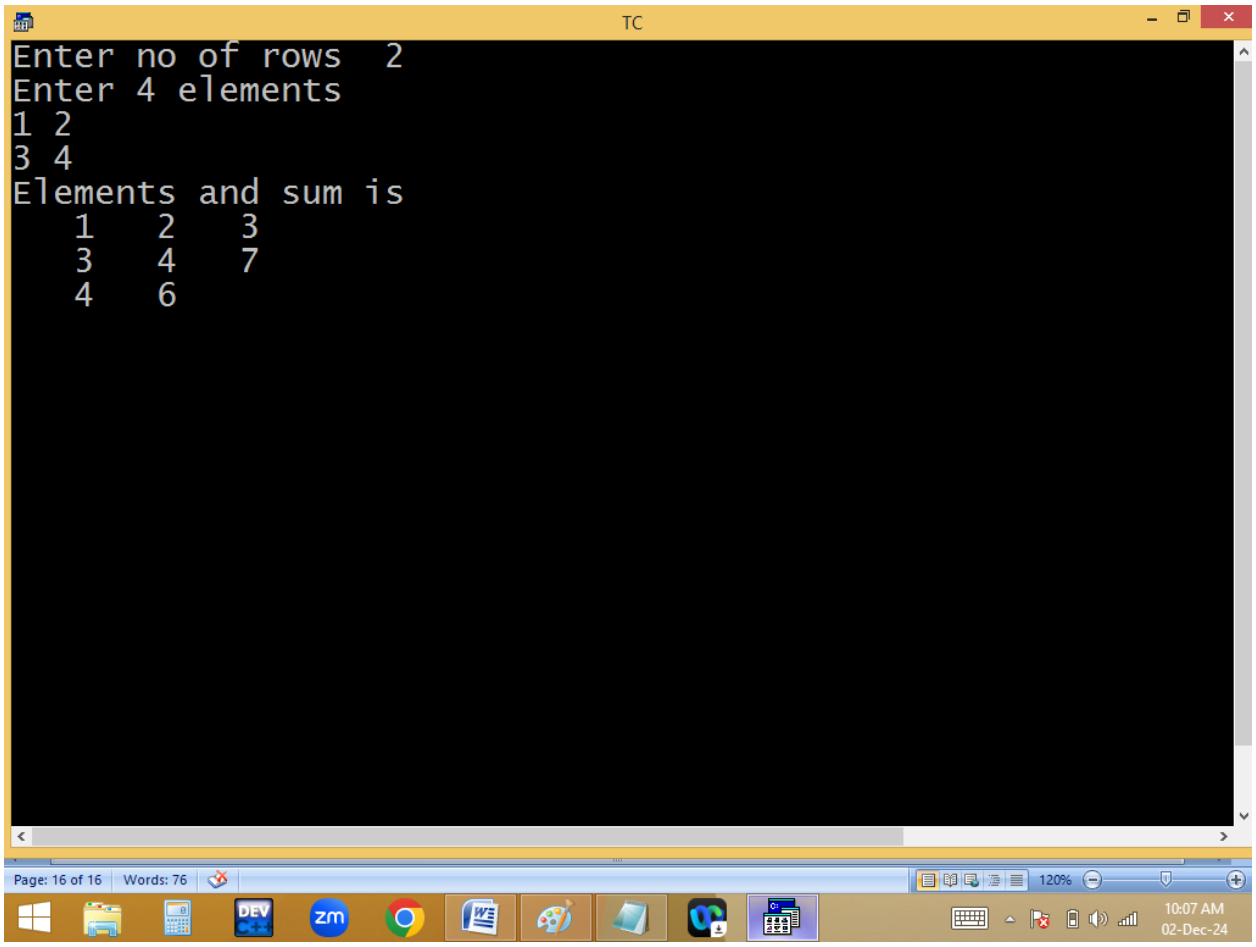
3-1=2

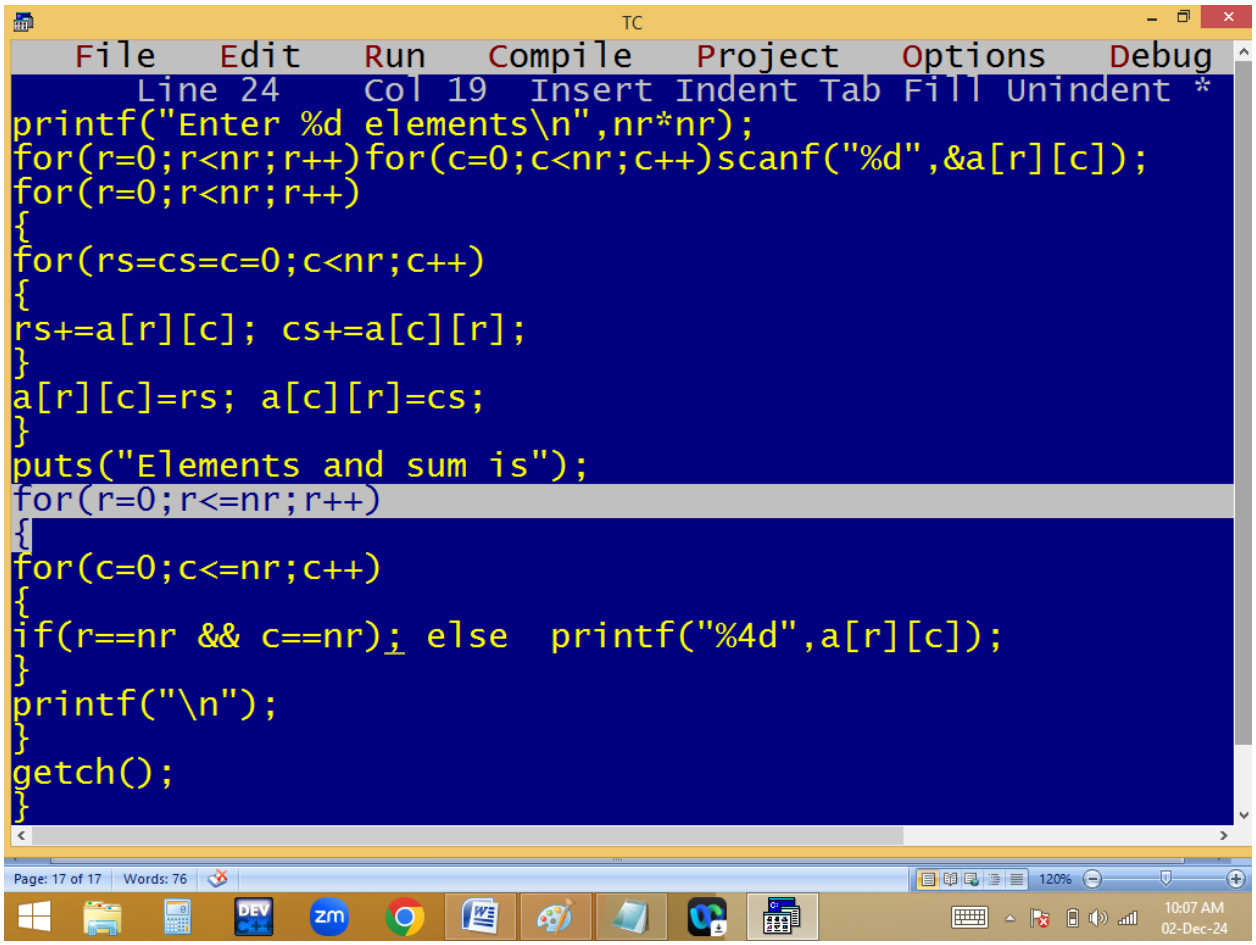
Finding row sum and column sum:

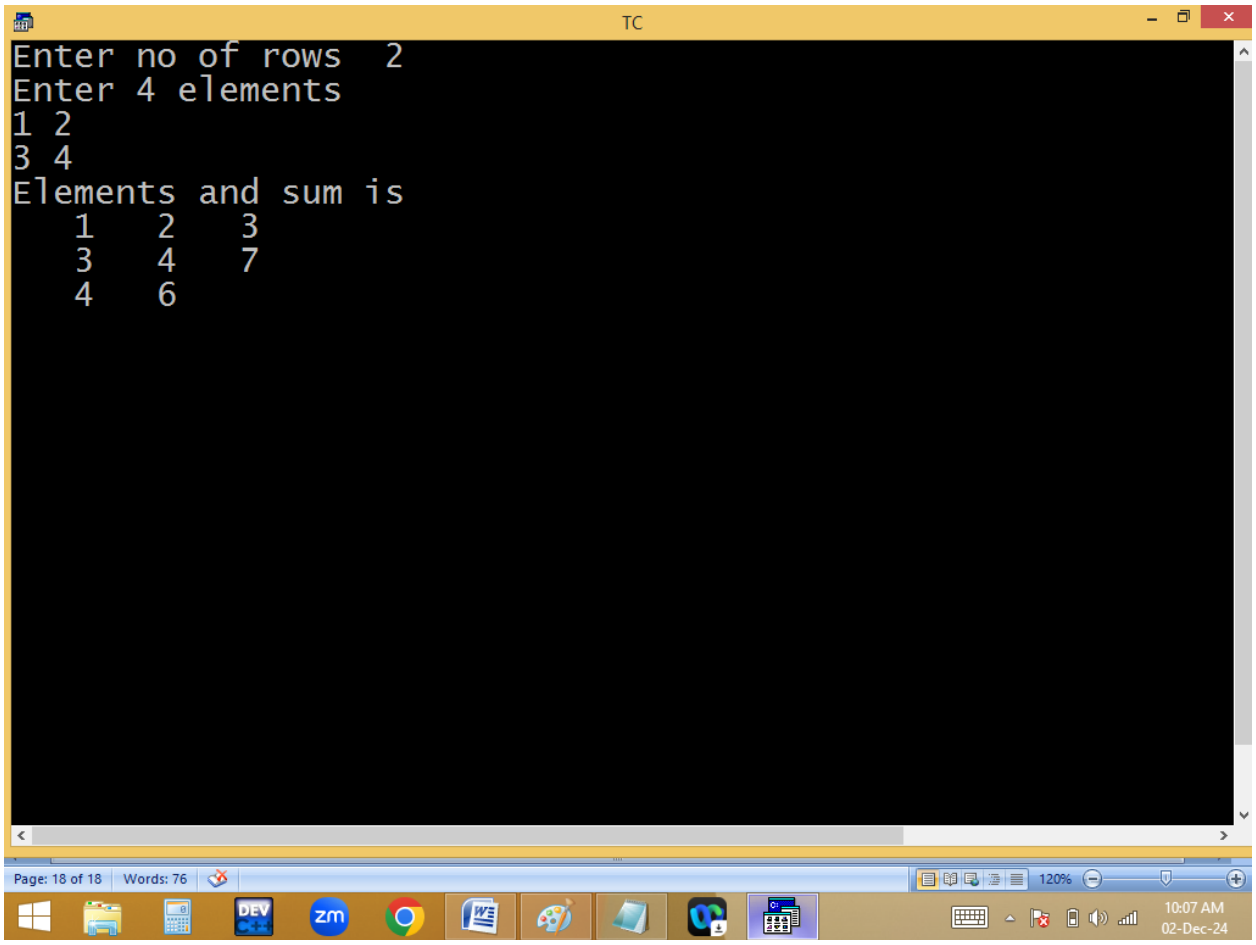
```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],nr,r,c,rs,cs;
clrscr();
printf("Enter no of rows  ");
scanf("%d",&nr);
printf("Enter %d elements\n",nr*nr);
for(r=0;r<nr;r++)for(c=0;c<nr;c++)scanf("%d",&a[r][c]);
for(r=0;r<nr;r++)
{
for(rs=cs=c=0;c<nr;c++)
{
rs+=a[r][c]; cs+=a[c][r];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

```
}
a[r][c]=rs; a[c][r]=cs;
}
puts("Elements and sum is");
for(r=0;r<=nr;r++)
{
for(c=0;c<=nr;c++)
{
if(r==nr && c==nr)continue; else  printf("%4d",a[r][c]);
}
printf("\n");
}
getch();
```

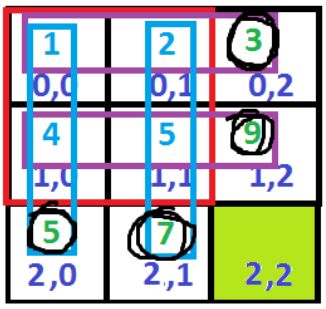
}


TC
Enter no of rows 2
Enter 4 elements
1 2
3 4
Elements and sum is
1 2 3
3 4 7
4 6
Page: 16 of 16
Words: 76
120%
10:07 AM
02-Dec-24


TC
File Edit Run Compile Project Options Debug
Line 24 Col 19 Insert Indent Tab Fill Unindent *
printf("Enter %d elements\n",nr*nr);
for(r=0;r<nr;r++)for(c=0;c<nr;c++)scanf("%d",&a[r][c]);
for(r=0;r<nr;r++)
{
for(rs=cs=c=0;c<nr;c++)
{
rs+=a[r][c]; cs+=a[c][r];
}
a[r][c]=rs; a[c][r]=cs;
}
puts("Elements and sum is");
for(r=0;r<=nr;r++)
{
for(c=0;c<=nr;c++)
{
if(r==nr && c==nr); else printf("%4d",a[r][c]);
}
printf("\n");
}
getch();
}
Page: 17 of 17
Words: 76
120%
10:07 AM
02-Dec-24




```
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: 0 | 1 | 2

c: 0 1 2

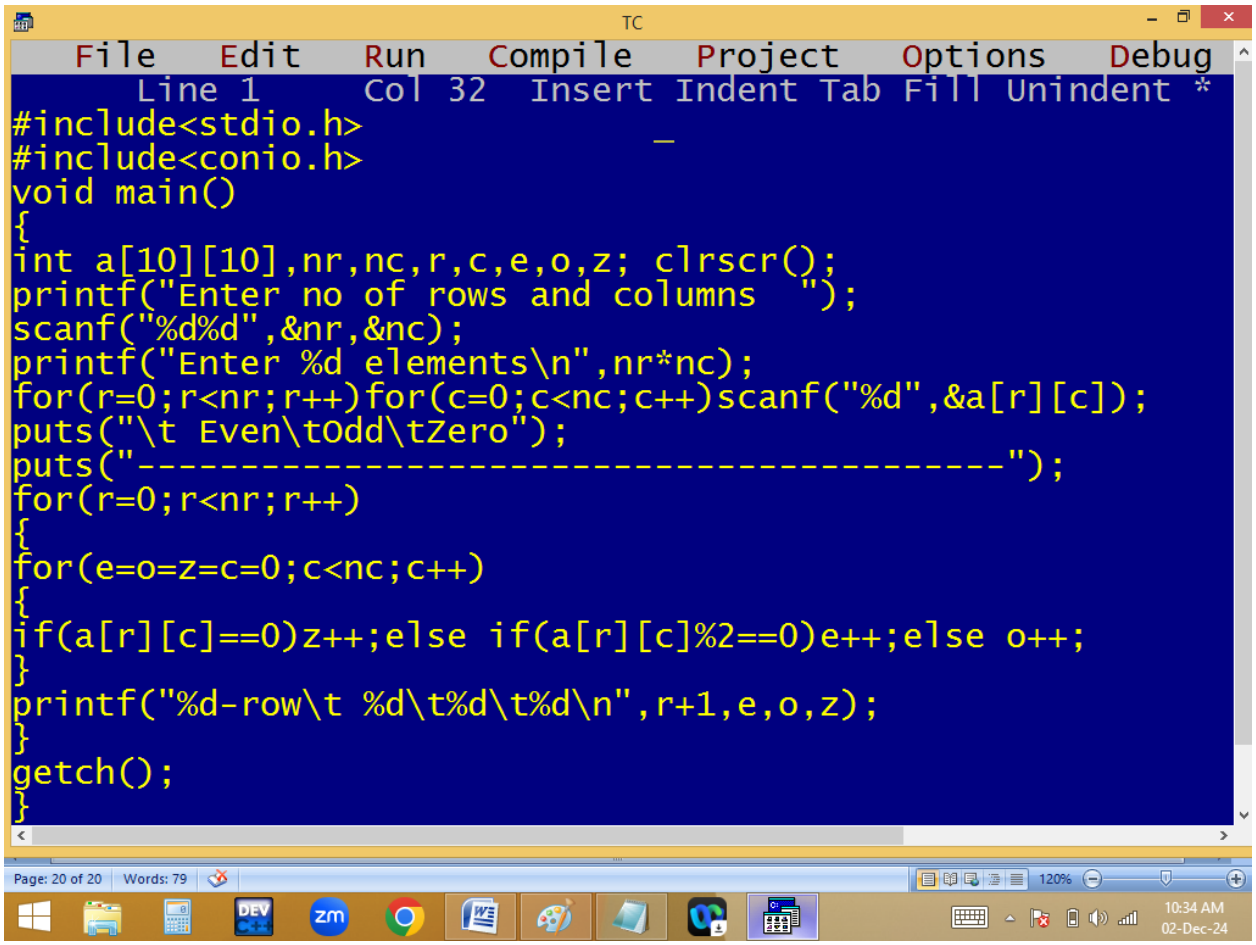
rs: 0+1+2 = 3 | 0+4+5 = 9

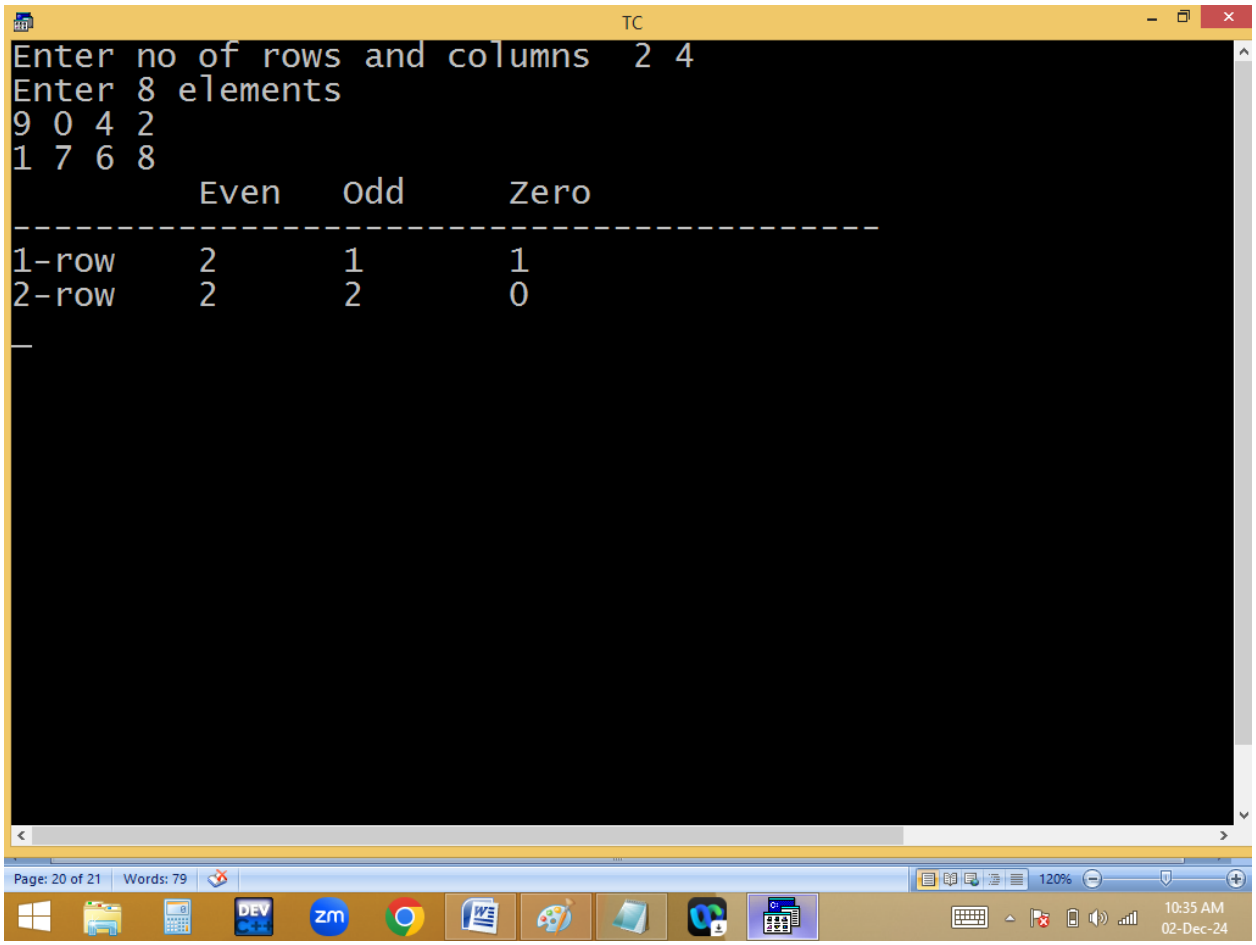
cs: 0+1+4 = 5 | 0+2+5 = 7

Printing below output:

9 0,0	0 0,1	4 0,2	2 0,3
1 1,0	7 1,1	6 1,2	8 1,3

	Even	Odd	Zero
1-row	2	1	1
2-row	2	2	0


TC
File Edit Run Compile Project Options Debug
Line 1 Col 32 Insert Indent Tab Fill Unindent *
#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 elements\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("\t Even\tOdd\tZero");
puts("--");
for(r=0;r<nr;r++)
{
for(e=o=z=c=0;c<nc;c++)
{
if(a[r][c]==0)z++;else if(a[r][c]%2==0)e++;else o++;
}
printf("%d-row\t %d\t%d\t%d\n",r+1,e,o,z);
}
getch();
}
Page: 20 of 20
Words: 79
120%
10:34 AM
02-Dec-24



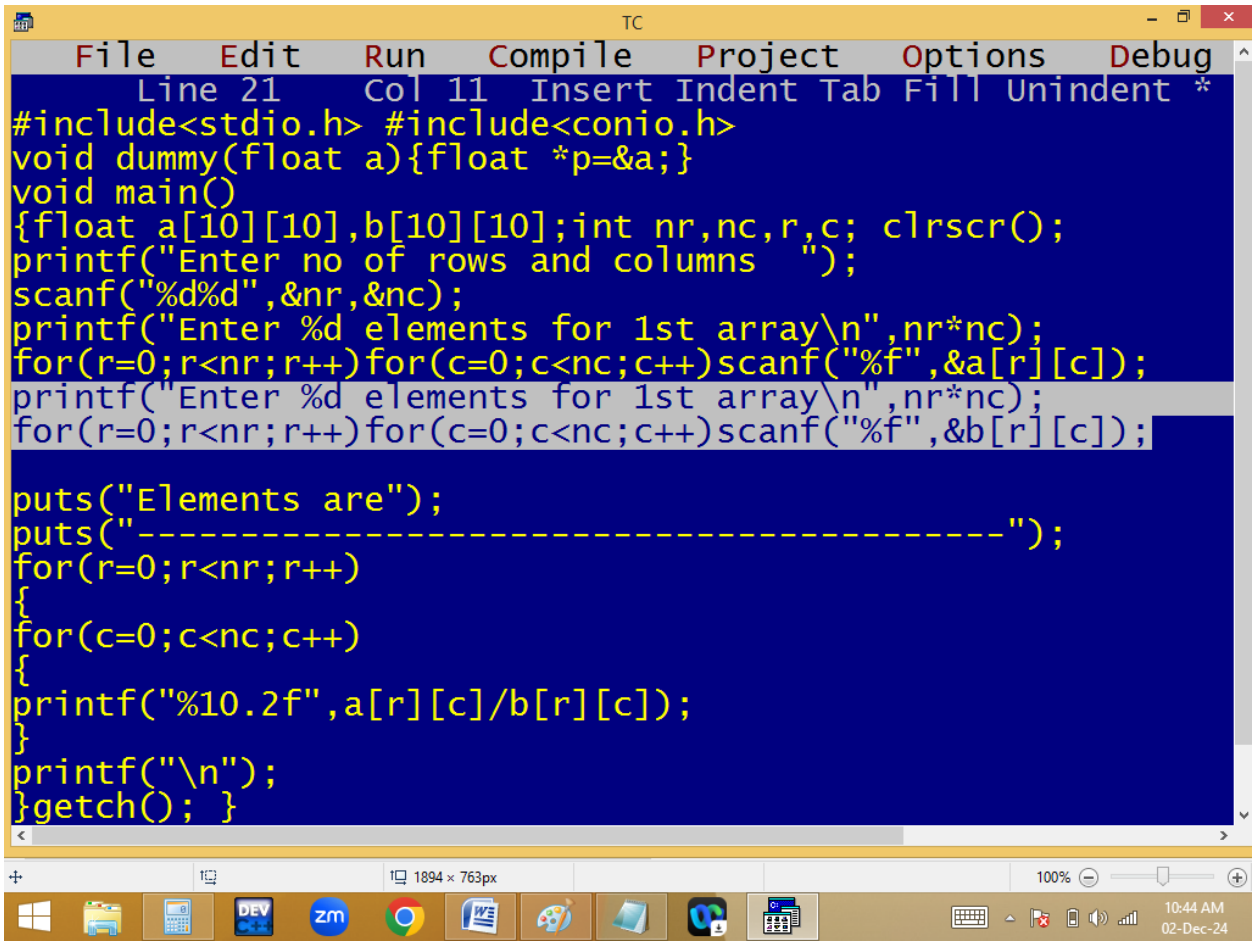

```
puts("\tEven\tOdd\tZero");
puts("----------------------------------------");
for(r=0;r<2;r++)
{
for(e=o=z=c=0;c<4;c++)
{
if(a[r][c]==0)z++;
else if(a[r][c]%2==0)e++;
else o++;
}
p("%d-row\t%d\t%d\t%d\n",r+1,e,o,z);
}
```

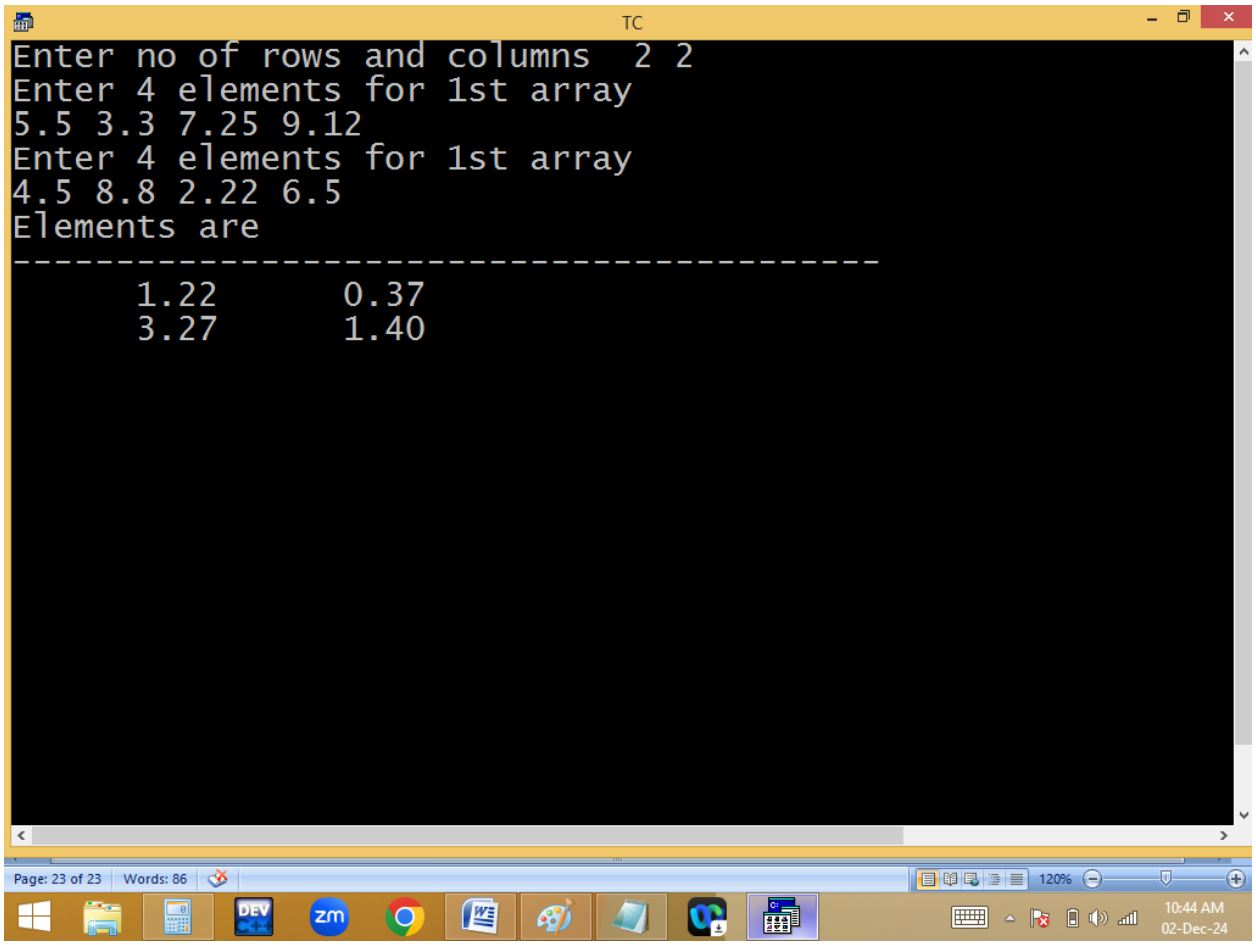
9 0,0	0 0,1	4 0,2	2 0,3
1 1,0	7 1,1	6 1,2	8 1,3

	Even	Odd	Zero
1-row	2	1	1
2-row	2	2	0

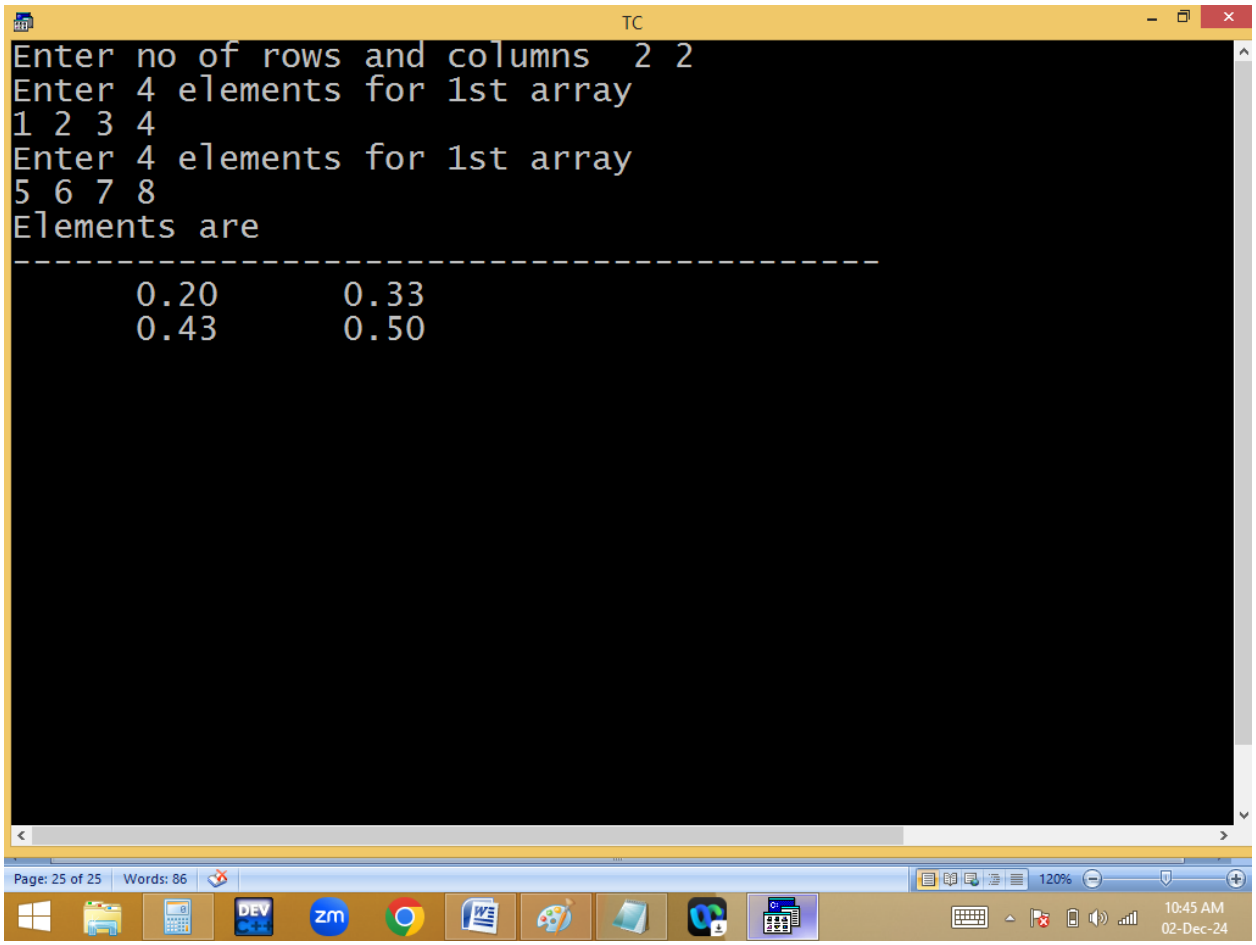
Finding fractions of n*n matrix:

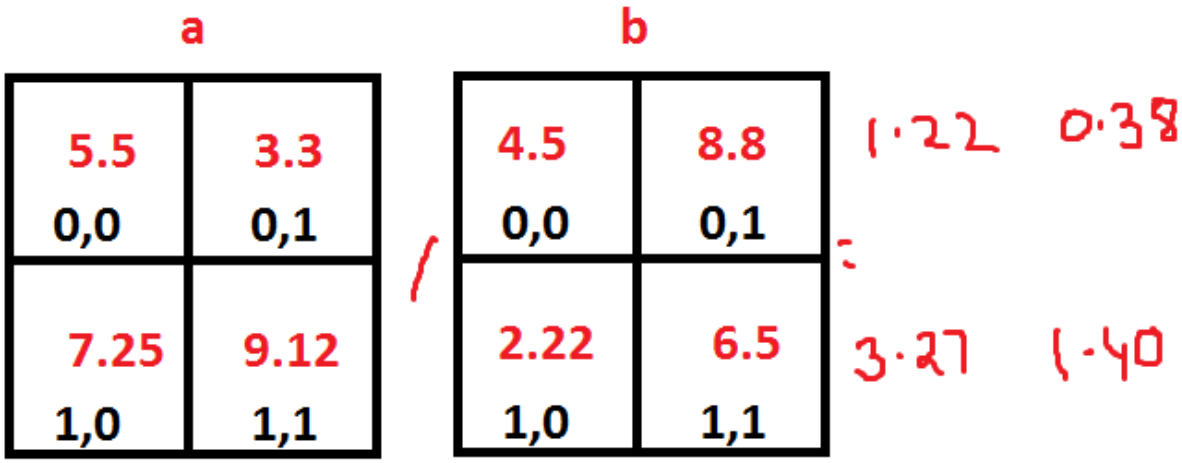
a/b matrix:


TC
File Edit Run Compile Project Options Debug
Line 21 Col 11 Insert Indent Tab Fill Unindent *
#include<stdio.h> #include<conio.h>
void dummy(float a){float *p=&a;}
void main()
{float a[10][10],b[10][10];int nr,nc,r,c; clrscr();
printf("Enter no of rows and columns ");
scanf("%d%d",&nr,&nc);
printf("Enter %d elements for 1st array\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%f",&a[r][c]);
printf("Enter %d elements for 1st array\n",nr*nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%f",&b[r][c]);
puts("Elements are");
puts("----------");
for(r=0;r<nr;r++)
{
for(c=0;c<nc;c++)
{
printf("%10.2f",a[r][c]/b[r][c]);
}
printf("\n");
}getch(); }
1894 × 763px
100%
10:44 AM
02-Dec-24


TC
Enter no of rows and columns 2 2
Enter 4 elements for 1st array
5.5 3.3 7.25 9.12
Enter 4 elements for 1st array
4.5 8.8 2.22 6.5
Elements are

1.22 0.37
3.27 1.40
Page: 23 of 23
Words: 86
120%
10:44 AM
02-Dec-24





Matrix multiplication: