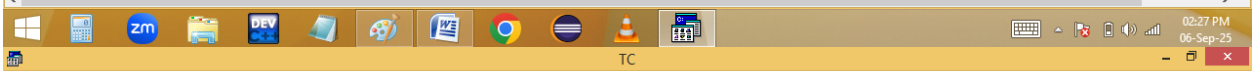
Removing duplicate elements from array:

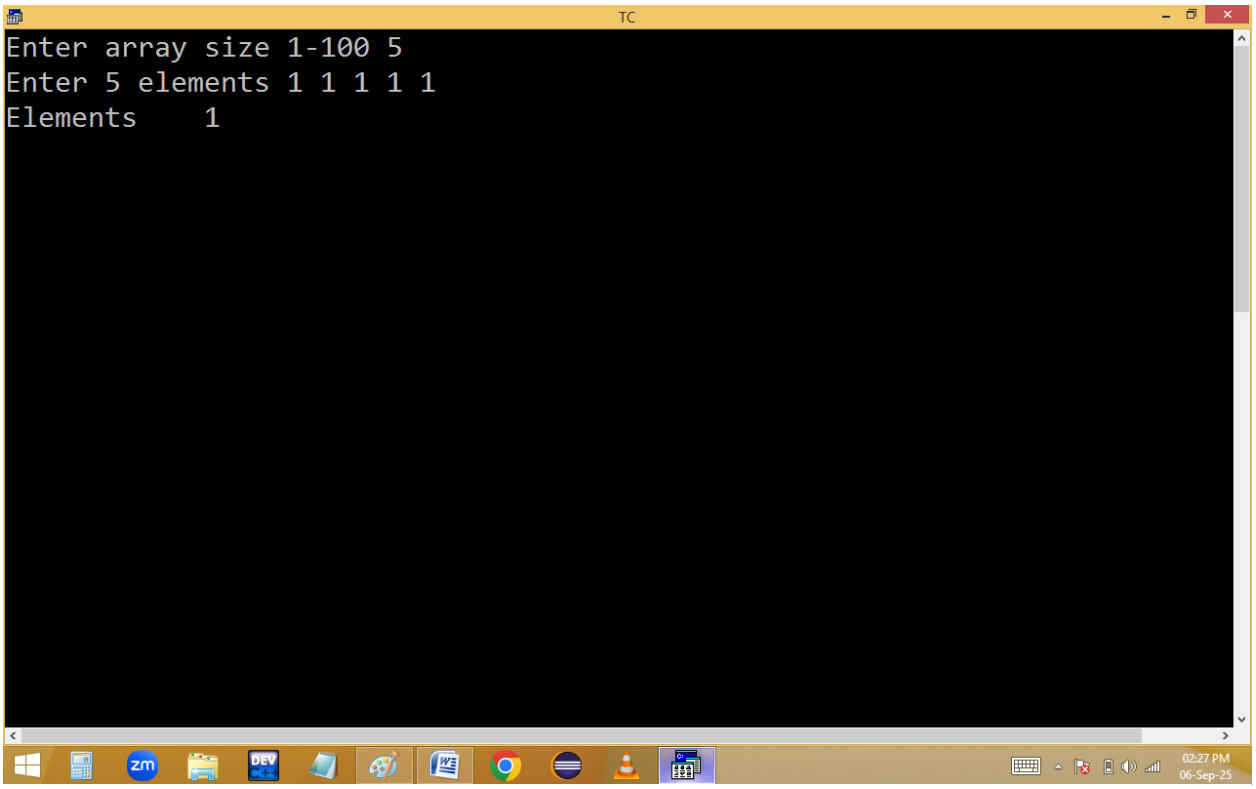
TC

```
#include<stdio.h>#include<conio.h>
void main()
{
int a[100],n,i,j,k;
clrscr();
printf("Enter array size 1-100 "); scanf("%d",&n);
printf("Enter %d elements ",n);for(i=0;i<n;i++)scanf("%d",&a[i]);
for(i=0;i<n;i++)
{
for(j=i+1;j<n;j++)
{
if(a[i]==a[j])
{
for(n--,k=j;k<n;k++)a[k]=a[k+1];j--;
}
}
}
printf("Elements ");for(i=0;i<n;i++)printf("%4d",a[i]);
getch();
}
```

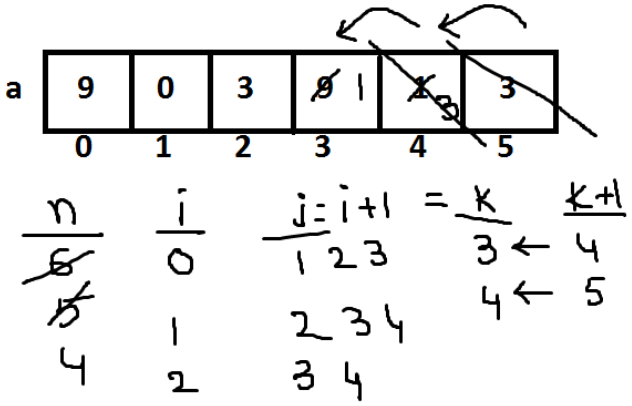


TC

```
Enter array size 1-100 9
Enter 9 elements 1 2 3 3 2 1 2 1 3
Elements    1   2   3
```




```
for(i=0;i<n;i++)
{
for(j=i+1;j<n;j++)
{
if(a[i]==a[j])
{
for(n--,k=j;k<n;k++)a[k]=a[k+1];
j--;
}
}
}
```



Two dimensional arrays:

Array with several rows and columns is called two dimensional array.

Array with two subscripting operators [ ] [ ].

It is a **constant pointer**.

It is an **implicit double pointer**.

It is array of array. i.e. collection of one dimensional array.

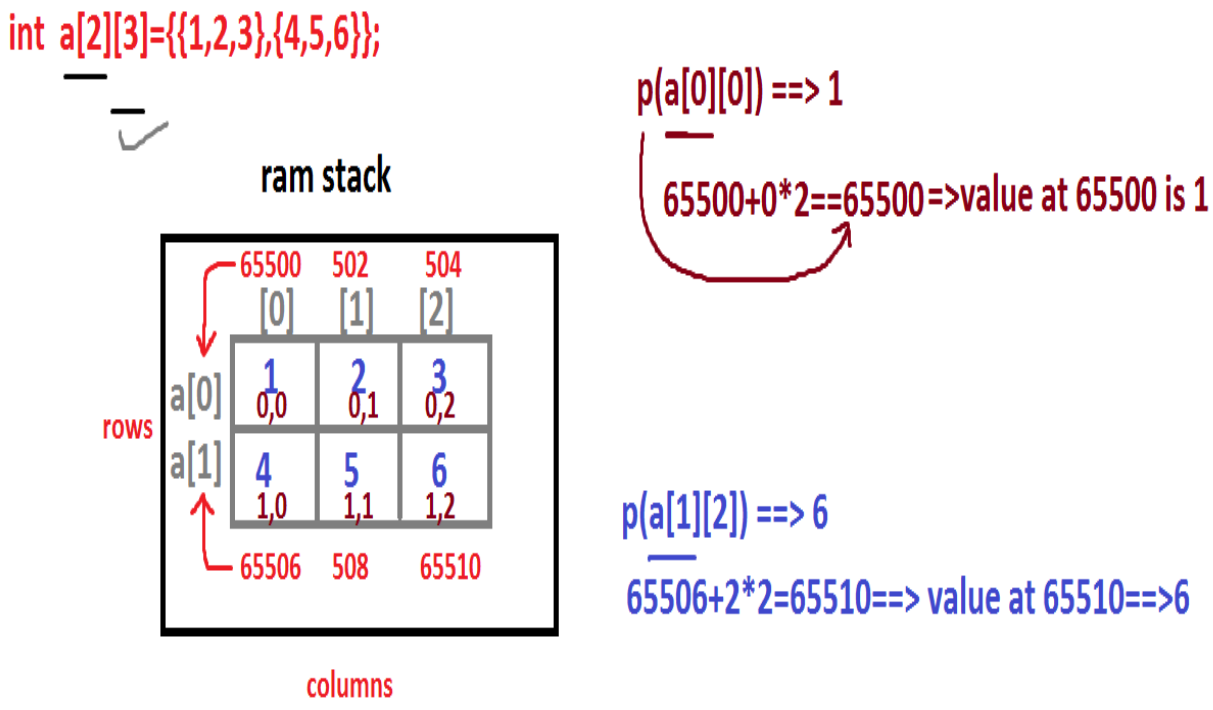
It is an m*n matrix.

Syntax:

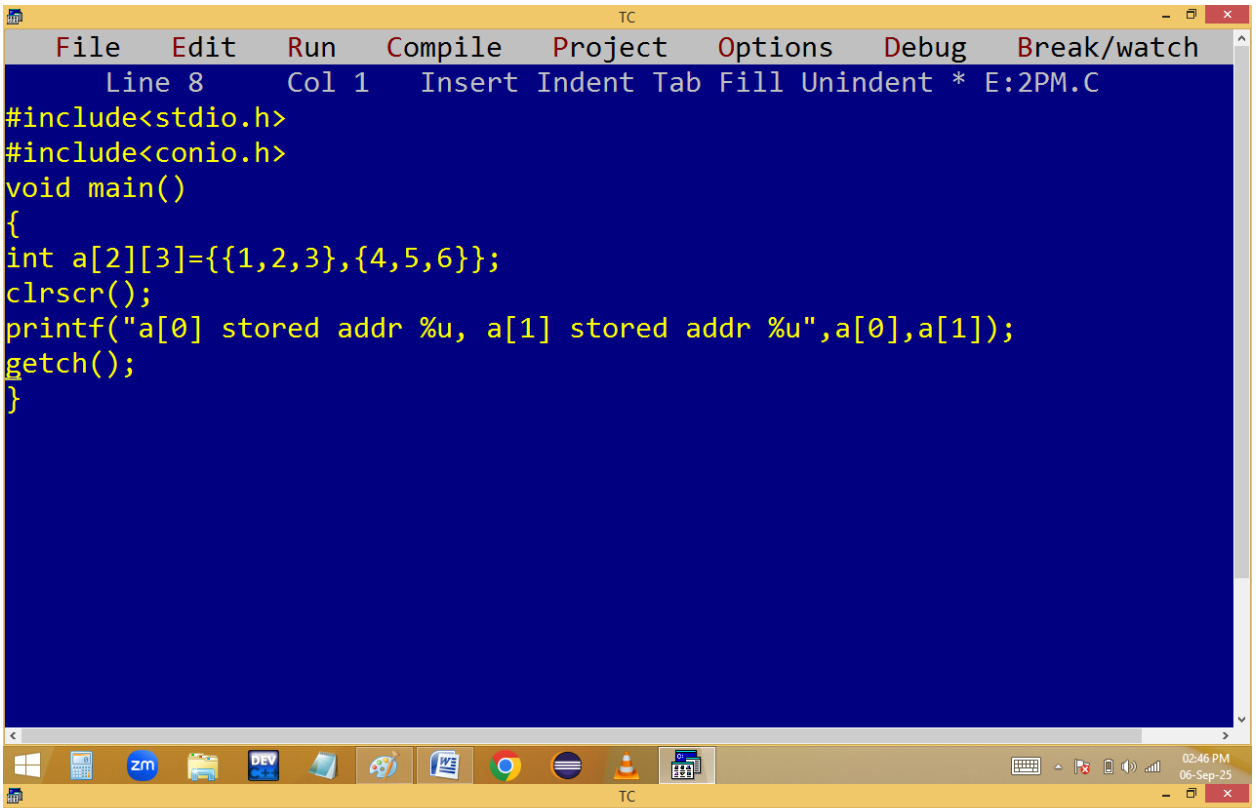
Datatype variable [rows][cols]={elements};

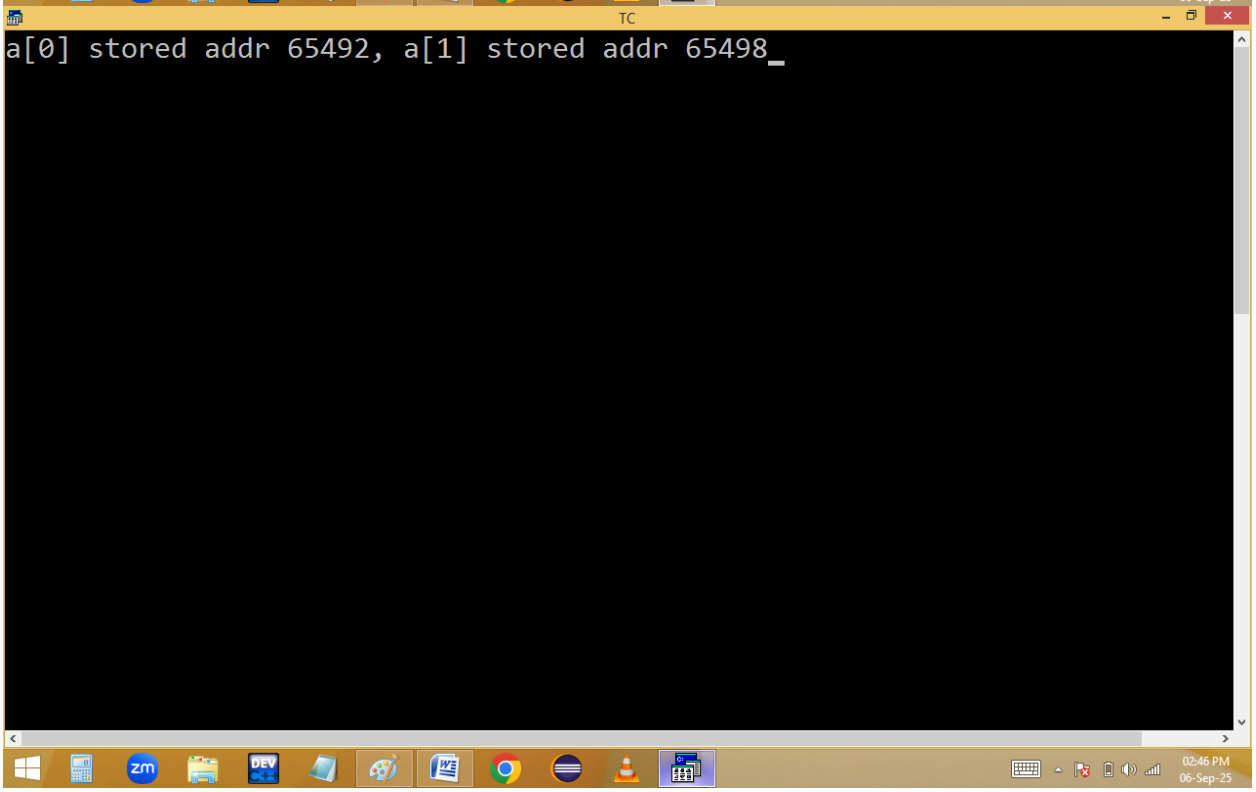
Eg:

int a[2][3]={{1,2,3},{4,5,6}};

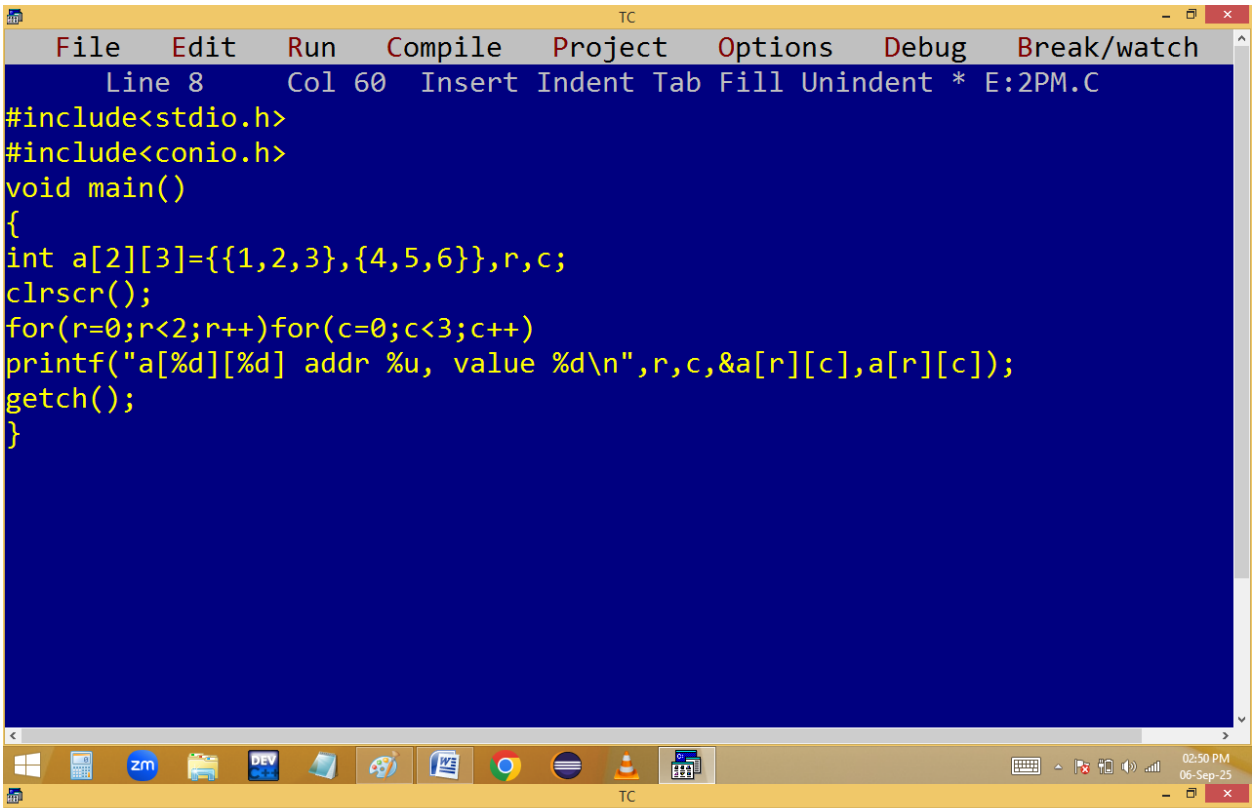


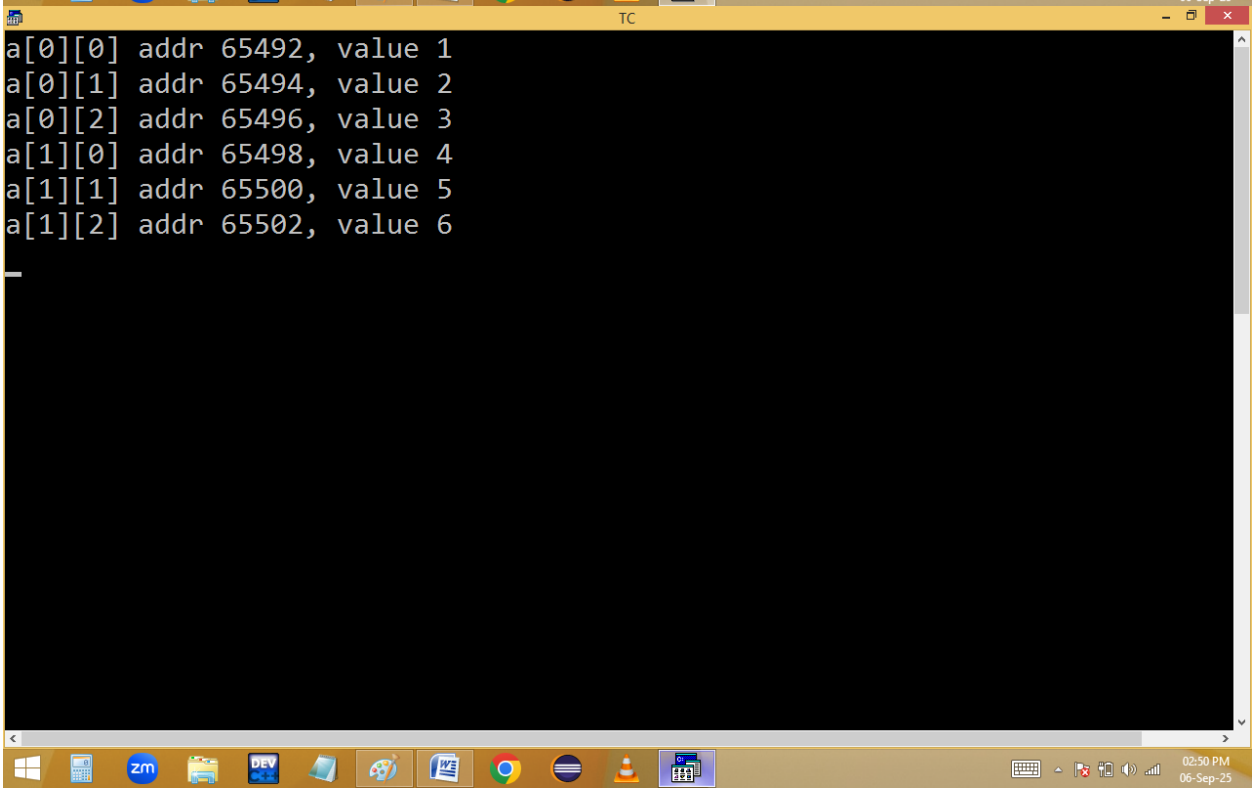
Finding address of a 2*3 matrix:

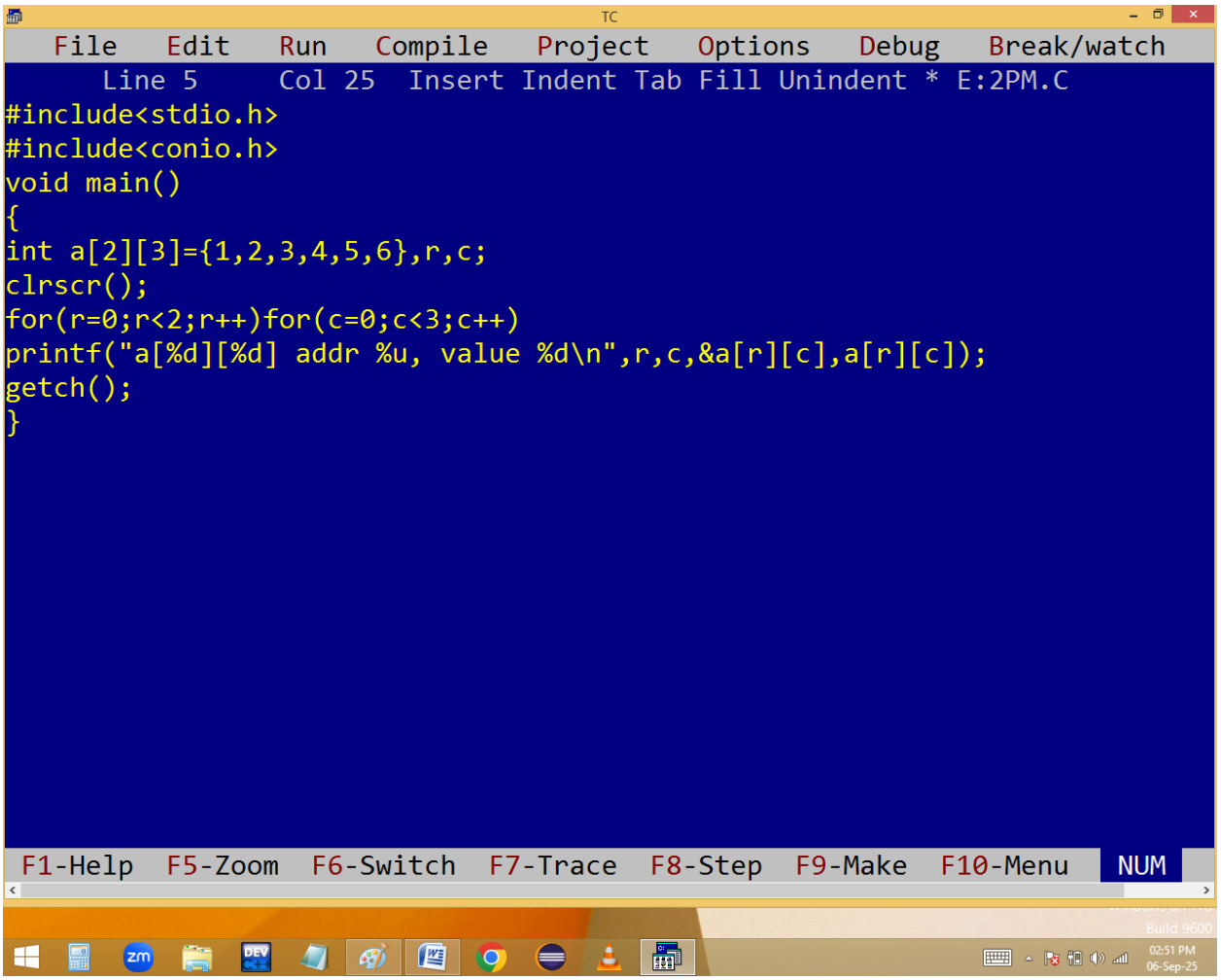


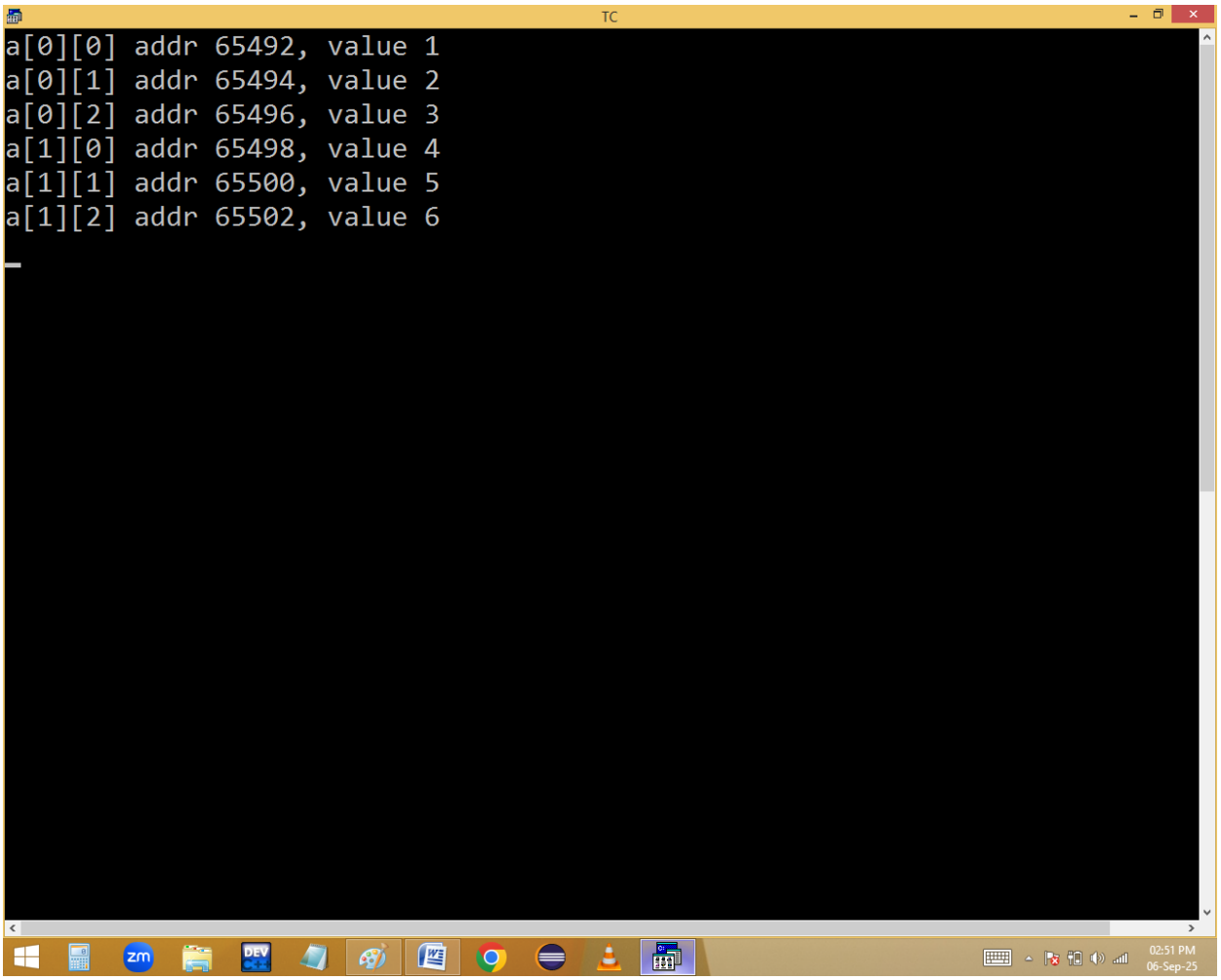


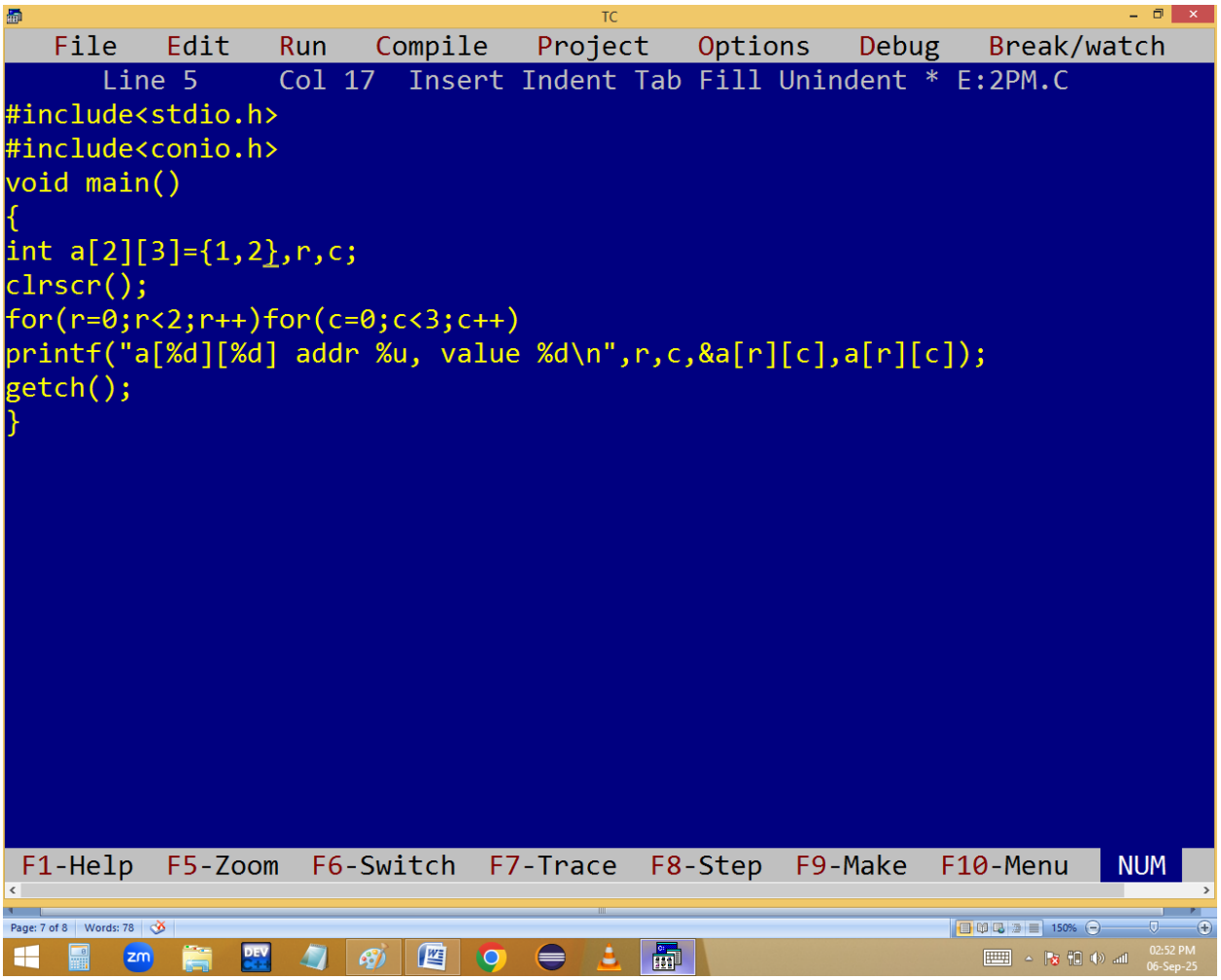
Printing cell position, value and address of a 2*3 matrix:

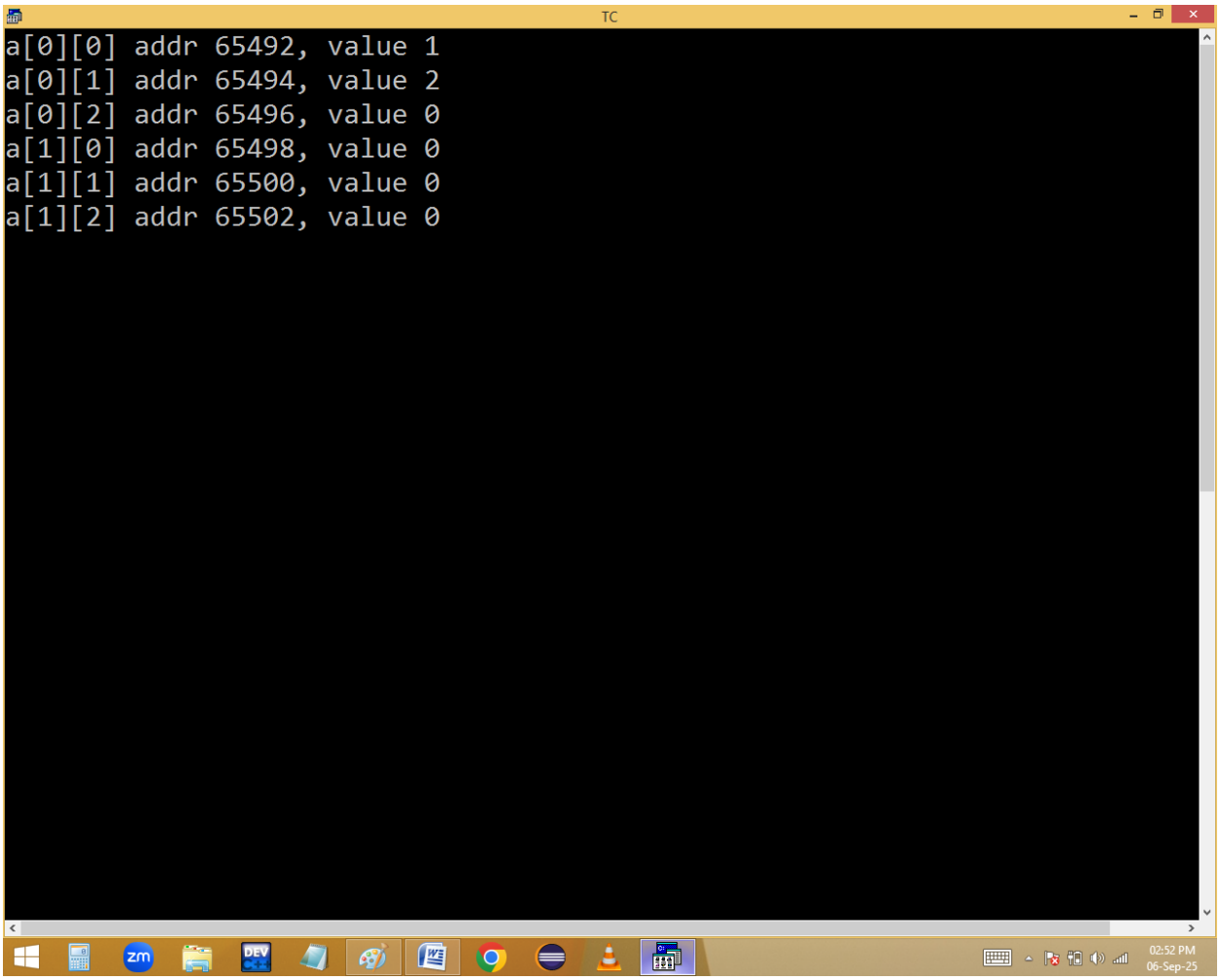

TC
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 60 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{1,2,3},{4,5,6}},r,c;
clrscr();
for(r=0;r<2;r++)for(c=0;c<3;c++)
printf("a[%d][%d] addr %u, value %d\n",r,c,&a[r][c],a[r][c]);
getch();
}

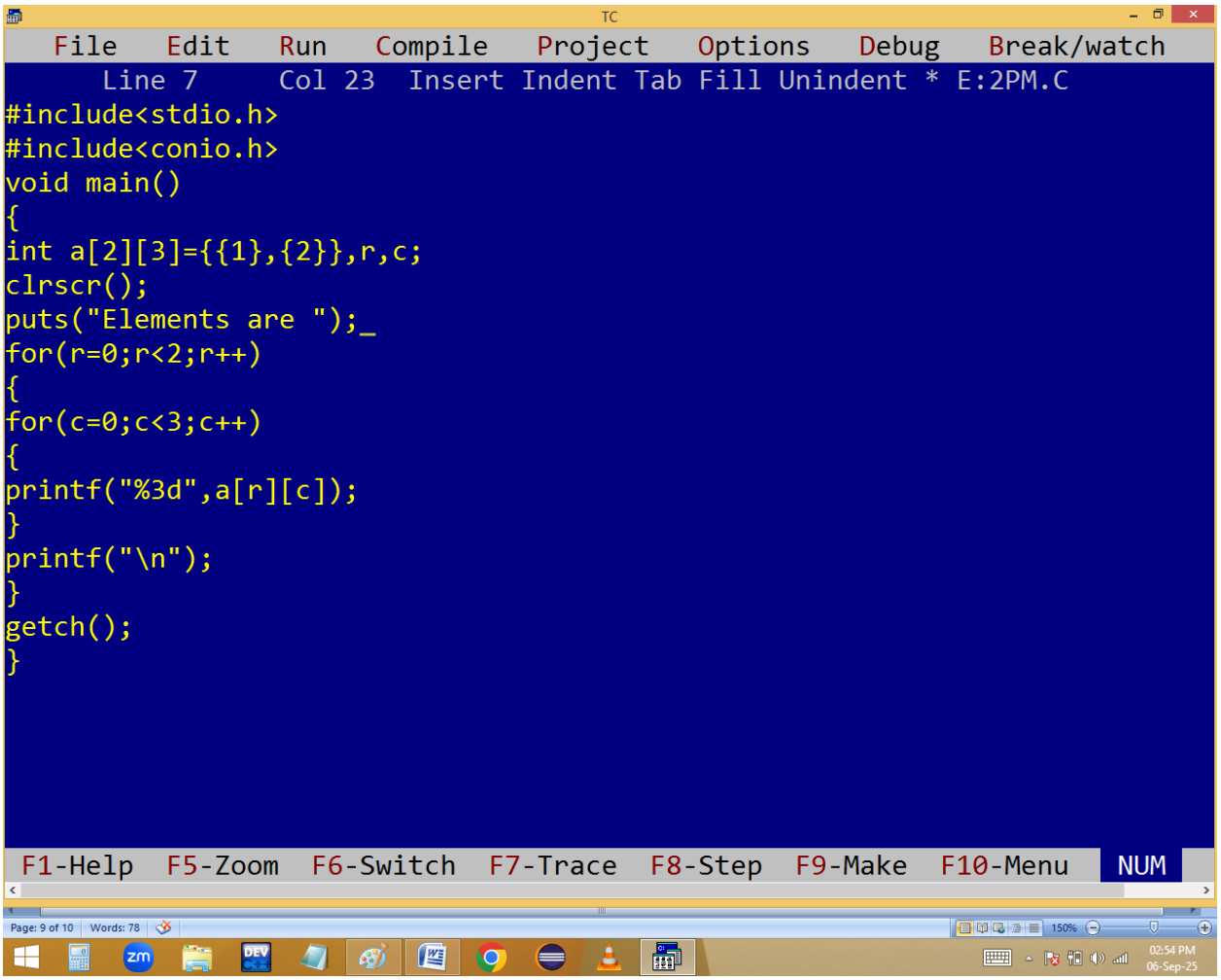

TC
a[0][0] addr 65492, value 1
a[0][1] addr 65494, value 2
a[0][2] addr 65496, value 3
a[1][0] addr 65498, value 4
a[1][1] addr 65500, value 5
a[1][2] addr 65502, value 6

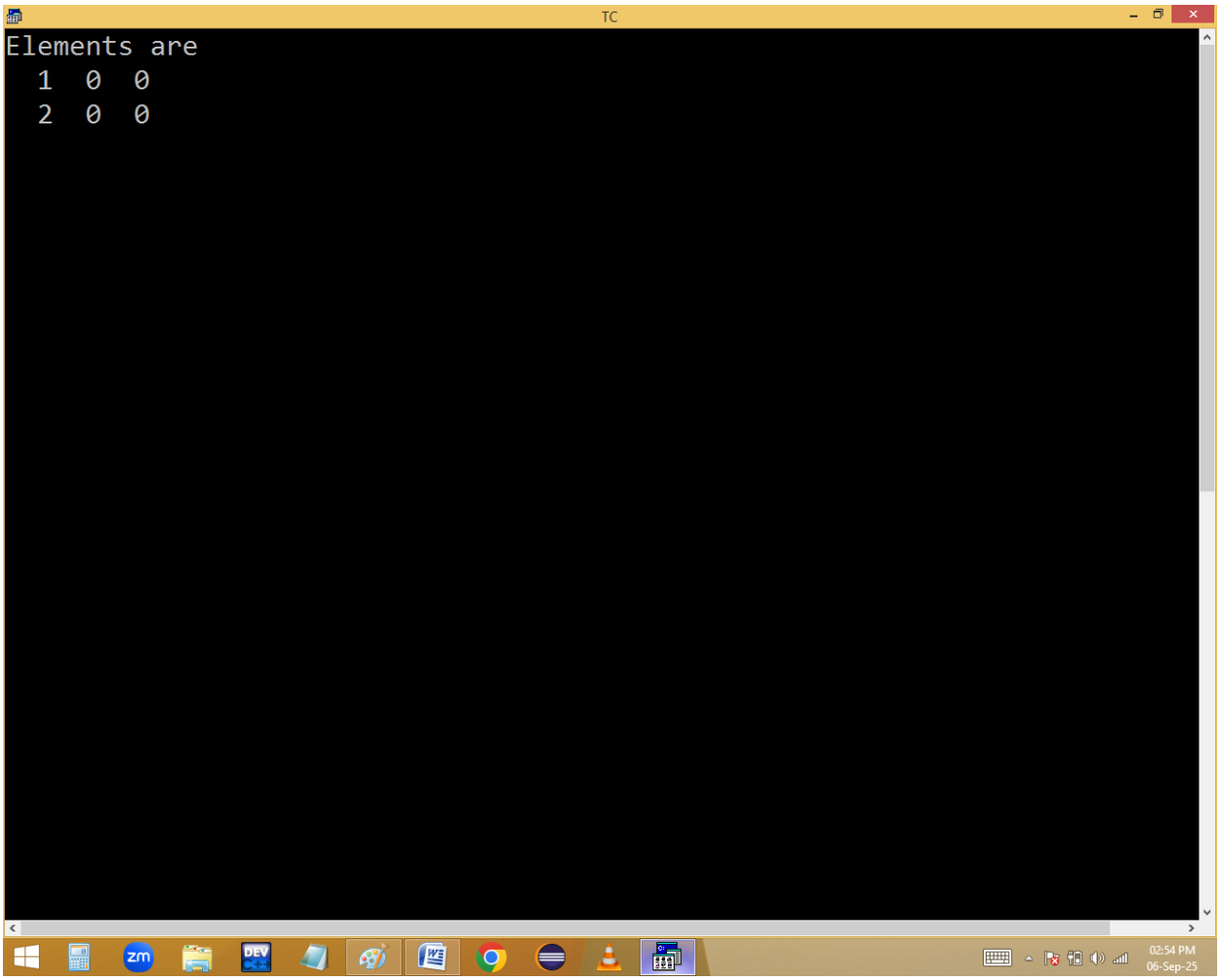

TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 25 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={1,2,3,4,5,6},r,c;
clrscr();
for(r=0;r<2;r++)for(c=0;c<3;c++)
printf("a[%d][%d] addr %u, value %d\n",r,c,&a[r][c],a[r][c]);
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

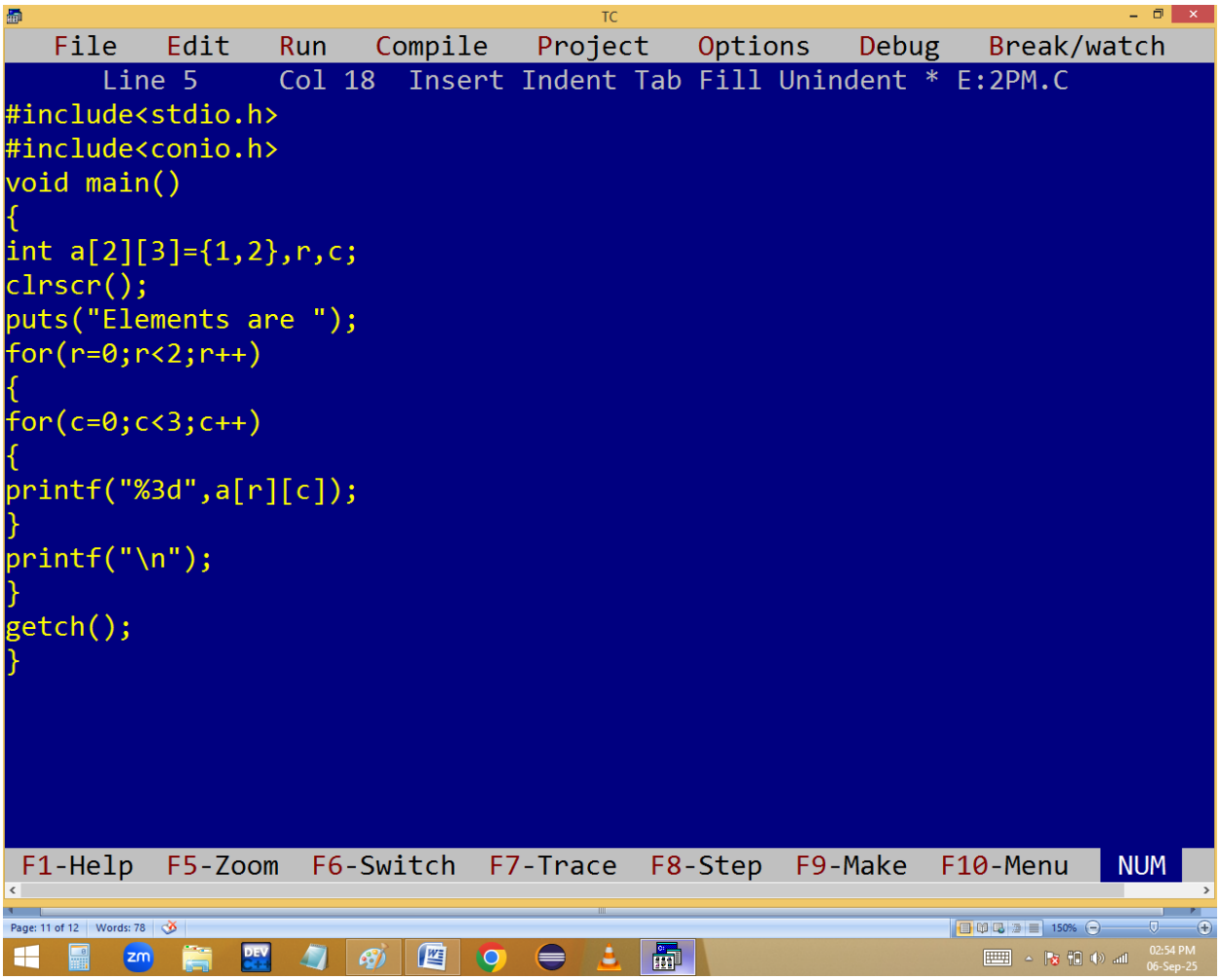

TC
a[0][0] addr 65492, value 1
a[0][1] addr 65494, value 2
a[0][2] addr 65496, value 3
a[1][0] addr 65498, value 4
a[1][1] addr 65500, value 5
a[1][2] addr 65502, value 6
02:51 PM
06-Sep-25

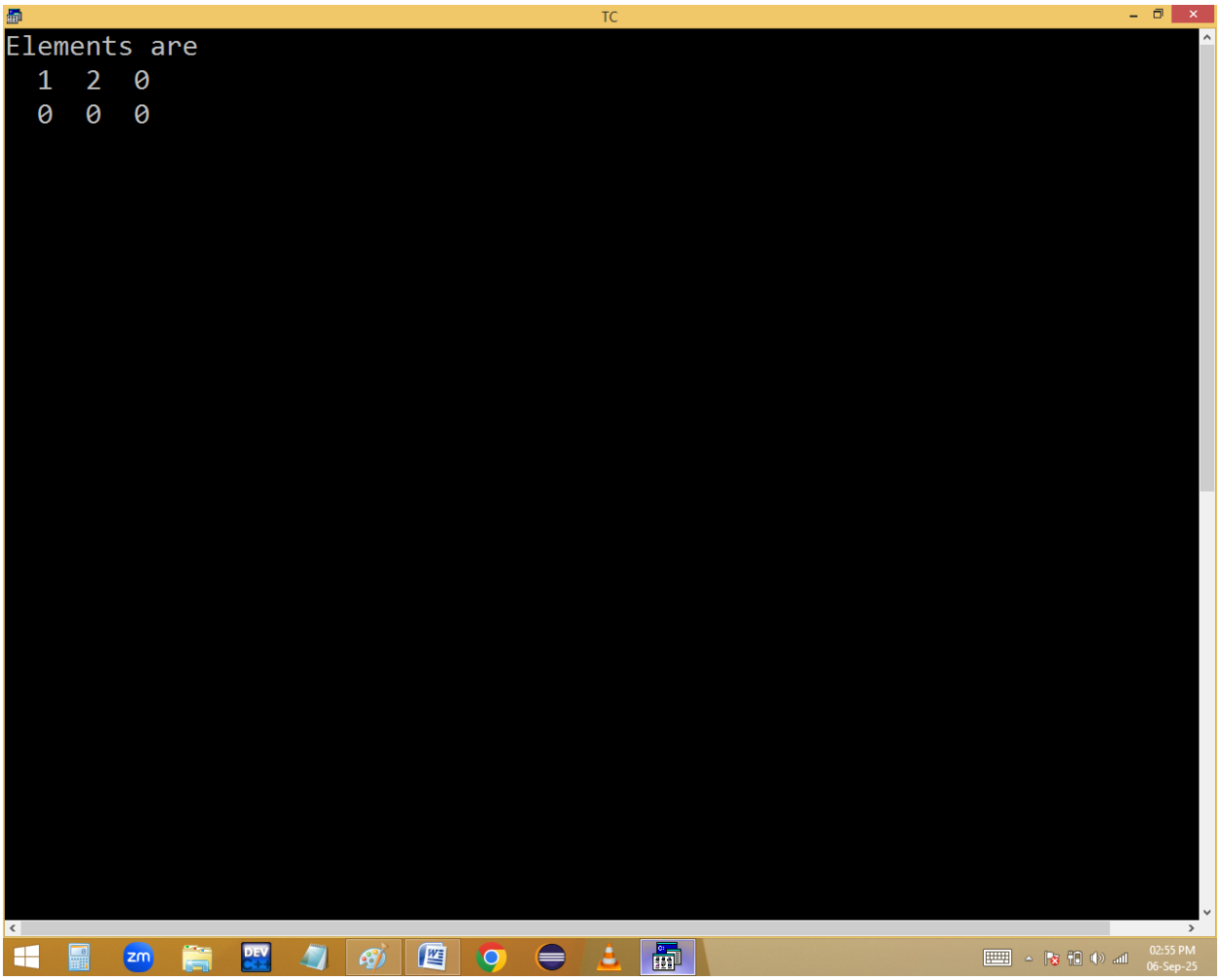

TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 17 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={1,2},r,c;
clrscr();
for(r=0;r<2;r++)for(c=0;c<3;c++)
printf("a[%d][%d] addr %u, value %d\n",r,c,&a[r][c],a[r][c]);
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

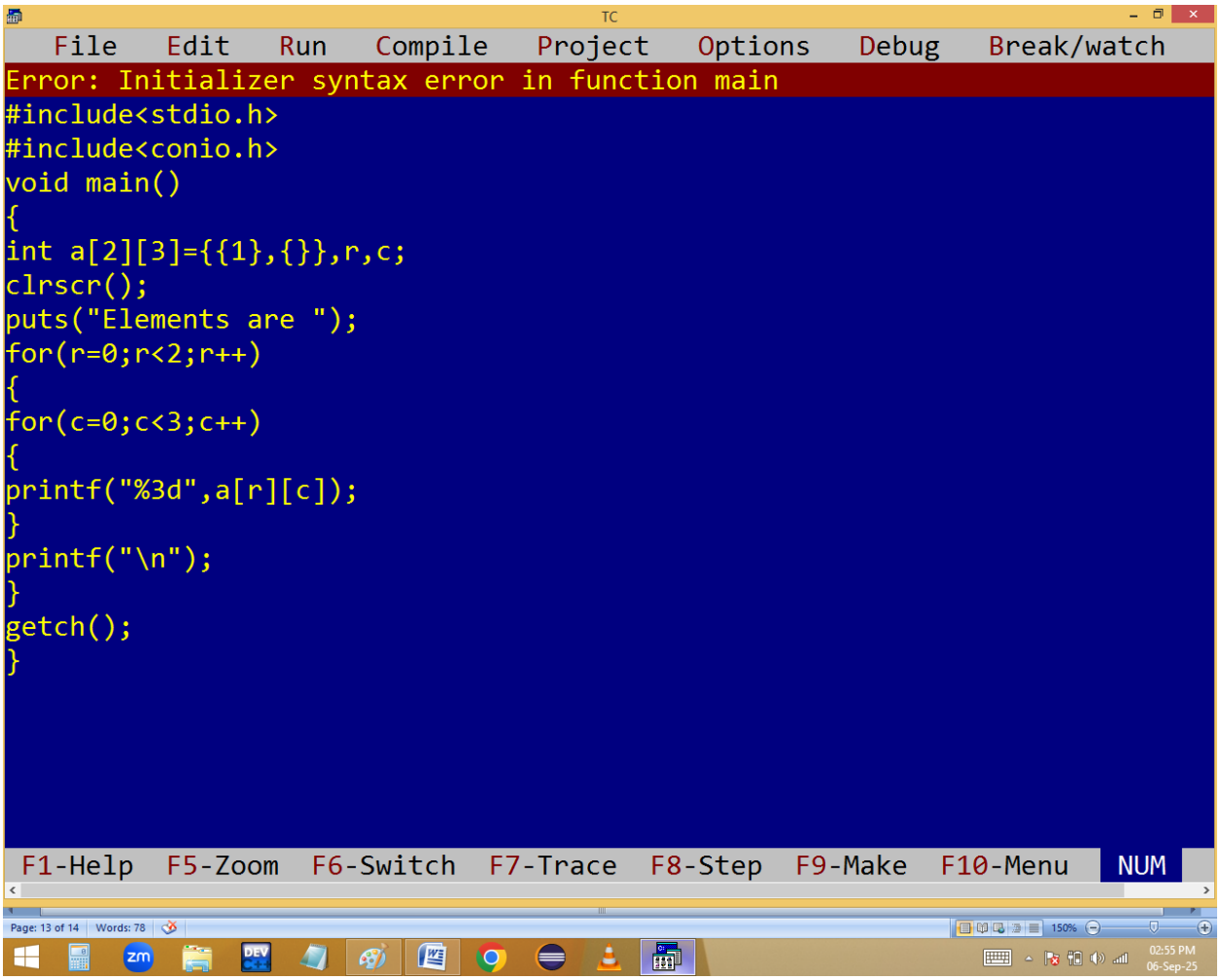

TC
a[0][0] addr 65492, value 1
a[0][1] addr 65494, value 2
a[0][2] addr 65496, value 0
a[1][0] addr 65498, value 0
a[1][1] addr 65500, value 0
a[1][2] addr 65502, value 0
02:52 PM
06-Sep-25

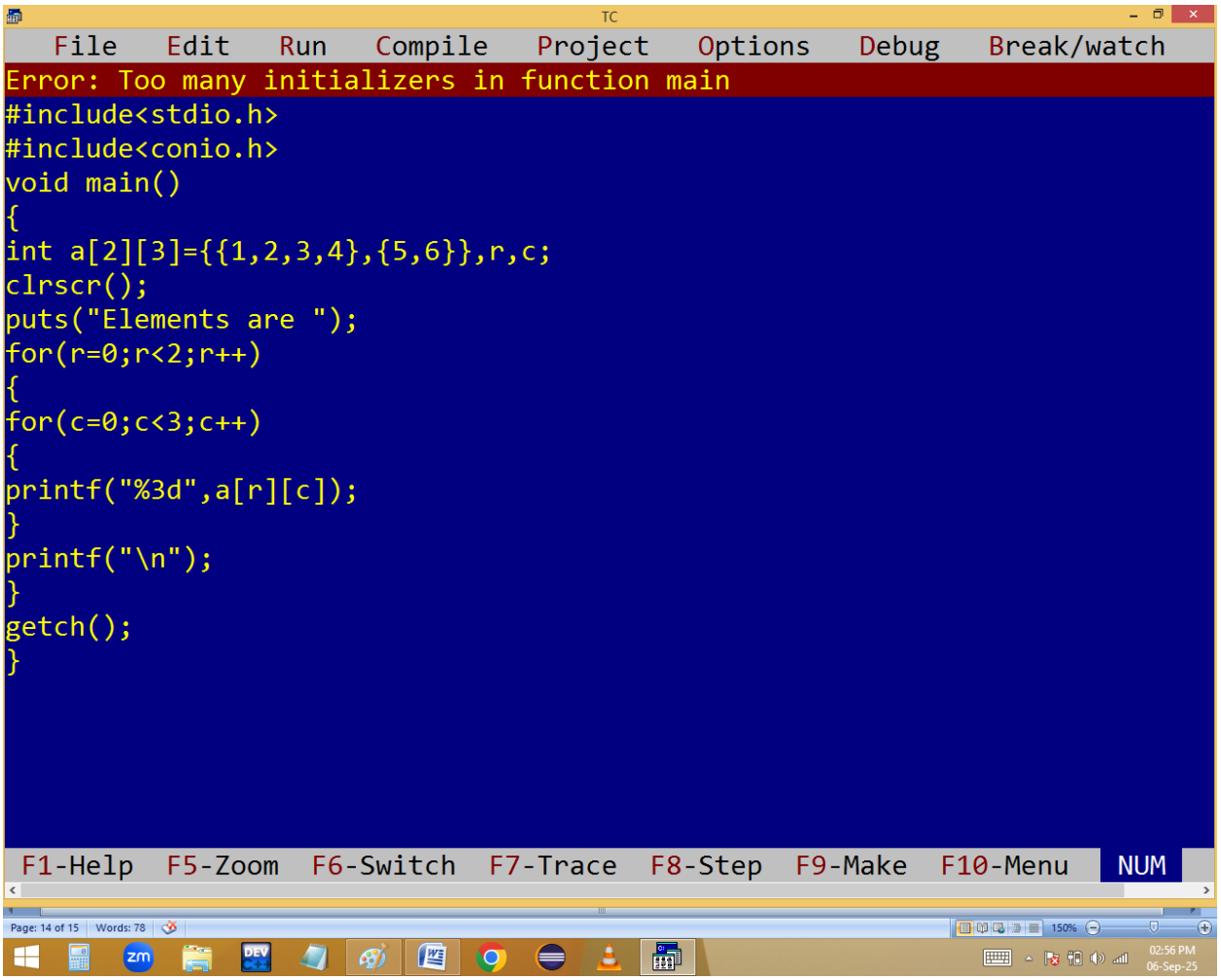

TC
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 23 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{1},{2}},r,c;
clrscr();
puts("Elements are ");_
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 9 of 10 Words: 78
150%
02:54 PM
06-Sep-25

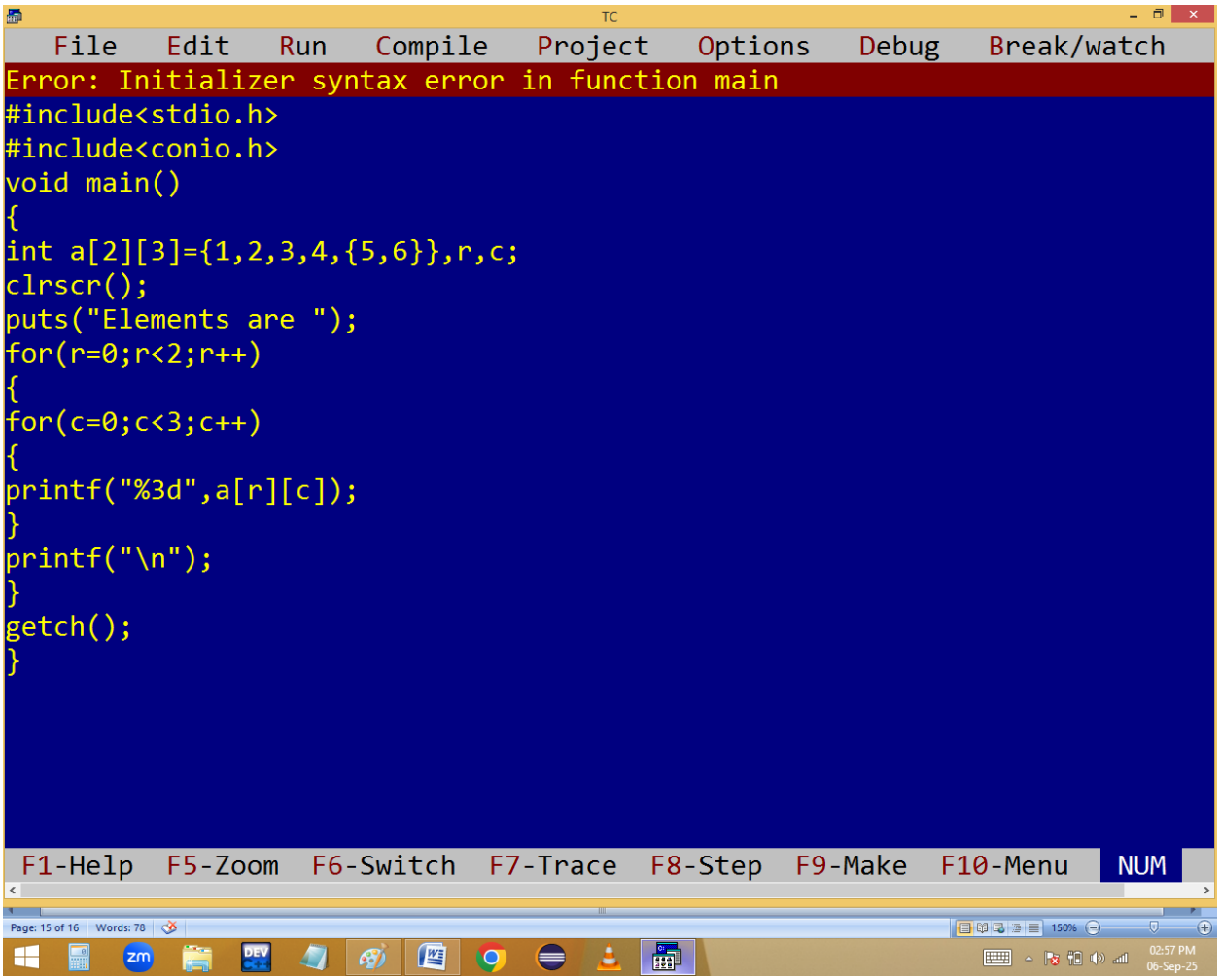

TC
Elements are
1 0 0
2 0 0
02:54 PM
06-Sep-25

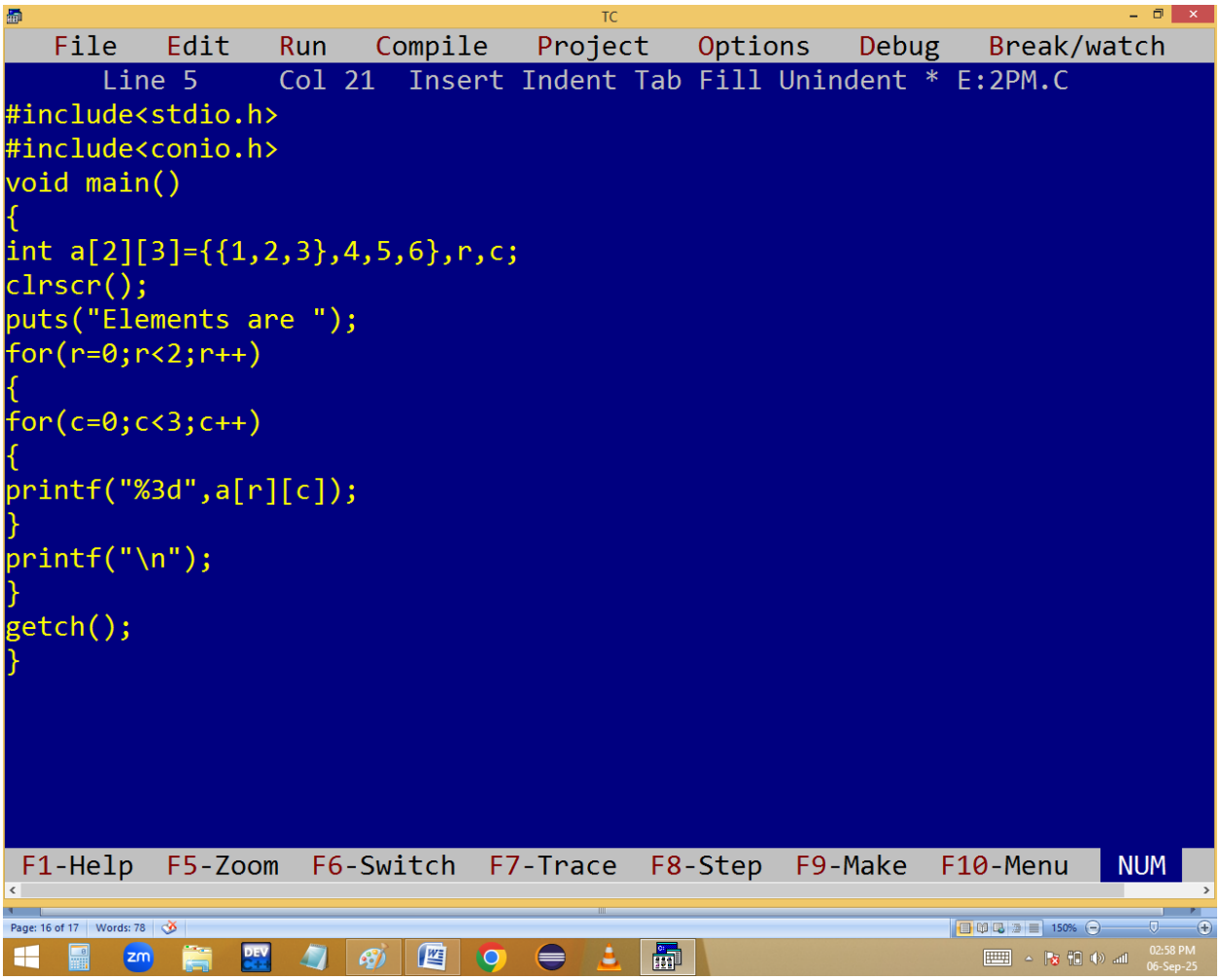

TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 18 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={1,2},r,c;
clrscr();
puts("Elements are ");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 11 of 12 Words: 78
150%
02:54 PM
06-Sep-25

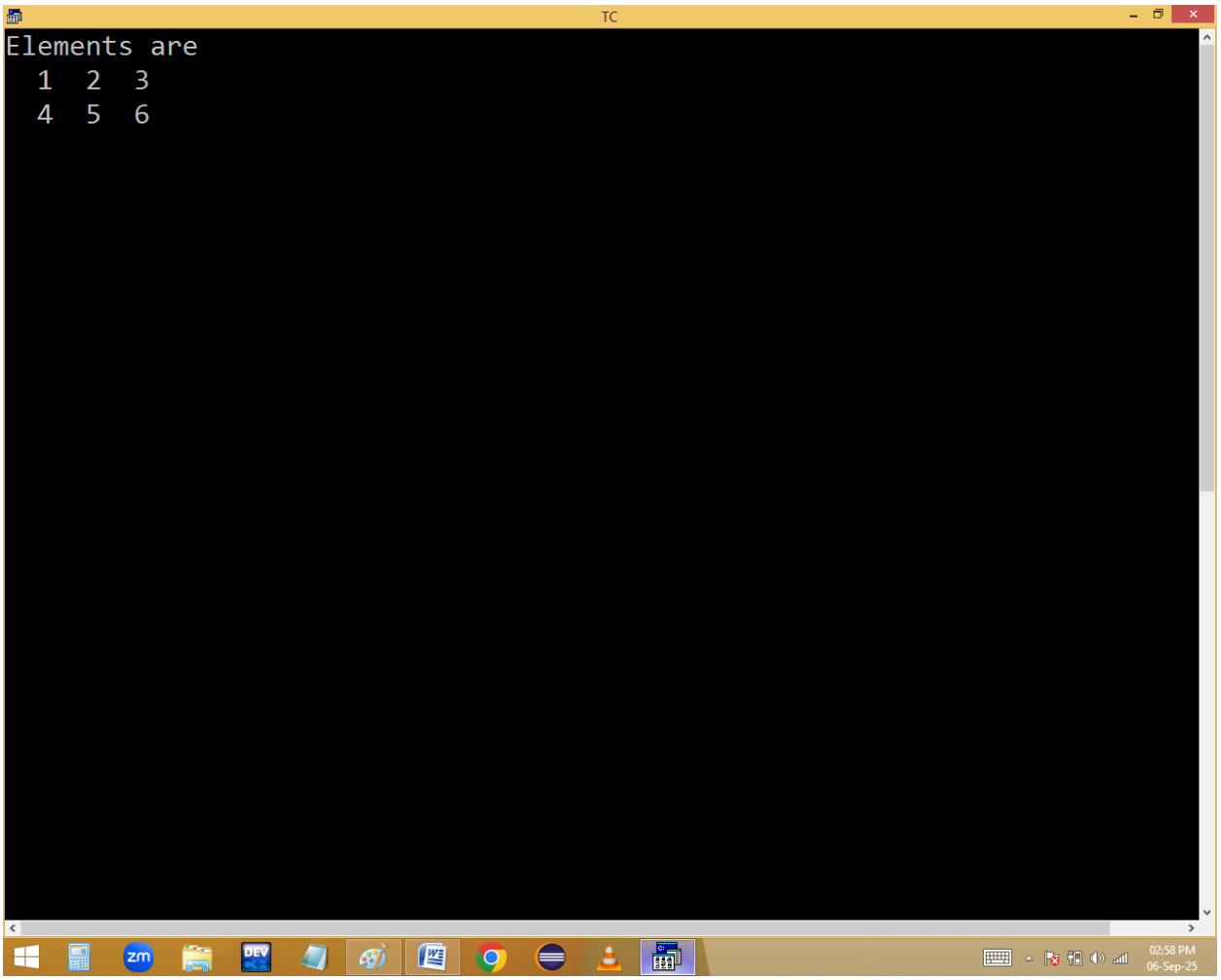

TC
Elements are
1 2 0
0 0 0
02:55 PM
06-Sep-25


TC
File Edit Run Compile Project Options Debug Break/watch
Error: Initializer syntax error in function main
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{1},{}},r,c;
clrscr();
puts("Elements are ");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 13 of 14 Words: 78
150%
02:55 PM
06-Sep-25

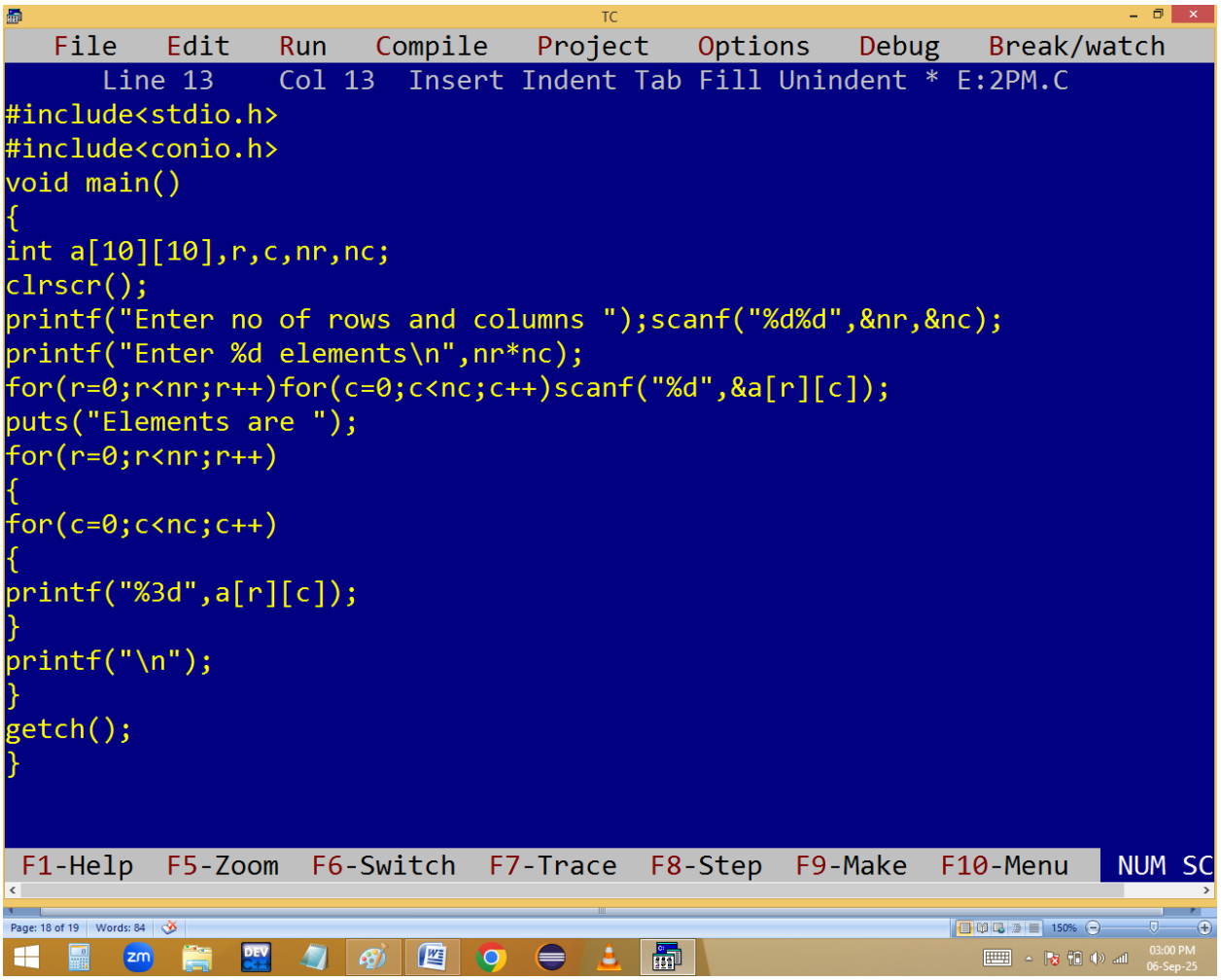

TC
File Edit Run Compile Project Options Debug Break/watch
Error: Too many initializers in function main
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{1,2,3,4},{5,6}},r,c;
clrscr();
puts("Elements are ");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 14 of 15 Words: 78
150%
02:56 PM
06-Sep-25

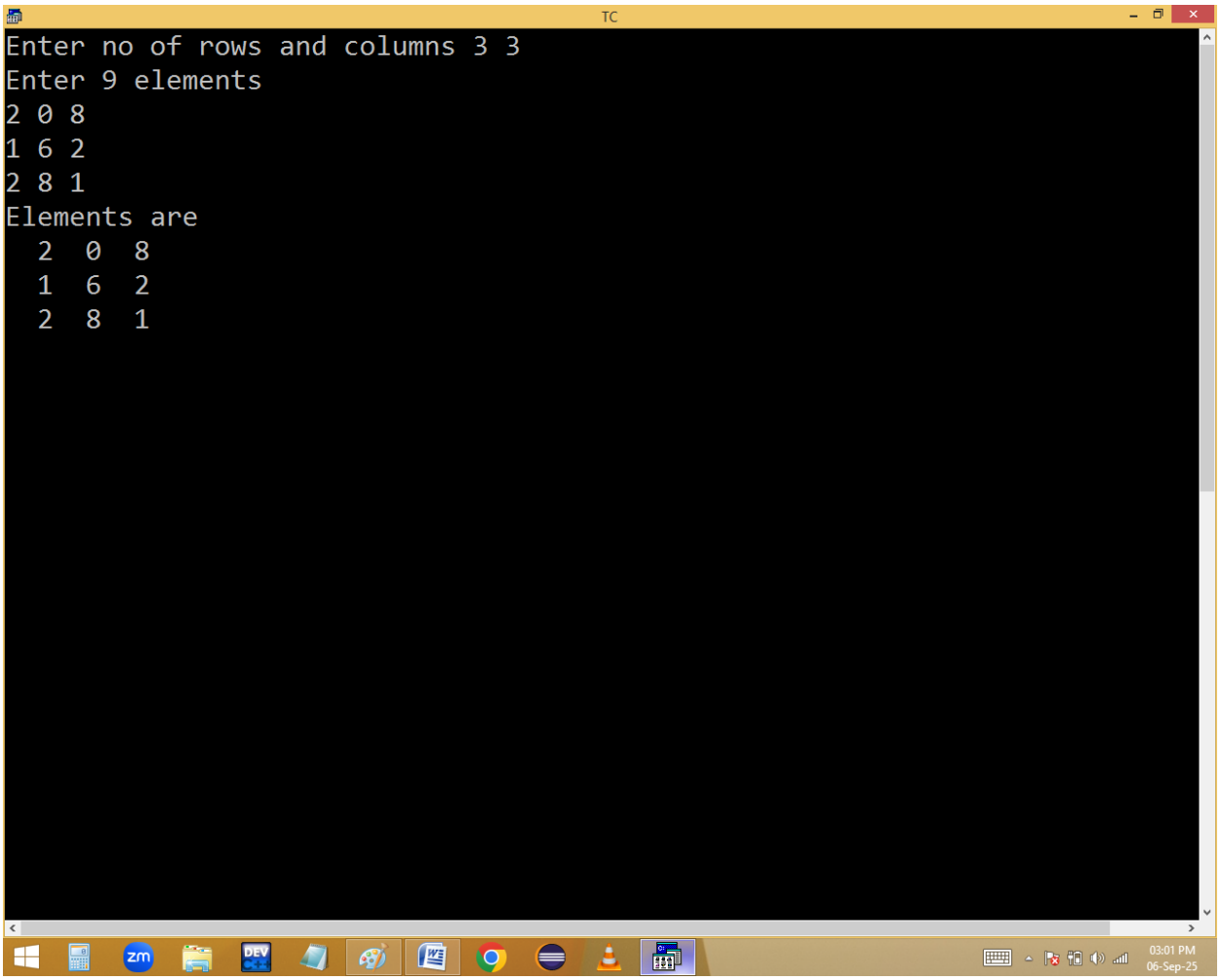

TC
File Edit Run Compile Project Options Debug Break/watch
Error: Initializer syntax error in function main
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={1,2,3,4,{5,6}},r,c;
clrscr();
puts("Elements are ");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 15 of 16 Words: 78
150%
02:57 PM
06-Sep-25

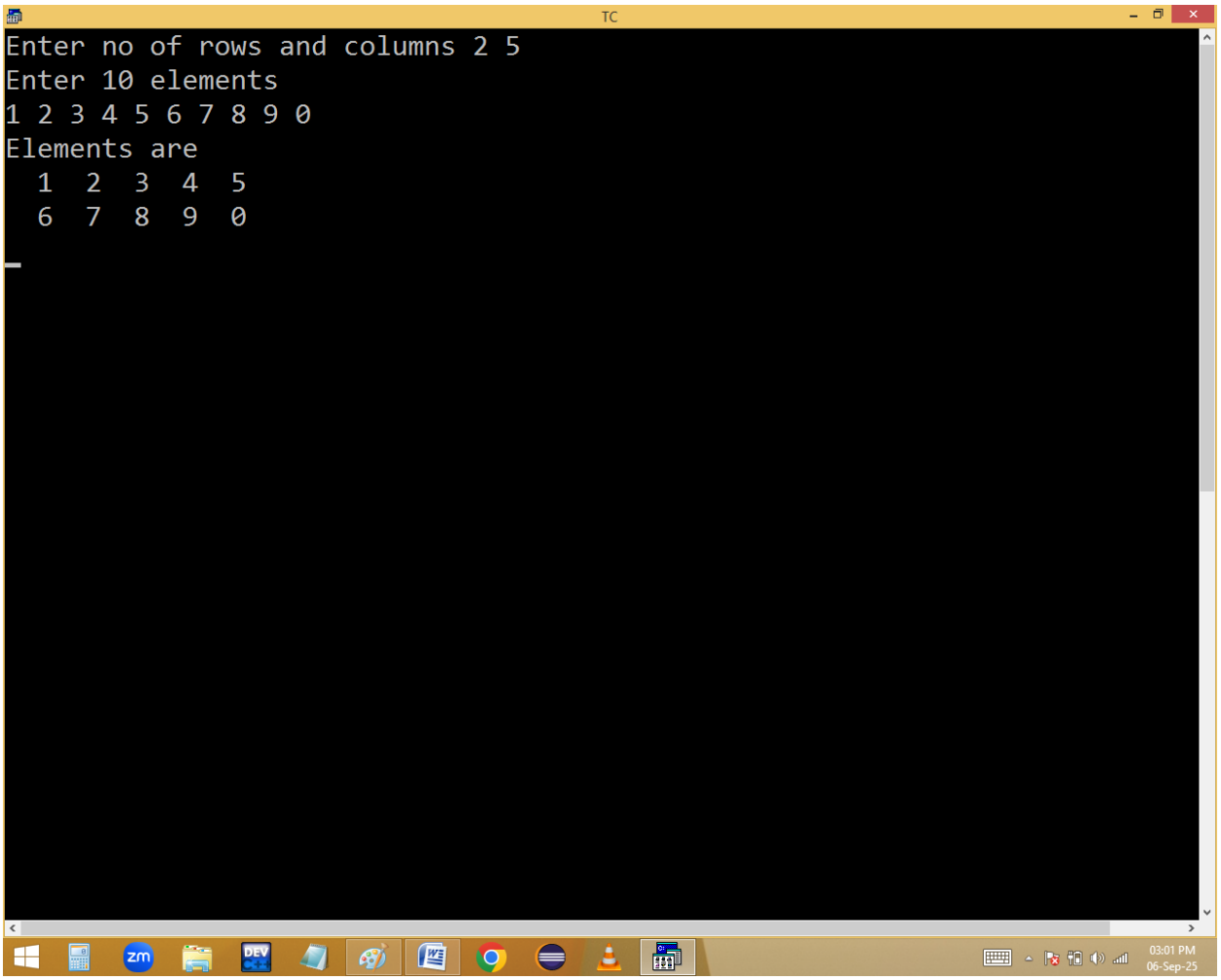

TC
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 21 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{1,2,3},4,5,6},r,c;
clrscr();
puts("Elements are ");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
Page: 16 of 17 Words: 78
150%
02:58 PM
06-Sep-25

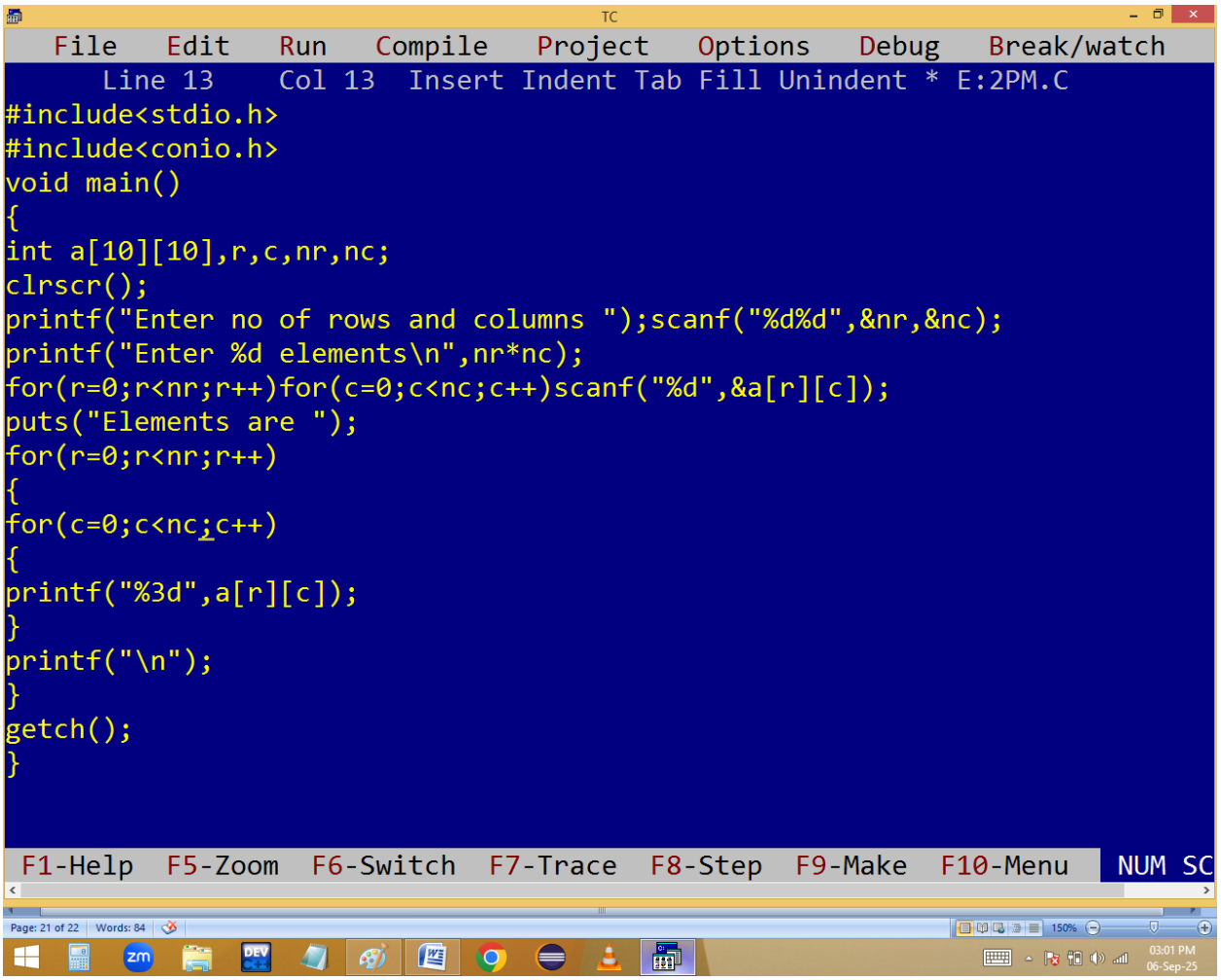


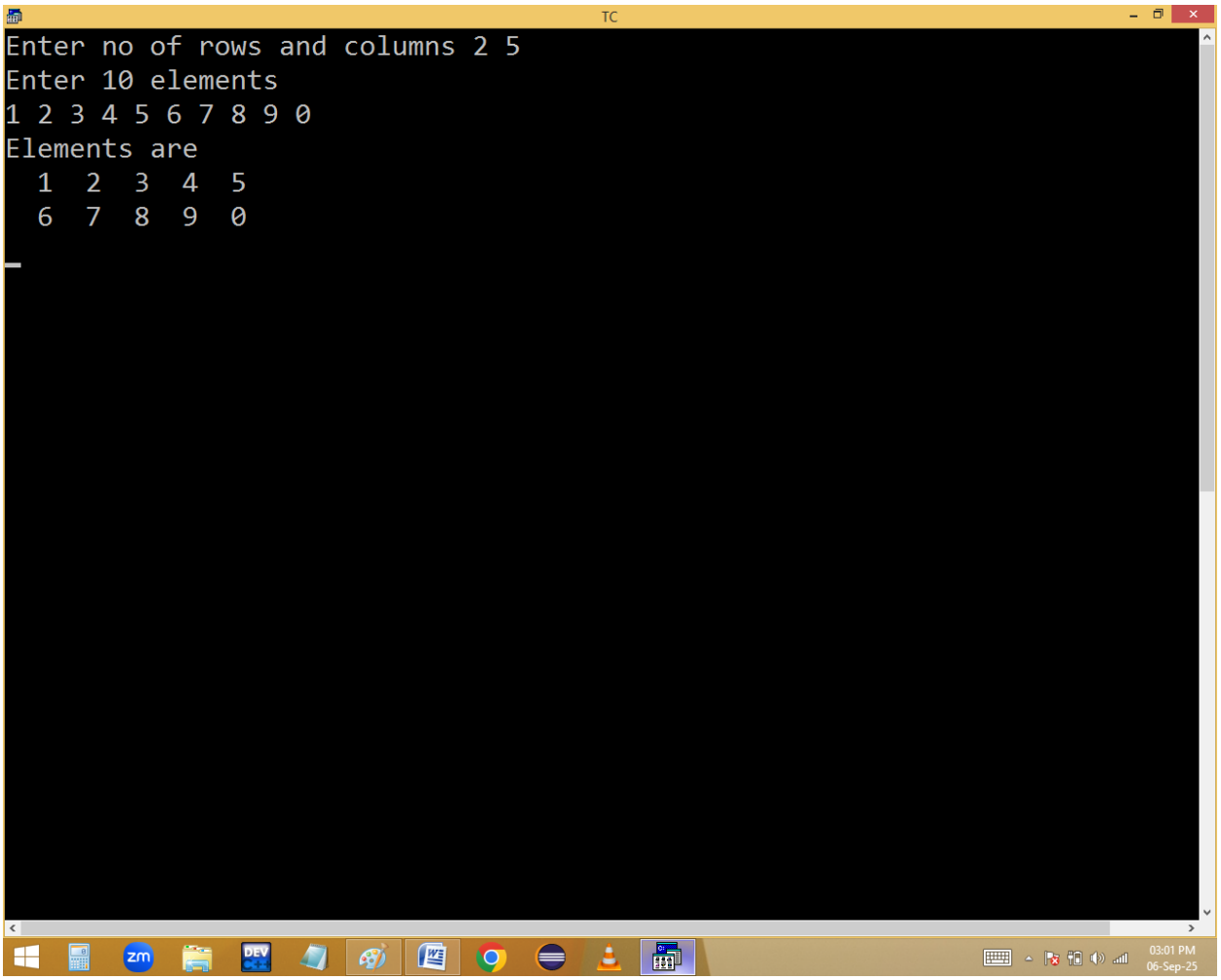
Reading and printing of array elements:


TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc;
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("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
Page: 18 of 19 Words: 84
150%
03:00 PM
06-Sep-25

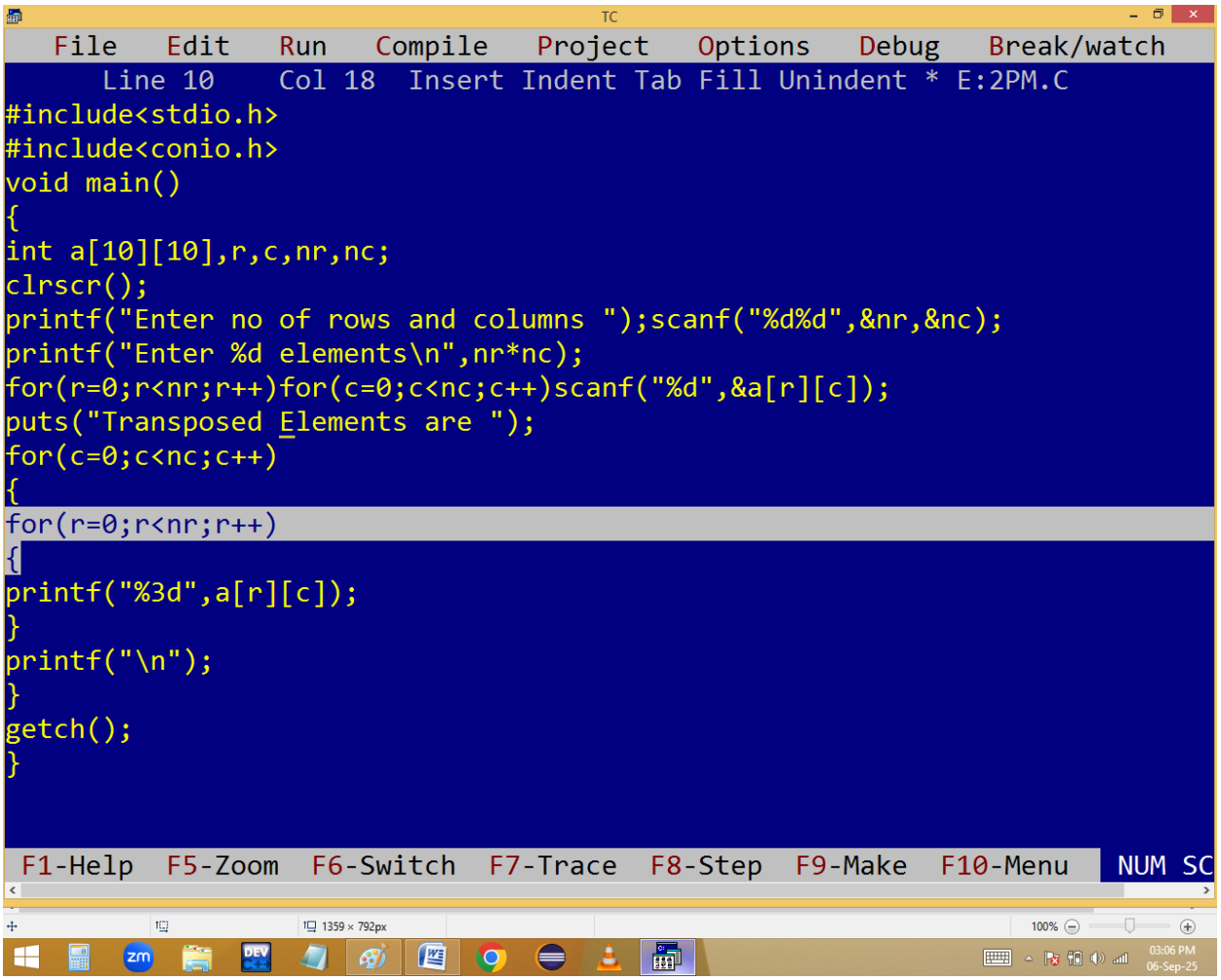

TC
Enter no of rows and columns 3 3
Enter 9 elements
2 0 8
1 6 2
2 8 1
Elements are
2 0 8
1 6 2
2 8 1
03:01 PM
06-Sep-25

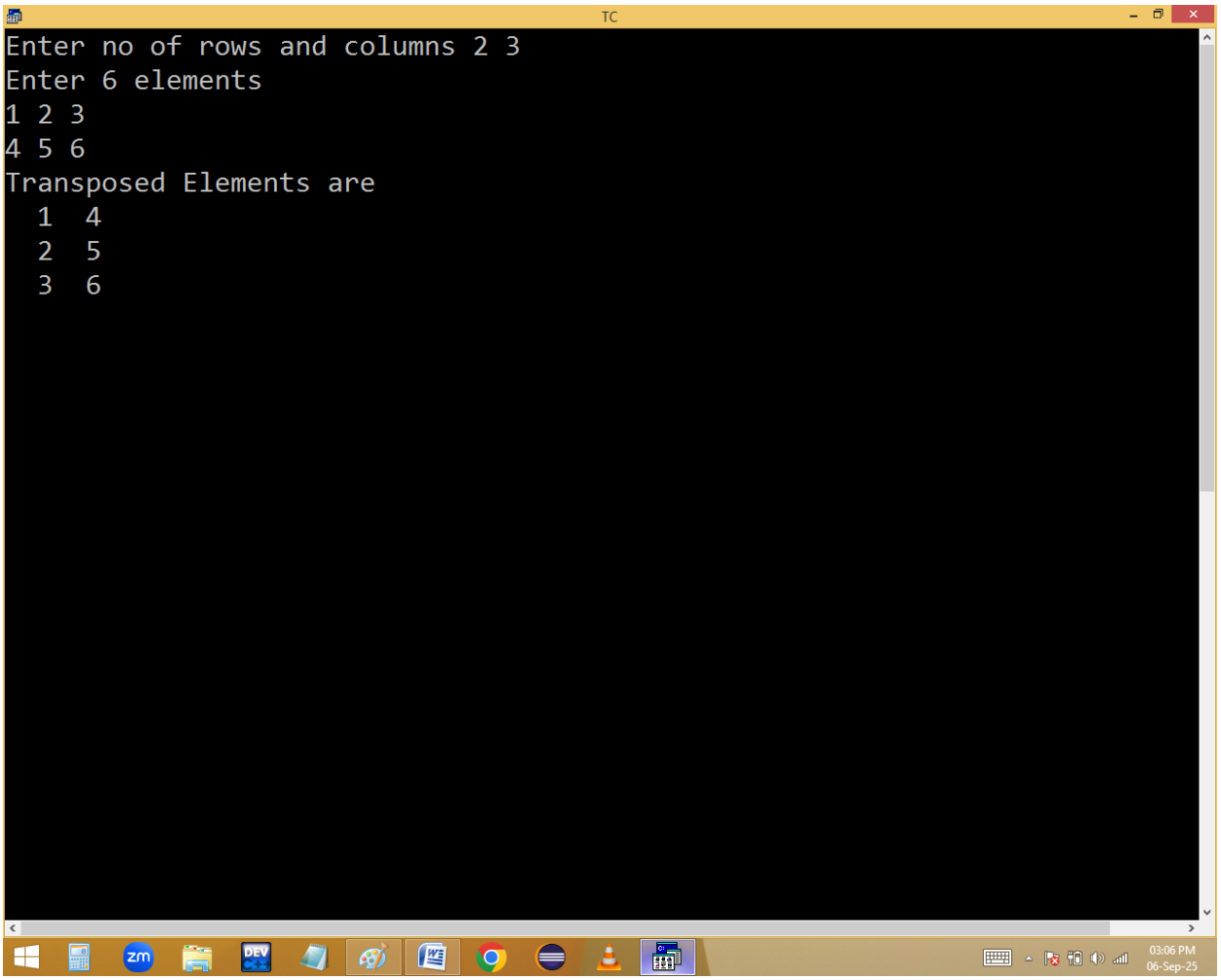

TC
Enter no of rows and columns 2 5
Enter 10 elements
1 2 3 4 5 6 7 8 9 0
Elements are
1 2 3 4 5
6 7 8 9 0
03:01 PM
06-Sep-25


TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc;
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("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
Page: 21 of 22 Words: 84
150%
03:01 PM
06-Sep-25



Transpose of n*n matrix:

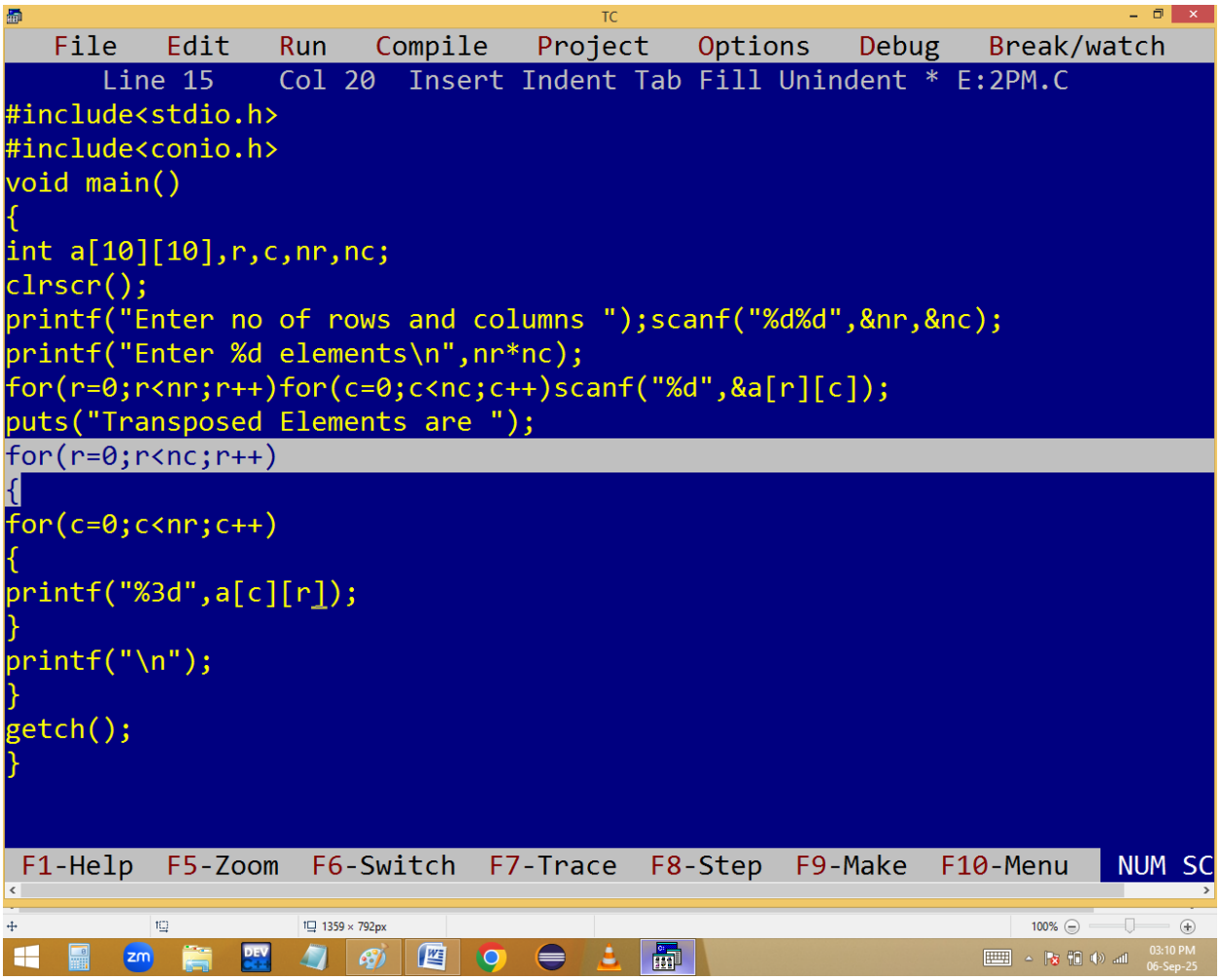

TC
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 18 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc;
clrscr();
printf("Enter no of rows and columns ");scanf("%d%d",&nr,&nc);
printf("Enter %d elements\n",nr*nc);
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("%3d",a[r][c]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC

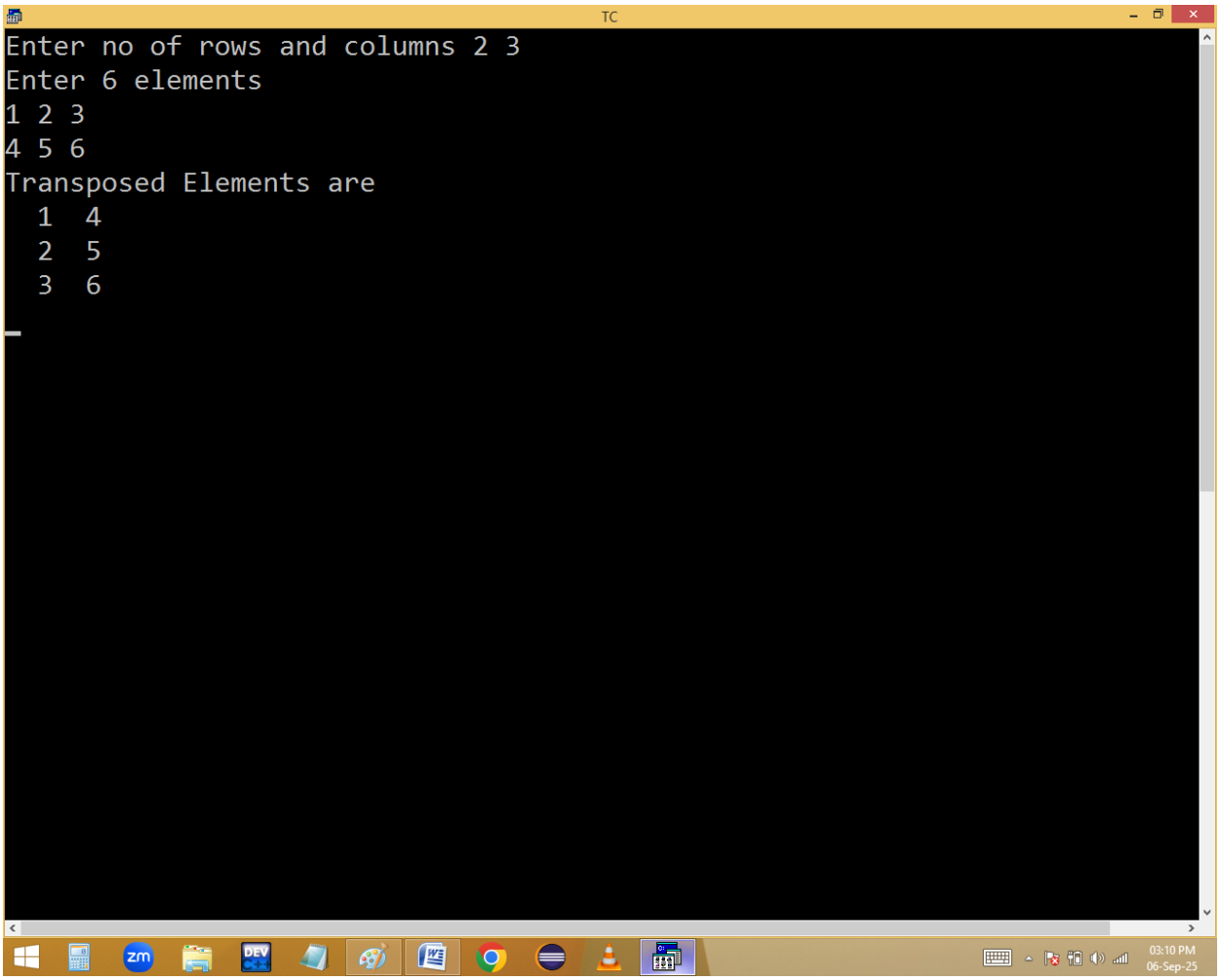

TC
Enter no of rows and columns 2 3
Enter 6 elements
1 2 3
4 5 6
Transposed Elements are
1 4
2 5
3 6
03:06 PM
06-Sep-25

```
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


TC
File Edit Run Compile Project Options Debug Break/watch
Line 15 Col 20 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc;
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("%3d",a[c][r]);
}
printf("\n");
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
1359 × 792px
100%
03:10 PM
06-Sep-25


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
03:10 PM
06-Sep-25

```
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 | 0

0 | 1

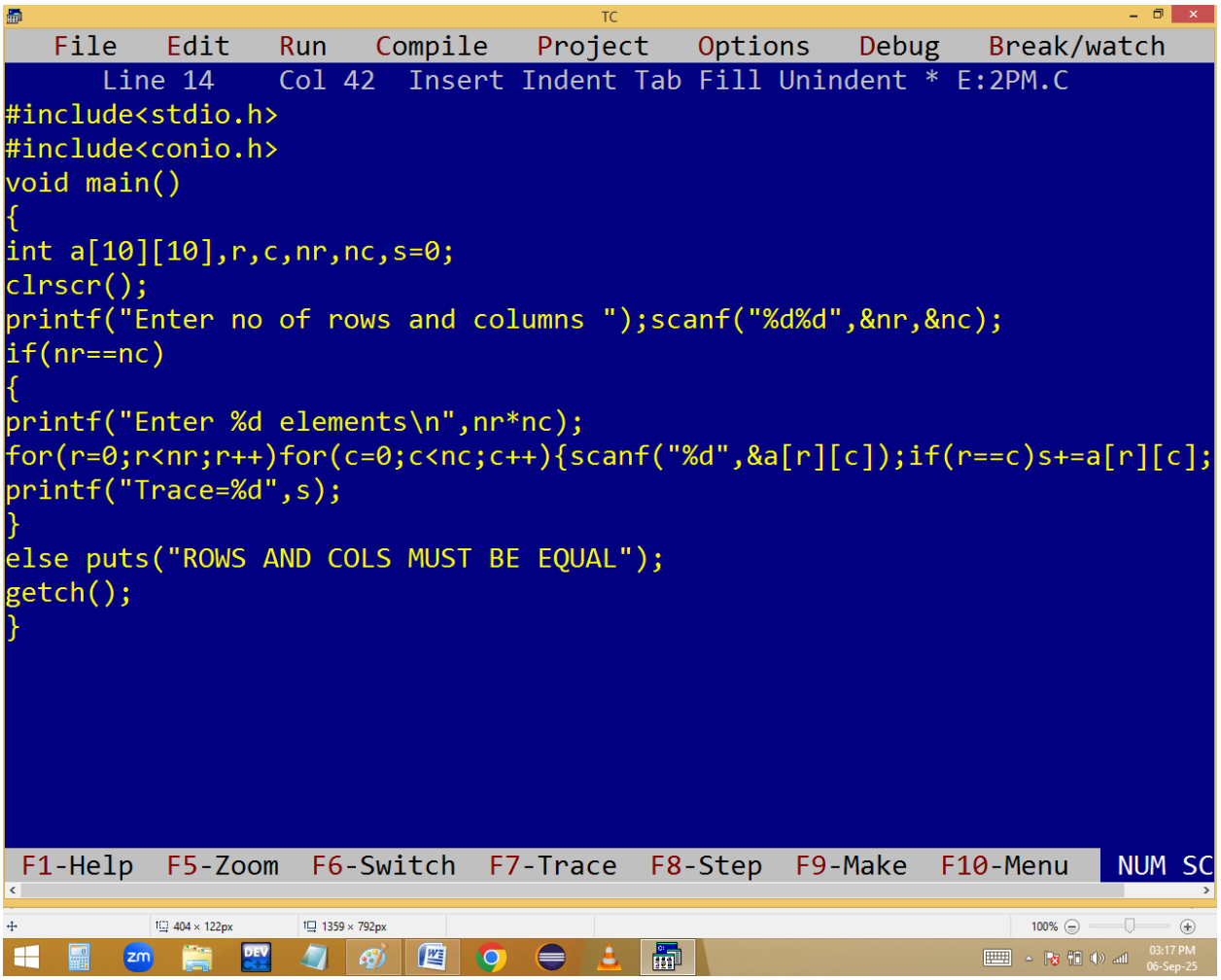
0 | 2

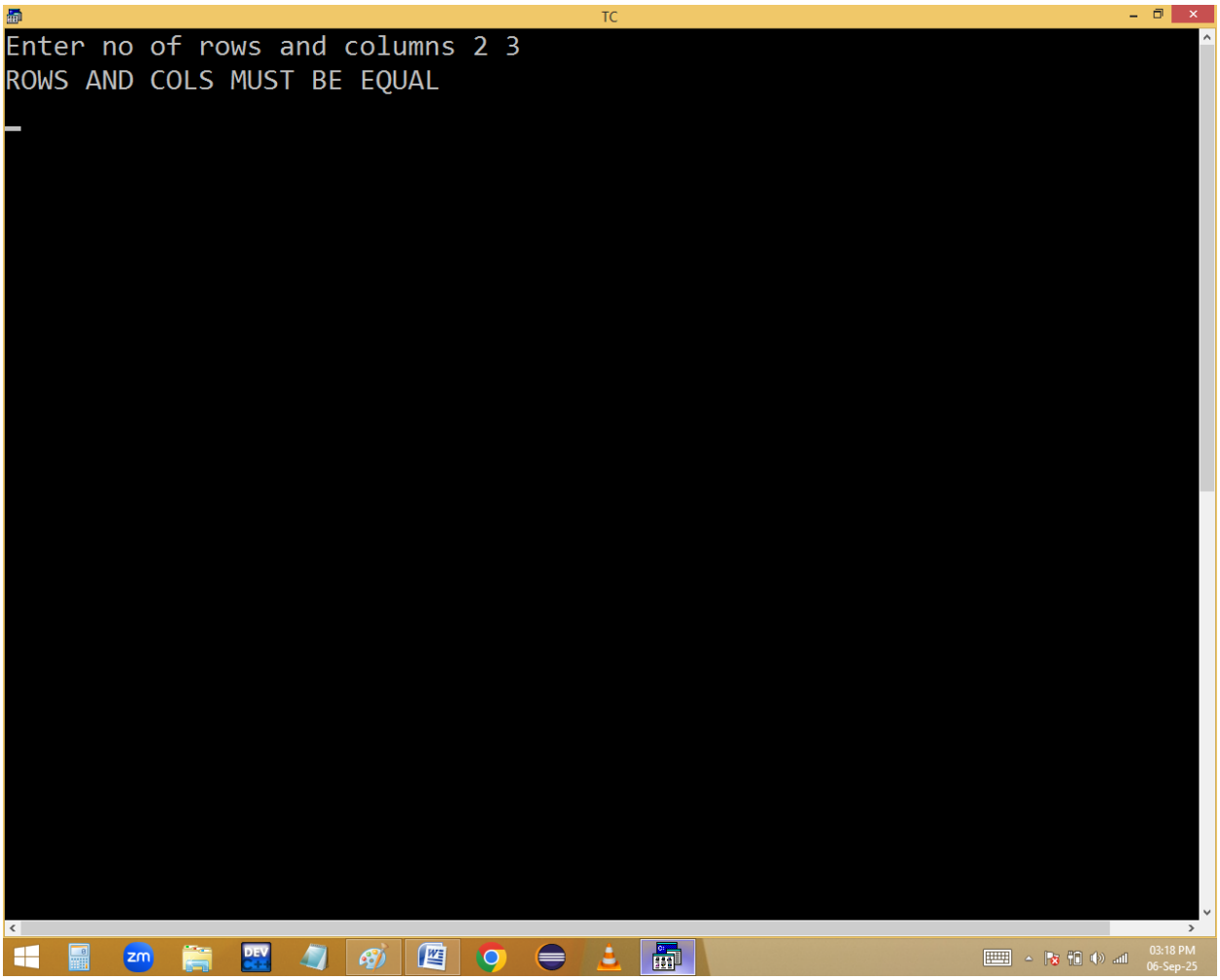
3

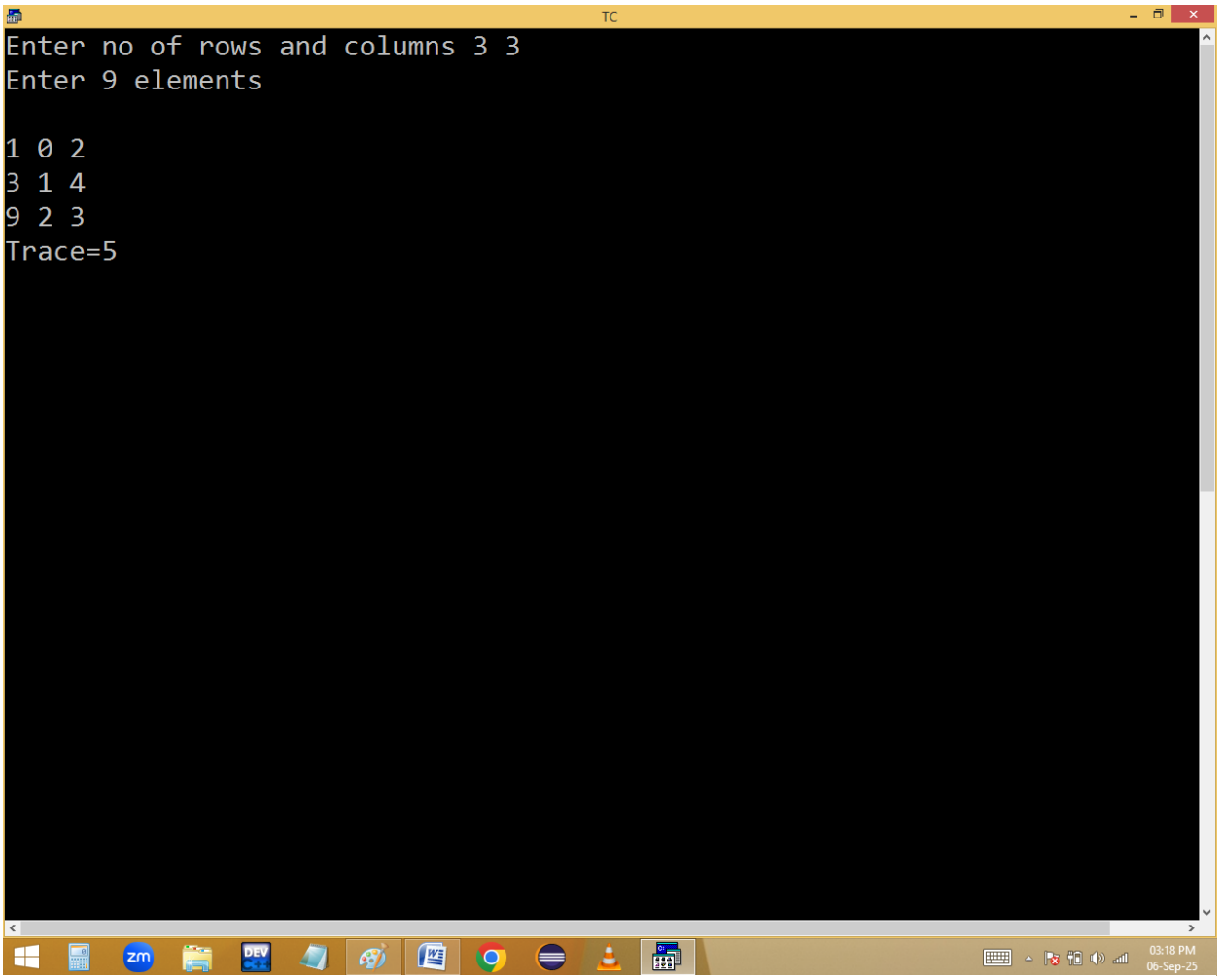
1	4
2	5
3	6

Finding trace of m*n matrix:

Trace means sum of principle diagonal elements.


TC
File Edit Run Compile Project Options Debug Break/watch
Line 14 Col 42 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc,s=0;
clrscr();
printf("Enter no of rows and columns ");scanf("%d%d",&nr,&nc);
if(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]);if(r==c)s+=a[r][c];
printf("Trace=%d",s);
}
else puts("ROWS AND COLS MUST BE EQUAL");
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
404 × 122px
1359 × 792px
100%
03:17 PM
06-Sep-25

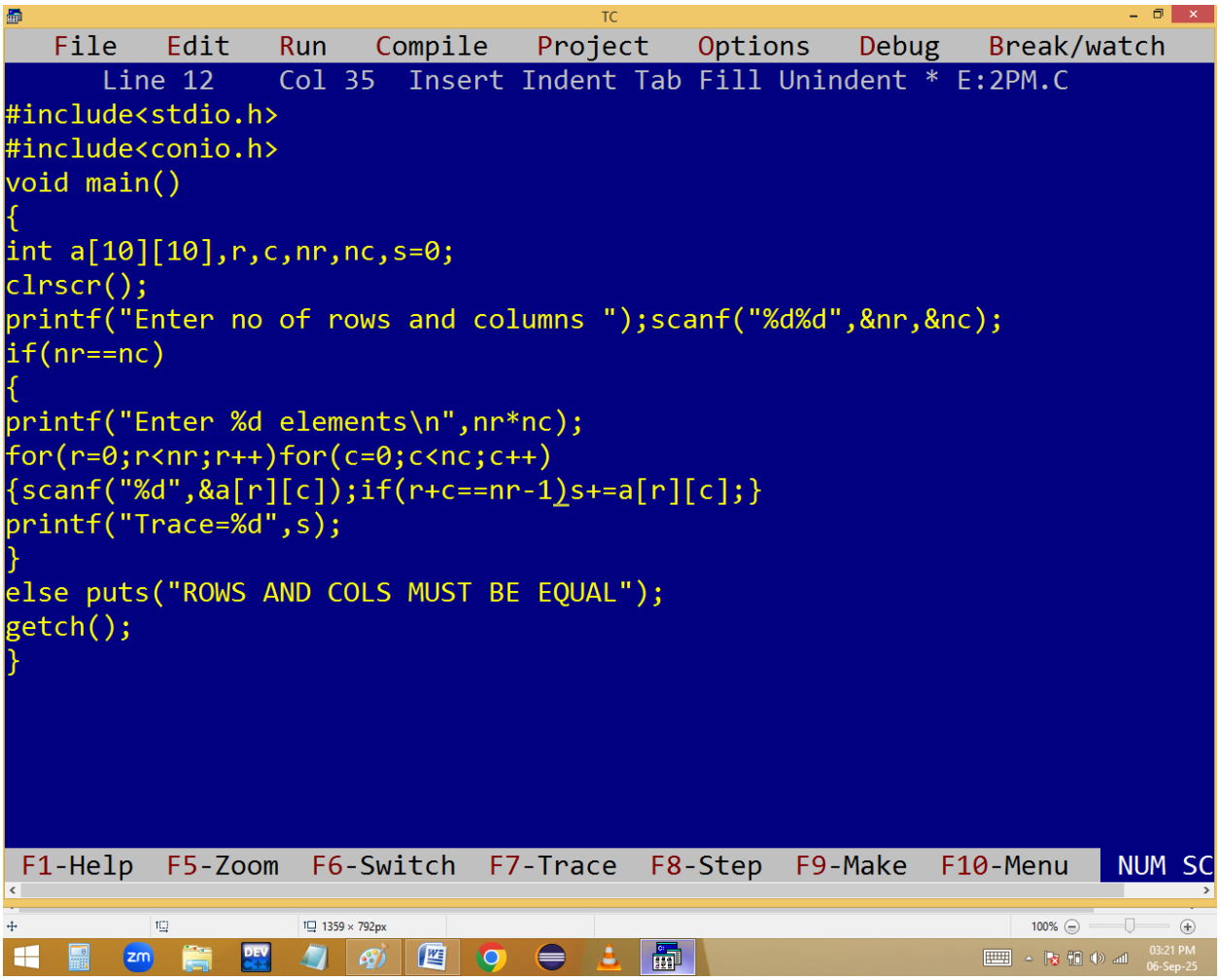

TC
Enter no of rows and columns 2 3
ROWS AND COLS MUST BE EQUAL
03:18 PM
06-Sep-25

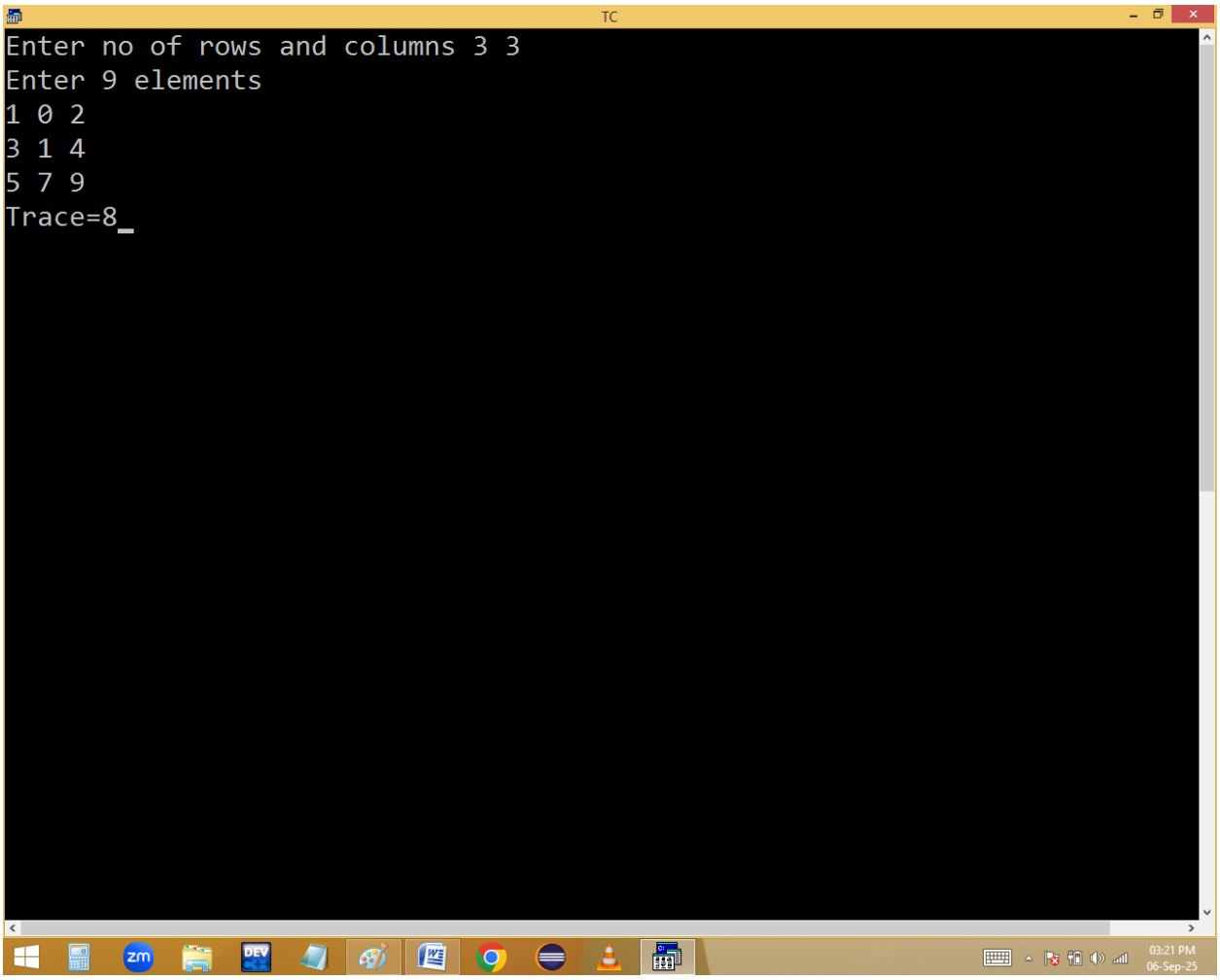



```
if(r==c) trace+=a[r][c];
```

9 0,0	0 0,1	4 0,2
5 1,0	7 1,1	2 1,2
1 2,0	4 2,1	3 2,2

Trace=9+7+3=19


TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 35 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc,s=0;
clrscr();
printf("Enter no of rows and columns ");scanf("%d%d",&nr,&nc);
if(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]);if(r+c==nr-1)s+=a[r][c];}
printf("Trace=%d",s);
}
else puts("ROWS AND COLS MUST BE EQUAL");
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC



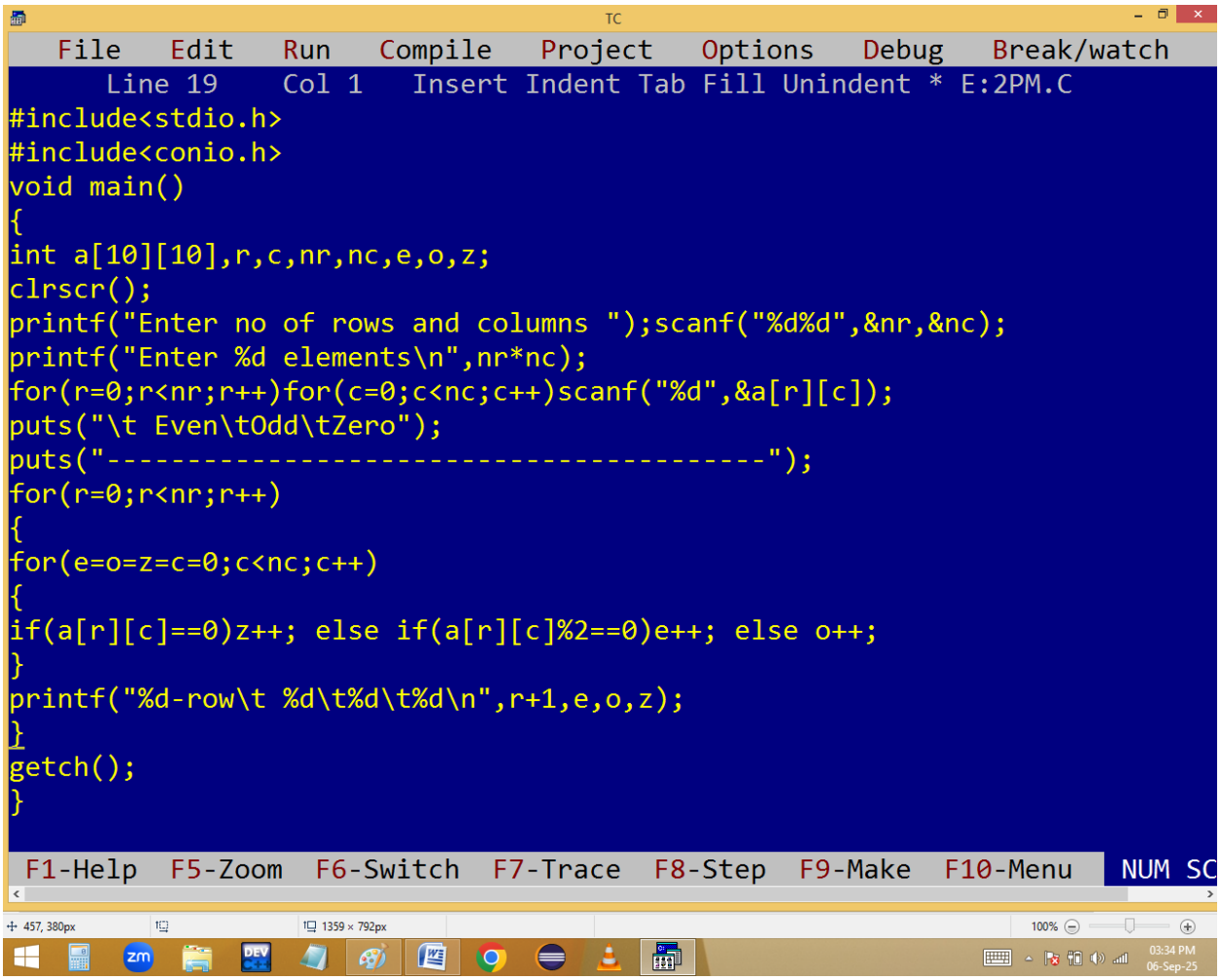
if(r+c ==nr-1) s+=a[r][c];

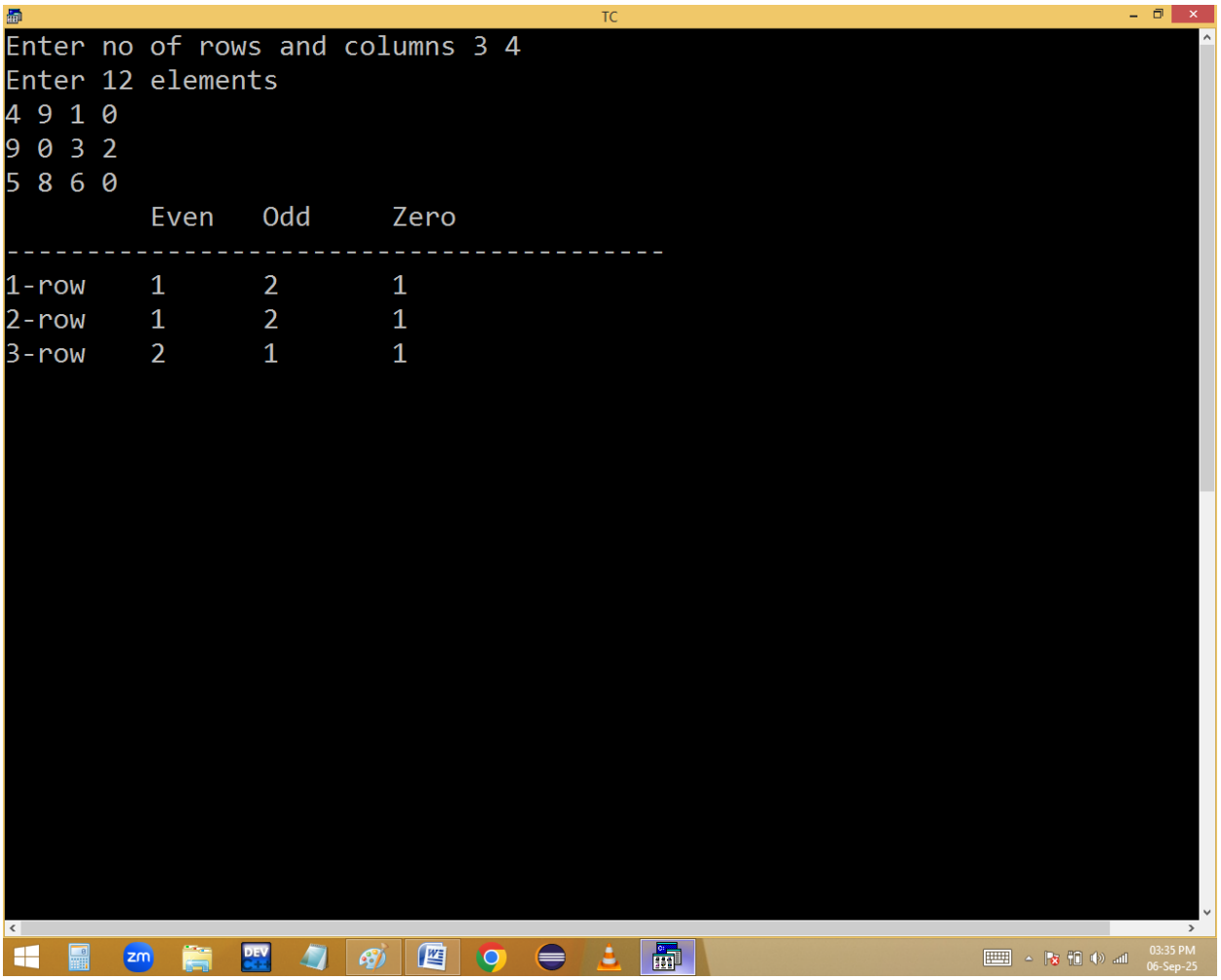
nr / 3

9 0,0	0 0,1	4 0,2
5 1,0	7 1,1	2 1,2
1 2,0	4 2,1	3 2,2

sum=12

Read n elements into m*n matrix and find even/odd/zero elements row wise?


TC
File Edit Run Compile Project Options Debug Break/watch
Line 19 Col 1 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc,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();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
457, 380px
1359 × 792px
100%
03:34 PM
06-Sep-25

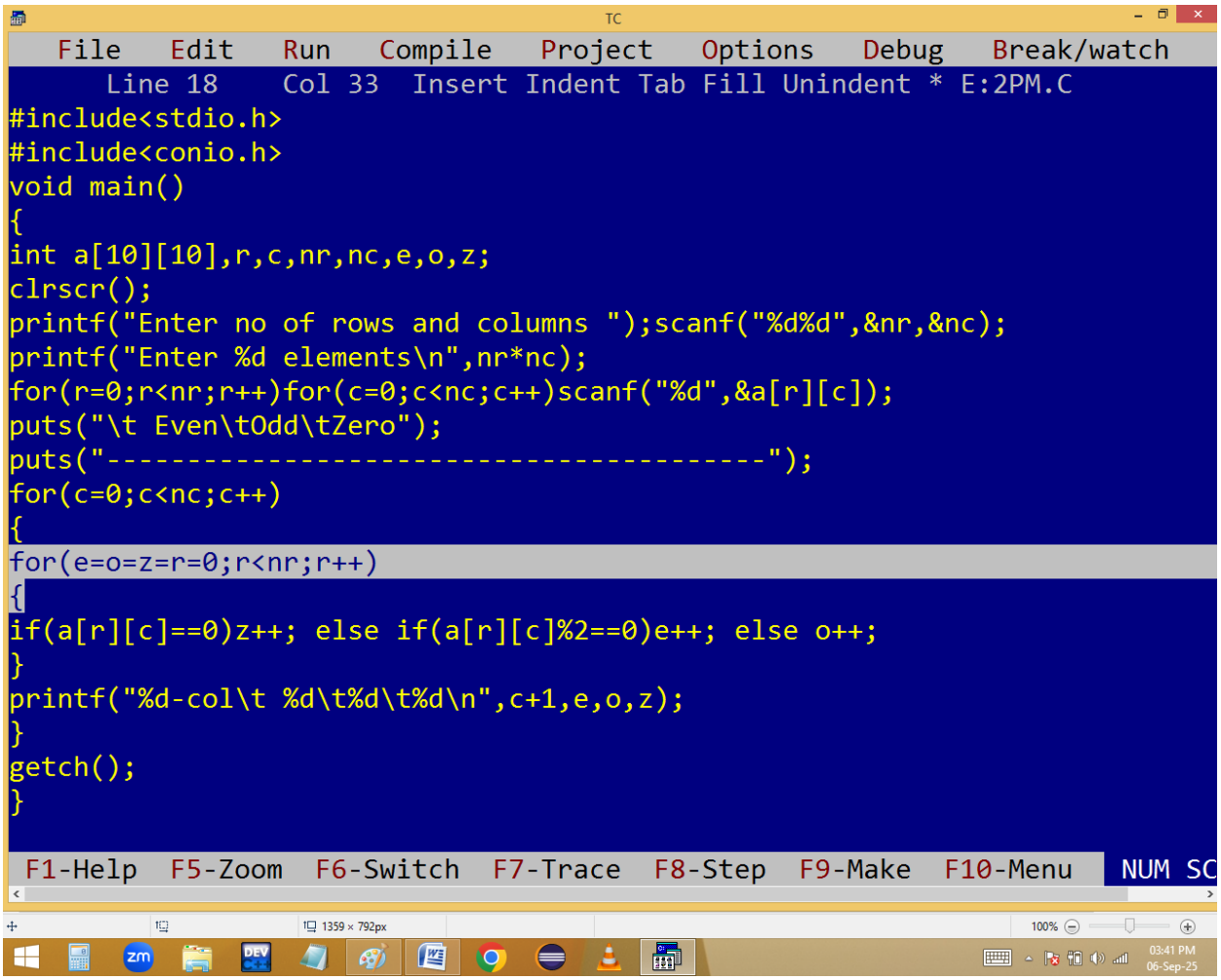


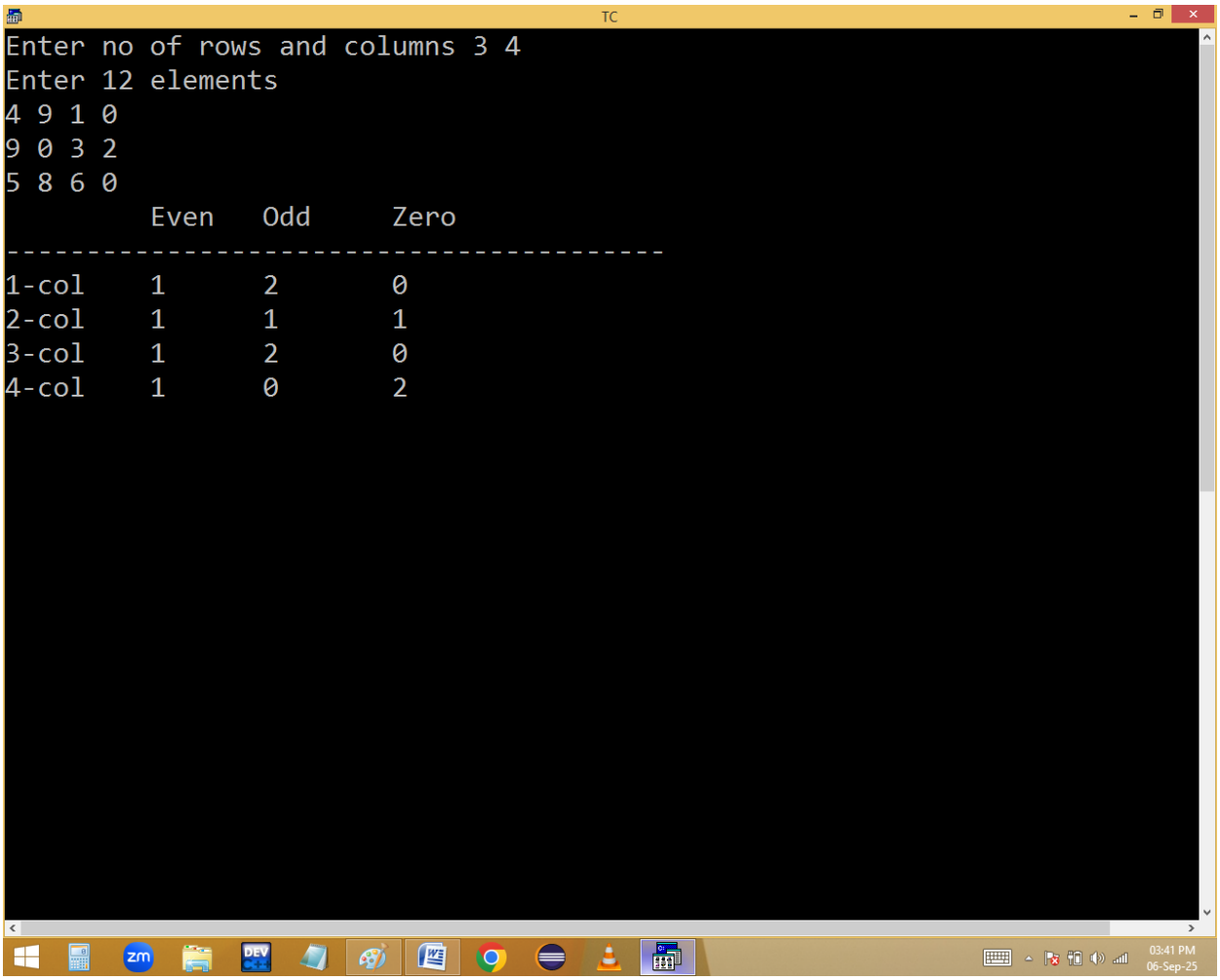

```
puts("\t Even\tOdd\tZero");
puts("---------------------------------------");

for( r=0; r<3; 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++;
}
printf("%d-row\t%d\t%d\t\n",r+1,e,o,z);
}
```

4 0,0	9 0,1	1 0,2	0 0,3
9 1,0	0 1,1	3 1,2	2 1,3
5 2,0	8 2,1	6 2,2	0 2,3

	Even	Odd	Zero
1-row	1	2	1
2-row	1	2	1
3-row	2	1	1

Col wise:


TC
File Edit Run Compile Project Options Debug Break/watch
Line 18 Col 33 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[10][10],r,c,nr,nc,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(c=0;c<nc;c++)
{
for(e=o=z=r=0;r<nr;r++)
{
if(a[r][c]==0)z++; else if(a[r][c]%2==0)e++; else o++;
}
printf("%d-col\t %d\t%d\t%d\n",c+1,e,o,z);
}
getch();
}
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM SC
1359 × 792px
100%
03:41 PM
06-Sep-25


TC
Enter no of rows and columns 3 4
Enter 12 elements
4 9 1 0
9 0 3 2
5 8 6 0
Even Odd Zero
1-col 1 2 0
2-col 1 1 1
3-col 1 2 0
4-col 1 0 2