

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 5 Col 15 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{10,20,30},{40,50,60}},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows taskbar icons: File Explorer, Microsoft Edge, Word, PowerPoint, Excel, Chrome, DevTools, Teams, OneDrive, Task View, Start Menu. System tray: 4:26 PM, 07/05/2022.

TC

Elements

```
10  20  30
40  50  60
```

Windows taskbar icons: File Explorer, Microsoft Edge, Word, PowerPoint, Excel, Chrome, DevTools, Teams, OneDrive, Task View, Start Menu. System tray: 4:26 PM, 07/05/2022.

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 5 Col 22 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{10},{40}},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows taskbar icons: File Explorer, Microsoft Edge, Word, PowerPoint, Paint, Calculator, Chrome, Dev C++, Teams, File Zilla, Task Manager. System tray: 4:27 PM, 07/05/2022.

TC

Elements

```
10  0  0
40  0  0
```

Windows taskbar icons: File Explorer, Microsoft Edge, Word, PowerPoint, Paint, Calculator, Chrome, Dev C++, Teams, File Zilla, Task Manager. System tray: 4:27 PM, 07/05/2022.

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 5 Col 19 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={10,40},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows taskbar: 4:28 PM 07/05/2022

TC

Elements

```
10  40  0
0   0   0
```

Windows taskbar: 4:29 PM 07/05/2022

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]={{10},{ }},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
/* Error */
```

4:30 PM 07/05/2022

TC

File Edit Run Compile Project Options Debug Break/watch

Line 17 Col 1 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{10,20},{30,40}},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

4:31 PM 07/05/2022

TC

```
Elements
10 20 0
30 40 0
```

Windows taskbar: 4:31 PM 07/05/2022

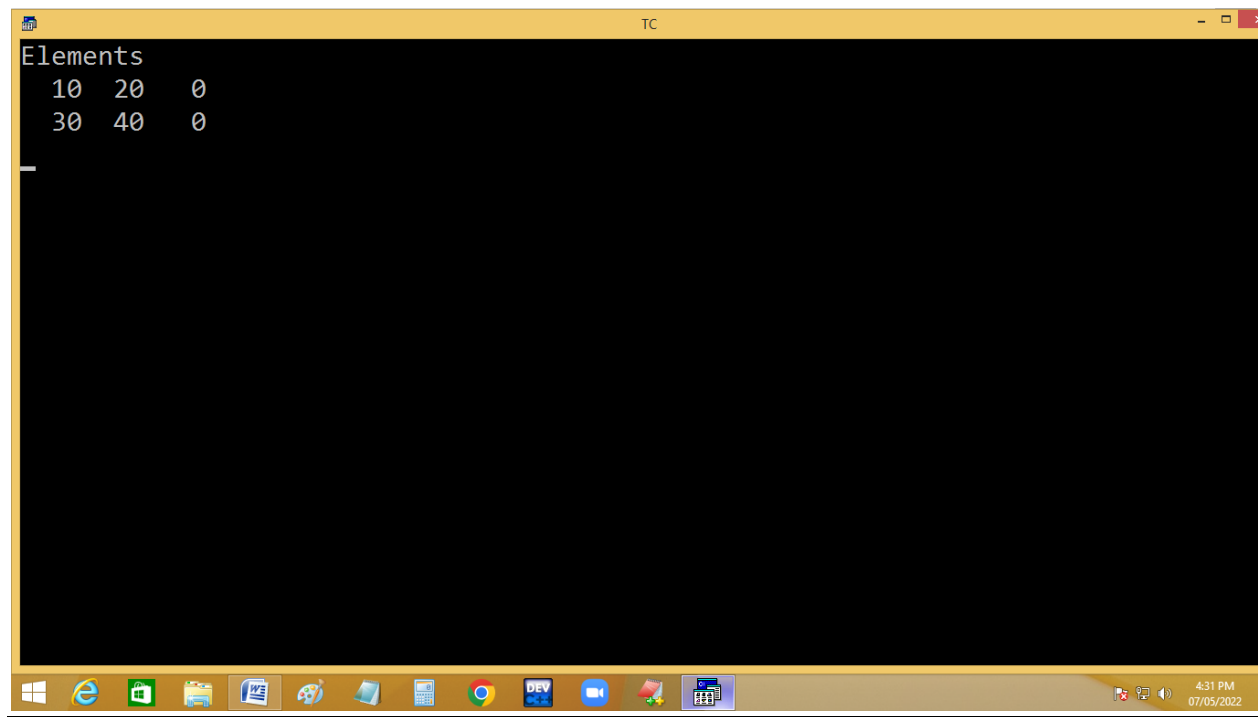
TC

File Edit Run Compile Project Options Debug Break/watch

Line 5 Col 27 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={{10,20},30,40},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows taskbar: 4:32 PM 07/05/2022



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]={10,20,30,40},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

4:32 PM 07/05/2022

TC

File Edit Run Compile Project Options Debug Break/watch

Line 5 Col 25 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={10,20,30,40},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

4:33 PM 07/05/2022

TC

```
Elements
10 20 30
40 0 0
```

Windows taskbar: 4:33 PM 07/05/2022

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]={{10,20},{30,40},{50,60}},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows taskbar: 4:34 PM 07/05/2022


```
TC
File Edit Run Compile Project Options Debug Break/watch
Error: Size of structure or array not known in function main
#include<stdio.h>
#include<conio.h>
void main()
{
int a[][]={10,20,30,40,50,60},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

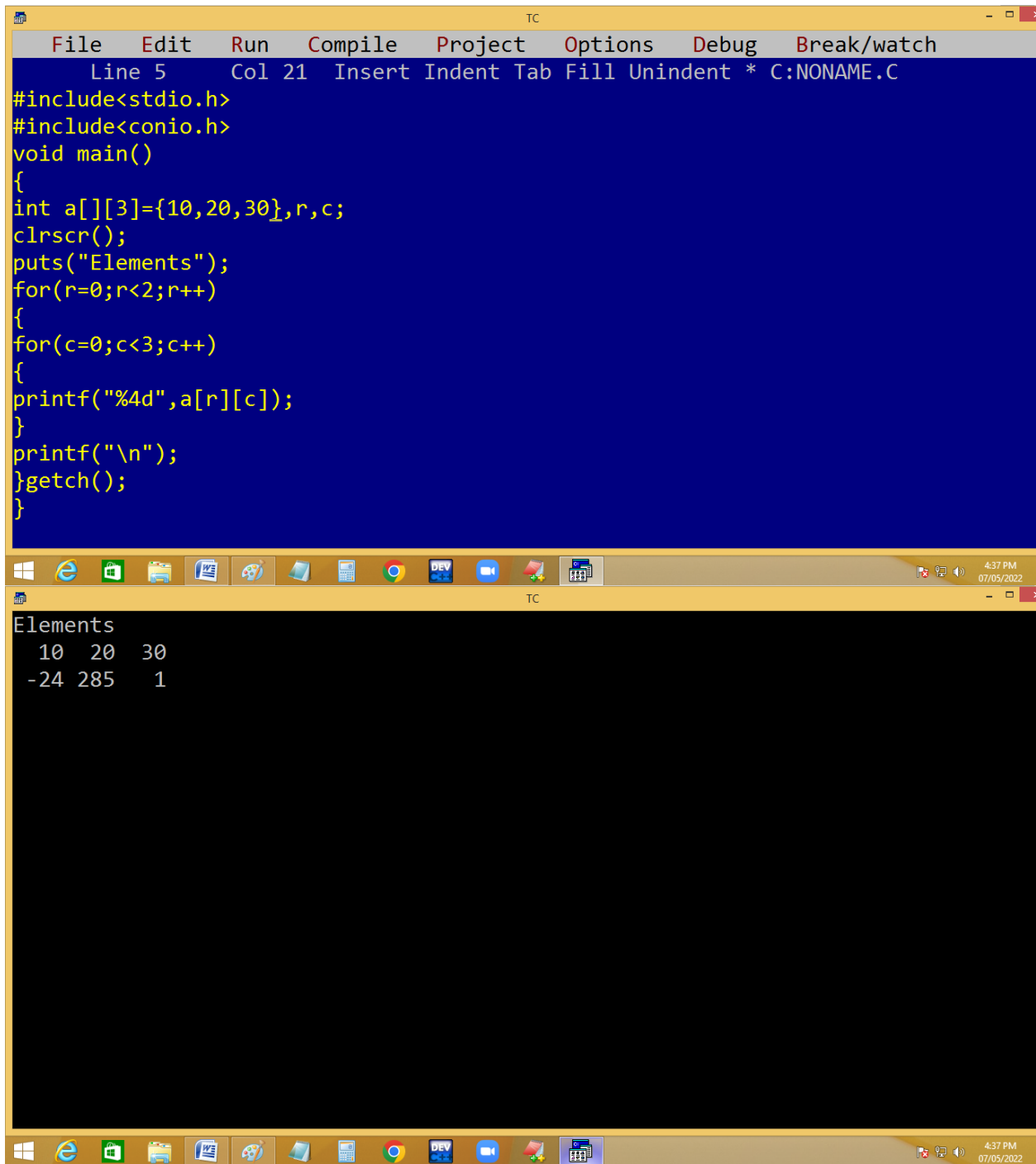
```
TC
File Edit Run Compile Project Options Debug Break/watch
Error: Size of structure or array not known in function main
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][]={10,20,30,40,50,60},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code of a C program. The code includes headers for `stdio.h` and `conio.h`, and defines a `main` function. Inside `main`, a 2x3 integer array `a` is declared and initialized with values {10, 20, 30, 40, 50, 60}. The program uses `clrscr()` to clear the screen, prints the word "Elements", and then uses nested `for` loops to iterate through the array and print each element in two rows. The bottom window shows the output of the program, which is "Elements" followed by the array elements arranged in two rows: 10 20 30 and 40 50 60. The Windows taskbar at the bottom shows the time as 4:35 PM on 07/05/2022.

```
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 10 Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[][3]={10,20,30,40,50,60},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

Elements

10	20	30
40	50	60



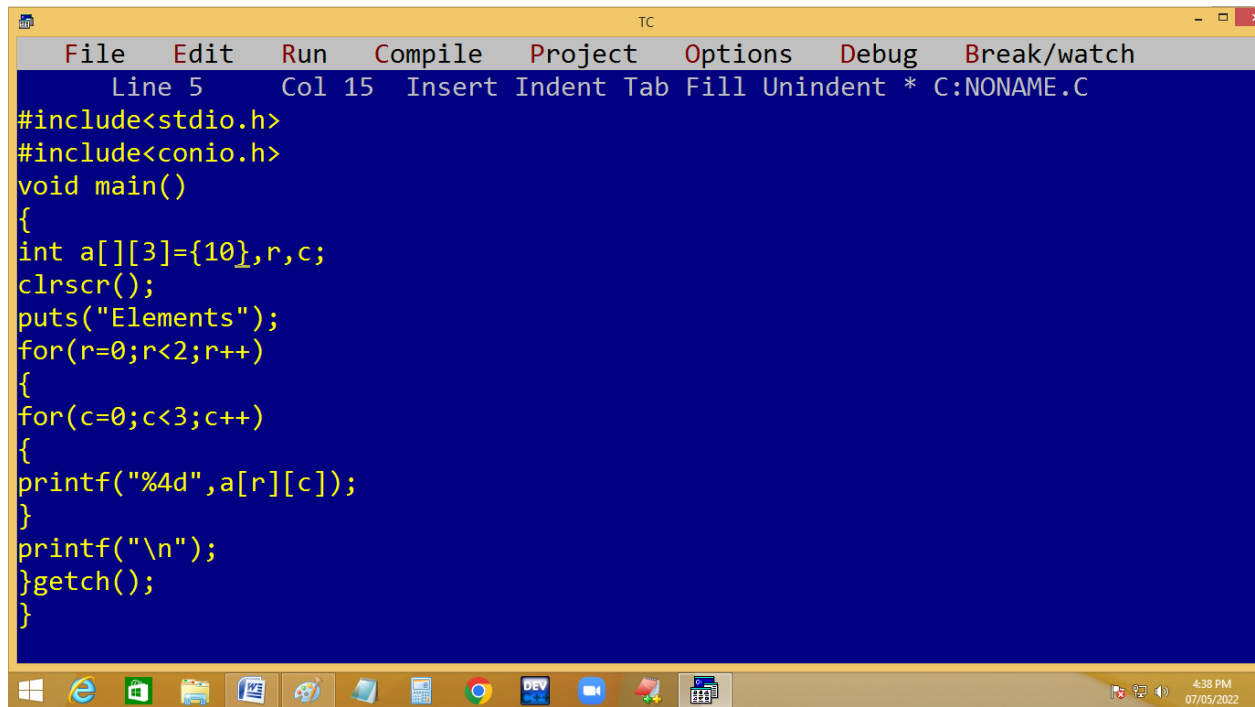
The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program with the following code:

```
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 21 Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[][3]={10,20,30},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

The bottom window shows the output of the program:

```
Elements
 10  20  30
-24 285   1
```

The IDE interface includes a menu bar at the top with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom right indicates the time as 4:37 PM on 07/05/2022. The taskbar at the very bottom shows various application icons, including Windows Explorer, Word, and the Turbo C++ IDE itself.



The image shows a screenshot of a Turbo C++ (TC) IDE. The window title is "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 5", "Col 15", and "Insert Indent Tab Fill Unindent * C:NONAME.C". The code in the editor is as follows:

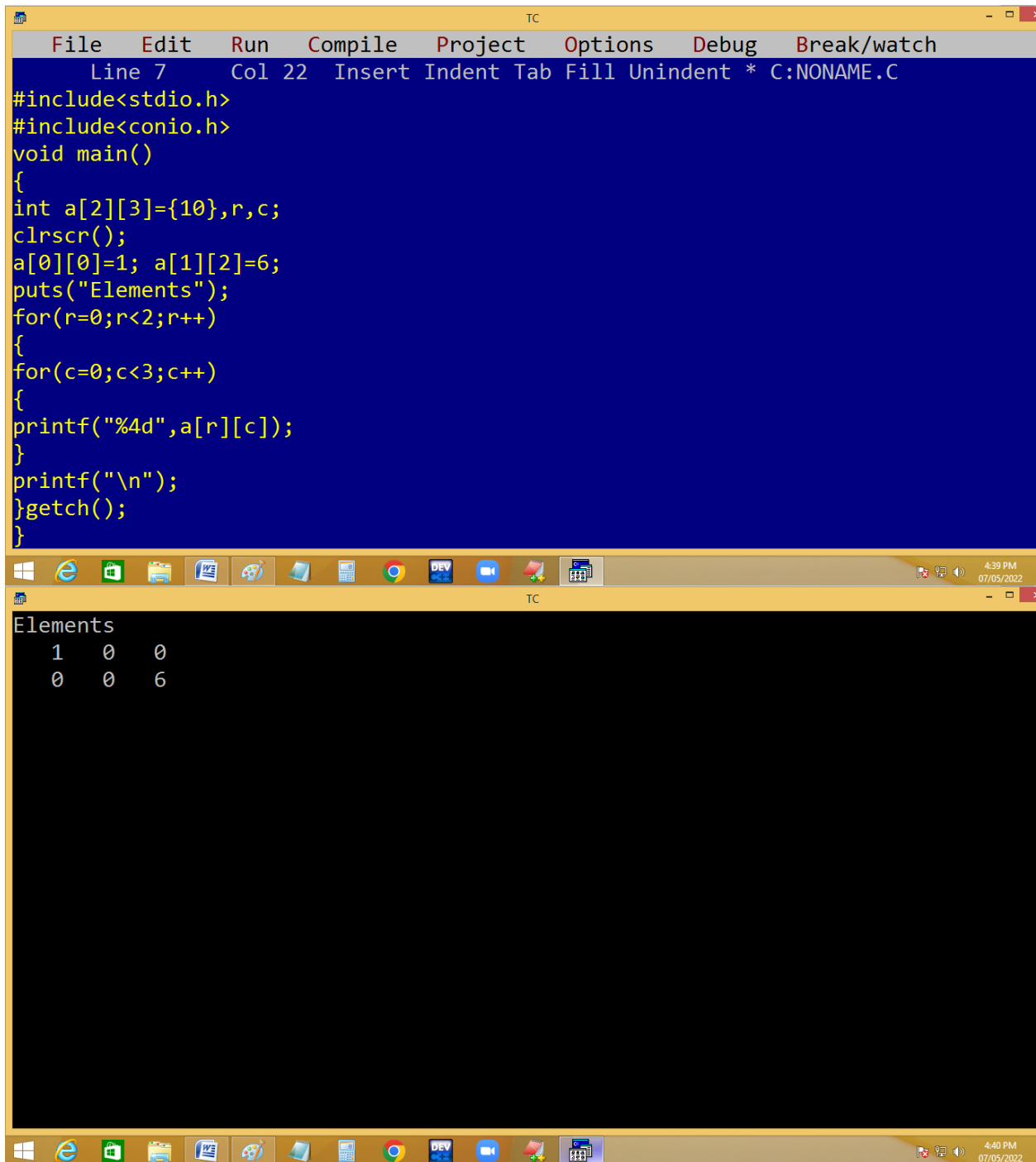
```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[][3]={10},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

The Windows taskbar is visible at the bottom, showing icons for various applications and the system clock displaying 4:38 PM on 07/05/2022.

Output:

10 0 0

Gr gr gr



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program with the following code:

```
Line 7 Col 22 Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={10},r,c;
clrscr();
a[0][0]=1; a[1][2]=6;
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%4d",a[r][c]);
}
printf("\n");
}getch();
}
```

The bottom window shows the output of the program:

```
Elements
 1  0  0
 0  0  6
```

The IDE interface includes a menu bar with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom indicates the time as 4:39 PM and the date as 07/05/2022.

TC

File Edit Run Compile Project Options Debug Break/watch

Line 13 Col 11 Insert Indent Tab Fill Unindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3],r,c;
clrscr();
a[0][0]=1; a[1][2]=6;
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows Explorer Edge Word PowerPoint Paint File Explorer Calculator Chrome DevTools Teams Task View

4:42 PM 07/05/2022

TC

Elements

1	7083	1824
-24	5201	6

Windows Explorer Edge Word PowerPoint Paint File Explorer Calculator Chrome DevTools Teams Task View

4:42 PM 07/05/2022

TC

File Edit Run Compile Project Options Debug Break/watch

Error: Incompatible type conversion in function main

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]=1,r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

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][2]={1,2,3,4,5,6},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

TC

FileEditRunCompileProjectOptionsDebugBreak/watch

Line 7Col 2InsertIndentTabFillUnindent * C:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][2]={1,2,3,4},r,c;
clrscr();
a[0][2]=100; a[1][2]=200;
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

Windows Explorer Edge Word PowerPoint Paint File Explorer Calculator Chrome Dev C++ Visual Studio Code Task View

4:57 PM 07/05/2022

TC

Elements

1	2	100
100	4	200

Windows Explorer Edge Word PowerPoint Paint File Explorer Calculator Chrome Dev C++ Visual Studio Code Task View

4:57 PM 07/05/2022

	65500	502
a[0]	1	2
a[1]	3	4
	65504	65506

a[0][2]=100;
 $65500+2*2=65504=100$

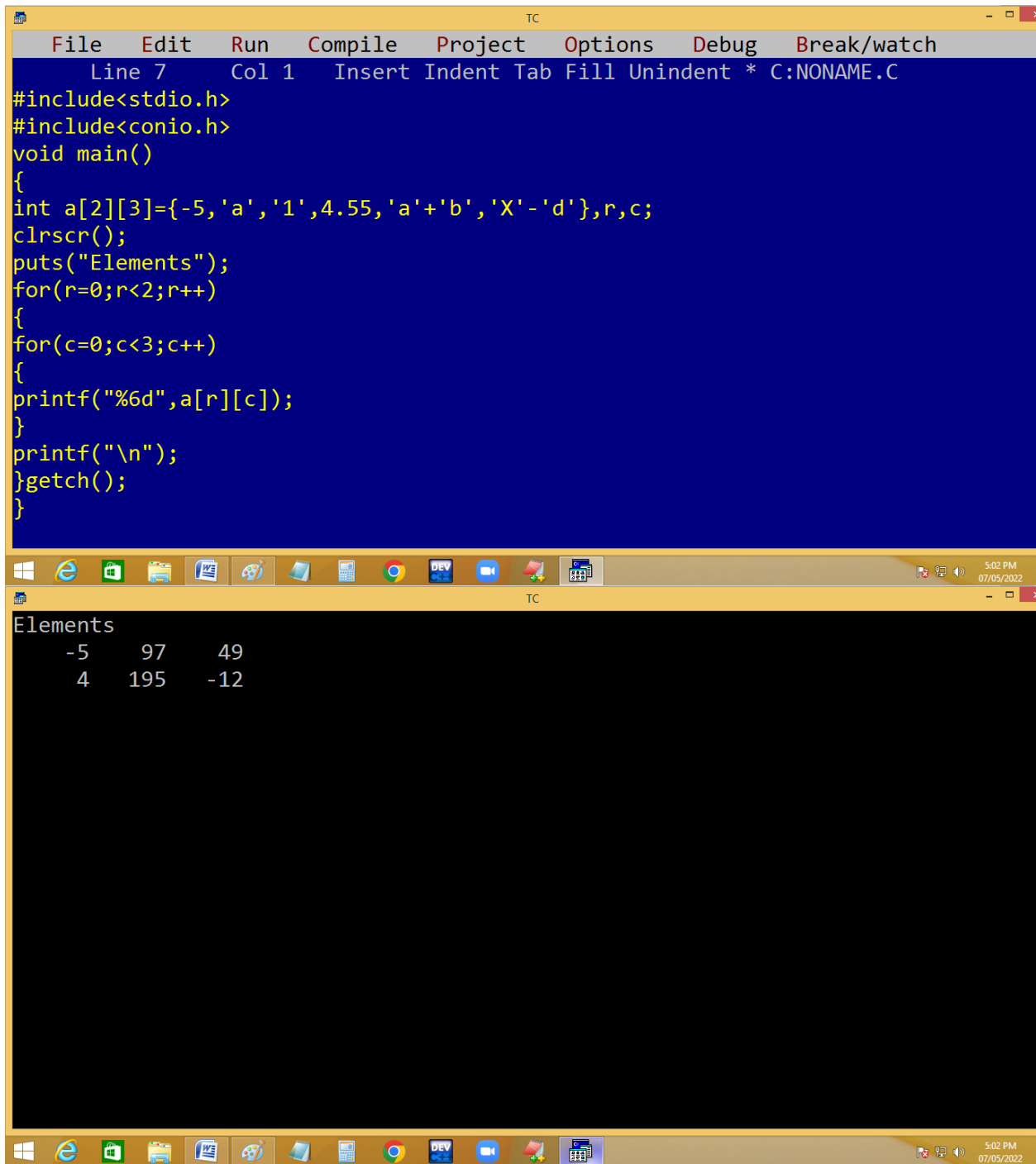
a[1][2]=200;
 $65504+2*2=65508=200$

a[0][2]

a[1][2]	200
a[1][1]	4
a[1][0]	3 100
a[0][1]	2
a[0][0]	1

65508 ←
 65506
 65504 ← a[0][2]

1 2 100
 100 4 200



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`, a 2x3 integer array `a` is declared and initialized with the values `{-5, 'a', '1', 4.55, 'a'+ 'b', 'X' - 'd'}`. The program then uses `clrscr()` to clear the screen, prints the word "Elements", and uses nested `for` loops to iterate over the array and print each element using `printf("%6d", a[r][c]);`. A `getch()` call is used to pause the program before exiting.

```
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 1 Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a[2][3]={-5,'a','1',4.55,'a'+ 'b','X' - 'd'},r,c;
clrscr();
puts("Elements");
for(r=0;r<2;r++)
{
for(c=0;c<3;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

The bottom window shows the output of the program. It displays the word "Elements" followed by two rows of three numbers each, formatted with a width of 6 characters. The first row contains -5, 97, and 49. The second row contains 4, 195, and -12.

```
Elements
-5    97    49
 4   195   -12
```

Reading and printing elements of n*n matrix.

```
#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 integers", nr * nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Elements");
for(r=0;r<nr;r++)
{
for(c=0;c<nc;c++)
{
printf("%6d",a[r][c]);
}
printf("\n");
}getch();
}
```

Enter no of rows and columns 2 4
Enter 8 integers1 2 3 4 5 6 7 8
Elements

1	2	3	4
5	6	7	8

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```
TC
Enter no of rows and columns 5 2
Enter 10 integers
2 0 -4 8 -9 1 4 2 9 4
Elements
    2      0
   -4      8
   -9      1
    4      2
    9      4
```

Eg.

Read elements of $n \times n$ matrix and print row sum as follows.

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code of a C program. The code includes headers for `stdio.h` and `conio.h`, and defines a `main` function. Inside `main`, a 10x10 integer array `a` is declared. The program prompts the user to enter the number of rows (`nr`) and columns (`nc`), then enters integers for each element of the array. It then calculates the sum of each row and prints the results. The bottom window shows the program's output, where the user has entered 3 rows and 5 columns, and the program has calculated the row sums: 25 for the first row and 20 for the second row.

```
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 28 Insert Indent Tab Fill Unindent * C:NONAME.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);
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("rows sum ");
for(r=0;r<nr;r++)
{
for(s=0,c=0;c<nc;c++)
{
printf("%d+",a[r][c],s=s+a[r][c]);
}
}
```

3 0 9 5 8
1 9 -3 7 6
rows sum
3+0+9+5+8=25
1+9+-3+7+6=20

```

for(r=0; r<nr; r++)
{
    for(s=0, c=0; c<nc; c++)
    {
        p("%d+", a[r][c], s=s+a[r][c]); ==> 1+2+3=6
        4+5+6=15
    }
    p("\b=%d\n", s);

```

1	2	3
4	5	6

$$\begin{array}{l} \underline{S} \\ 0 + 1+2+3=6 \\ 4+5+6=15 \end{array}$$

$$\begin{array}{l} \underline{r} \\ 0 \\ 1 \end{array} \quad \begin{array}{l} \underline{c} \\ 0, 1, 2, 3 \end{array}$$

Transpose of n*n matrix.

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 16 Col 2 Insert Indent Tab Fill Unindent * C:NONAME.C
#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 integers\n", nr * nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed elements ");
for(c=0;c<nc;c++)
{
for(r=0;r<nr;r++)
{
printf("%3d",a[r][c]);
}printf("\n");
}getch();
}

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
```

```

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	₆ 2

✓ 1	✓ 4
✓ 2	✓ 5
✓ 3	✓ 6

$\frac{r}{0} \mid \neq \frac{c}{0}$
 $0 \mid 1 \neq 1$
 $0 \mid 1 \neq 2$
 $\quad \quad \quad \neq$

Method 2:


```
TC
#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 integers\n", nr * nc);
for(r=0;r<nr;r++)for(c=0;c<nc;c++)scanf("%d",&a[r][c]);
puts("Transposed elements ");
for(r=0;r<nc;r++)
{
for(c=0;c<nr;c++)
{
printf("%3d",a[c][r]);
}printf("\n");
}getch();
}

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
```

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```

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

```

1	2	3
4	5	6

✓ 1	✓ 4
✓ 2	✓ 5
✓ 3	✓ 6

$$\begin{array}{r} c \\ 0 \end{array} \begin{array}{r} 1 \\ 7 \end{array}$$

$$\begin{array}{r} c \\ 0 \end{array} \begin{array}{r} 1 \\ 7 \end{array}$$

$$\begin{array}{r} c \\ 0 \end{array} \begin{array}{r} 1 \\ 7 \end{array}$$

Home work:

Eg 1.Trace of $n \times n$ matrix.

1	7	5
0	9	2
2	7	3

= 13

Eg 2:

Finding no of even, odd, zeros in each row as follow.

1	0	30
4	5	6

	even	odd	zero
1-row 1	1	1	1
2-row 2	1	1	0