

ARITHMETIC OPERATORS [+, -, *, %, /]

They are used to perform mathematical operations.

Eg: $a+b$, $a-b$, $a*b$,.....

% - modulo division [modules / remainder]:

$$5 \% 2 = 1$$

$$\begin{array}{r} 2 \overline{) 5} \\ \underline{4} \\ 1 \end{array} \quad \begin{array}{l} (2 \leftarrow \text{Quotient} == / \\ 1 \leftarrow \text{Remainder} == \% \end{array}$$

$$2 \% 5 = 2$$

Note: if the divisor bigger than dividend then dividend is the answer.

A handwritten division problem $20 \div 5$ is shown. A green checkmark is drawn above the expression. Red arrows point from the number 20 to the label 'dividend' and from the number 5 to the label 'divisor'.

dividend

divisor

The image shows a screenshot of a 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 8 Col 22 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n", 5%2 );
printf("%d\n",2%5);
printf("%d\n",10%20);
getch();
}
```

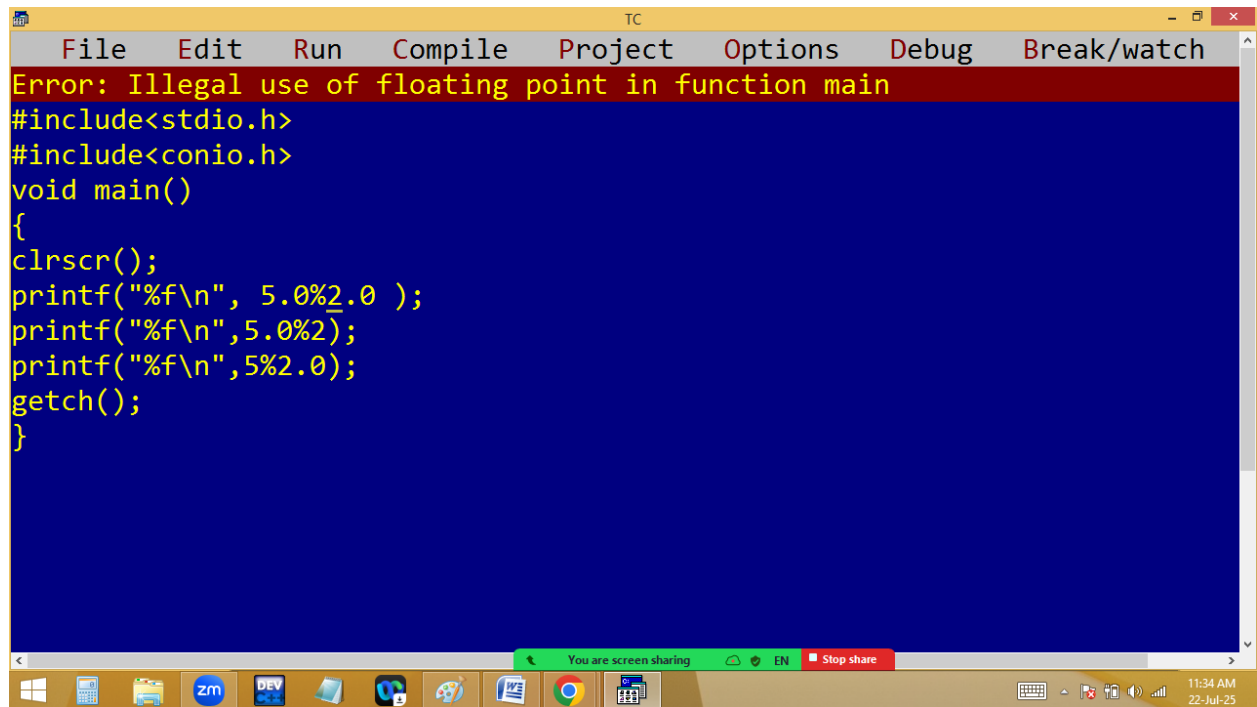
The bottom window shows the output of the program, which is:

```
1
2
10
```

The IDE interface includes a menu bar at the top, a toolbar, and a status bar at the bottom. A green banner across the middle of the IDE says "You are screen sharing" with a "Stop share" button.

5.0 % 2.0 = Error

Note: In C & C++ % operator can't perform floating modules. For this we have to use the predefined function **fmod()** available in **<math.h>**



The image shows a screenshot of a Turbo C++ (TC) IDE window. The title bar reads "TC". The menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", "Debug", and "Break/watch". A red error message banner at the top states: "Error: Illegal use of floating point in function main". Below this, the source code is displayed on a dark blue background with yellow text. The code includes `#include<stdio.h>` and `#include<conio.h>`, followed by a `void main()` function. Inside the function, there is a `clrscr();` call, three `printf` statements, and a `getch();` call. The first `printf` statement is `printf("%f\n", 5.0%2.0);`, which is the source of the error. The second is `printf("%f\n",5.0%2);` and the third is `printf("%f\n",5%2.0);`. The Windows taskbar at the bottom shows various icons including a calculator, a folder, a terminal, and a web browser. A green status bar above the taskbar says "You are screen sharing" with a "Stop share" button. The system clock in the bottom right corner shows "11:34 AM" and "22-Jul-25".

```
File Edit Run Compile Project Options Debug Break/watch
Error: Illegal use of floating point in function main
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%f\n", 5.0%2.0 );
printf("%f\n",5.0%2);
printf("%f\n",5%2.0);
getch();
}
```

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 3 Col 17 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
#include<math.h>_
void main()
{
clrscr();
printf("%f\n", fmod(5.0,2.0) );
printf("%f\n",fmod(5.0,2));
printf("%f\n",fmod(5,2.0));
printf("%f",fmod(5,2));
getch();
}
```

The bottom window shows the output of the program, which consists of four lines of floating-point numbers:

```
1.000000
1.000000
1.000000
1.000000_
```

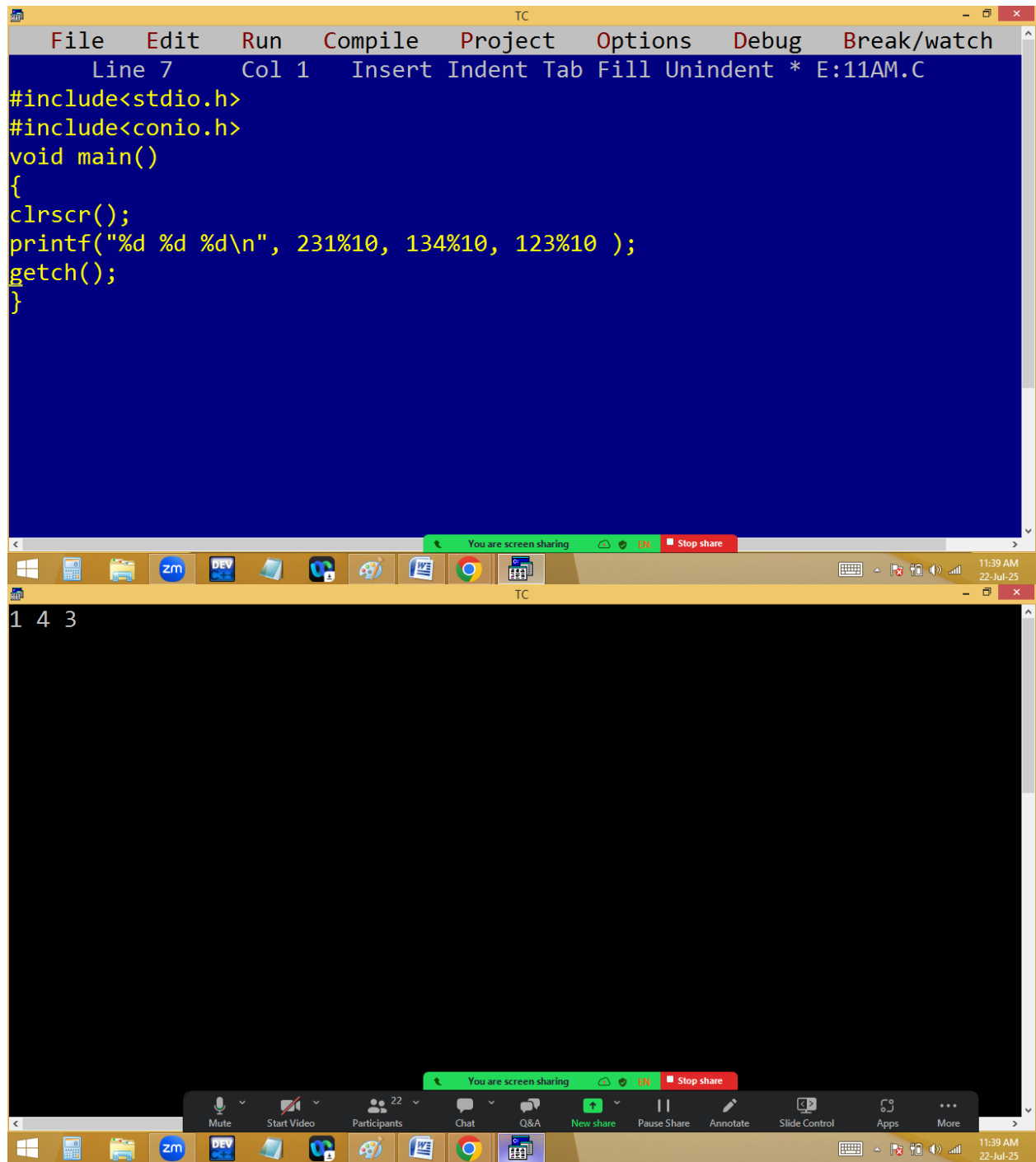
The Windows taskbar at the bottom indicates the time is 11:36 AM on 22-Jul-25. A green status bar above the taskbar reads "You are screen sharing" with a "Stop share" button.

$$231 \% 10 = 1$$

$$124 \% 10 = 4$$

$$123 \% 10 = 3$$

Note: Any $no \% 10$ gives last digit.

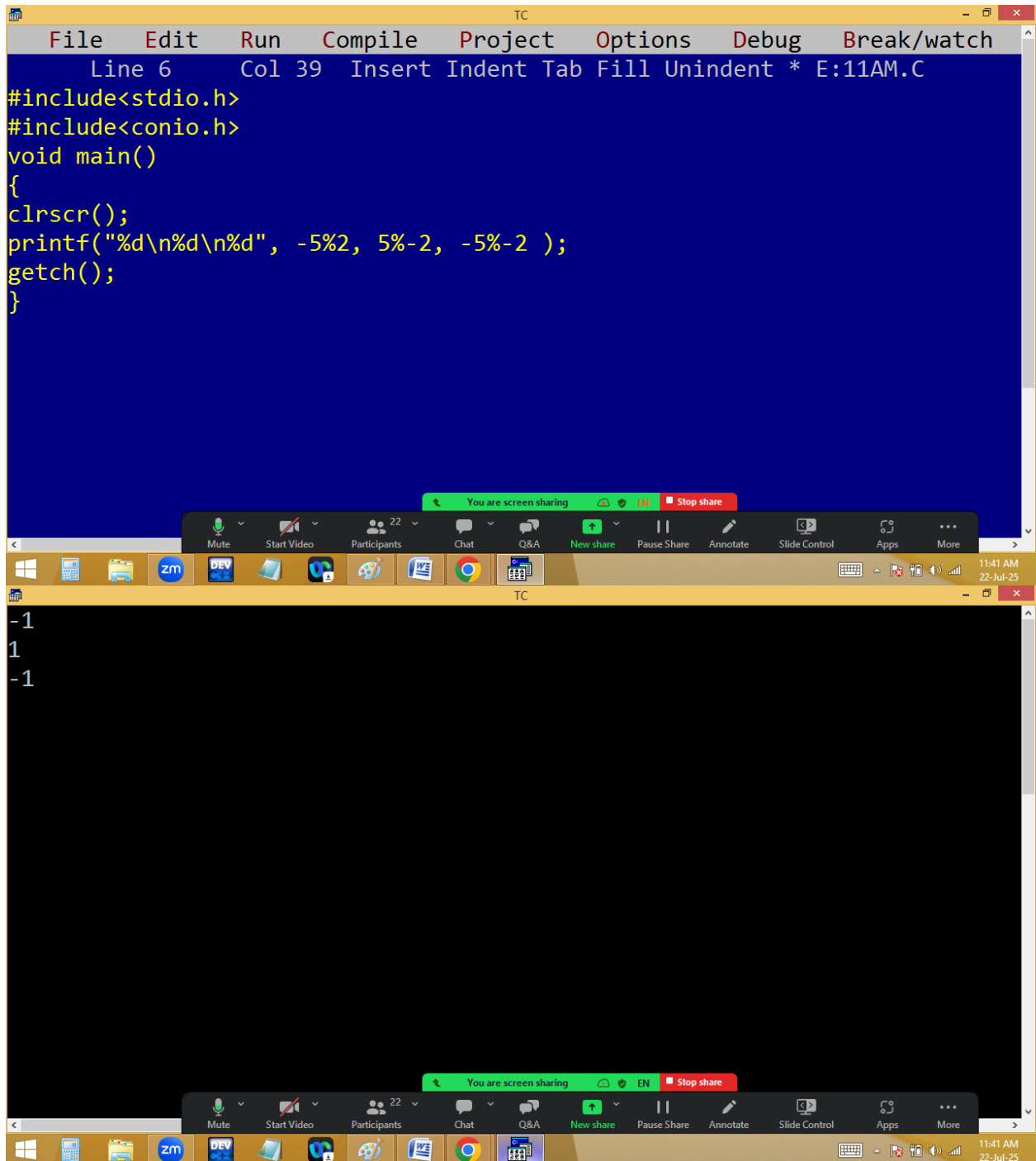


-5%2= -1

5%-2= 1

-5%-2= -1

Note: In modules if the numerator is negative then result also negative.



The screenshot displays the Turbo C++ (TC) IDE interface. The top menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 6 Col 39 Insert Indent Tab Fill Unindent * E:11AM.C'. The main editor window has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n%d\n%d", -5%2, 5%-2, -5%-2 );
getch();
}
```

Below the editor, a green status bar reads 'You are screen sharing' with a 'Stop share' button. A toolbar with icons for Mute, Start Video, Participants, Chat, Q&A, New share, Pause Share, Annotate, Slide Control, Apps, and More is visible. The Windows taskbar at the bottom shows the Start button, taskbar icons (including Zoho, DEV, and Chrome), and the system clock displaying '11:41 AM 22-Jul-25'.

The output window at the bottom shows the results of the program execution:

```
-1
1
-1
```


/ - division [Quotient]:

$$5/2=2$$

Note: In division both operands are int then result also int.
any one or both floats then result also float.

$$5.0/2=2.500000$$

$$5/2.0=2.500000$$

$$5.0/2.0=2.500000$$

Int a = 5.2 ; \Rightarrow a=5 \leftarrow implicit type casting

float b = 12; \Rightarrow b=12.000000

(int) 5.0/2 = 2 /* explicit type casting */

(float)5/2=2.500000 /* explicit type casting */

(float) (5/2) = 2.000000

```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10.4; /* implicit type casting */
float b=12;
clrscr();
printf("%d\n", 5/2 );
printf("%f\n", 5.0/2 );
printf("%f\n", 5/2.0 );
printf("%f\n", 5.0/2.0 );
printf("%f\n", (float)5/2 ); /* explicit type casting */
printf("%f\n", (float)(5/2) );
printf("a=%d\n", a );
printf("b=%f\n", b );
getch();
}

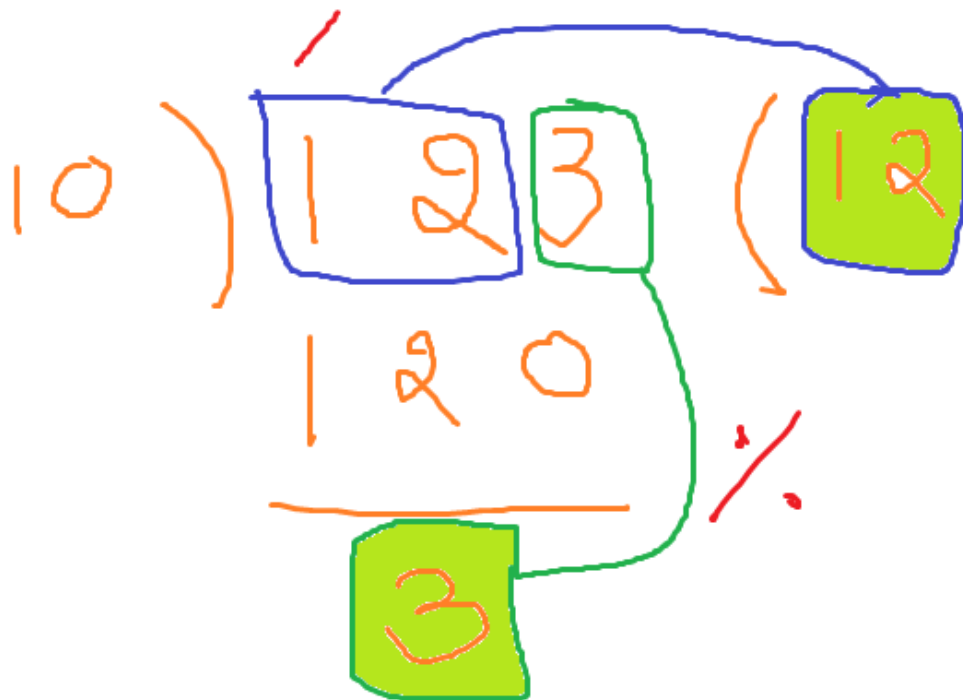
2
2.500000
2.500000
2.500000
2.500000
2.000000
a=10
b=12.000000
```

123/10=12

12/10=1

1/10=0

Note: Any no/10 removes the last digit.



Write a C program to print a 3 digit no in reverse or without using loops.

Eg: 123 reverse is 321

```
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 52 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n=123;
clrscr();
printf("%d reverse is %d", n, n%10); /* 123%10=3 */_
n=n/10; /* n=123/10=12 */
printf("%d%d",n%10,n/10); /* 12%10=2, 12/10=1 */
getch();
}
```

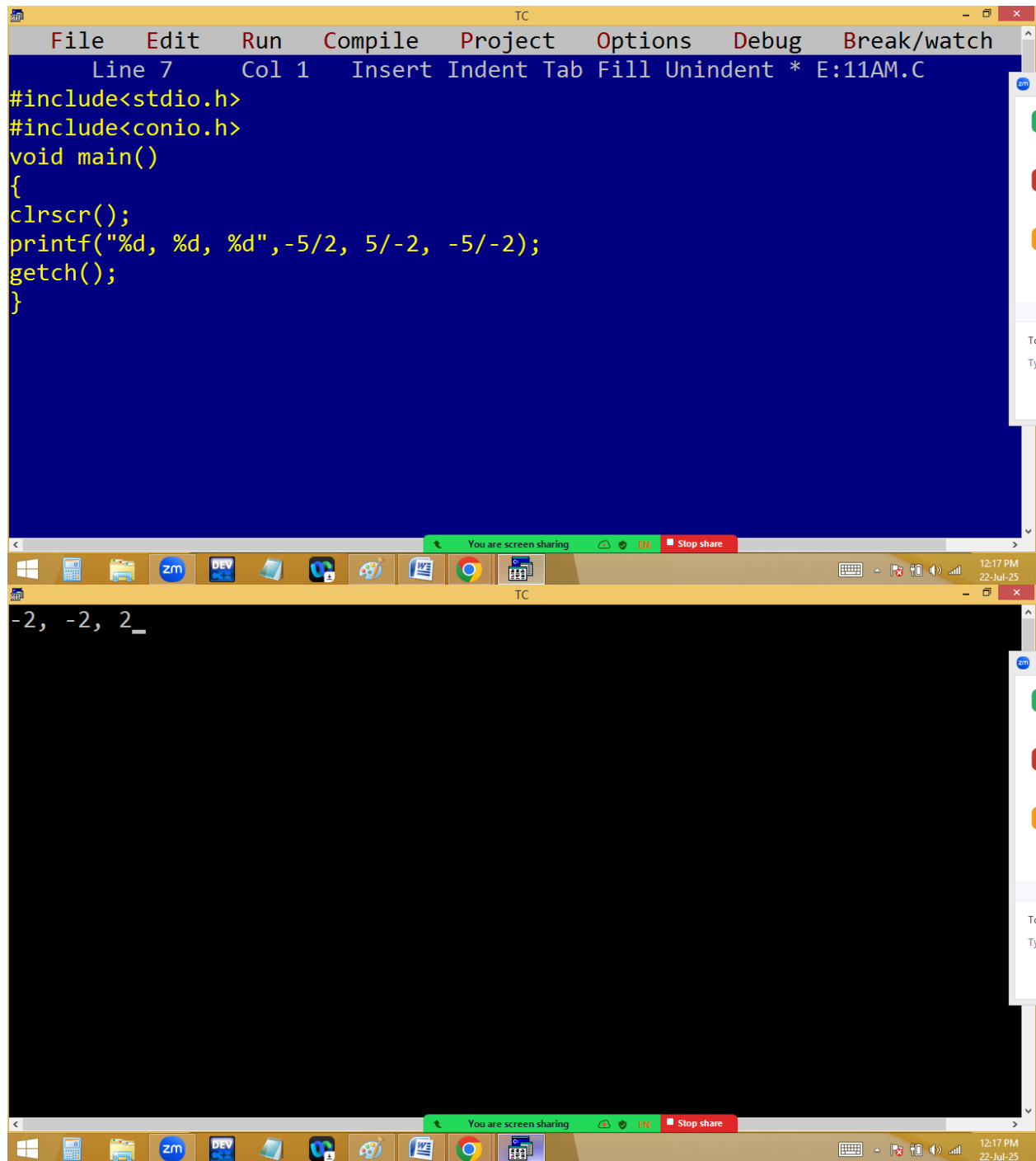
```
123 reverse is 321_
```

$$-5/2 = -2$$

$$5/-2 = -2$$

$$-5/-2=2$$

Note: In division any one operand is negative then result also negative. If both are negative then result is positive.



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

```
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 1 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d, %d, %d",-5/2, 5/-2, -5/-2);
getch();
}
```

The bottom window shows the output of the program:

```
-2, -2, 2_
```

The Windows taskbar at the bottom indicates the time is 12:17 PM on 22-Jul-25. A green status bar above the taskbar reads "You are screen sharing".

Relational operators [== (comparison), <, >, <=, >=, != (not equal)]:

They are used to check the given expression is true or false. If the expression is **true** always the answer is **1**. If expressions **false** the answer is **0**.

The image shows a screenshot of a Turbo C++ IDE window titled "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 14 Col 19 Insert Indent Tab Fill Unindent * E:11AM.C".

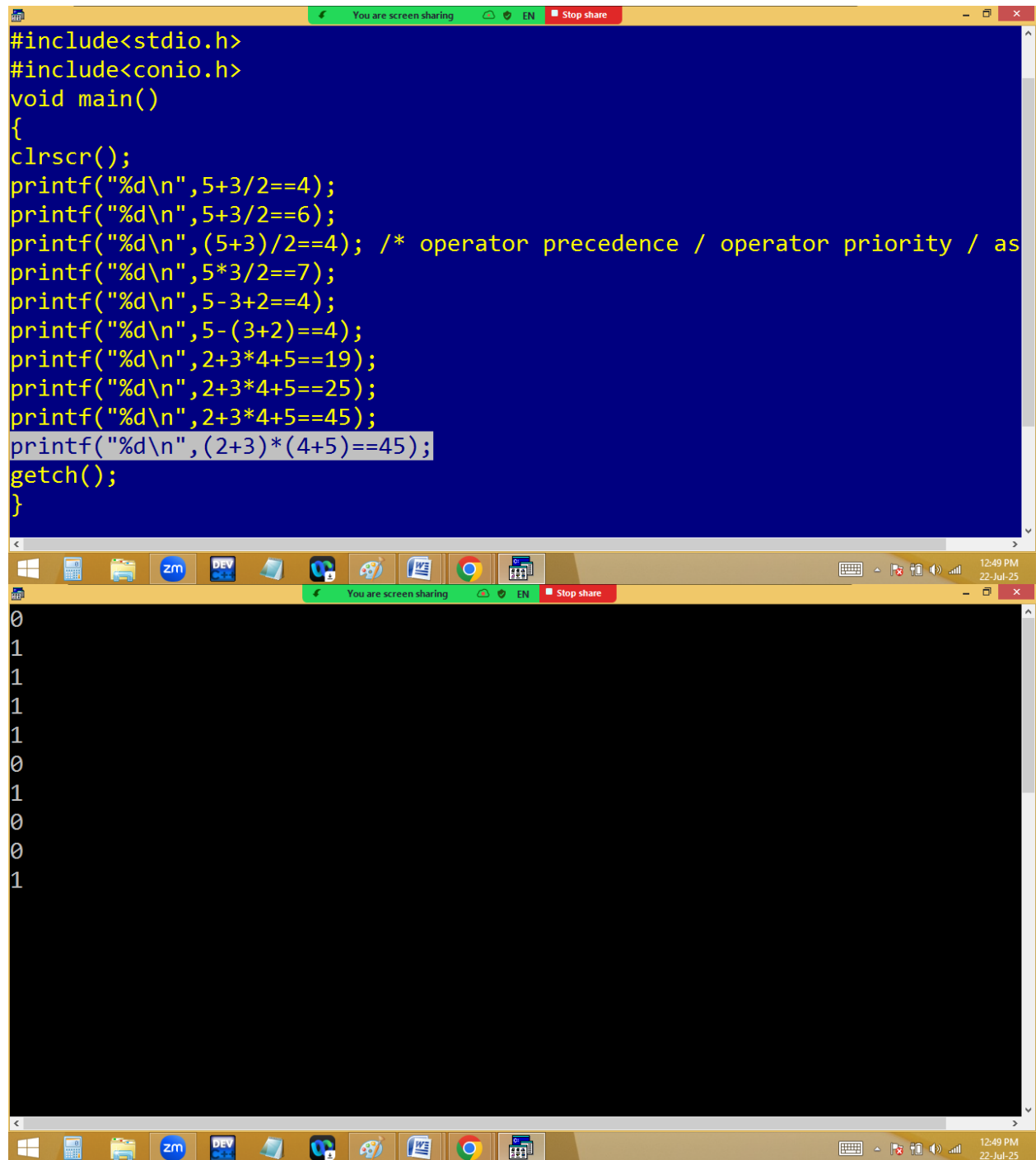
The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n",5==5);
printf("%d\n",5==15);
printf("%d\n",5==5.0);
printf("%d\n",'5'==5); /* 53==5 */
printf("%d\n",'5'==53);
printf("%d\n",'a'>'A'); /* 97>65 */
printf("%d\n",0<='0'); /* 0<=48 */
printf("%d\n",5!=5);
getch();
}
```

Below the code editor, a green status bar indicates "You are screen sharing" with a "Stop share" button. The Windows taskbar is visible at the bottom, showing icons for various applications including a calculator, file explorer, and web browsers.

The output window, also titled "TC", displays the results of the program's execution. It shows a series of lines, each starting with a line number (1, 0, 1, 0, 1, 1, 1, 0) followed by a space and the output of the corresponding printf statement. The output values are 1, 0, 1, 0, 1, 0, 1, 0, which correspond to the boolean results of the comparisons in the code.

At the bottom of the output window, a green status bar indicates "You are screen sharing" with a "Stop share" button. Below this, a toolbar contains icons for Mute, Start Video, Participants, Chat, Q&A, New share, Pause Share, Annotate, Slide Control, Apps, and More. The Windows taskbar is also visible at the bottom of the output window, showing the same set of application icons as the top window.



```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n",5+3/2==4);
printf("%d\n",5+3/2==6);
printf("%d\n", (5+3)/2==4); /* operator precedence / operator priority / as
printf("%d\n",5*3/2==7);
printf("%d\n",5-3+2==4);
printf("%d\n",5-(3+2)==4);
printf("%d\n",2+3*4+5==19);
printf("%d\n",2+3*4+5==25);
printf("%d\n",2+3*4+5==45);
printf("%d\n", (2+3)*(4+5)==45);
getch();
}
```

0
1
1
1
1
0
1
0
0
1

Operator precedence / Operator priority (ASSOCIATION OF OPERATORS)

1. ()

2. +, -, ! (sign operators, unary operators)
3. ++, -- (pre increment & decrement)
4. *, /, %
5. +, - (Binary)
6. ==, !=
7. &&
8. ||
9. ?: (ternary operator)
10. =
11. ++, -- (Post increment & decrement)
12. , (comma)

