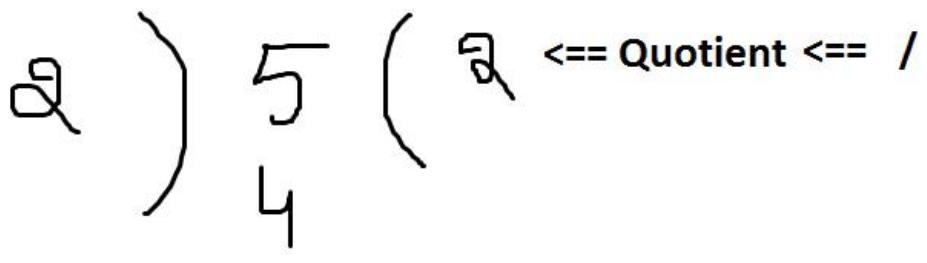


**Arithmetic operators [ +, -, \*, %, / ]:** They are used to perform mathematical operations.

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

**% - Modules [ Remainder ]:**

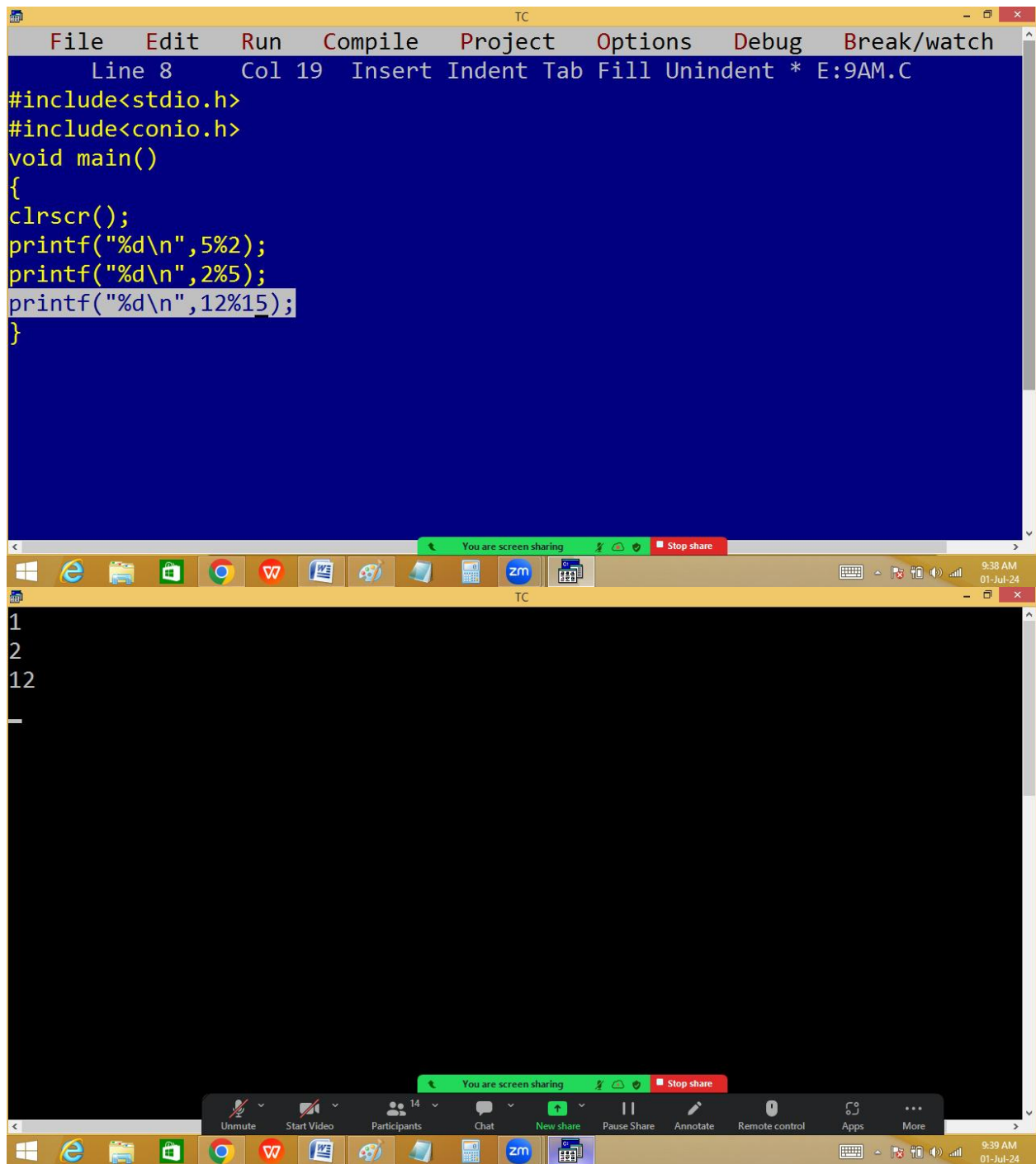
$$5\%2=1$$



Handwritten long division of 5 by 2. The divisor 2 is on the left, the dividend 5 is in the middle, and the quotient 2 is on the right. A horizontal line is drawn under the 5, and the remainder 1 is written below it. To the right of the division, the text "<== Quotient <== /" is written. Below the remainder 1, the text "% ==> Remainder" is written with an arrow pointing to the 1.

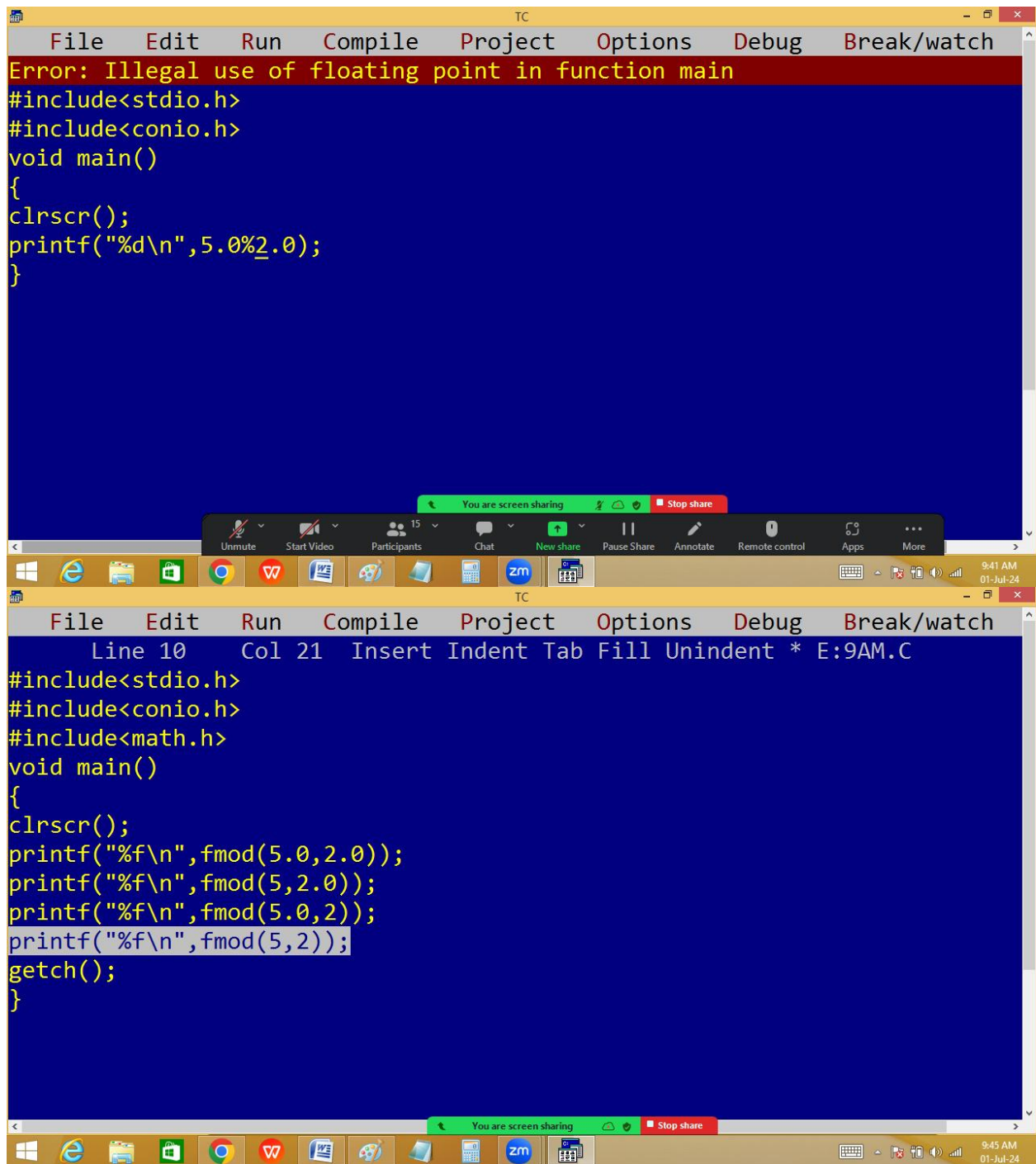
$$2\%5=2$$

**Note:** If the divisor is bigger than dividend then the dividend is the answer.



5.0 % 2.0 = Error

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



The image displays two screenshots of the Turbo C++ (TC) IDE, illustrating a common programming error and its correction.

**Top Screenshot:** The TC IDE window shows a compilation error: "Error: Illegal use of floating point in function main". The code in the editor is as follows:

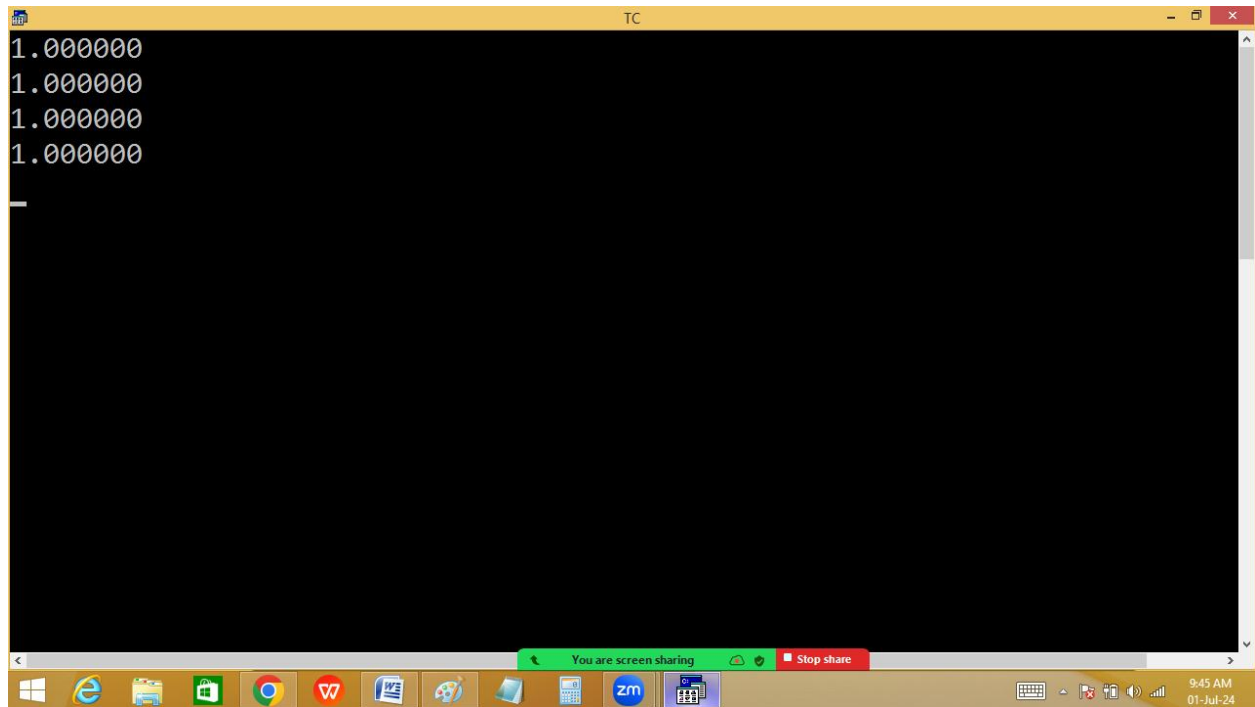
```
#include<stdio.h>
#include<conio.h>
void main()
{
    clrscr();
    printf("%d\n",5.0%2.0);
}
```

The error occurs because the modulus operator (%) is used with floating-point values (5.0 and 2.0), which is not allowed in C.

**Bottom Screenshot:** The TC IDE window shows the same code after correction. The error has been resolved by using the `fmod` function from the `math.h` library to perform floating-point division. The corrected code is:

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    clrscr();
    printf("%f\n",fmod(5.0,2.0));
    printf("%f\n",fmod(5,2.0));
    printf("%f\n",fmod(5.0,2));
    printf("%f\n",fmod(5,2));
    getch();
}
```

The status bar at the bottom of the window indicates "Line 10 Col 21 Insert Indent Tab Fill Unindent \* E:9AM.C".



$$291\%10=1$$

$$34\%10=4$$

$$3\%10=3$$

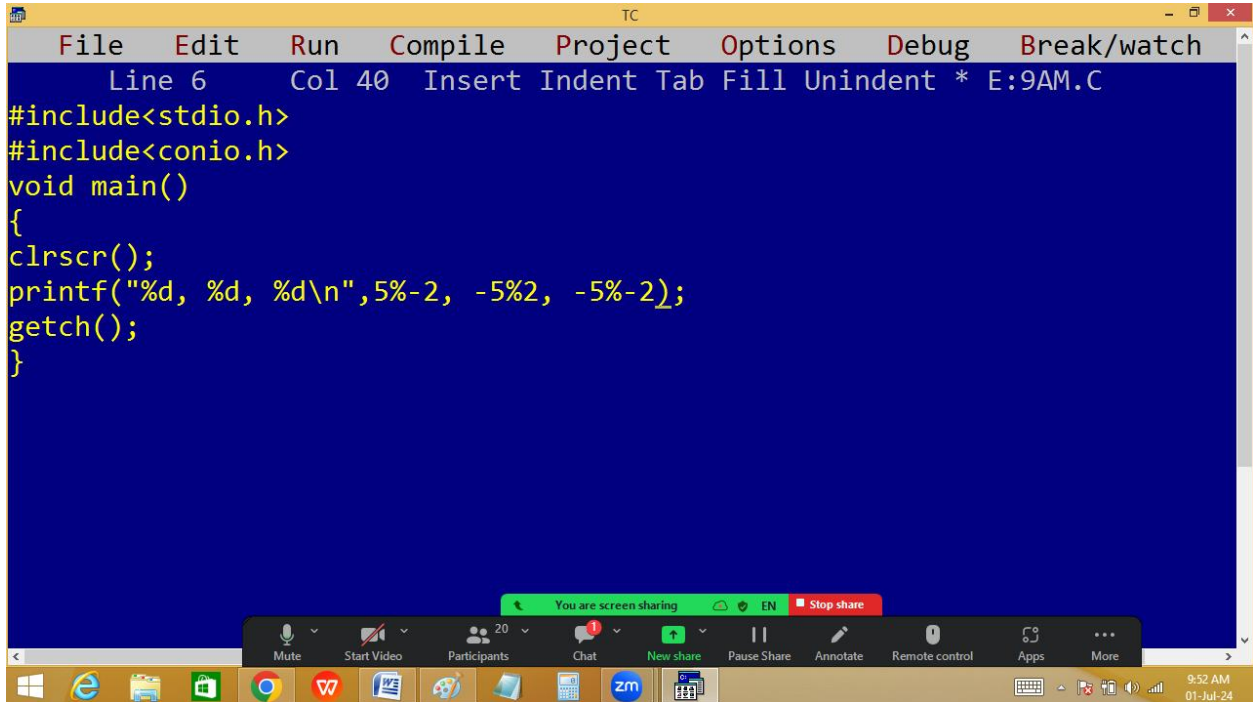
**Note:** Any  $\text{no}\%10$  gives the last digit.

$$5\%-2= 1$$

$$-5\%2= -1$$

$$-5\%-2= -1$$

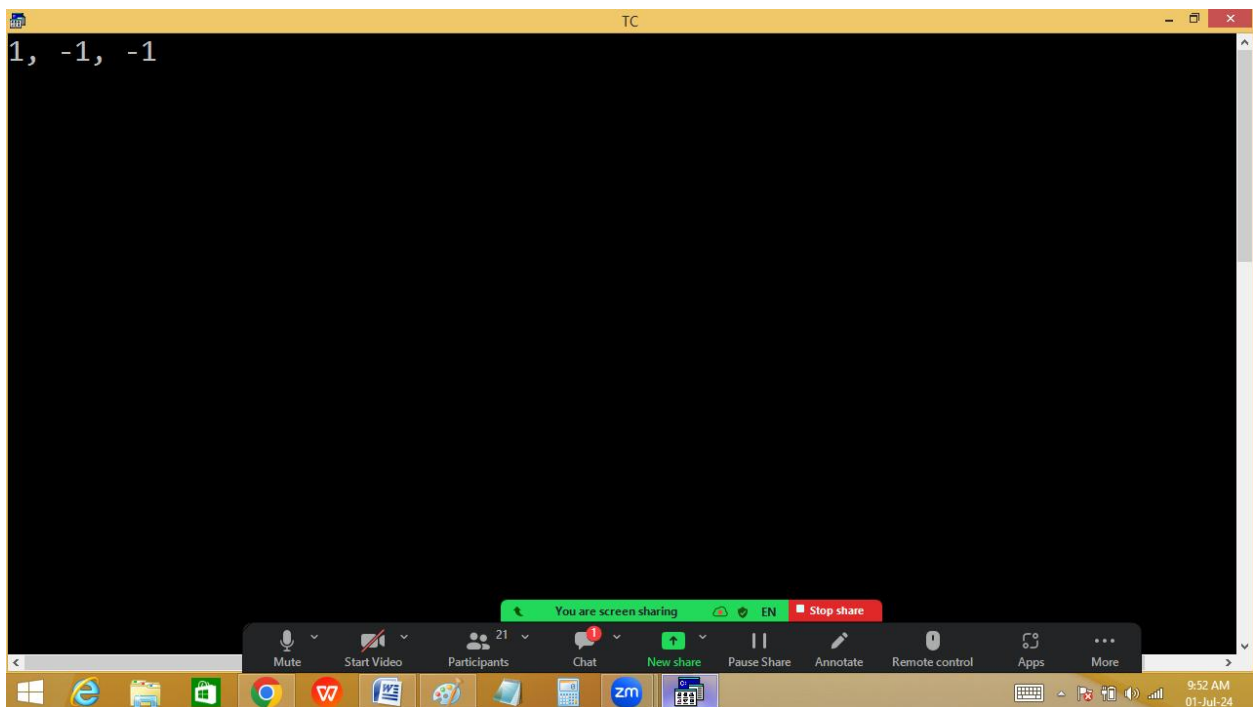
**Note:** If the numerator is negative then result also negative.



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The code editor has a blue background and contains the following C program:

```
Line 6   Col 40   Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d, %d, %d\n",5%-2, -5%2, -5%-2);
getch();
}
```

Below the code editor, there is a status bar indicating "You are screen sharing" and a "Stop share" button. The Windows taskbar at the bottom shows various application icons and the system clock displaying 9:52 AM on 01-Jul-24.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and toolbar as the previous image. The code editor now displays the output of the program:

```
1, -1, -1
```

Below the code editor, there is a status bar indicating "You are screen sharing" and a "Stop share" button. The Windows taskbar at the bottom shows various application icons and the system clock displaying 9:52 AM on 01-Jul-24.

## **/ - division [ Quotient ]:**

$5/2=2$  [int/int=int]

$5.0/2=2.500000$

$5/2.0=2.500000$

$5.0/2.0=2.500000$

$(\text{float})5/2=2.500000$  [ explicit type casting ]

$(\text{int})5.0/2=$  [ explicit type casting ]

Int a=1.2; /\* implicit type casting \*/  $\rightarrow$  a=1

Float b=10; /\* implicit type casting \*/  $\rightarrow$  b=10.000000

$(\text{float})(5/2)=2.000000$

**Note:** In C when both operands are int then result also int. if anyone or both are floats then result also float.

The screenshot displays a Turbo C++ (TC) IDE window. The top menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 4 Col 19 Insert Indent Tab Fill Unindent \* E:9AM.C'. The code editor contains the following C program:

```
#include<stdio.h> #include<conio.h>
void main()
{
int a=1.2; float b=10; /* implicit type casting */
clrscr();
printf("a=%d\nb=%f\n",a,b);
printf("%d\n",5/2);
printf("%f\n",5.0/2);
printf("%f\n",5.0/2.0);
printf("%f\n",5/2.0);
printf("%d\n",(int)5.0/2); /* explicit type casting */
printf("%f\n",(float)5/2);
printf("%f\n",5/(float)2);
printf("%f\n",(float)(5/2));
getch();
}
```

The output window below the code editor shows the results of the program's execution:

```
a=1
b=10.000000
2
2.500000
2.500000
2.500000
2
2.500000
2.500000
2.000000
```

The Windows taskbar at the bottom shows the time as 10:06 AM on 01-Jul-24. A Zoom toolbar is also visible, indicating a screen share session.

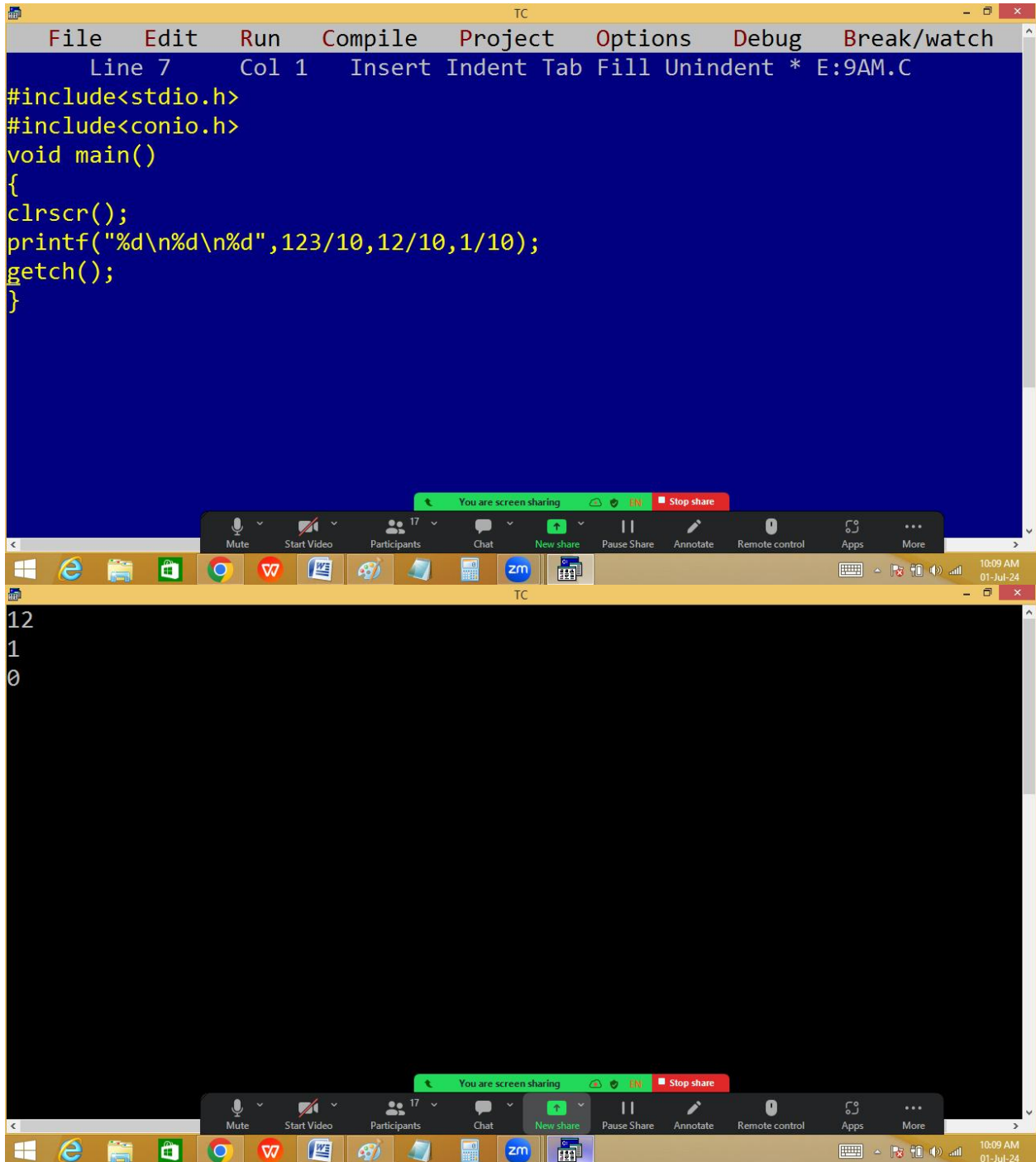
$$12\textcolor{red}{3}/10=12$$

$$1\textcolor{red}{2}/10=1$$



1/10=0

**Note:** Any no/10 removes the last digit.

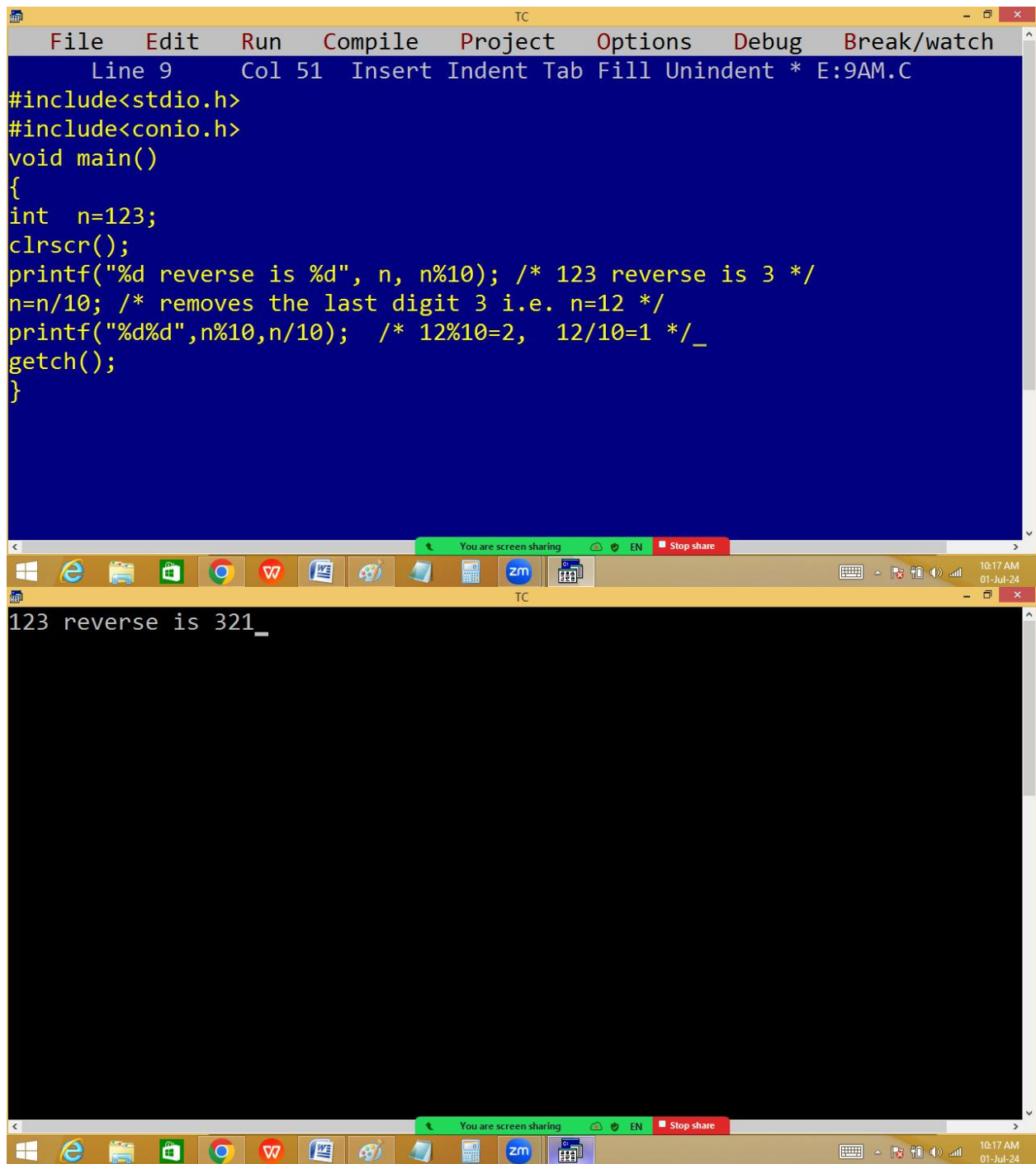


```
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n%d\n%d",123/10,12/10,1/10);
getch();
}
```

12  
1  
0

**Write a c program to print a 3 digit no in reverse order without using loop:**

Eg: 123 reverse is 321



The image shows a Turbo C++ (TC) IDE window with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 9, Col 51, Insert, Indent, Tab, Fill, Unindent, \* E:9AM.C). The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n=123;
    clrscr();
    printf("%d reverse is %d", n, n%10); /* 123 reverse is 3 */
    n=n/10; /* removes the last digit 3 i.e. n=12 */
    printf("%d%d",n%10,n/10); /* 12%10=2, 12/10=1 */
    getch();
}
```

Below the code editor is a Windows taskbar with icons for various applications. A green status bar above the taskbar reads "You are screen sharing" and "EN".

The output window, titled "TC", shows the result of the program execution:

```
123 reverse is 321_
```

The output window also has a Windows taskbar at the bottom, identical to the one above it, with a green status bar reading "You are screen sharing" and "EN". The system clock in the bottom right corner of the output window shows "10:17 AM 01-Jul-24".

$$\begin{array}{r}
 10 \overline{) 123} \rightarrow 10 \overline{) 12} \\
 \underline{100} \qquad \underline{10} \\
 23 \qquad \qquad 2
 \end{array}$$

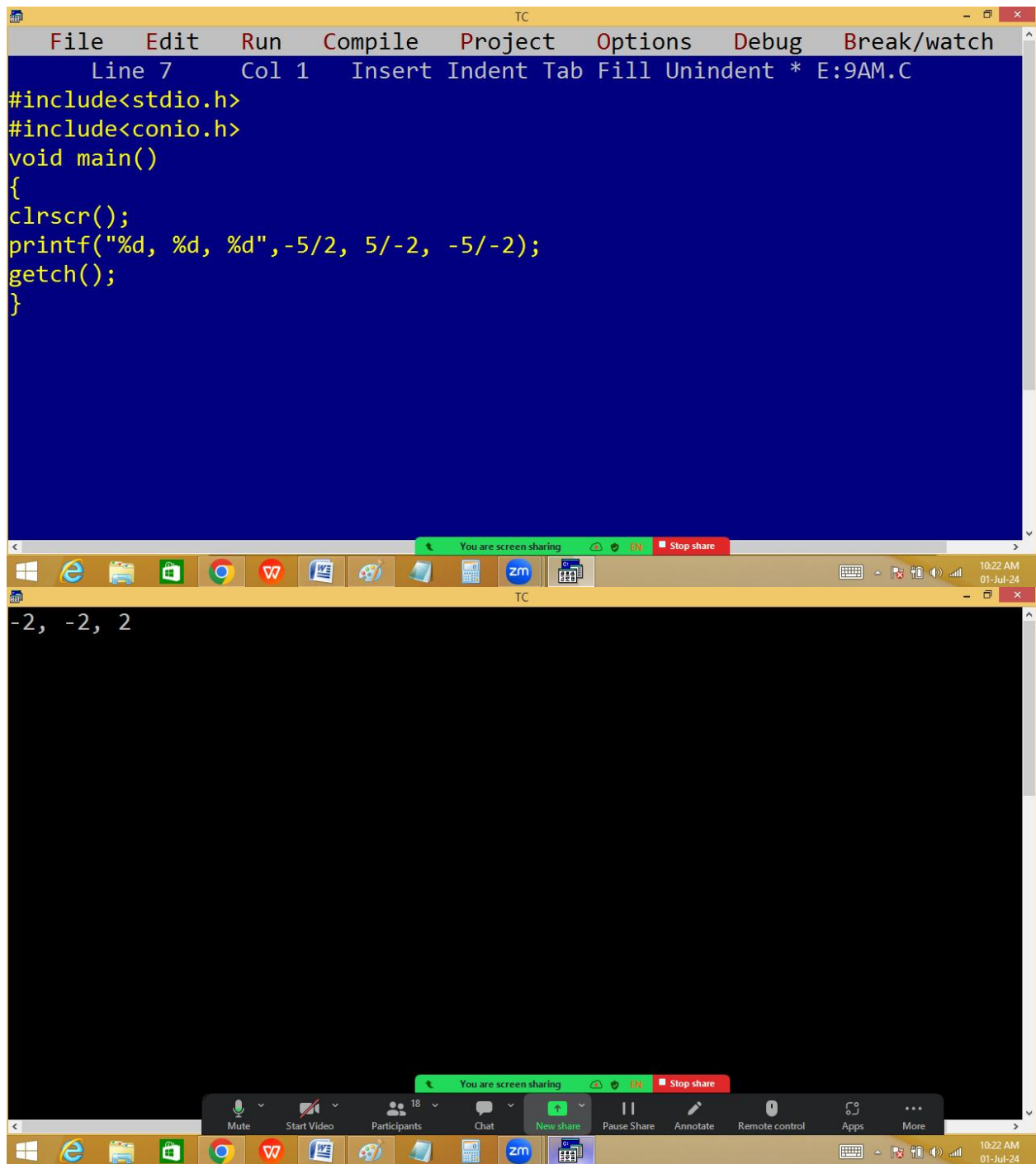
The diagram shows two long division problems. The first problem is  $10 \overline{) 123}$  with a quotient of 12 and a remainder of 3. The second problem is  $10 \overline{) 12}$  with a quotient of 1 and a remainder of 2. Green arrows connect the remainders: from 3 to 3, from 2 to 2, and from 1 to 1.

$$-5/2 = -2$$

$$5/-2 = -2$$

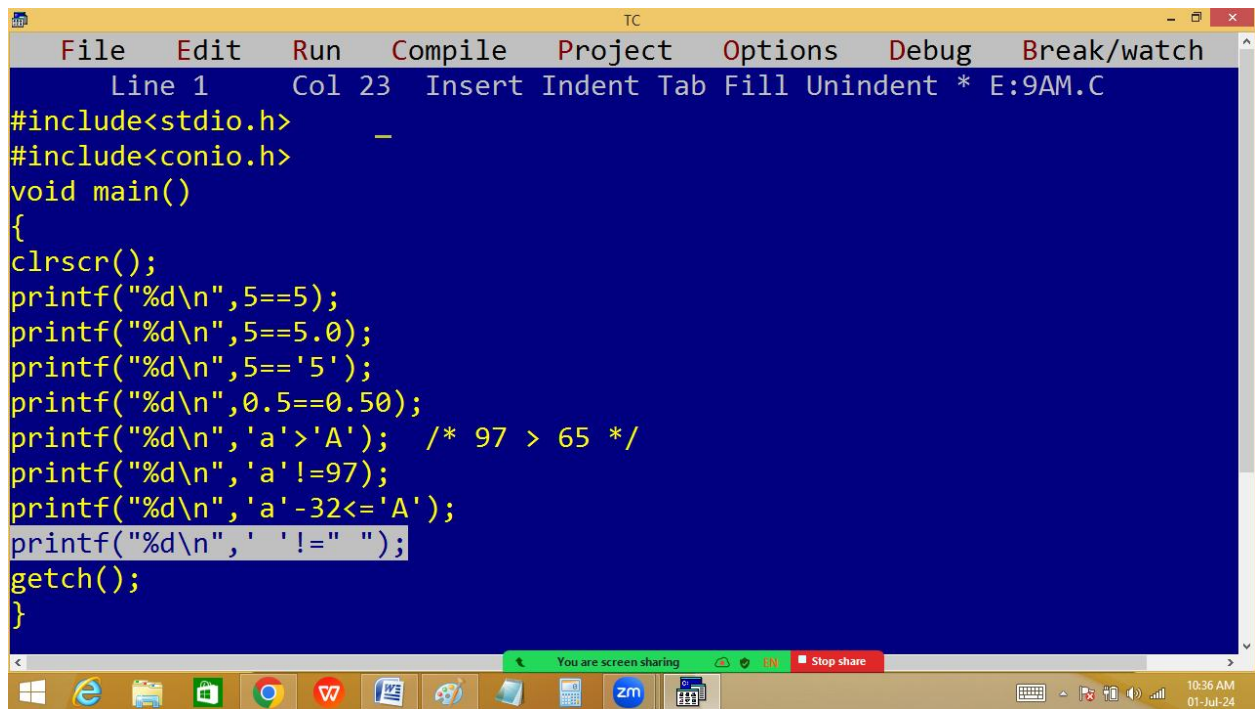
$$-5/-2 = 2$$

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

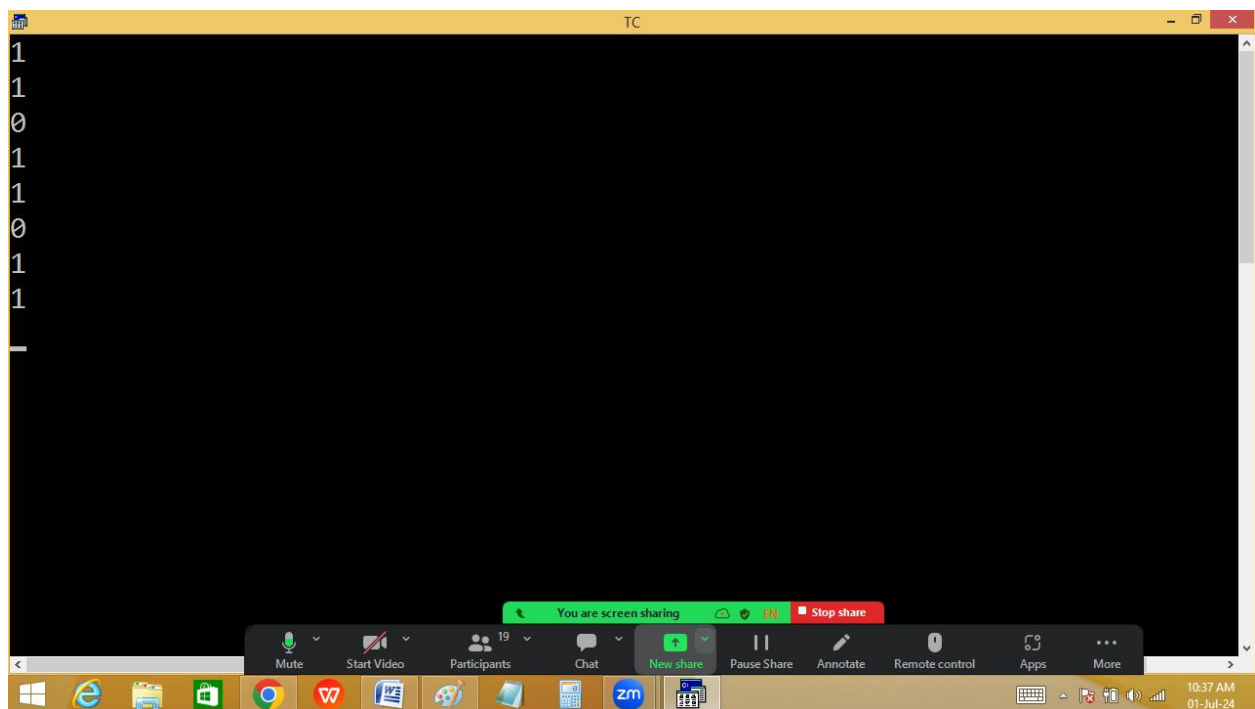


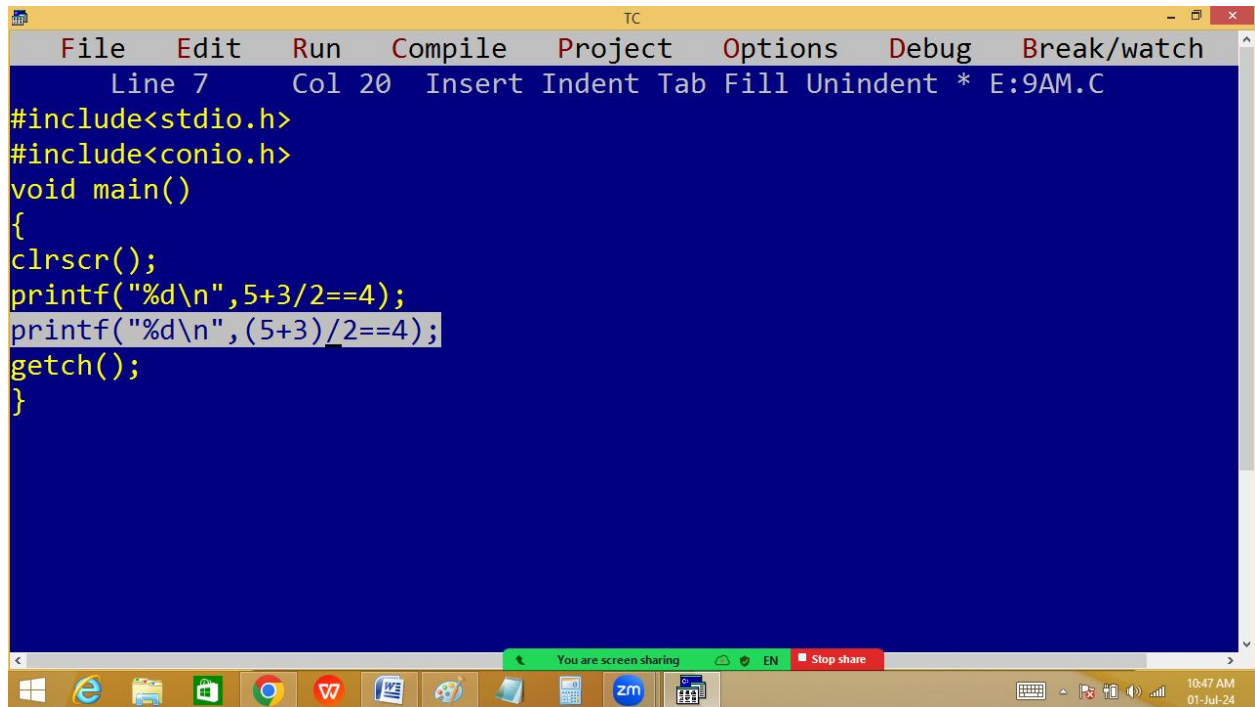
**Relational operators [ == ( comparison ), <, >, <=, >=, != (not equal ) ]:**

They are used to check the given condition or expression is true or false. If condition true always it return 1 and false it return 0.



```
File Edit Run Compile Project Options Debug Break/watch
Line 1 Col 23 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n",5==5);
printf("%d\n",5==5.0);
printf("%d\n",5=='5');
printf("%d\n",0.5==0.50);
printf("%d\n",'a'>'A'); /* 97 > 65 */
printf("%d\n",'a'!=97);
printf("%d\n",'a'-32<='A');
printf("%d\n",' '!=" ");
getch();
}
```

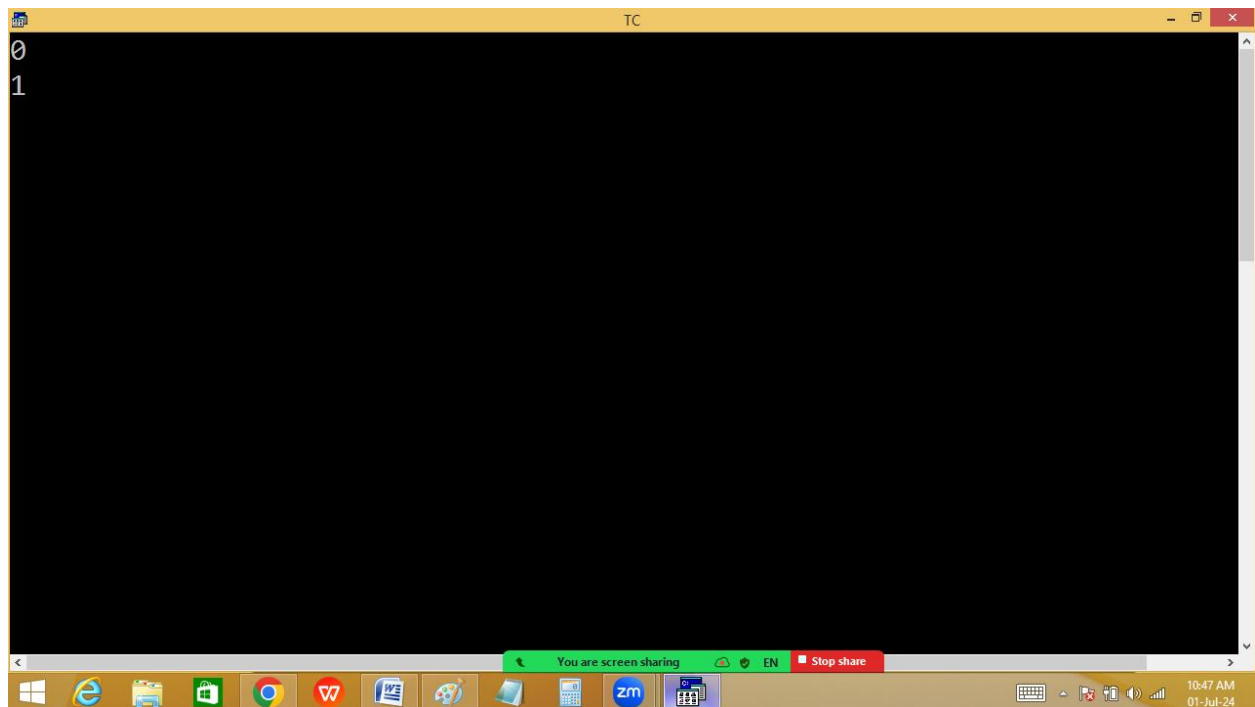




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 7, Col 20, Insert, Indent, Tab, Fill, Unindent, \* E:9AM.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n",5+3/2==4);
printf("%d\n",(5+3)/2==4);
getch();
}
```

The taskbar at the bottom shows various application icons and a system clock indicating 10:47 AM on 01-Jul-24. A green notification bar at the bottom of the window states "You are screen sharing".



The screenshot shows the Turbo C++ (TC) IDE after execution. The output window on the left displays the results of the program:

```
0
1
```

The rest of the IDE interface, including the menu bar, status bar, and taskbar, remains the same as in the first screenshot.

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)

