

## String:

A group of characters is called string.

It is alpha-numeric. i.e. in a string we can store both alphabets, numbers and special characters.

Eg:

```
char s[10]="Hyd-16";
```

```
char s[ ]="Hyd-16";
```

## Memory allocation:

```
char name[40]="Ravi";
```

RAM

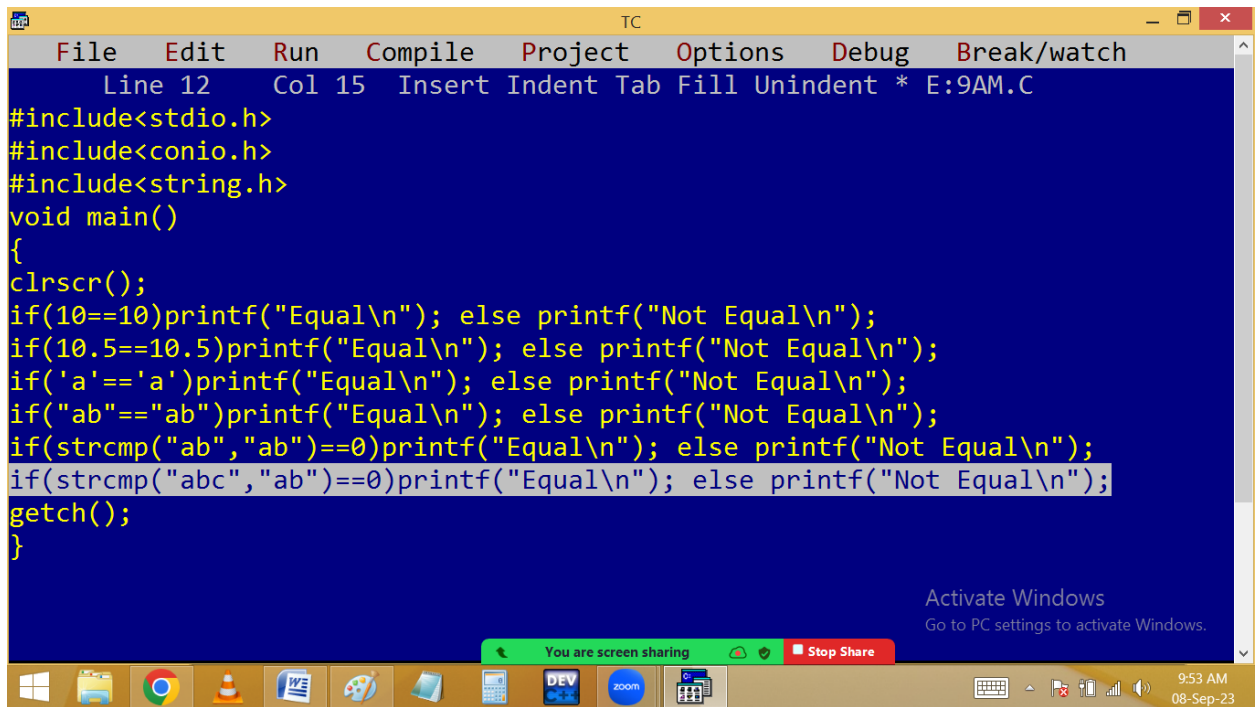
H	y	d	-	1	6	\0

— NULL Char

## Note:

1. We should have to left one byte for null char.  
Otherwise we are getting garbage/junk values.

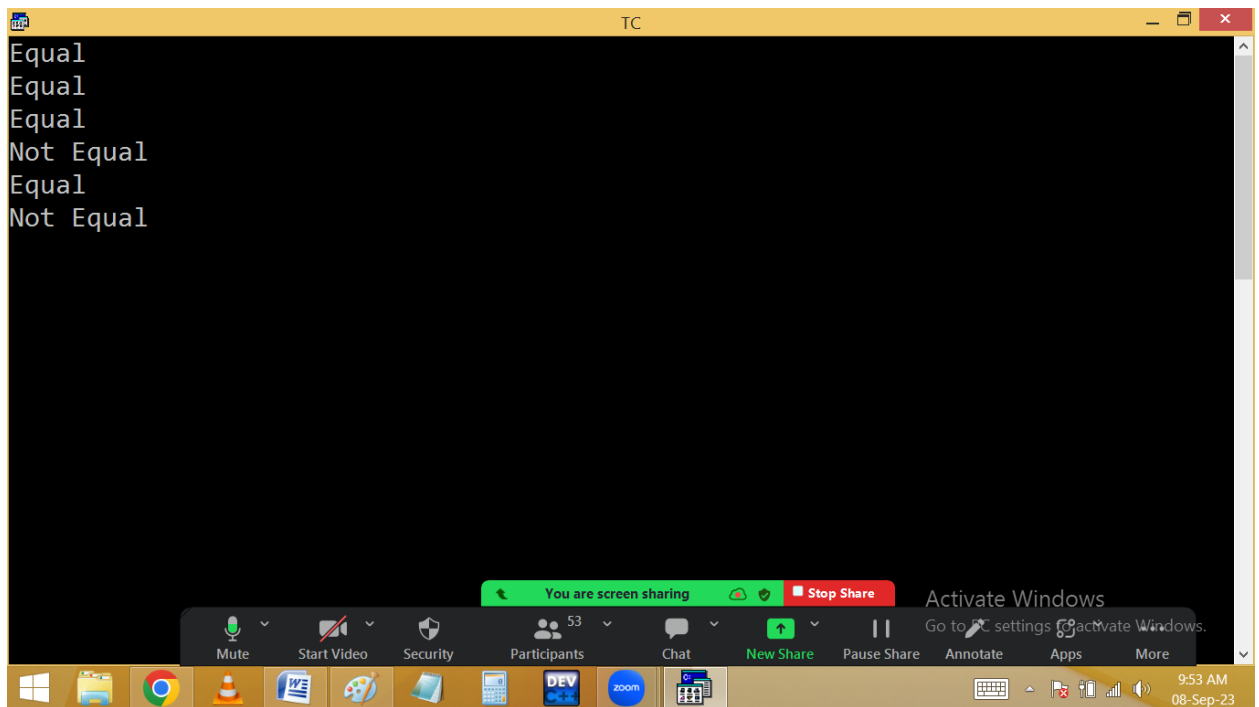
2. String variable size never smaller than string.
3. We can't copy a string using = operator. We have to use strcpy().
4. We can't compare two strings using == (**comparison**) operator. We have to use strcmp() for this.



The screenshot shows the Turbo C++ (TC) IDE with a yellow title bar and menu bar. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 12 Col 15 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>
#include<string.h>
void main()
{
clrscr();
if(10==10)printf("Equal\n"); else printf("Not Equal\n");
if(10.5==10.5)printf("Equal\n"); else printf("Not Equal\n");
if('a'=='a')printf("Equal\n"); else printf("Not Equal\n");
if("ab"=="ab")printf("Equal\n"); else printf("Not Equal\n");
if(strcmp("ab","ab")==0)printf("Equal\n"); else printf("Not Equal\n");
if(strcmp("abc","ab")==0)printf("Equal\n"); else printf("Not Equal\n");
getch();
}
```

At the bottom of the IDE, there is a green banner that says 'You are screen sharing' and a red 'Stop Share' button. The Windows taskbar is visible at the very bottom, showing various application icons and the system clock indicating 9:53 AM on 08-Sep-23.



This screenshot shows the same Turbo C++ IDE after the program has been executed. The output of the program is displayed in the main editing area on a black background with white text:

```
Equal
Equal
Equal
Not Equal
Equal
Not Equal
```

The IDE's status bar and the Windows taskbar are also visible, showing the same 'You are screen sharing' banner and system clock as the previous screenshot.

## OPERATORS

Operator is a special symbol designed for a particular purpose[work]. C comes with 44 operators and 14 separators. Operator works on operands. Based on no of operands participating in operation, the operators divided into 3 types.

1. **Unary operator**: Require one operand.

Eg: +2, -2, sizeof(a), a++, a--, ++a, --a, !a, ~a, ..

2. **Binary operator**: Require two operands.

Eg: a+b, a-b, a\*b, a>b, a!=b, a<<b, ...

3. **Ternary / conditional operator**: Require three operands/expressions.

a > b                      ? "a is big" : "b is big" ;

conditional part ? true part : false part;

based on operation, the operators divided into several types.

1. **Assignment operator [ = ]**: It copies the value on its right side into the variable on its left side. In assignment, the left side operand should be a variable. i.e. constants / expressions not allowed on left side.

**Eg:**

a=10;

b=1.2;

c='X';

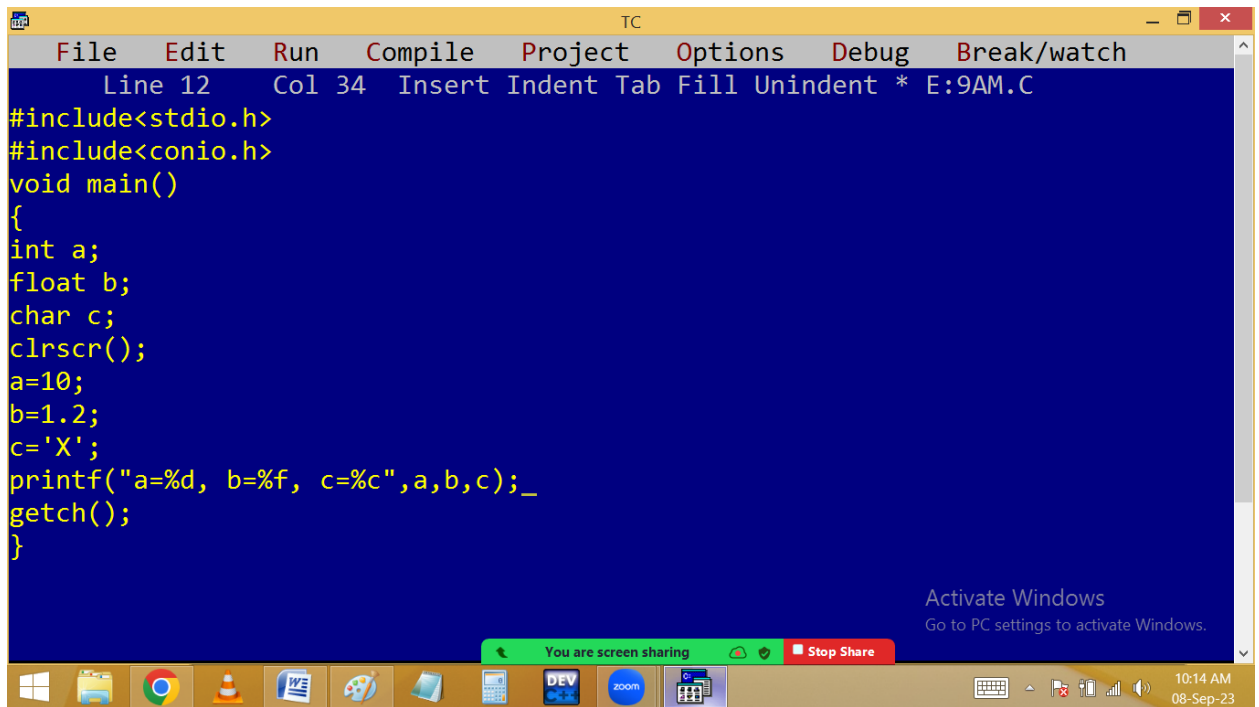
d="abc"; ➔ Error string copy not allowed

10=20; ➔ Error because of 10 is a constant

a=b=c=10;

c=10+20;

10+20=30 ➔ Error because of 10+20 is expression and expression gives constant value



The screenshot shows the Turbo C++ (TC) IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 12 Col 34 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;
float b;
char c;
clrscr();
a=10;
b=1.2;
c='X';
printf("a=%d, b=%f, c=%c",a,b,c);_
getch();
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window. The Windows taskbar at the bottom shows various application icons, including File Explorer, Chrome, VLC, Word, Paint, and several development tools like DEV, Zoom, and a calendar. A green notification bar above the taskbar states 'You are screen sharing' with a 'Stop Share' button. The system clock in the bottom right corner shows '10:14 AM 08-Sep-23'.



The screenshot shows the same Turbo C++ (TC) IDE, but now displaying the output of the program. The output text is 'a=10, b=1.200000, c=X'. The IDE window has a black background. The 'Activate Windows' watermark is still present in the bottom right corner. The Windows taskbar and the 'You are screen sharing' notification bar are identical to the first screenshot, showing the same application icons and system clock ('10:14 AM 08-Sep-23').

TC

File Edit Run Compile Project Options Debug Break/watch

Error: Lvalue required in function main

```
#include<stdio.h>
#include<conio.h>
void main()
{
char name[20];
clrscr();
name="Krish";
printf("name=%s",name);
getch();
}
```

Activate Windows  
Go to PC settings to activate Windows.

You are screen sharing Stop Share

10:16 AM  
08-Sep-23

TC

File Edit Run Compile Project Options Debug Break/watch

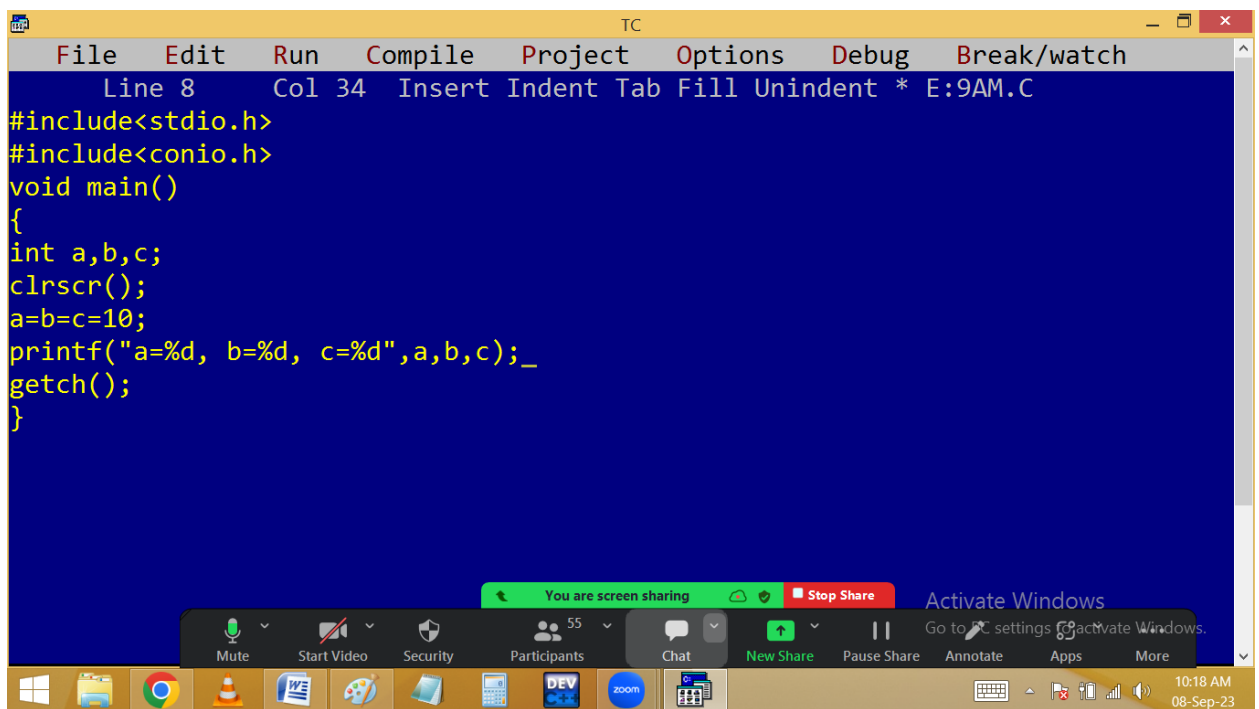
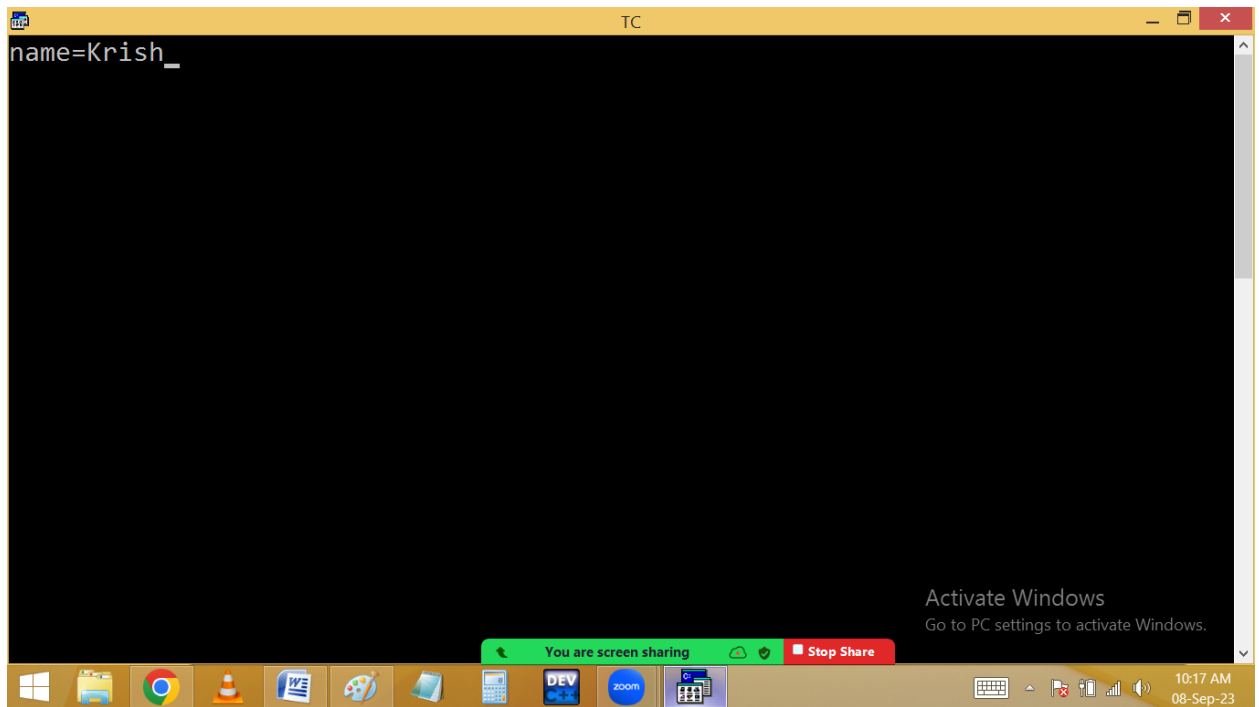
Line 8 Col 23 Insert Indent Tab Fill Unindent \* E:9AM.C

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char name[20];
clrscr();
strcpy(name , "Krish");
printf("name=%s",name);
getch();
}
```

Activate Windows  
Go to PC settings to activate Windows.

You are screen sharing Stop Share

10:17 AM  
08-Sep-23





TC

```
a=10, b=10, c=10_
```

You are screen sharing Stop Share

Mute Start Video Security Participants 56 Chat New Share Pause Share Annotate Apps More

Activate Windows Go to Windows settings to activate Windows.

10:18 AM 08-Sep-23

TC

File Edit Run Compile Project Options Debug Break/watch

Line 8 Col 16 Insert Indent Tab Fill Unindent \* E:9AM.C

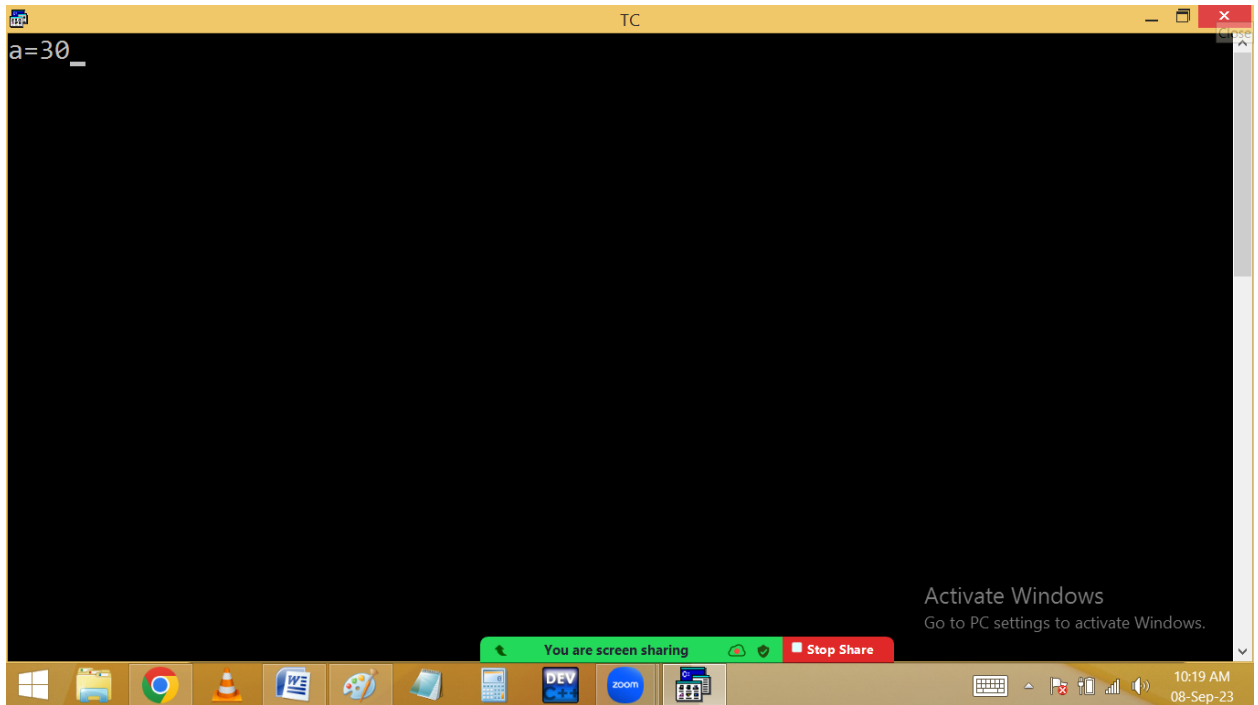
```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
clrscr();
a=10+20;
printf("a=%d",a);
getch();
}
```

You are screen sharing Stop Share

Mute Start Video Security Participants 56 Chat New Share Pause Share Annotate Apps More

Activate Windows Go to Windows settings to activate Windows.

10:19 AM 08-Sep-23




Lvalue error means left side value not changeable because of it is a constant value.

**2. 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, followed by a closing parenthesis. The dividend 5 is in the middle. Below 5 is the product 4, with a horizontal line underneath. The remainder 1 is at the bottom. To the right of the division is an opening parenthesis, followed by the quotient 2, an arrow pointing left to the quotient, and the word "Quotient /". Below the remainder 1 is an arrow pointing left to the text "% - remainder".

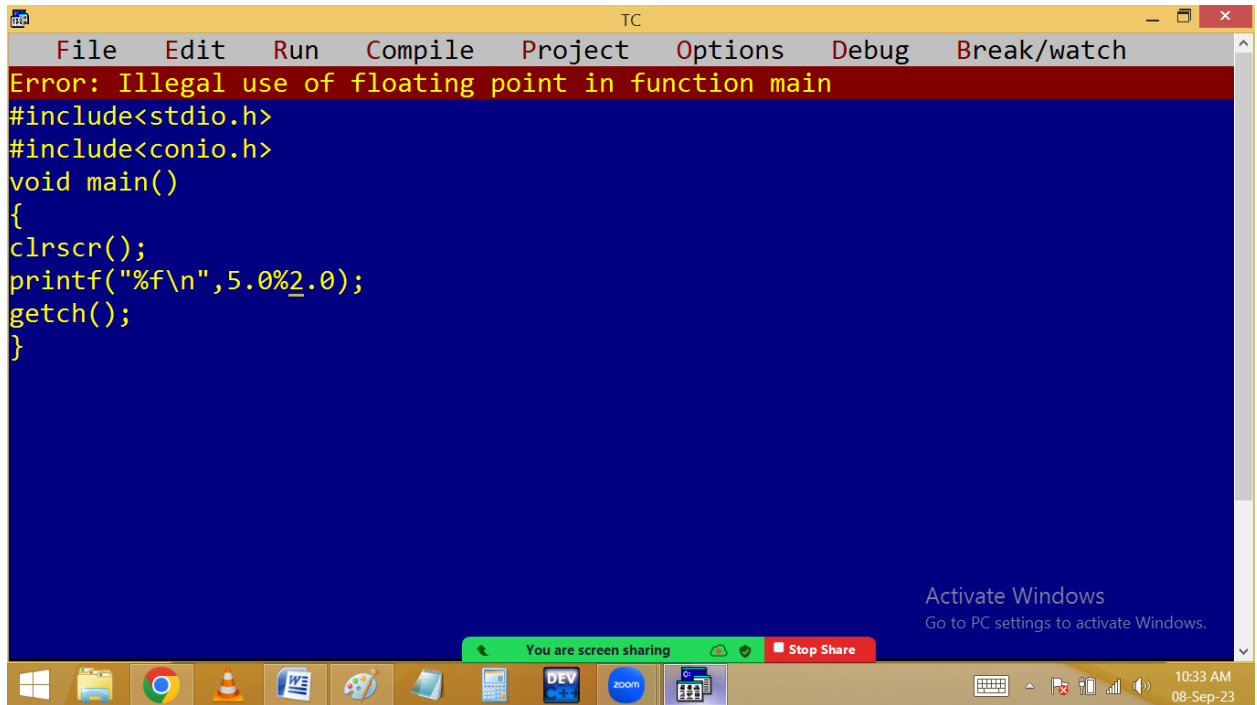
$$2 \% 5 = 2$$

**Note:** if divisor greater than dividend then the dividend is the answer.

```
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 19 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\\n",5%2);
printf("%d\\n",2%5);
printf("%d\\n",22%65);
getch();
}
```

```
1
2
22
```

**5.0%2.0 = Error**

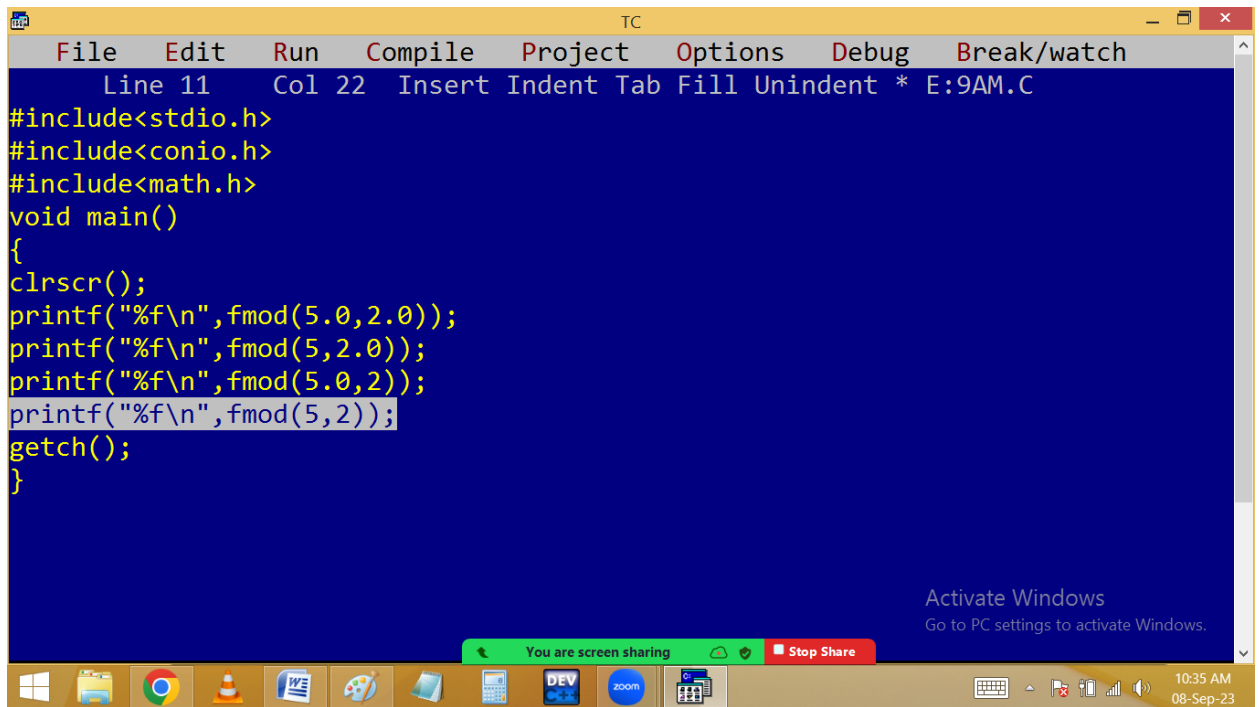


The screenshot shows the Turbo C++ (TC) IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A red error message banner at the top reads "Error: Illegal use of floating point in function main". The code editor contains the following C code:

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

The Windows taskbar at the bottom shows various application icons, including File Explorer, Google Chrome, VLC, Word, Paint, and several development tools. A green status bar indicates "You are screen sharing" with a "Stop Share" button. The system clock shows 10:33 AM on 08-Sep-23.

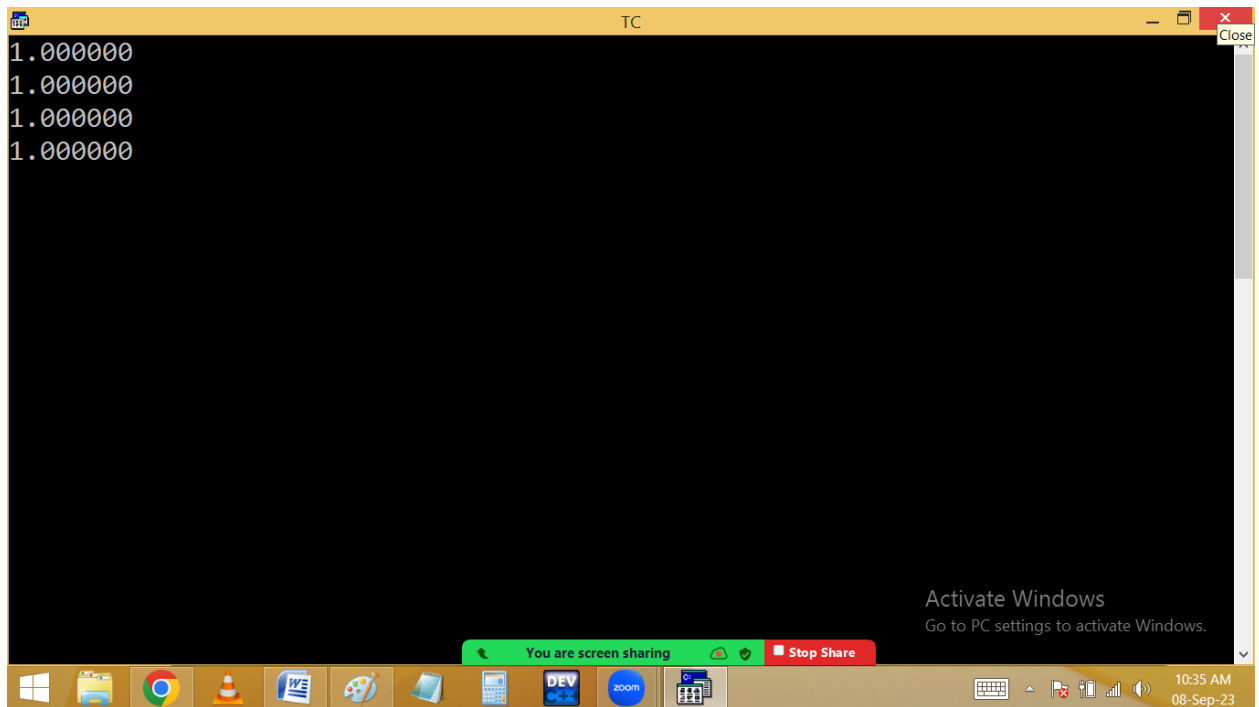
**Note:** in C & C++ we can't perform floating modules with % operator. For this we have to use fmod() available in <math.h>



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 displays the following C program:

```
Line 11 Col 22 Insert Indent Tab Fill Unindent * E:9AM.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(5,2.0));
printf("%f\n",fmod(5.0,2));
printf("%f\n",fmod(5,2));
getch();
}
```

The Windows taskbar at the bottom shows the system clock as 10:35 AM on 08-Sep-23. A green notification bar indicates "You are screen sharing" with a "Stop Share" button. An "Activate Windows" watermark is visible in the bottom right corner.



The screenshot shows the output window of the Turbo C++ IDE, displaying the results of the program execution:

```
1.000000
1.000000
1.000000
1.000000
```

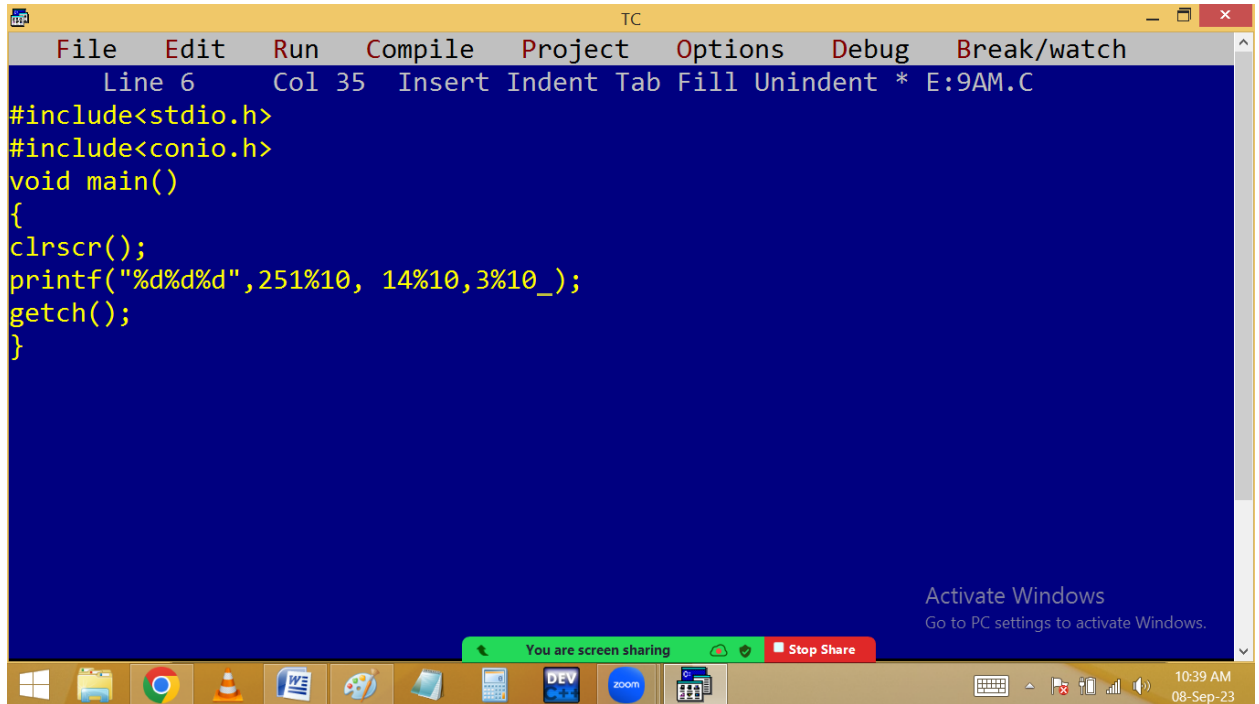
The Windows taskbar at the bottom shows the system clock as 10:35 AM on 08-Sep-23. A green notification bar indicates "You are screen sharing" with a "Stop Share" button. An "Activate Windows" watermark is visible in the bottom right corner.

**341%10=1**

**24%10=4**

$3\%10=3$

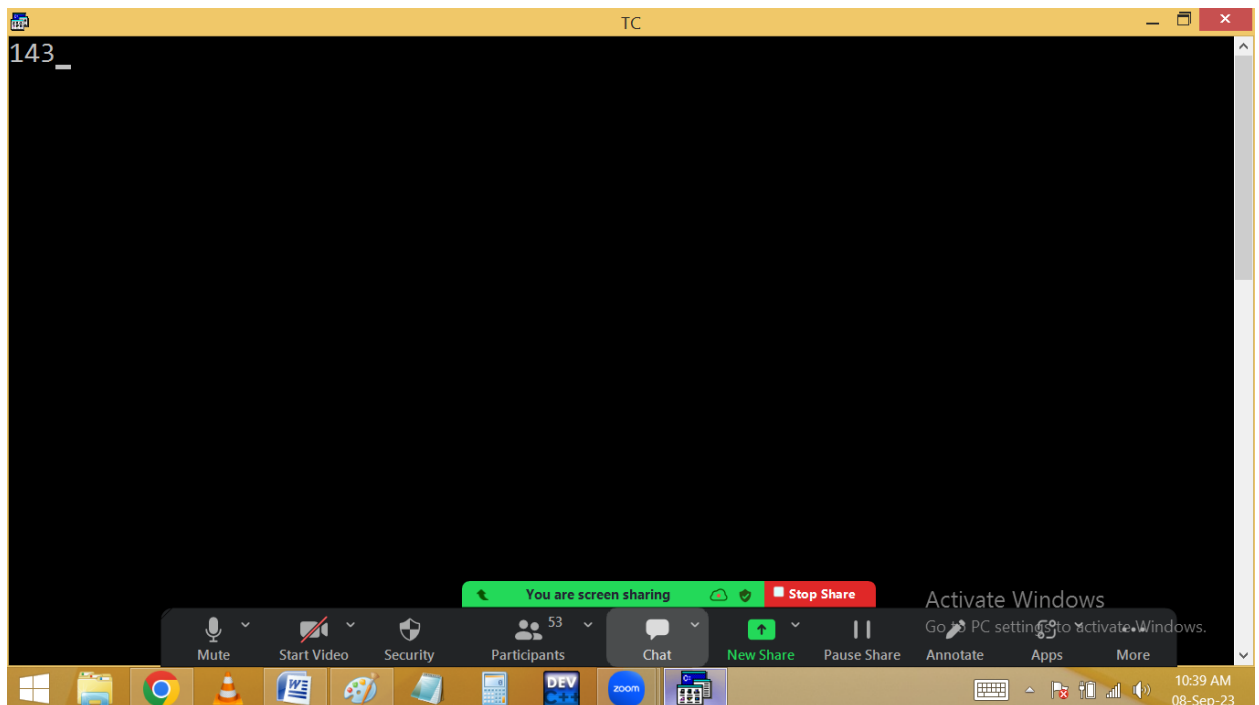
**Note:** Any  $\text{no}\%10$  gives last digit.



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 6, Col 35, 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%d%d",251%10, 14%10,3%10_);
    getch();
}
```

At the bottom of the window, there is a green status bar that says "You are screen sharing" and a red button that says "Stop Share". An "Activate Windows" watermark is visible in the bottom right corner.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar as the previous image. The output of the program is displayed in the main window, showing the text "143\_".

At the bottom of the window, there is a green status bar that says "You are screen sharing" and a red button that says "Stop Share". An "Activate Windows" watermark is visible in the bottom right corner.

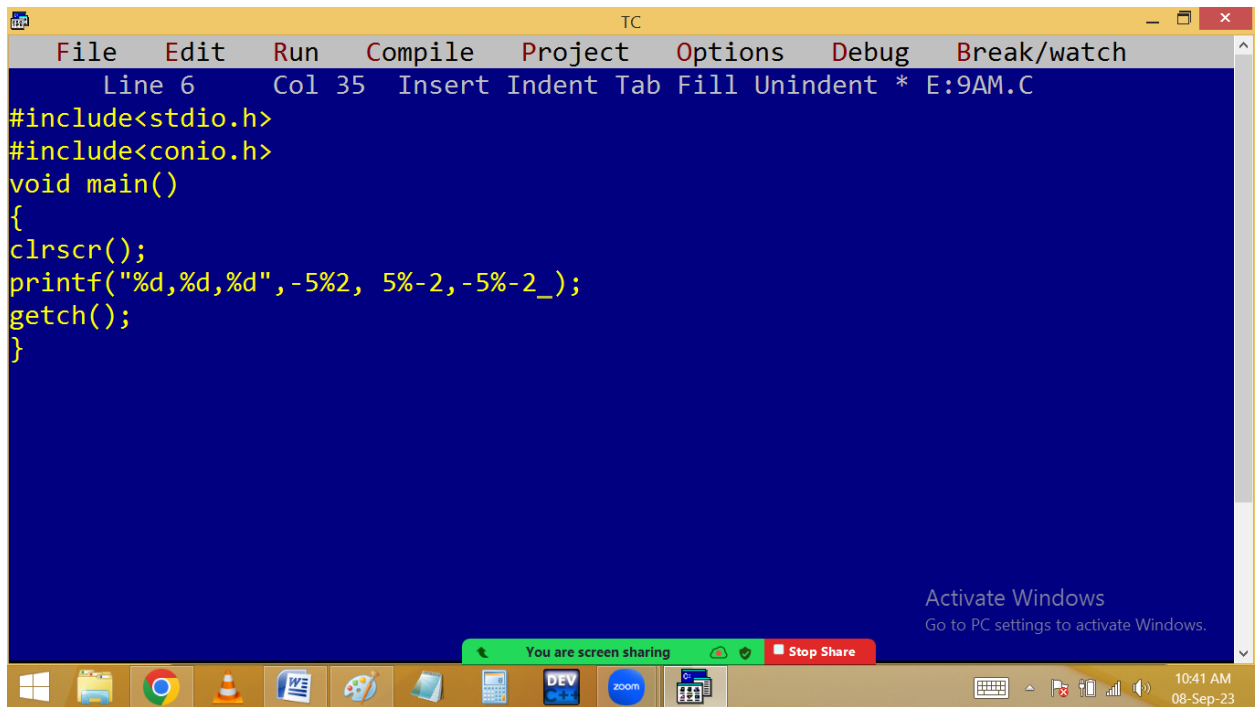
$$5\%-2=1$$

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

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

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

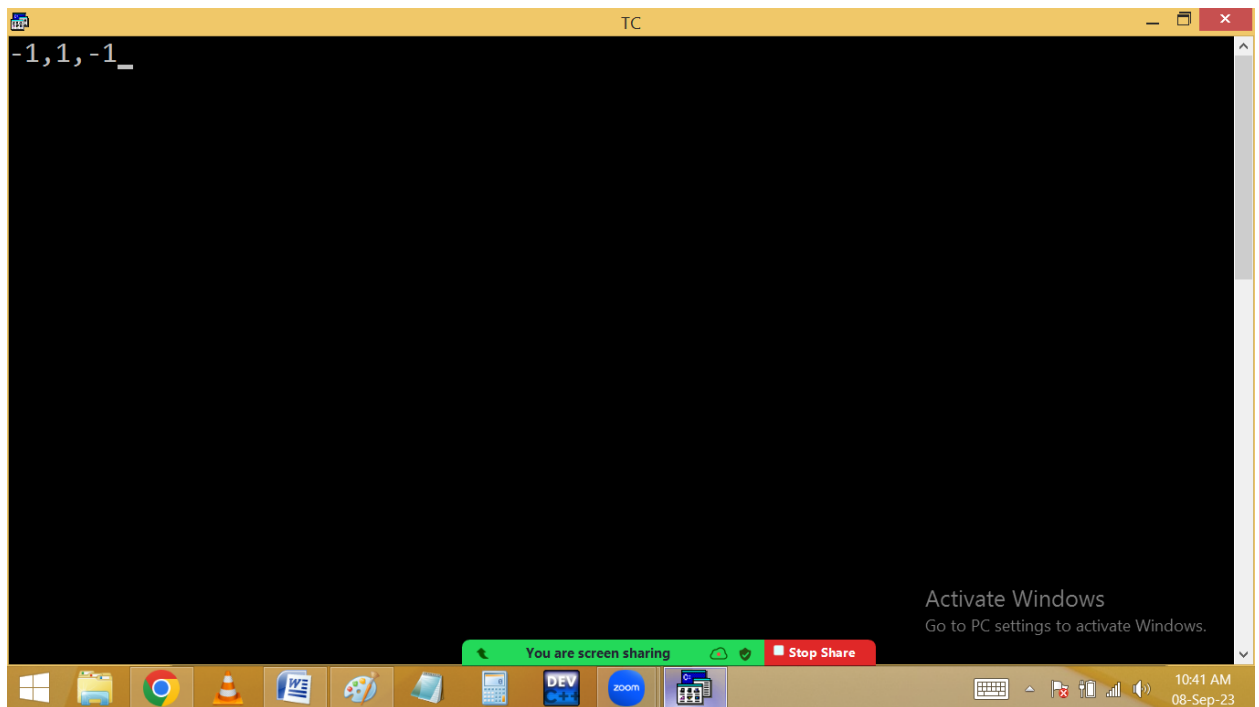




The screenshot shows the Turbo C++ (TC) IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 6 Col 35 Insert Indent Tab Fill Unindent \* E:9AM.C'. The main editing area has a blue background and contains the following C code:

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

At the bottom right of the IDE, there is a message: 'Activate Windows Go to PC settings to activate Windows.' Below the IDE window, a Windows taskbar is visible with various application icons. A green notification bar at the bottom of the taskbar reads 'You are screen sharing' with a 'Stop Share' button. The system clock in the bottom right corner shows '10:41 AM 08-Sep-23'.



This screenshot shows the same Turbo C++ IDE after the program has been executed. The main editing area now has a black background, and the output of the program is visible in the top left corner: '-1,1,-1\_'. The rest of the IDE interface, including the menu bar, status bar, and Windows taskbar, remains the same as in the previous screenshot. The 'Activate Windows' message and the 'You are screen sharing' notification are also present.

