

TC

File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 33 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
int a=10,b=20,c; /* global var */
void main()
{
clrscr();
{
int a=1,b=2,c=3; /* local var */
printf("Sum=%d\n",a+b+c);
}
printf("Sum=%d\n",a+b+c);
getch();
}
```

Sum=6
Sum=30

Windows Taskbar icons: File Explorer, Task View, DEV, ZM, Paint, FileZilla, Google Chrome, FileZilla, etc.

System Tray: 9:21 AM, 17-Jul-24

TC

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>
int a=10,b=20,c; /* global var */
void main()
{
clrscr();
{
int a=1,b=2,c; /* local var */
printf("Sum=%d\n",a+b+c);
}
printf("Sum=%d\n",a+b+c);
getch();
}
```

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Sum=25558
Sum=30

```
File Edit Run Compile Project Options Debug Break/watch
Error: Undefined symbol 'a' in function main
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
{
int a=1,b=2,c; /* local var */
printf("Sum=%d\n",a+b+c);
}
printf("Sum=%d\n",a+b+c);
getch();
}
```

TC

File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C

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

10 cube = 1000

TC

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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100, cube;
clrscr();
cube = a*a*a;
printf("%d cube = %d\n",a,cube);
getch();
}
```

100 cube = 16960

Windows Taskbar Icons: File Explorer, ZM, Google Chrome, etc.

System Tray: 9:25 AM, 17-Jul-24

TC

File Edit Run Compile Project Options Debug Break/watch
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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100;
long int cube;
clrscr();
cube = a*a*a;
printf("%d cube = %ld\n",a,cube);
getch();
}
```

100 cube = 16960

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TC

100 cube = 16960

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TC

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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100;
long int cube;
clrscr();
cube = (long)a*a*a; /* explicit type casting */
printf("%d cube = %ld\n",a,cube);
getch();
}
```

100 cube = 1000000

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TC

File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 11 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
long int a=100, cube;
clrscr();
cube = a*a*a;
printf("%ld cube = %ld\n",a,cube);
getch();
}
```

100 cube = 1000000

9:28 AM 17-Jul-24

The image shows a Windows desktop environment with two windows open. The top window is a terminal or code editor with a dark blue background. It displays the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
long int a=100, cube=a*a*a;
clrscr();
printf("%ld cube = %ld\n",a,cube);
getch();
}
```

The bottom window is also a terminal or code editor, showing the output of the program. It displays the following text:

```
100 cube = 1000000
```

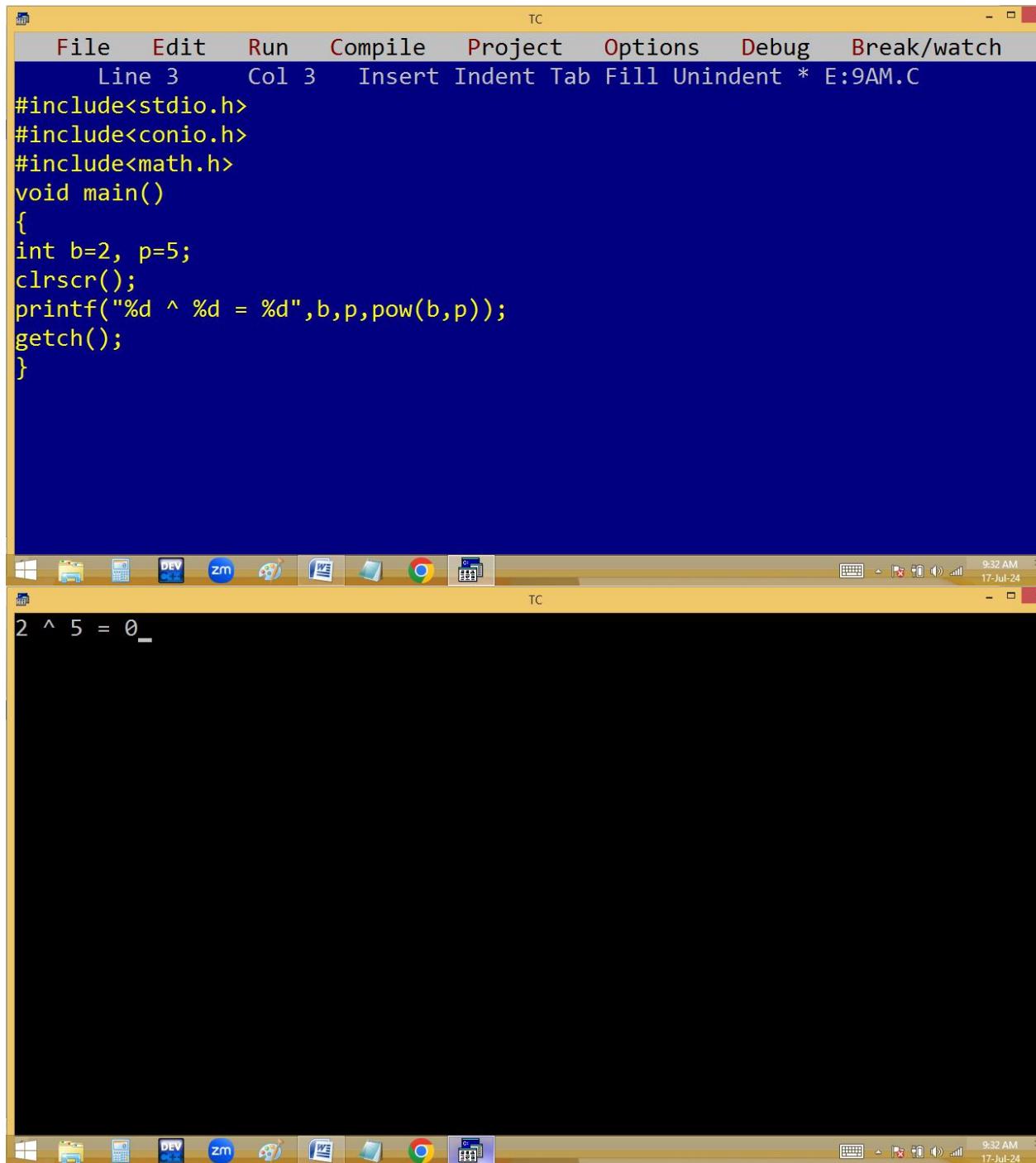
The image shows a Windows desktop environment with two windows open. The top window is a code editor titled 'TC' with a dark blue background. It displays the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100;
clrscr();
printf("%d cube = %ld\n",a,(long)a*a*a);
getch();
}
```

The bottom window is a terminal window also titled 'TC' with a black background. It displays the output of the program: '100 cube = 1000000'. The desktop taskbar at the bottom shows various icons for applications like File Explorer, ZM, and Google Chrome. The system tray indicates the date as 17-Jul-24 and the time as 9:30 AM.

Finding power value:

$$2^5 = 32$$



```
TC
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Line 3 Col 3 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int b=2, p=5;
clrscr();
printf("%d ^ %d = %d",b,p,pow(b,p));
getch();
}

2 ^ 5 = 0_
```

The image shows a Windows desktop environment with two Command Prompt windows. The top window is titled 'TC' and contains a C program. The code includes #include directives for stdio.h, conio.h, and math.h, followed by a main() function that calculates 2^5 using the pow function from the math library. The bottom window also has a title 'TC' and displays the output of the program: '2 ^ 5 = 32'. The desktop background is blue, and the taskbar at the bottom shows various pinned icons and system status.

TC

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```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int b=2, p=5;
clrscr();
printf("%d ^ %d = %f\n",b,p,pow(b,p));
printf("%d ^ %d = %.0f\n",b,p,pow(b,p));
printf("%d ^ %d = %d",b,p,(int)pow(b,p));/*expicit type casting*/
getch();
}
```

2 ^ 5 = 32.000000
2 ^ 5 = 32
2 ^ 5 = 32

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Finding area and circumference of a circle.

Area = $\pi * r * r$

Cf = $2 * \pi * r$

The image shows a Windows desktop environment with two windows open. The top window is titled 'TC' and contains a C programming code. The code includes #include<stdio.h>, #include<conio.h>, void main(), and logic to calculate area and circumference using pi as 3.14. The bottom window is a terminal or command prompt showing the output: 'Area = 346.18, Circumference=65.94'. The desktop taskbar at the bottom has icons for various applications like File Explorer, DEV, and Google Chrome.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    const float pi = 3.14;
    float r=10.5, area, cf;
    clrscr();
    area = pi * r * r;
    cf   = 2 * pi * r;
    printf("Area = %.2f, Circumference=%.2f",area, cf);
    getch();
}
```

Area = 346.18, Circumference=65.94

The image shows a Windows desktop environment with two windows open. The top window is a code editor titled 'TC' with a menu bar including File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom of this window indicates 'Line 8 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C'. The code itself is as follows:

```
#include<stdio.h>
#include<conio.h>
#define pi 3.14 /* macro */
void main()
{
float r=10.5, area, cf;
clrscr();
area = pi * r * r;
cf = 2 * pi * r;
printf("Area = %.2f, Circumference=% .2f",area, cf);
getch();
}
```

The bottom window is a terminal or command prompt window showing the output of the program. The output text is 'Area = 346.18, Circumference=65.94'. The desktop taskbar at the bottom has several icons, and the system tray shows the date and time as 9:37 AM 17-Jul-24.

Adding of two numbers without using + operator.

TC

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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=20;
clrscr();
printf("Sum=%d\n",a-(-b));
printf("Sum=%d\n",a- -b);
printf("Sum=%d\n",a-(~b)-1);
getch();
}
```

Sum=30
Sum=30
Sum=30

—

Windows Taskbar icons: File Explorer, File Manager, Task View, DEV, ZM, Paint, FileZilla, Google Chrome, FileZilla Client.

System tray: Date (9:39 AM), Date (17-Jul-24).

a=10

b=20

a-(~b)-1

10-(~20)-1

10-(-21)-1

10+21-1

31-1=30

Swap of two numbers:

Method 1 without using operators:

The image shows a Windows desktop environment with two windows open. The top window is a terminal or code editor titled "TC". Its menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", "Debug", and "Break/watch". The status bar at the bottom of this window shows "Line 7 Col 38 Insert Indent Tab Fill Unindent * E:9AM.C". The main area of the window displays the following C code:

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

The bottom window is a standard command prompt window. It shows the output of the executed C program, which swaps the values of variables a and b:

```
Before swap a=10, b=20
After swap a=20, b=10
```

Using 3rd variable:

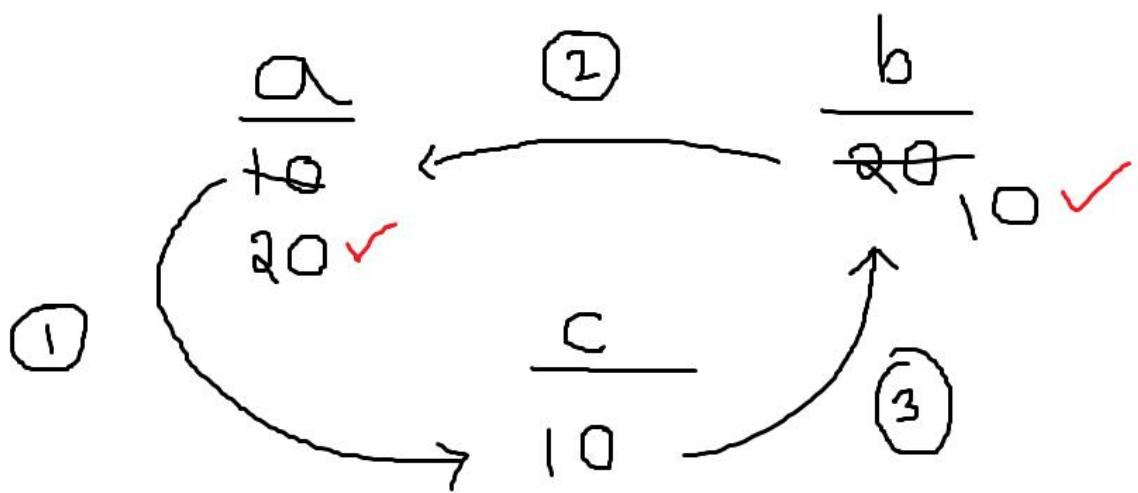
TC

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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=20,c;
clrscr();
printf("Before swap a=%d, b=%d\n",a,b);
c=a; a=b; b=c;
printf("After swap a=%d, b=%d\n",a,b);
getch();
}
```

TC

```
Before swap a=10, b=20
After swap a=20, b=10
```



Without using 3rd variable:

TC

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```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=20;
clrscr();
printf("Before swap a=%d, b=%d\n",a,b);
/* a=a+b; b=a-b; a=a-b;
a=a*b; b=a/b; a=a/b; */
a=a^b; b=a^b; a=a^b;
printf("After swap a=%d, b=%d\n",a,b);
getch();
}
```

Before swap a=10, b=20
After swap a=20, b=10

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$$a=10 \Rightarrow 30 \Rightarrow 20$$
$$b=20 \Rightarrow 10$$

$$a=a+b \Rightarrow 10+20=30$$
$$b=a-b \Rightarrow 30-20=10$$
$$a=a-b \Rightarrow 30-10=20$$

$$a=10 \Rightarrow 200 \Rightarrow 20$$
$$b=20 \Rightarrow 10$$

$$a=a*b \Rightarrow 10*20=200$$
$$b=a/b \Rightarrow 200/20=10$$
$$a=a/b \Rightarrow 200/10=20$$

$$\begin{array}{r} 2 | 10 \\ 2 | 5 - 0 \\ 2 | 2 - 1 \\ \hline 1 - 0 \end{array}$$

$$10=1010$$

$$\begin{array}{r} 2 | 20 \\ 2 | 10 - 0 \\ 2 | 5 - 0 \\ 2 | 2 - 1 \\ \hline 1 - 0 \end{array}$$

$$20=10100$$

$a=a \wedge b$ ←
 a=10=01010
 b=20=10100
 11110=30
 2⁴+2³+2²+2¹
 | | | /
 16+8+4+2=30
 a=30, b=20

$b=a \wedge b$ ←
 a=30=11110
 b=20=10100
 01010=10
 a=30, b=10

$a=a \wedge b$ ←
 a=30=11110
 b=10=01010
 10100=20
 a=20, b=10 ✓

Finding sqrt of given no using scanf:

The image shows a Windows desktop environment with two windows open. The top window is a code editor titled 'TC' with a menu bar including File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom of the editor window shows 'Line 11 Col 32 Insert Indent Tab Fill Unindent * E:9AM.C'. The code in the editor is:

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
printf("%d SQRT is %f\n",n, sqrt(n));
printf("%d SQRT is %.2f\n",n, sqrt(n));
printf("%d SQRT is %d",n, (int)sqrt(n));
getch();
}
```

The bottom window is a terminal window titled 'TC' with a command-line interface. The terminal output is:

```
Enter n value 100
100 SQRT is 10.000000
100 SQRT is 10.00
100 SQRT is 10_-
```

scanf()

It is the major input function available in stdio.h

It is used to read the values at run time from user.

Syntax:

```
int scanf("conversion characters",  
&variable, &variable,.....);
```

- Here scanf() returns an integer which indicates the no of conversion characters we have used in scanf().
- Generally conversion characters are the first arguments and they should be placed in “ ”.
- Space is optional in between the conversion characters. When comma / any character is entered in between

conversion characters, at run time also we have to enter the same letter in between the values.

- & indicates address of variable. & is mandatory for all data types **except string** type variables.

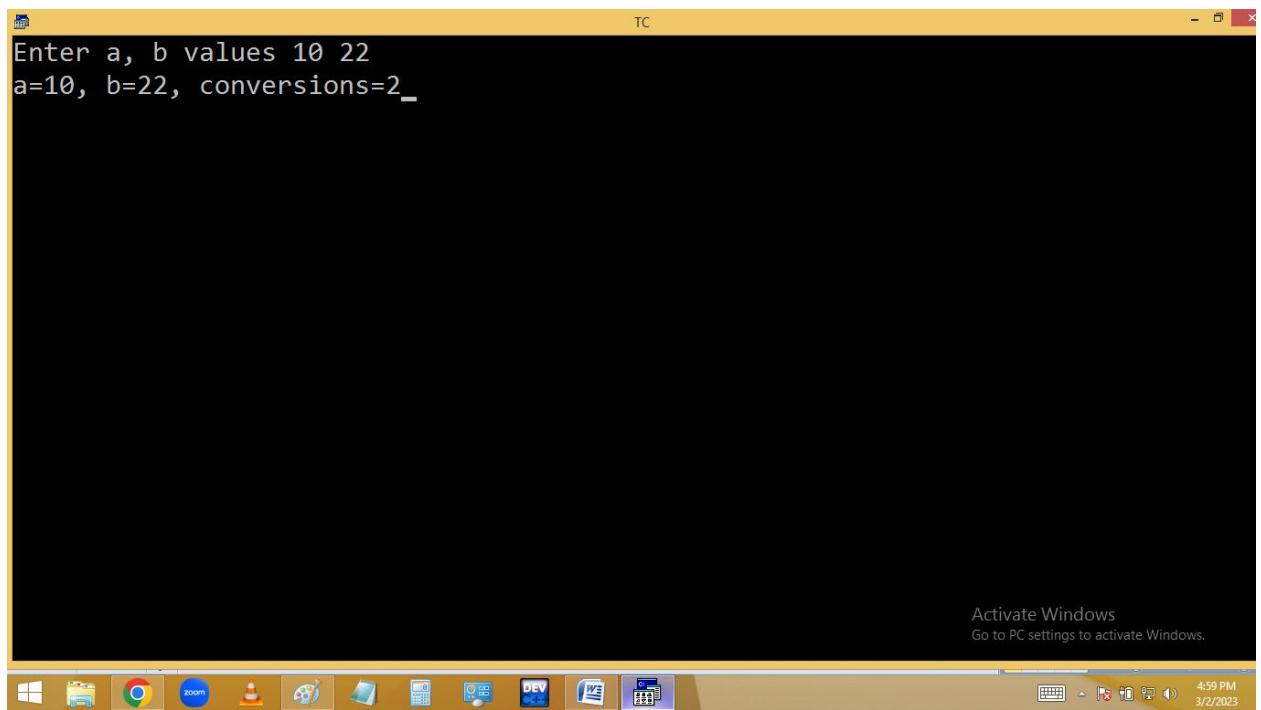
Eg: Finding no of conversion characters in

scanf():

The screenshot shows the Turbo C IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top shows "Line 8 Col 19 Insert Indent Tab Fill Unindent * E:NONAME.C". The code editor contains the following C program:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("Enter a, b values ");
c = scanf("%d %d",&a, &b);
printf("a=%d, b=%d, conversions=%d",a,b,c);
getch();
}
```

The status bar at the bottom right shows "Activate Windows Go to PC settings to activate Windows." The taskbar at the bottom has icons for various applications like File Explorer, Google Chrome, and Microsoft Word.



Method 2:

TC

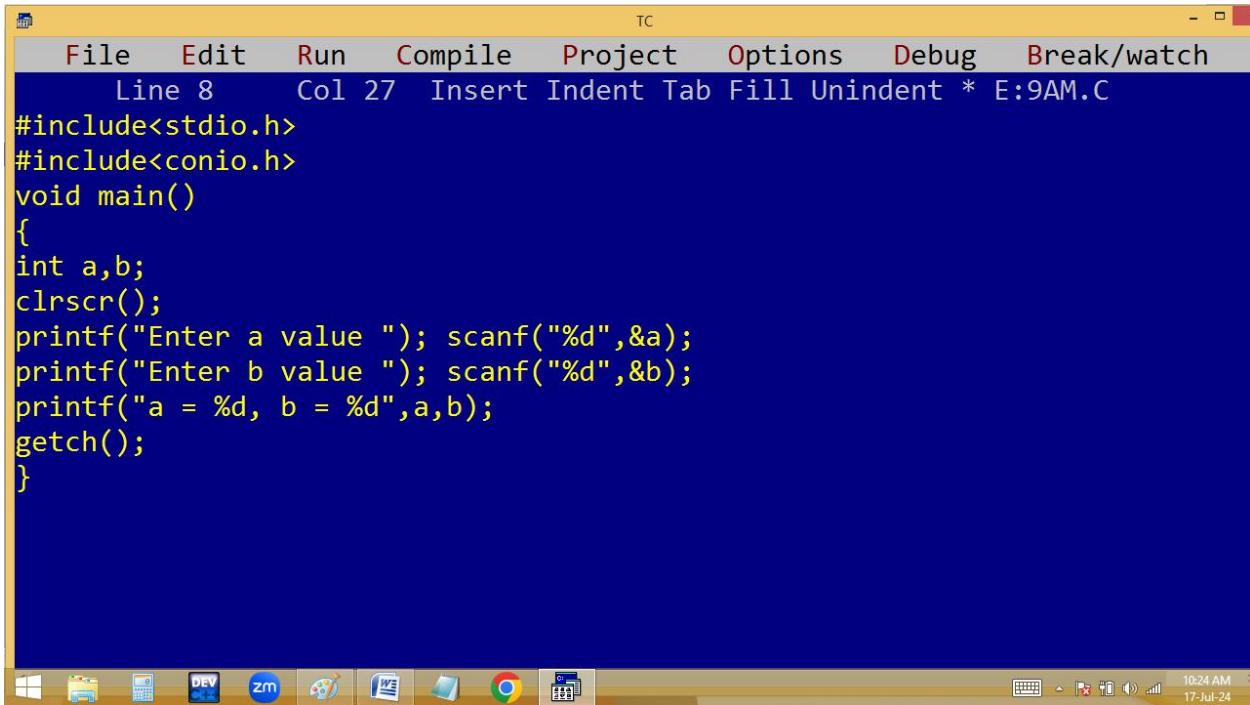
File Edit Run Compile Project Options Debug Break/watch
Line 5 Col 1 Insert Indent Tab Fill Unindent * E:NONAME.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("Enter a, b values ");
printf("conversions=%d", scanf("%d %d"));
getch();
}
```

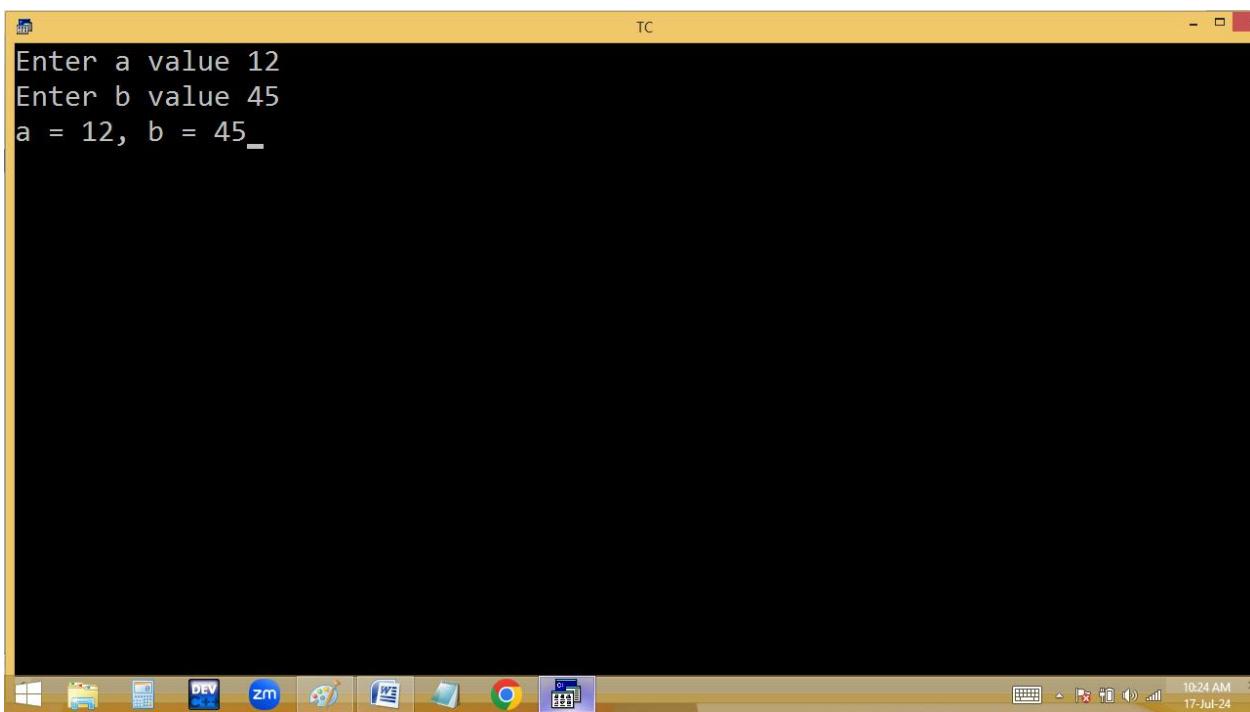
Activate Windows
Go to PC settings to activate Windows.

```
TC
Enter a, b values 12 45
conversions=2
```

Controlling inputs in scanf():



```
TC
File Edit Run Compile Project Options Debug Break/watch
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#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
printf("Enter b value "); scanf("%d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```



```
TC
Enter a value 12
Enter b value 45
a = 12, b = 45_
```

```
TC
Enter a value 3 5
Enter b value a = 3, b = 5_
```



```
TC
Enter a value 1 2 3
Enter b value a = 1, b = 2_
```



TC

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Line 8 Col 12 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
flushall();
printf("Enter b value "); scanf("%d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```

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TC

```
Enter a value 10 20
Enter b value 30
a = 10, b = 30
```

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TC

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Line 8 Col 13 Insert Indent Tab Fill Unindent E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
fflush(stdin);
printf("Enter b value "); scanf("%d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```

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TC

```
Enter a value 2 3 4 5
Enter b value 9
a = 2, b = 9_
```

10:30 AM 17-Jul-24

TC

File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 25 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a 2 digit value "); scanf("%d",&a);
printf("Enter a 3 digit value "); scanf("%d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```

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TC

```
Enter a 2 digit value 123
Enter a 3 digit value 1234
a = 123, b = 1234_
```

10:31 AM 17-Jul-24

TC

File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 44 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a 2 digit value "); scanf("%2d",&a);
printf("Enter a 3 digit value "); scanf("%3d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```

TC

```
Enter a 2 digit value 123456
Enter a 3 digit value a = 12, b = 345_
```

```
TC
Enter a 2 digit value 1
Enter a 3 digit value 2
a = 1, b = 2_
```

TC

File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 44 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a 2 digit value "); scanf("%2d",&a);
fflush(stdin);
printf("Enter a 3 digit value "); scanf("%3d",&b);
printf("a = %d, b = %d",a,b);
getch();
}
```

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TC

```
Enter a 2 digit value 12345
Enter a 3 digit value 56789
a = 12, b = 567
```

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TC

File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 23 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
char b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
printf("Enter b value "); scanf("%c",&b);
printf("a = %d, b = %c",a,b);
getch();
}
```

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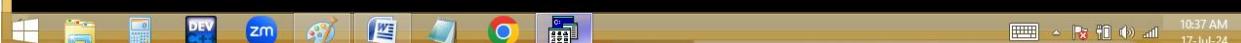
TC

```
Enter a value 34
Enter b value a = 34, b =
```

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TC

```
Enter a value 1
Enter b value a = 1, b =
-
```



10:37 AM 17-Jul-24

TC

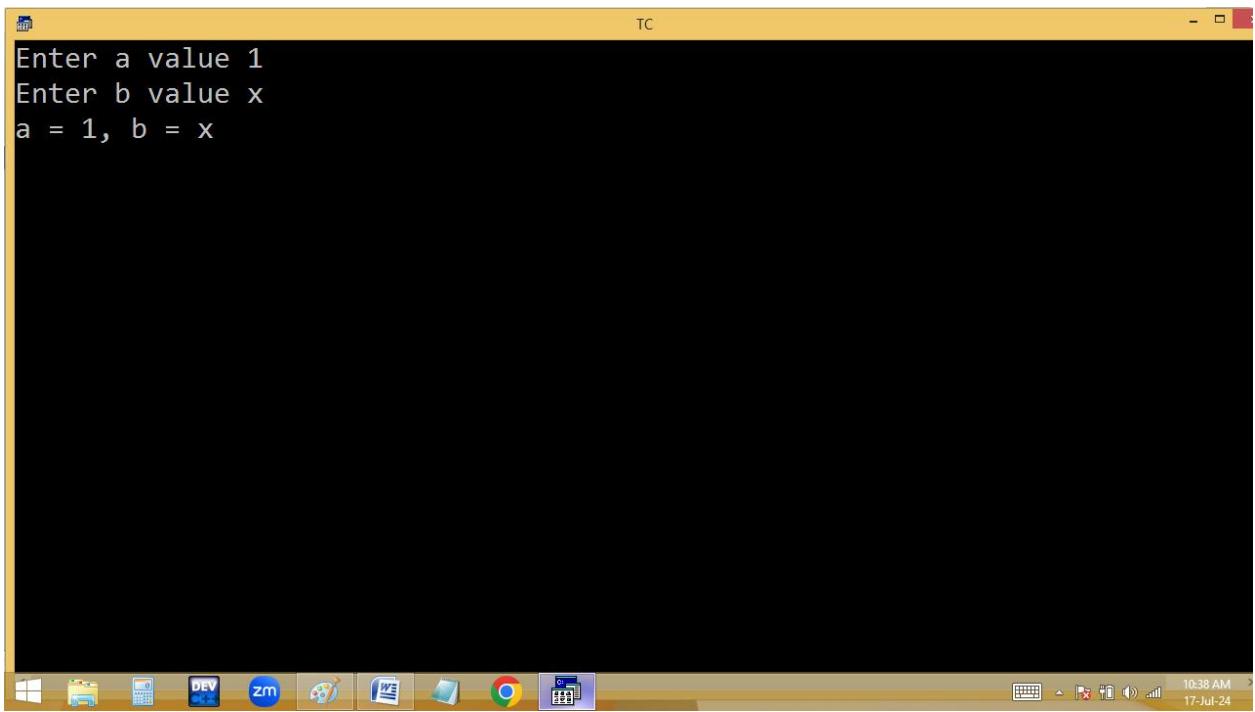
```
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 35 Insert Indent Tab Fill Unindent * E:9AM.C
```

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
char b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
printf("Enter b value "); scanf(" %c",&b);
printf("a = %d, b = %c",a,b);
getch();
}
```



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```
TC
Enter a value 1
Enter b value x
a = 1, b = x
```



TC

File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
char b;
clrscr();
printf("Enter a value "); scanf("%d",&a);
fflush(stdin);
printf("Enter b value "); scanf("%c",&b);
printf("a = %d, b = %c",a,b);
getch();
}
```

TC

```
Enter a value 4
Enter b value h
a = 4, b = h_
```