

Increment & Decrement operators [++ / --]:

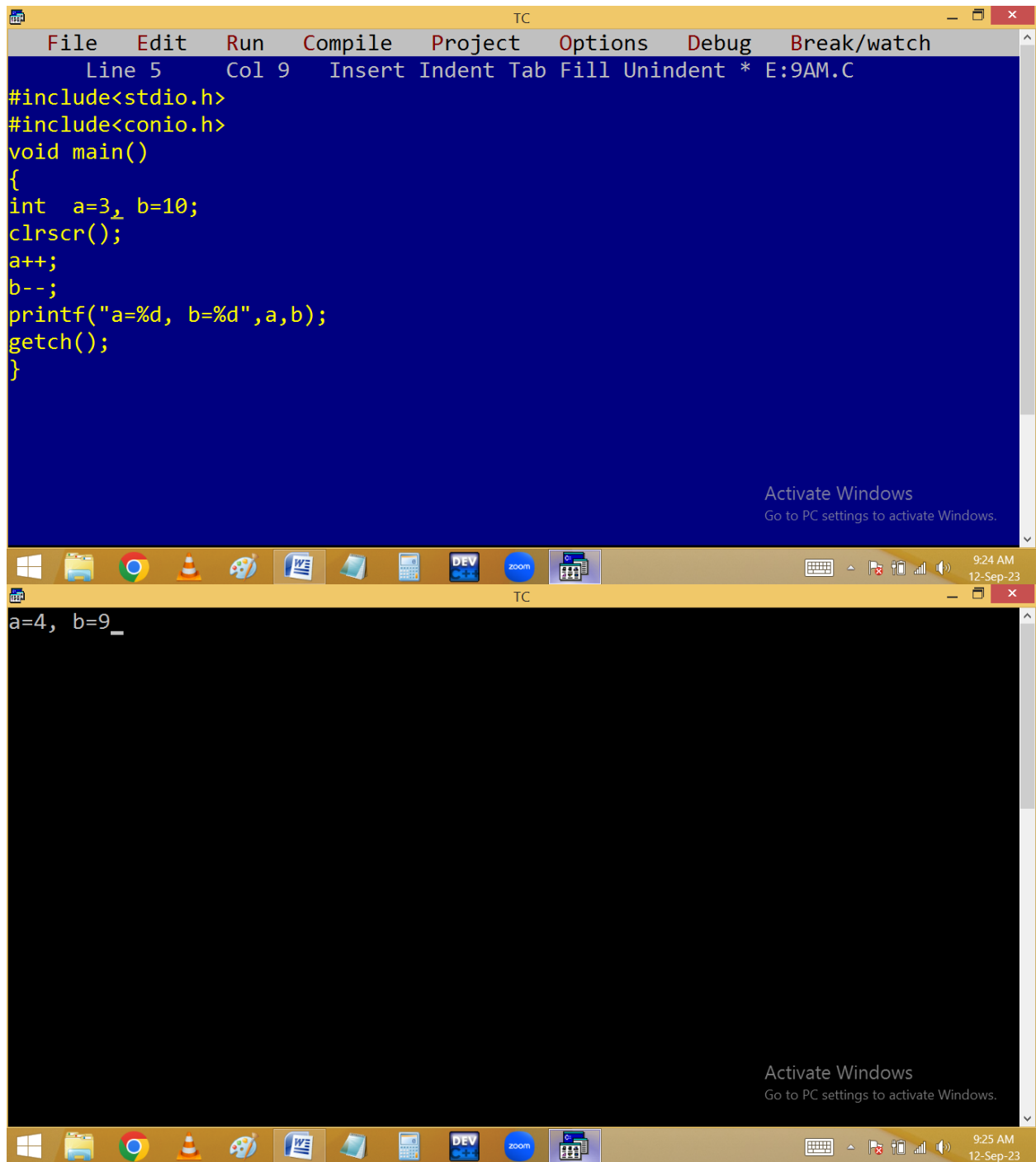
They are used to increment / decrement a variable value by 1.

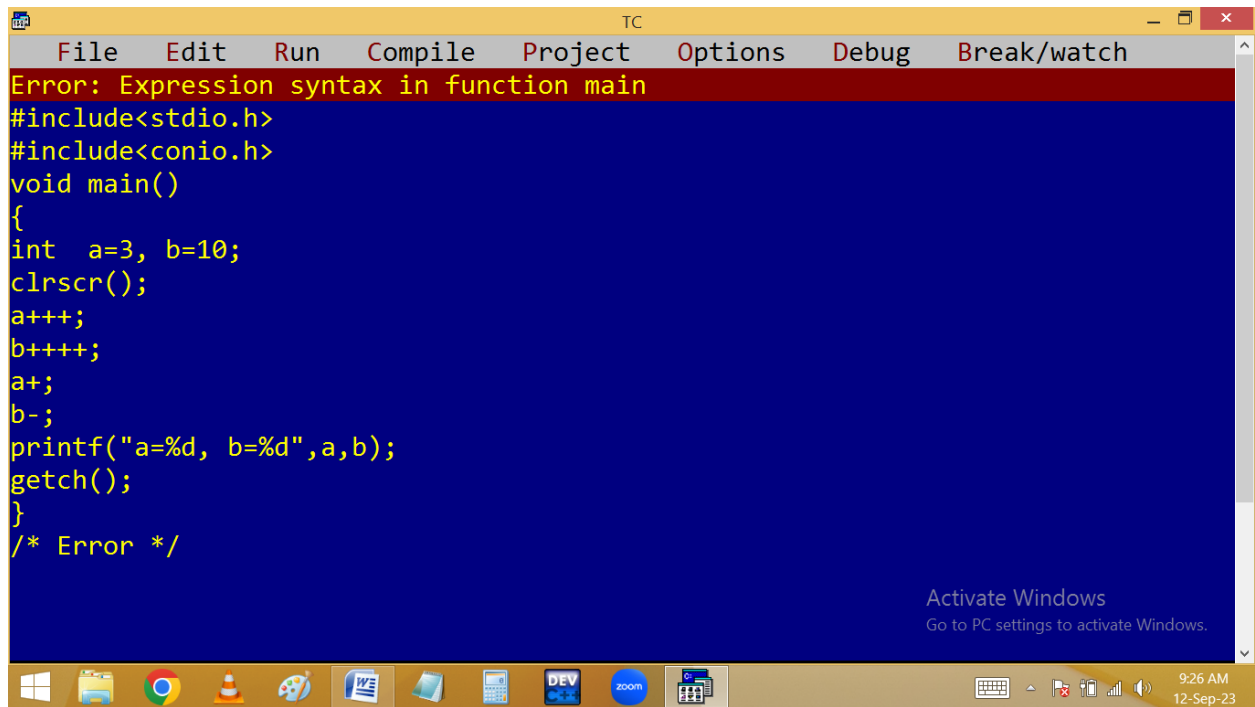
Example:

Int a=3, b=10;

a++; i.e. $a=a+1 \rightarrow a=4$

b--; i.e. $b=b-1 \rightarrow b=9$





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: Expression syntax in function main". The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int  a=3, b=10;
clrscr();
a+++;
b++++;
a+;
b-;
printf("a=%d, b=%d",a,b);
getch();
}
/* Error */
```

An "Activate Windows" watermark is visible in the bottom right corner of the IDE window, with the text "Go to PC settings to activate Windows." Below the IDE window is the Windows taskbar, which includes icons for the Start menu, File Explorer, Google Chrome, VLC media player, Paint, Word, a folder, a calculator, a "DEV" icon, Zoom, and a calendar. The system tray on the right shows the date and time as "9:26 AM 12-Sep-23".

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window, titled 'TC', contains a C program. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 21 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=2, b;
clrscr();
b=a++;
printf("a=%d, b=%d\n",a,b);
a=2;
b=++a;
printf("a=%d, b=%d",a,b);
getch();
}
/* a=3, b=2
a=3, b=3 */
```

The bottom window, also titled 'TC', shows the output of the program:

```
a=3, b=2
a=3, b=3
```

Both windows have a taskbar at the bottom with various application icons and a system tray showing the time as 9:33 AM and 9:34 AM on 12-Sep-23. An 'Activate Windows' watermark is visible in the bottom right of both windows.

postfix increment:

a=2

b=a++; **priority: =, a++**

1. b=a ==> **b=2**

2. a++ ==> **a=3**

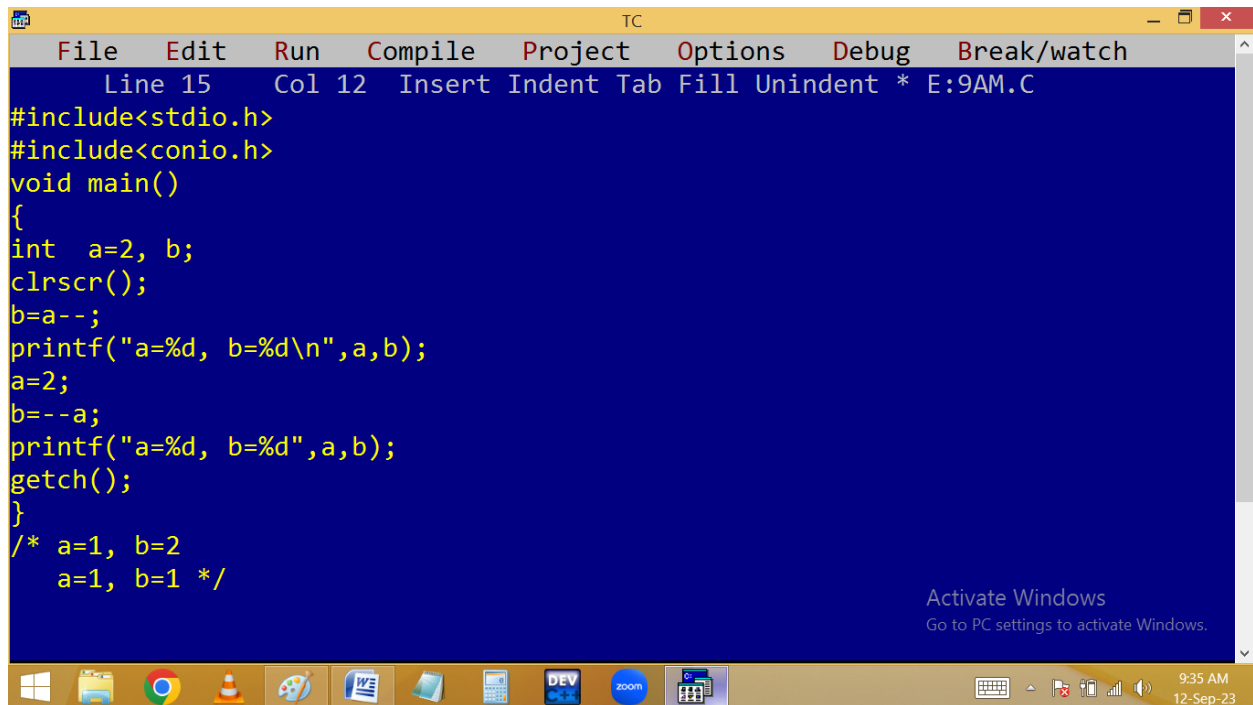
prefix increment:

a=2

b=++a; **priority: ++a, =**

1. ++a ==> **a=3**

2 b=a ==> **b=3**

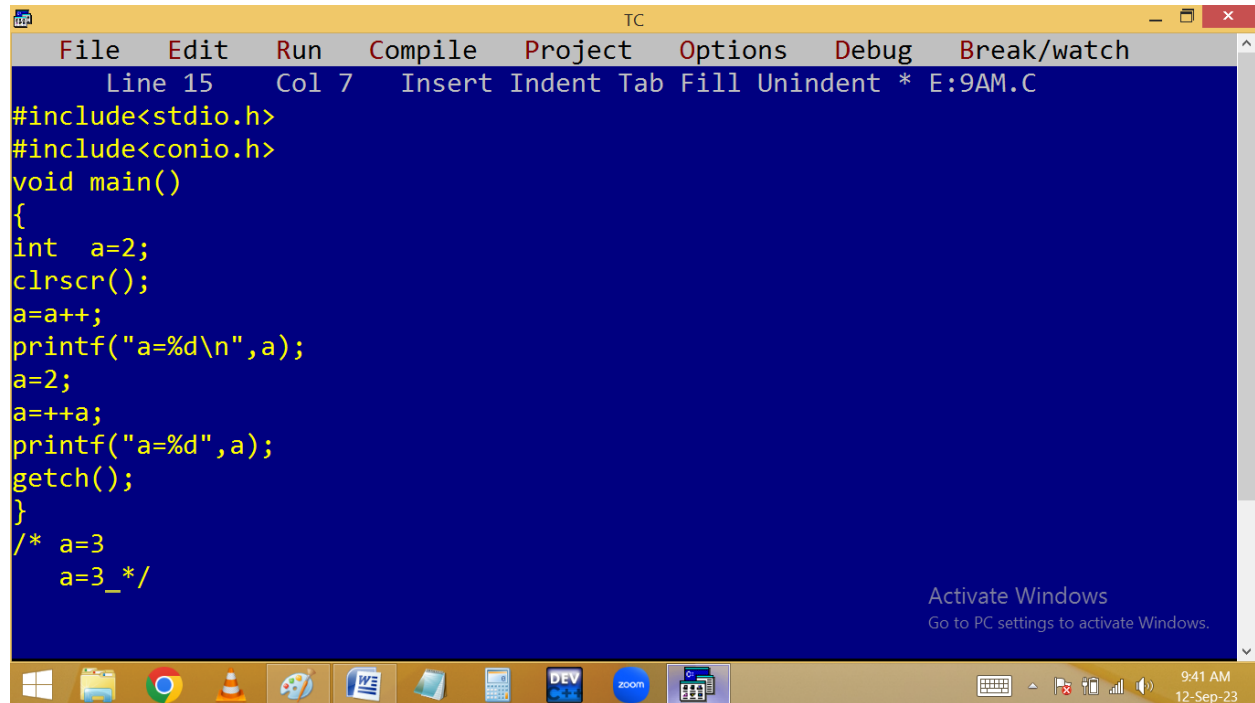


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 15 Col 12 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=2, b;
clrscr();
b=a--;
printf("a=%d, b=%d\n",a,b);
a=2;
b=--a;
printf("a=%d, b=%d",a,b);
getch();
}
/* a=1, b=2
a=1, b=1 */

Activate Windows
Go to PC settings to activate Windows.
9:35 AM
12-Sep-23
```

a=2
b=a--; **priority: =, a--**
1. b=a ==> **b=2**
2. a-- ==> **a=1**

a=2
b=--a; **priority: --a, =**
1. --a ==> **a=1**
2. b=a ==> **b=1**



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 15 Col 7 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=2;
clrscr();
a=a++;
printf("a=%d\n",a);
a=2;
a=++a;
printf("a=%d",a);
getch();
}
/* a=3
a=3_*/

Activate Windows
Go to PC settings to activate Windows.

9:41 AM
12-Sep-23
```

a=2

a=a++; **priority: =, a++**

1. a=a ==> a=2

2. a++ ==> a=3

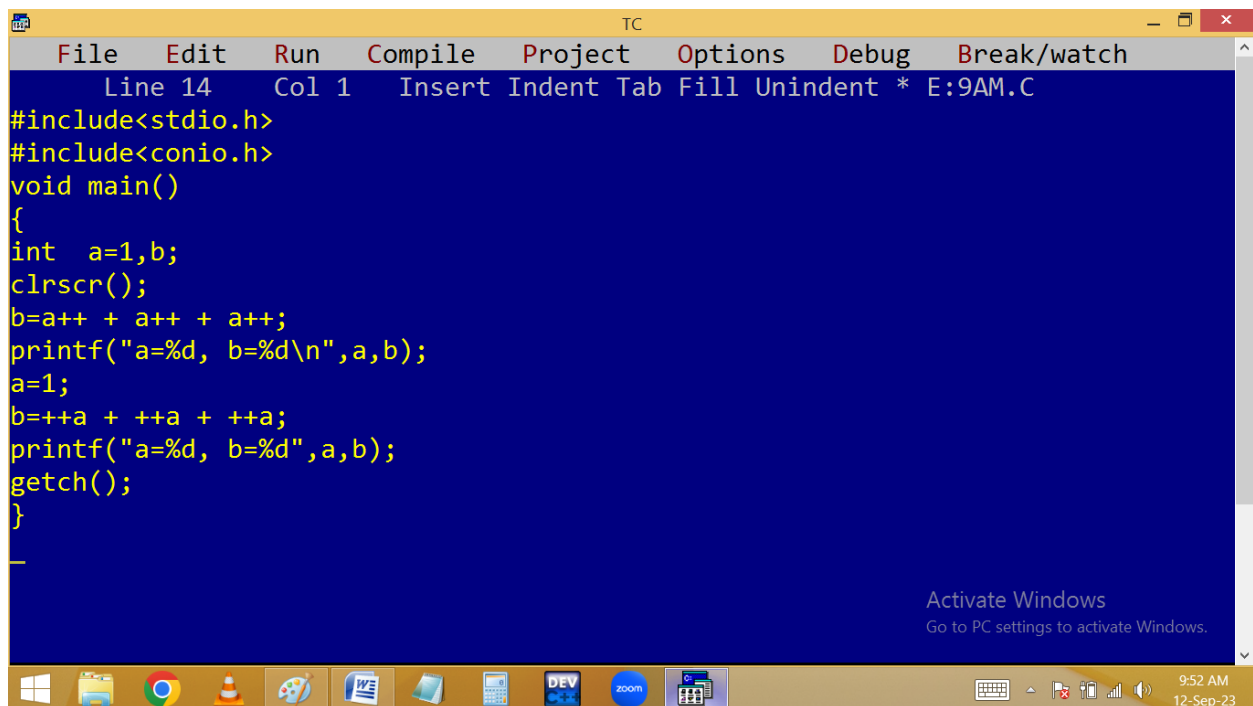
a=2

a=++a; **priority: ++a, =**

1. ++a ==> a=3

2. a=a ==> a=3

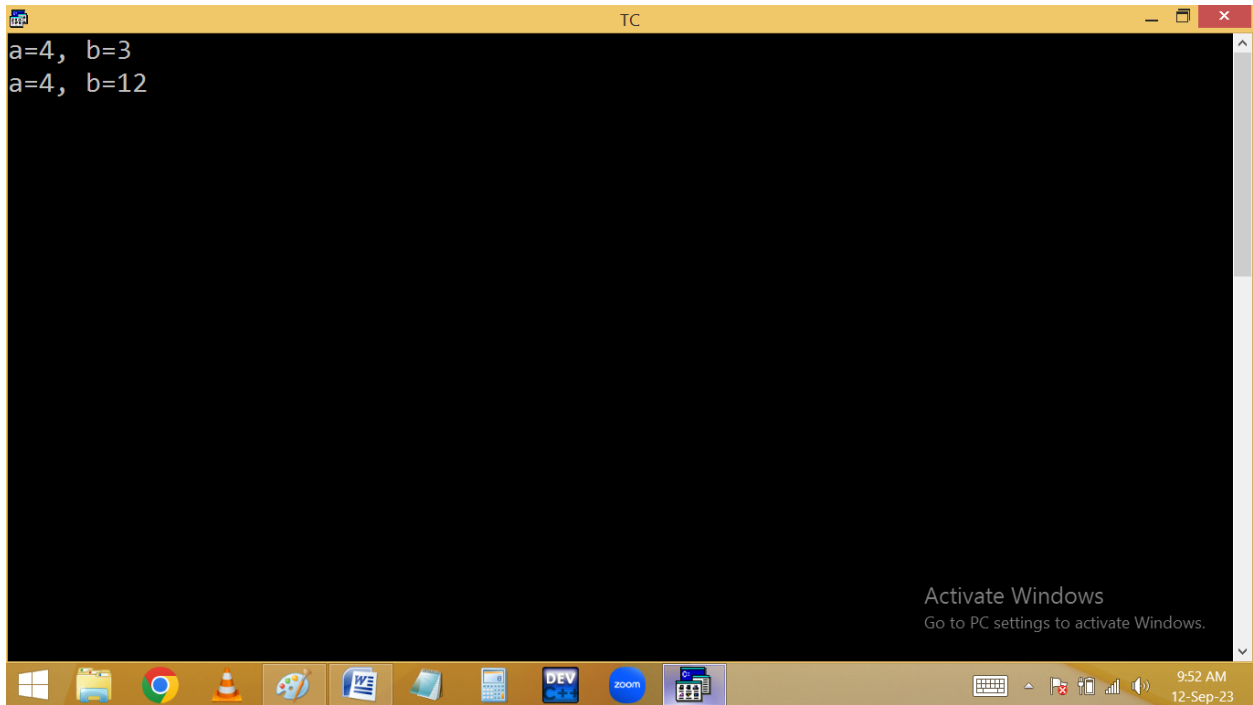
Note: Until assigning to any other variable, pre and post are same.



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 14 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=1,b;
clrscr();
b=a++ + a++ + a++;
printf("a=%d, b=%d\n",a,b);
a=1;
b=++a + ++a + ++a;
printf("a=%d, b=%d",a,b);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

9:52 AM
12-Sep-23



```
a=4, b=3
a=4, b=12
```

a=1
b=a++ + a++ + a++;
Priority: +, =, a++
1. b = a + a + a ==> 1 + 1 + 1
2. **b = 3**
3. a++ ==> a=2, a++ ==> a=3, a++ ==> **a=4**

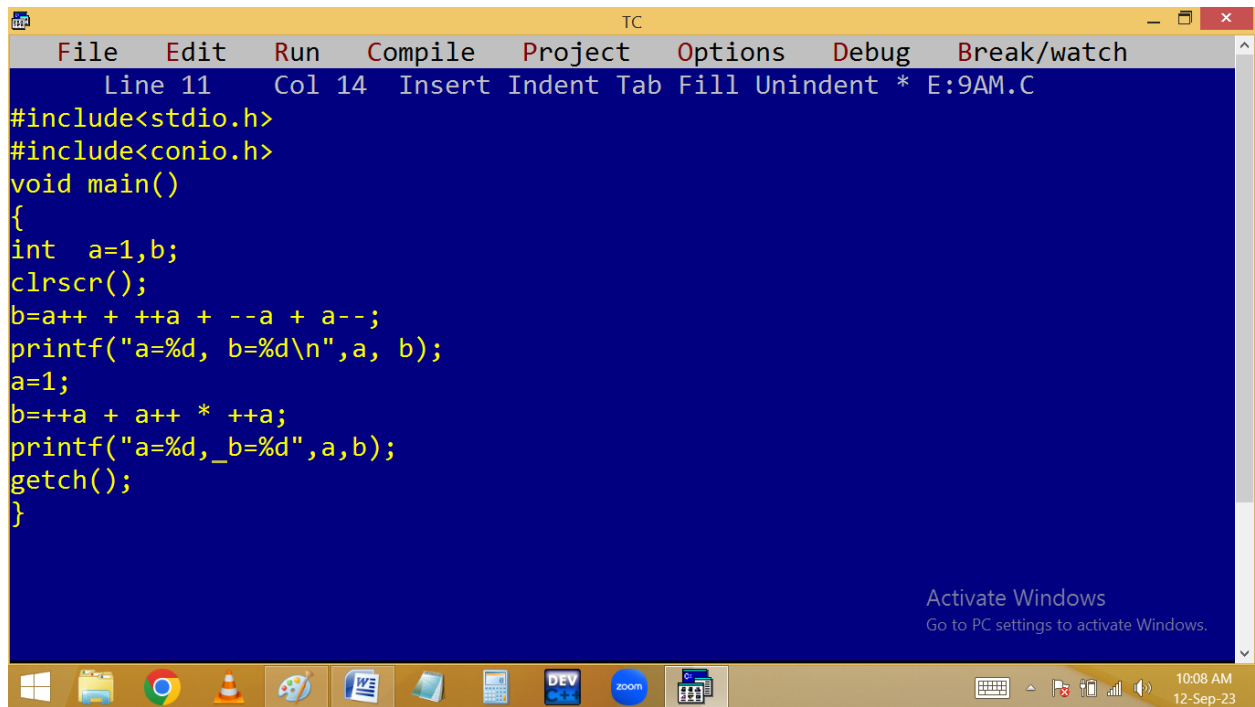
a=1
b= ++a + ++a + ++a;
priority: ++a, +, =
1. ++a==>a=2, ++a==>a=3, ++a==>**a=4**
2. b = a+a+a ==> 4+4+4
3. **b = 12**

Operator precedence

(PRIORITY OF OPERATORS)

1. ()
2. +, -, ! (sign operators, unary operators)
3. ++, -- (pre increment & decrement)

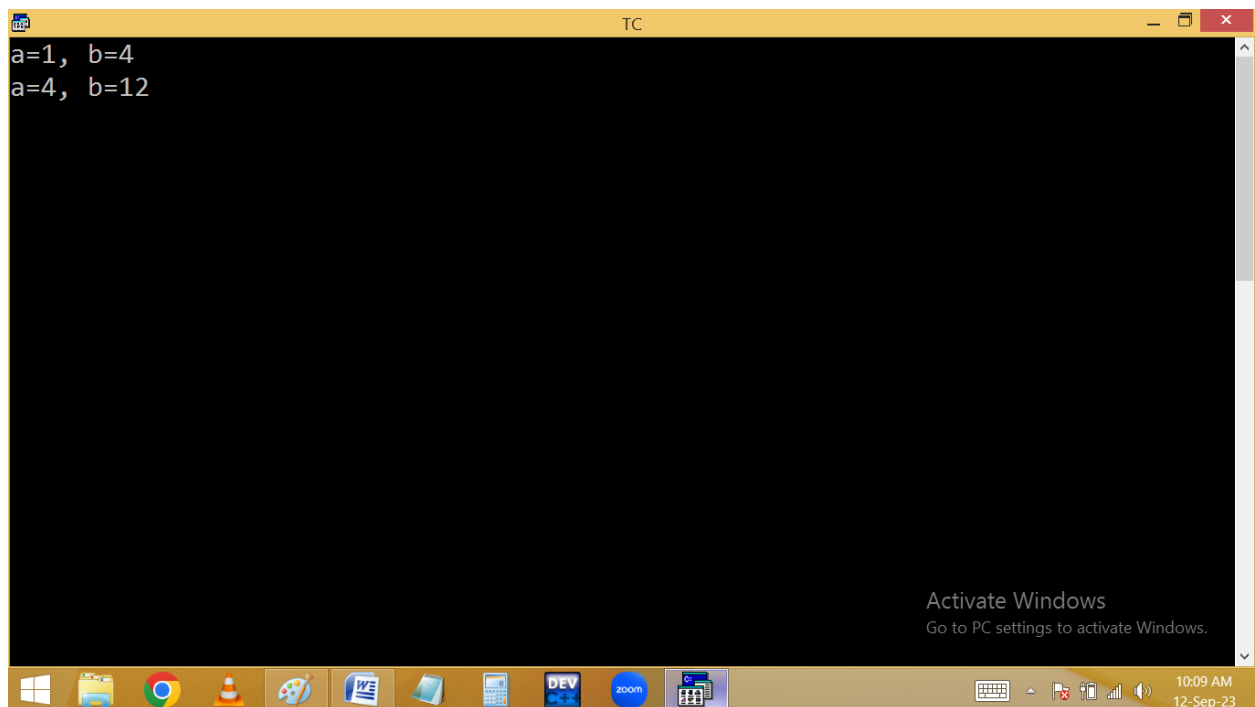
4. *, / , %
5. +, - (Binary)
6. ==, !=
7. &&
8. ||
9. ? : (ternary operator)
10. =
11. ++, -- (Post increment & decrement)
12. , (comma)



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 14 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=1,b;
clrscr();
b=a++ + ++a + --a + a--;
printf("a=%d, b=%d\n",a, b);
a=1;
b=++a + a++ * ++a;
printf("a=%d,_b=%d",a,b);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

10:08 AM
12-Sep-23



```
TC
a=1, b=4
a=4, b=12
```

Activate Windows
Go to PC settings to activate Windows.

10:09 AM
12-Sep-23

a=1

b = a++ + ++a + --a + a--;

priority: ++a, --a, +, =, a++, a--

1. ++a ==> a=2

2. --a ==> a=1

3. b = a + a + a + a ==> 1+1+1+1

4. b=4

5. a++ ==> a=2

6. a-- ==> a=1

a=1

b = ++a + a++ * ++a;

priority: ++a, *, +, =, a++

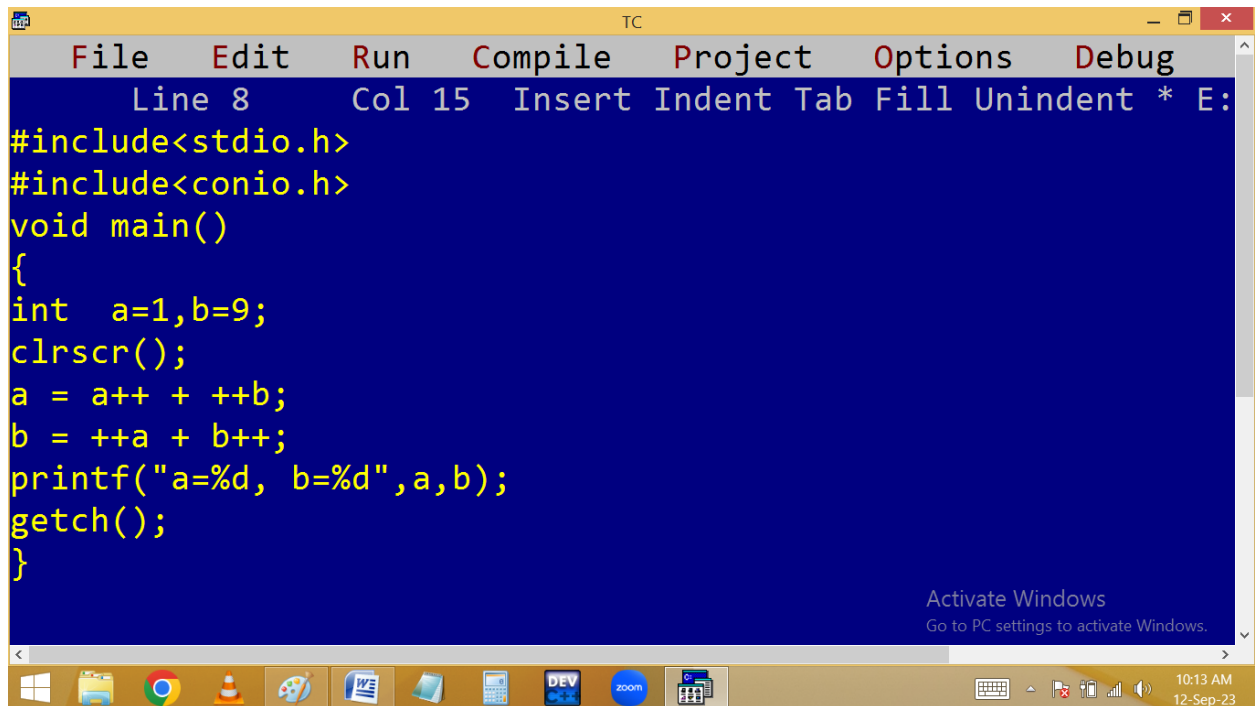
1. ++a ==> a=2, ++a ==> a=3

2. b = a + a * a

3. b = 3 + 9

4. b = 12

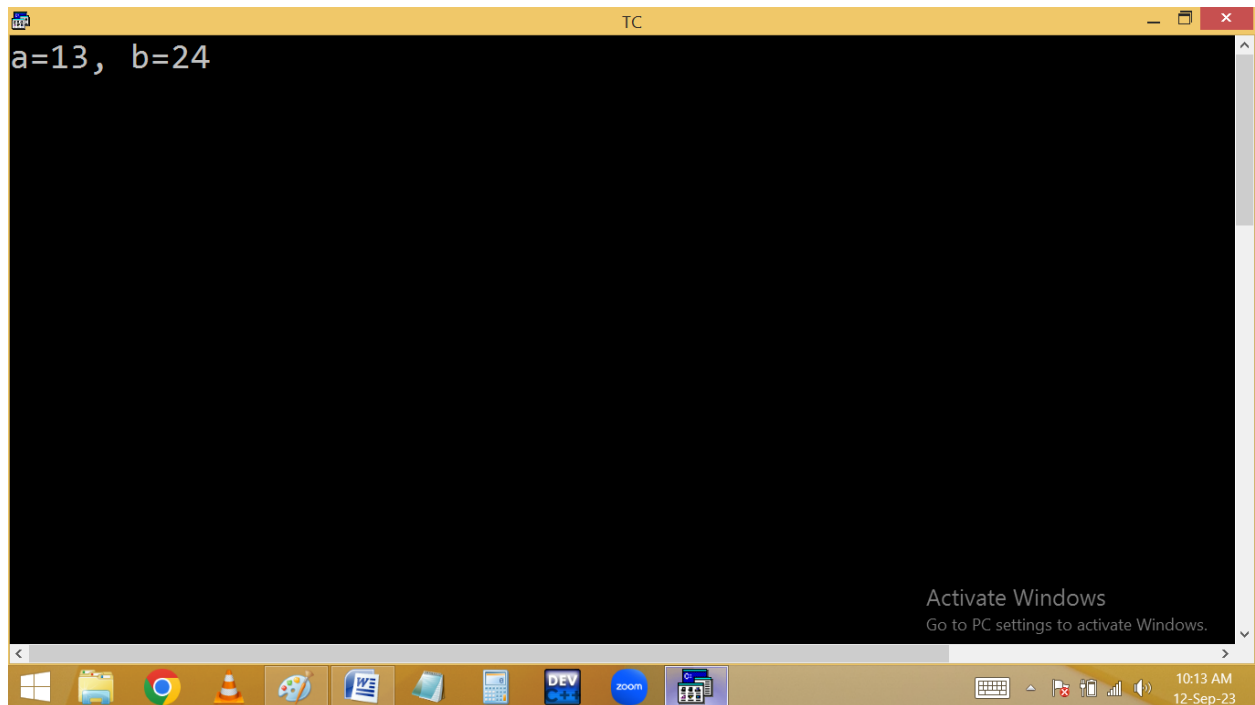
5. a++ ==> a=4



```
TC
File Edit Run Compile Project Options Debug
Line 8 Col 15 Insert Indent Tab Fill Unindent * E:
#include<stdio.h>
#include<conio.h>
void main()
{
int a=1,b=9;
clrscr();
a = a++ + ++b;
b = ++a + b++;
printf("a=%d, b=%d",a,b);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

10:13 AM
12-Sep-23



a=1 b=9

a = a++ + ++b;

priority: ++b, +, =, a++

1. ++b ==> b=10

2. a = a + b ==> 1 + 10

3. a = 11

4. a++ ==> a=12

a=12 b=10

b = ++a + b++;

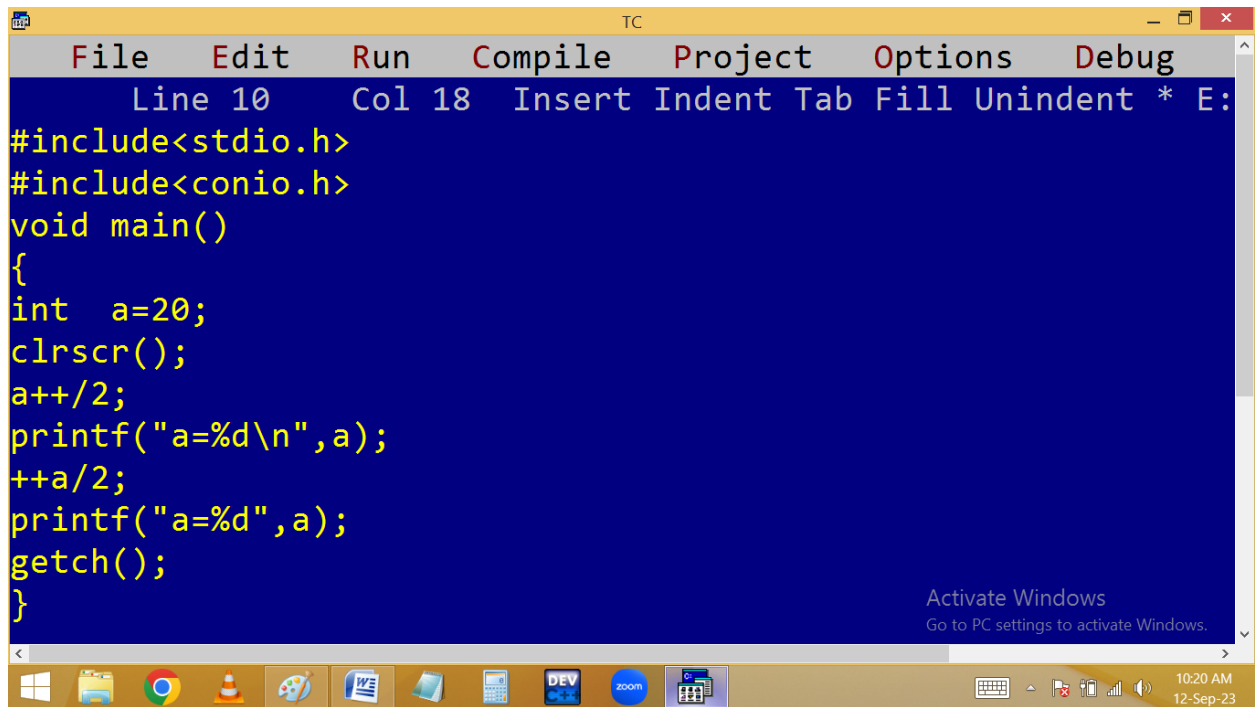
priority: ++a, +, =, b++

1. ++a ==> a=13 ✓

2. b = a + b ==> 13 + 10

3. b = 23

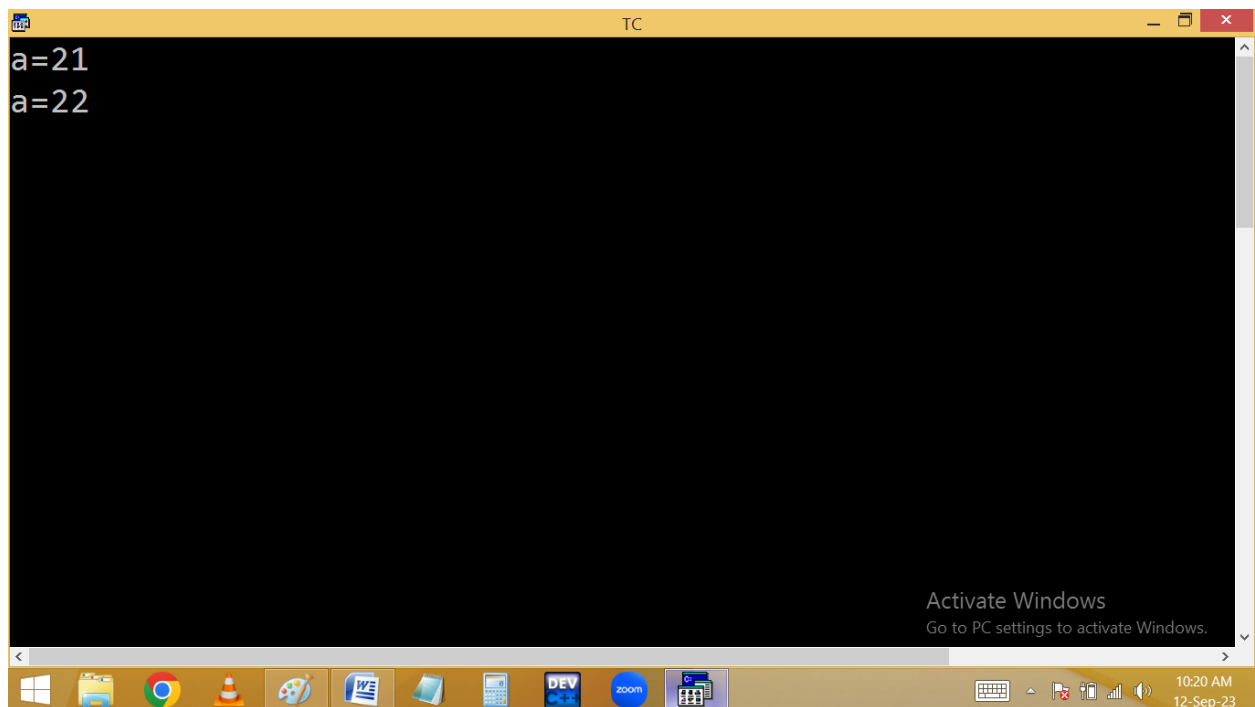
4. b++ ==> b=24 ✓



```
File Edit Run Compile Project Options Debug
Line 10 Col 18 Insert Indent Tab Fill Unindent * E:
#include<stdio.h>
#include<conio.h>
void main()
{
int a=20;
clrscr();
a++/2;
printf("a=%d\n",a);
++a/2;
printf("a=%d",a);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

10:20 AM
12-Sep-23



```
a=21
a=22
```

Activate Windows
Go to PC settings to activate Windows.

10:20 AM
12-Sep-23

a=20

a++/2; **priority: /, a++**

1. a/2 ==> 20/2=10 [**10 not stored in a because of = not used i.e. a=20**]

2. a++ ==> 21

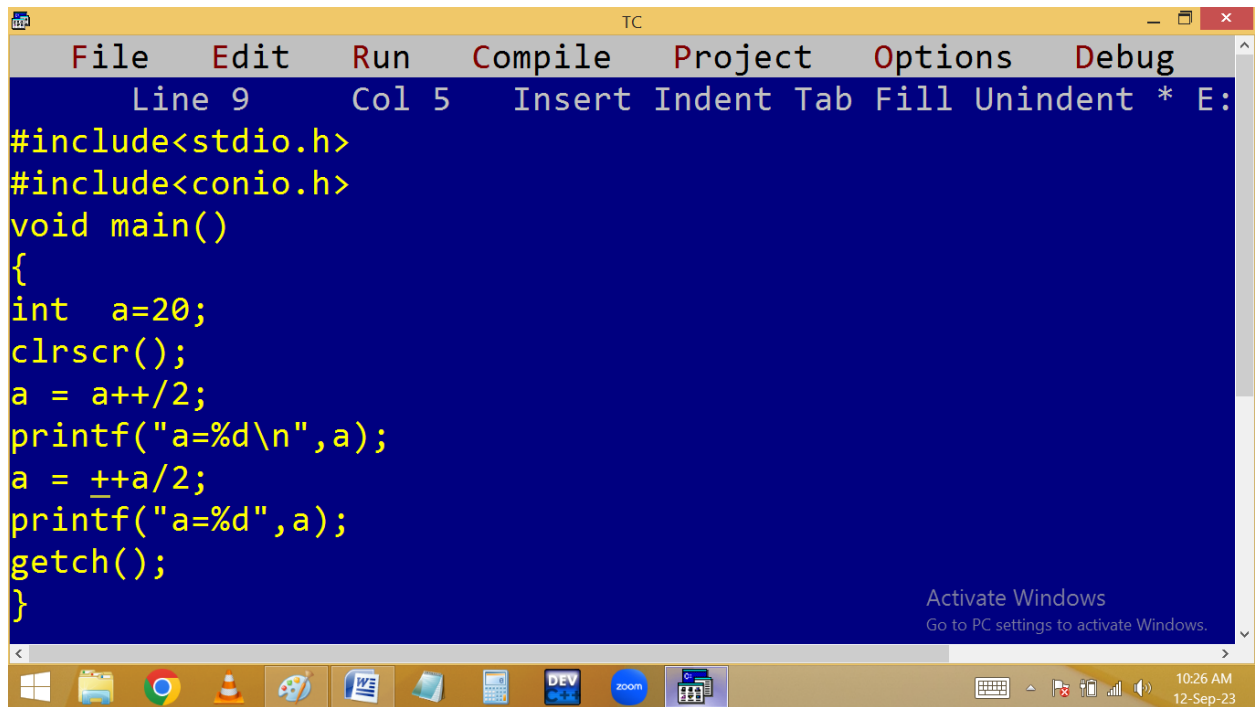
p(a) ==> **21**

++a/2; priority: ++a, /

1. ++a ==> a=22

2. a/2 ==> 22/2=11 [**11 not stored in a because of = not used i.e. a=22**]

p(a) ==> **22**



TC

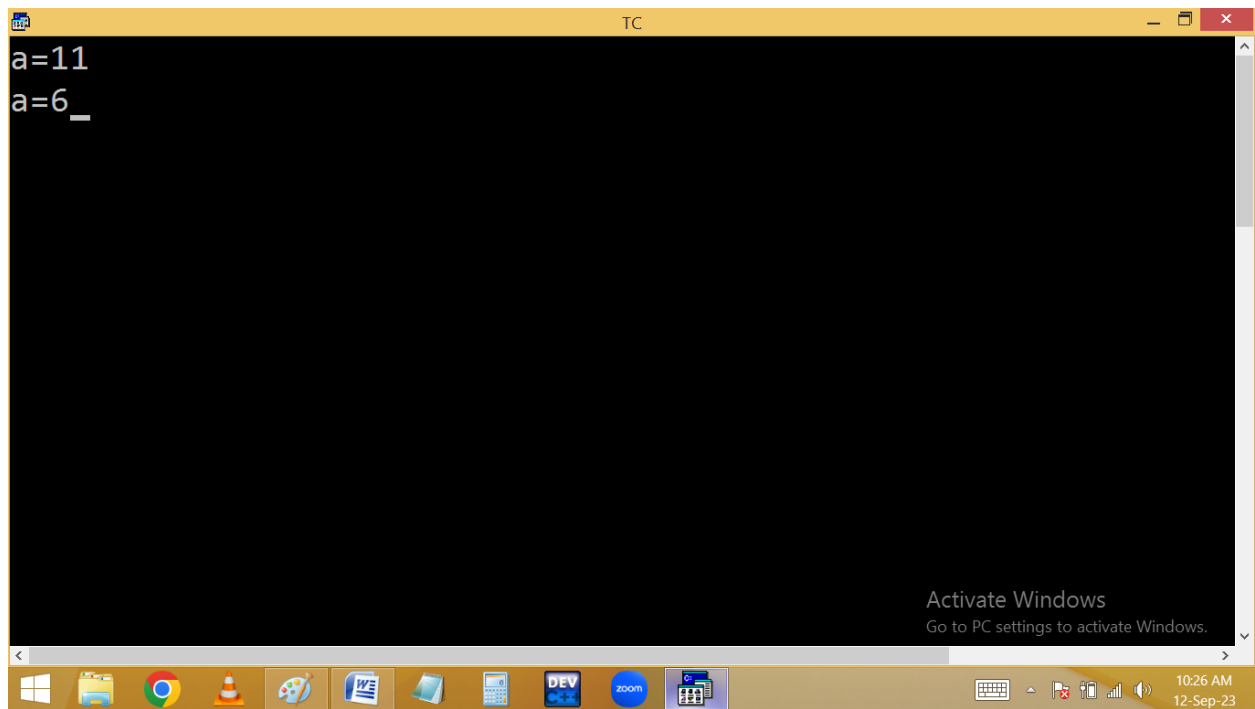
File Edit Run Compile Project Options Debug

Line 9 Col 5 Insert Indent Tab Fill Unindent * E:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=20;
clrscr();
a = a++/2;
printf("a=%d\n",a);
a = ++a/2;
printf("a=%d",a);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

10:26 AM
12-Sep-23



TC

```
a=11
a=6_
```

Activate Windows
Go to PC settings to activate Windows.

10:26 AM
12-Sep-23

a=20

a=a++/2; priority: /, =, a++

1. a=a/2 ==> 20/2 = 10

2. a=10

3. a++ ==> a=11

p(a); ==> 11

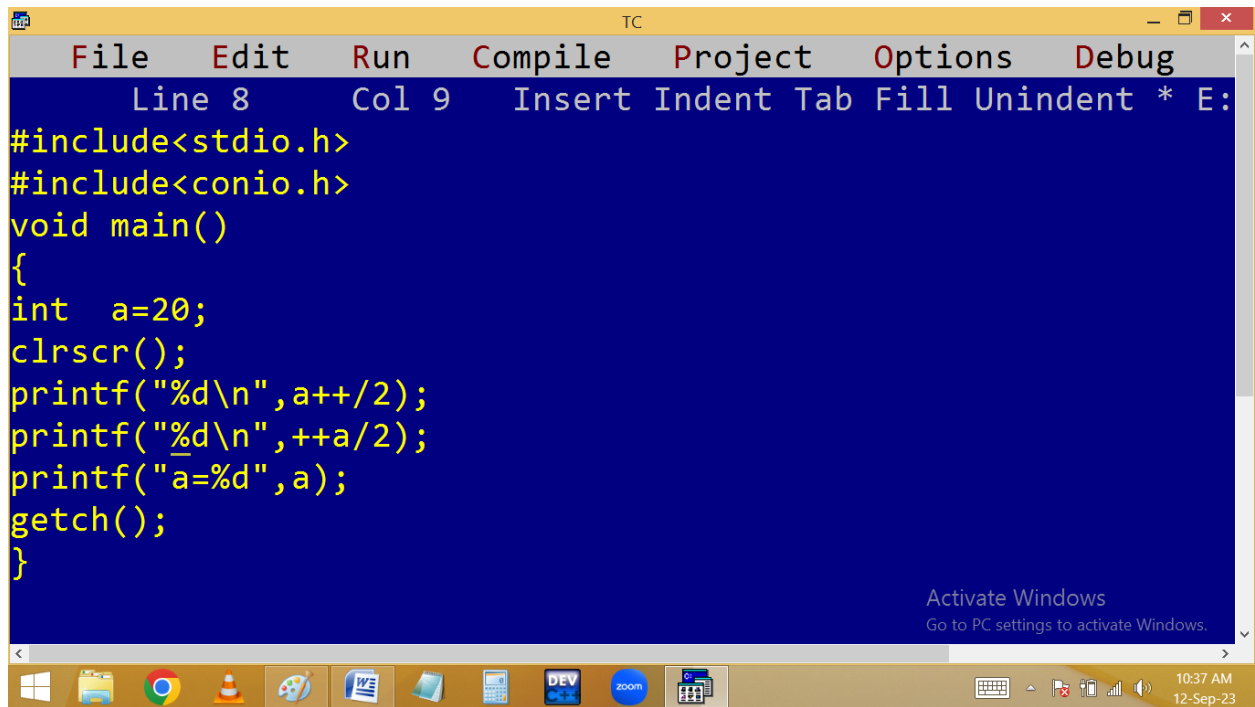
a=++a/2; priority: ++a, /, =

1. ++a ==> a=12

2. a=a/2 ==> 12/2=6

3. a=6

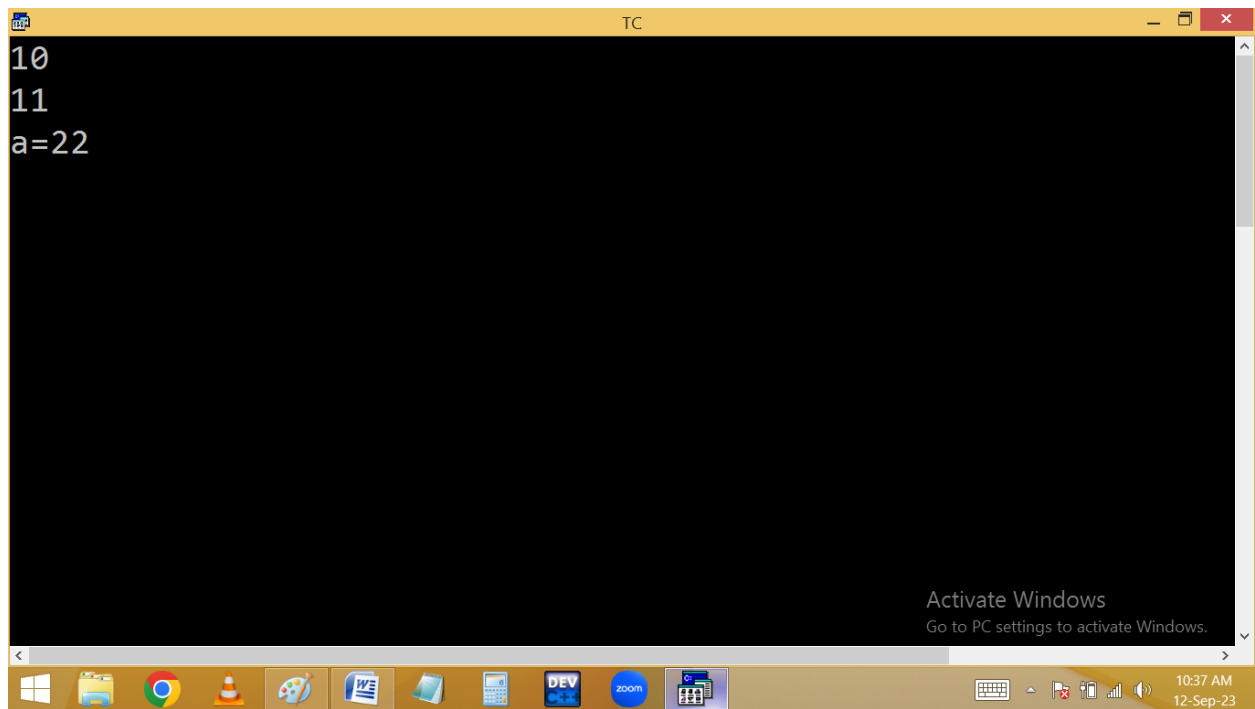
p(a) ==> 6



The screenshot shows the Turbo C++ IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, and Debug. The status bar at the top indicates 'Line 8 Col 9'. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int  a=20;
clrscr();
printf("%d\n",a++/2);
printf("%d\n",++a/2);
printf("a=%d",a);
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 and the system clock reading 10:37 AM on 12-Sep-23.



The screenshot shows the same Turbo C++ IDE window, but now displaying the output of the program. The output text is:

```
10
11
a=22
```

The 'Activate Windows' watermark is also present in the bottom right corner. The Windows taskbar at the bottom remains the same, showing the system clock at 10:37 AM on 12-Sep-23.

a=20

p("%d\n", a++/2);

priority: /, printf, a++

1. a/2 ==> 20/2 = 10

2. p(10) ==> 10 printed not stored i.e. a=20

3. a++ ==> a=21

p("%d", ++a/2);

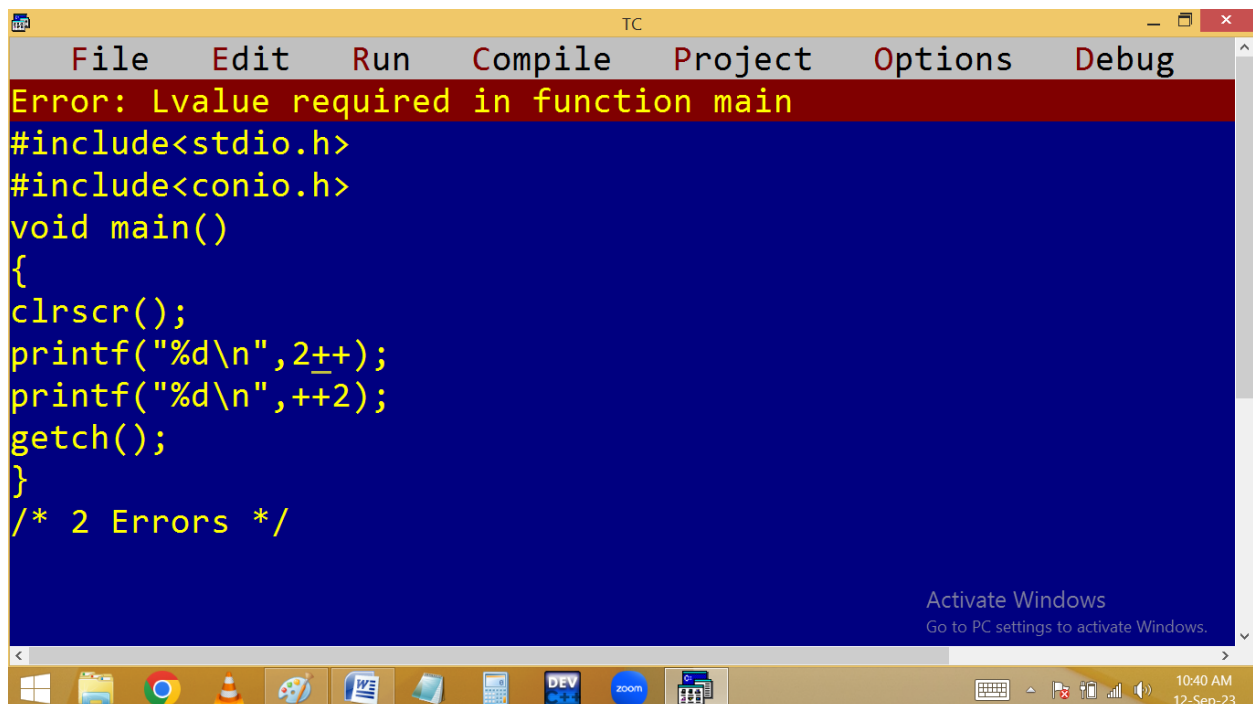
priority: ++a, /, printf

1. ++a ==> a=22

2. a/2 ==> 22/2=11

3. p(11) ==> 11 printed not stored i.e. a=22

p(a) ==> 22



The screenshot shows a Turbo C++ (TC) IDE window. The menu bar includes File, Edit, Run, Compile, Project, Options, and Debug. A red error message banner at the top reads "Error: Lvalue required in function main". The code editor contains the following C code:

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

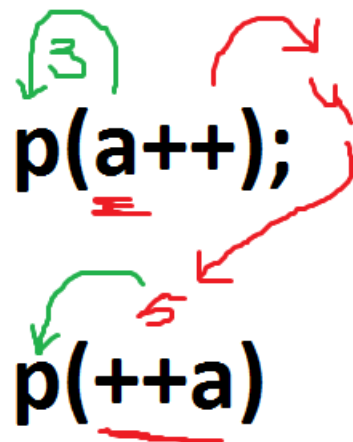
At the bottom right of the IDE, there is a watermark that says "Activate Windows Go to PC settings to activate Windows." The Windows taskbar is visible at the bottom with various icons and a system clock showing 10:40 AM on 12-Sep-23.

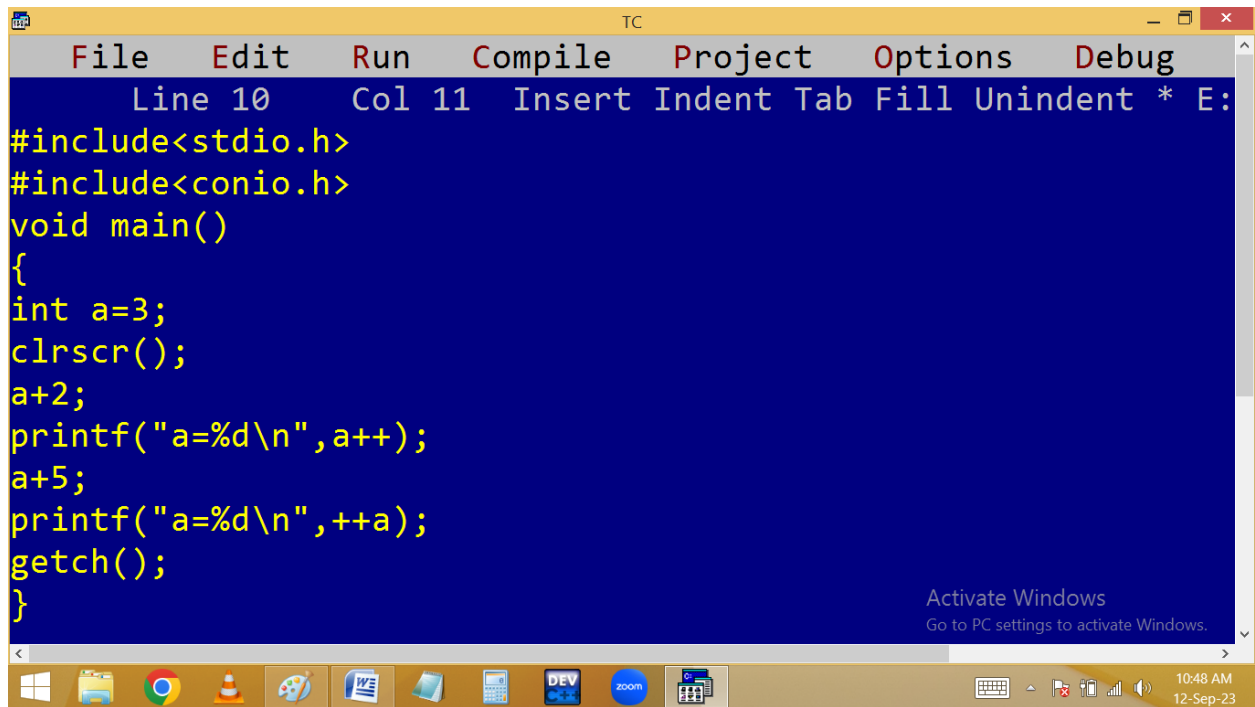
2++ means 2=2+1 ==>2=3==> Error

```
TC
File Edit Run Compile Project Options Debug
Line 12 Col 5 Insert Indent Tab Fill Unindent * E:
#include<stdio.h>
#include<conio.h>
void main()
{
int a=3;
clrscr();
printf("%d\n",a++);
printf("%d\n",++a);
getch();
}
/* 3
5 */
```

Activate Windows
Go to PC settings to activate Windows.

a=3

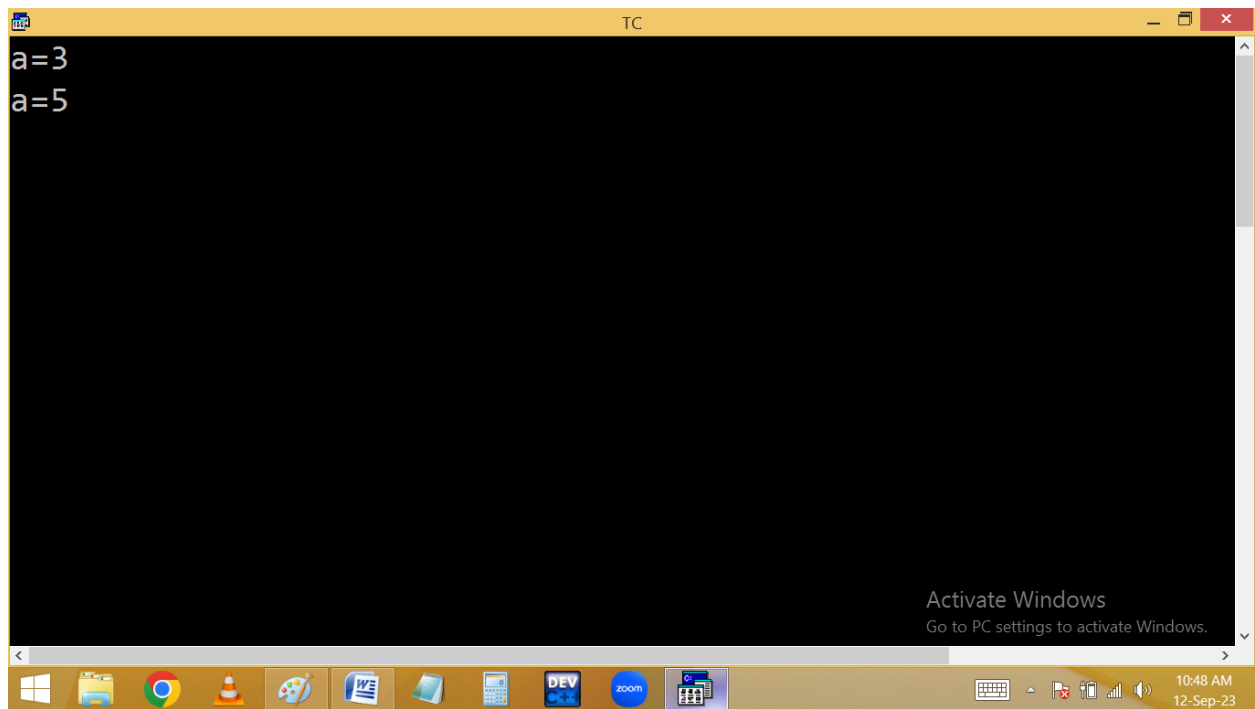




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug) and a status bar (Line 10, Col 11, Insert, Indent, Tab, Fill, Unindent, * E:). The main window displays the following C code:

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

An "Activate Windows" watermark is visible in the bottom right corner of the code editor. The Windows taskbar at the bottom shows the time as 10:48 AM on 12-Sep-23.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar as the first image. The main window displays the output of the program:

```
a=3
a=5
```

An "Activate Windows" watermark is visible in the bottom right corner of the output window. The Windows taskbar at the bottom shows the time as 10:48 AM on 12-Sep-23.

