

The image shows two screenshots of the Turbo C++ (TC) IDE. The top screenshot displays the source code of a C program in a blue editor window. The code includes `<stdio.h>` and `<conio.h>`, and defines a `main` function. Inside `main`, it declares `int a=4;`, calls `clrscr();`, and then performs a series of increment and print operations. The bottom screenshot shows the same IDE with the output window active, displaying the results of the program's execution: `11`, `10`, `14, 10`, and `a=8_`. The Windows taskbar at the bottom of both screenshots shows the time as 11:28 AM on 14-Jun-24.

```
File Edit Run Compile Project Options Debug Break/watch
Line 16 Col 1 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a=4;
clrscr();
a=a++ + ++a;
printf("%d\n",a);
a=4;
printf("%d\n", a++ + ++a);
a=4;
printf("%d, %d\n", a++ + ++a, ++a + a++);
printf("a=%d",a);
getch();
}
```

11
10
14, 10
a=8_

a=4

a = a++ + ++a;

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

1. ++a==>a=5

2. a = a + a ==> 5 + 5

3. a = 10

4. a++ ==> a=11

a=4

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

Handwritten diagram showing the evaluation of `a++ + ++a`. It shows `a` increasing from 4 to 5, then 5 to 6. The expression is evaluated as `4 + 6`, resulting in 10. A red arrow points from the result 10 to the `%d` placeholder in the `p` function call.

a=4

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

Handwritten diagram showing the evaluation of `a++ + ++a` and `++a + a++`. For the first expression, `a` increases from 4 to 5, then 5 to 6, and is evaluated as `4 + 6 = 10`. For the second expression, `a` increases from 6 to 7, then 7 to 8, and is evaluated as `6 + 8 = 14`. Blue arrows point from the results 10 and 14 to the `%d` placeholders in the `p` function call.

Compound assignment / shorthand operators:

Here we are using assignment operator with the combination of other operators as follows.

`+=, -=, *=, %/, <<=, >>=, ~=, ...`

Eg:

`int a=10, b=2;`

`float c=5;`

`a+=4;` i.e. `a=a+4` \Rightarrow `10+4` \Rightarrow `a=14`

`b*=3;` i.e. `b=b*3` \Rightarrow `2*3` \Rightarrow `b=6`

`c/=2;` i.e. `c=c/2` \Rightarrow `5/2` \Rightarrow `c=2.500000`

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 11 Col 34 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a=10, b=2;
float c=5;
clrscr();
a+=4;
b*=3;
c/=2;
printf("a=%d, b=%d, c=%f",a,b,c);_
getch();
}
```

The bottom window shows the output of the program:

```
a=14, b=6, c=2.500000_
```

Both windows have a taskbar at the bottom with various application icons and a system tray showing the time as 11:34 AM on 14-Jun-24. An "Activate Windows" watermark is visible in the bottom right corner of both windows.

The image shows two screenshots of the Turbo C++ (TC) IDE. The top screenshot displays the source code of a C program in a blue editor window. The code includes headers for `stdio.h` and `conio.h`, defines a `main` function, declares variables `a` and `b` with initial values 10 and 7, clears the screen, calculates `a = a + (b * 5)` (commented with `10 + (7 * 5) ==> 10 + 35 = 45`), prints the values of `a` and `b`, and waits for a key press. The bottom screenshot shows the same IDE with the output window displaying the result `a=45, b=7`. Both windows have a yellow title bar and a menu bar with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The Windows taskbar at the bottom shows various application icons and the system clock indicating 11:37 AM and 11:36 AM on 14-Jun-24.

```
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 56 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a=10,b=7;
clrscr();
a+=b*5; /* a=a+ (b*5) ==> 10+(7*5) ==> 10+35 = 45 */_
printf("a=%d, b=%d",a,b);
getch();
}
```

a=45, b=7

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the source code editor, which has a blue background and contains the following C code:

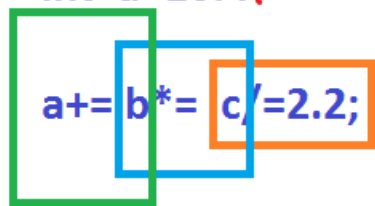
```
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 15 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a=10.4,b=7.7, c=2.2;
clrscr();
a+= b*= c/=2.2;
printf("a=%d, b=%d, c=%d",a,b,c);
getch();
}
```

The bottom window is the output console, which has a black background and displays the output of the program:

```
a=10, b=0, c=0
```

Both windows have a yellow title bar with the text "TC". The Windows taskbar is visible at the bottom of the screen, showing various application icons and the system clock indicating 11:40 AM and 11:41 AM on 14-Jun-24. An "Activate Windows" watermark is present in the bottom right corner of both the code and output windows.

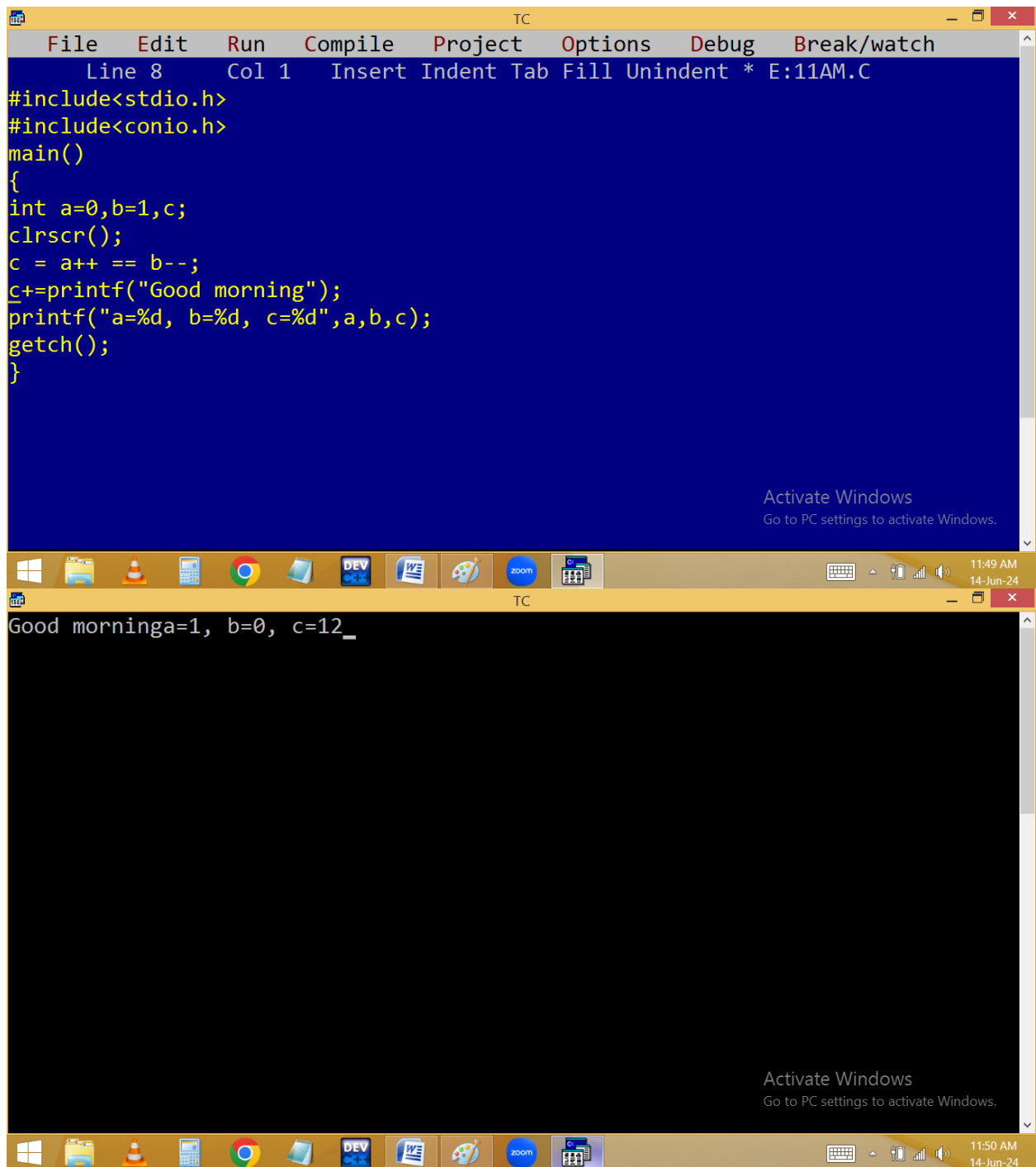
~~int a=10.4~~ ~~b=7.7~~ ~~c=2.2~~

 `a+=b*=c/=2.2;`

$c/=2.2 \implies c=c/2 \implies 2/2.2 \implies c=0$

$b*=c \implies b=b*c \implies 7*0 \implies b=0$

$a+=b \implies a=a+b \implies 10+0 \implies a=10$



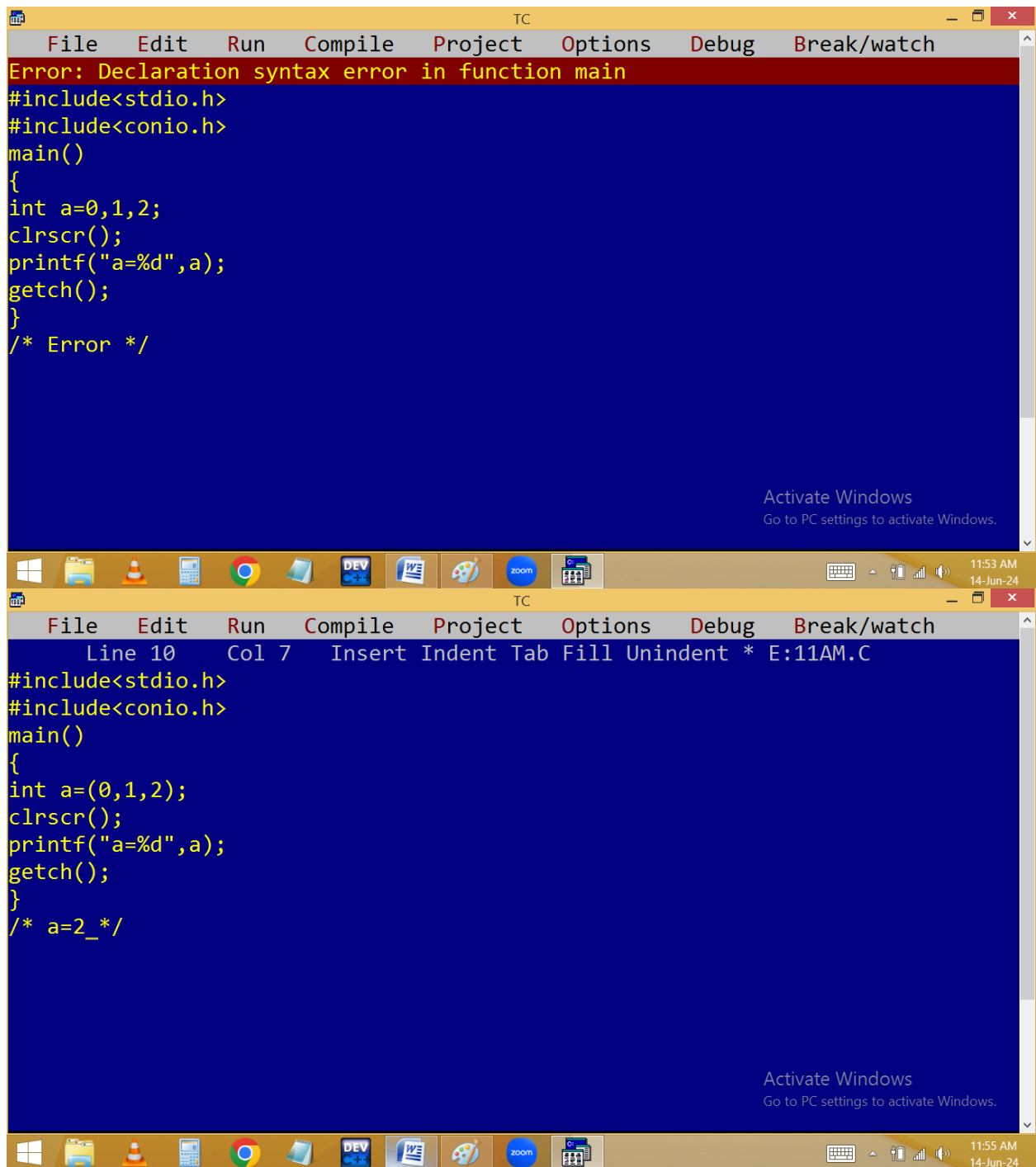
~~a=0~~ | ~~b=1~~ 0

c = a++ == b--;
0 1 0

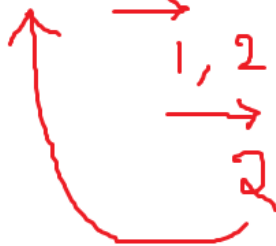
c += p("Good morning");
c = 0 + 12 = 12

p(a, b, c);
1 0 12

() and , separators:



int a = (0, 1, 2);



a=0;
a=1;
a=2;
printf(a);

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 7 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a;
a=0,1,2;
clrscr();
printf("a=%d",a);
getch();
}
/* a=0 */
```

Activate Windows
Go to PC settings to activate Windows.

a = 0, 1, 2;

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 7 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a;
a=(0,1),(2,3);
clrscr();
printf("a=%d",a);
getch();
}
/* a=1 */

Activate Windows
Go to PC settings to activate Windows.

11:59 AM
14-Jun-24
```

$a = (0, 1), (2, 3);$
→ →
 $a = 1, 3$
↪

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 7 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a;
a=((0,1),5),(2,3);
clrscr();
printf("a=%d",a);
getch();
}
/* a=5 */

Activate Windows
Go to PC settings to activate Windows.
```

$a = ((0,1), 5), (2, 3);$

$\xrightarrow{\quad} (1, 5), 3 \xrightarrow{\quad}$

$a = 5, 3$

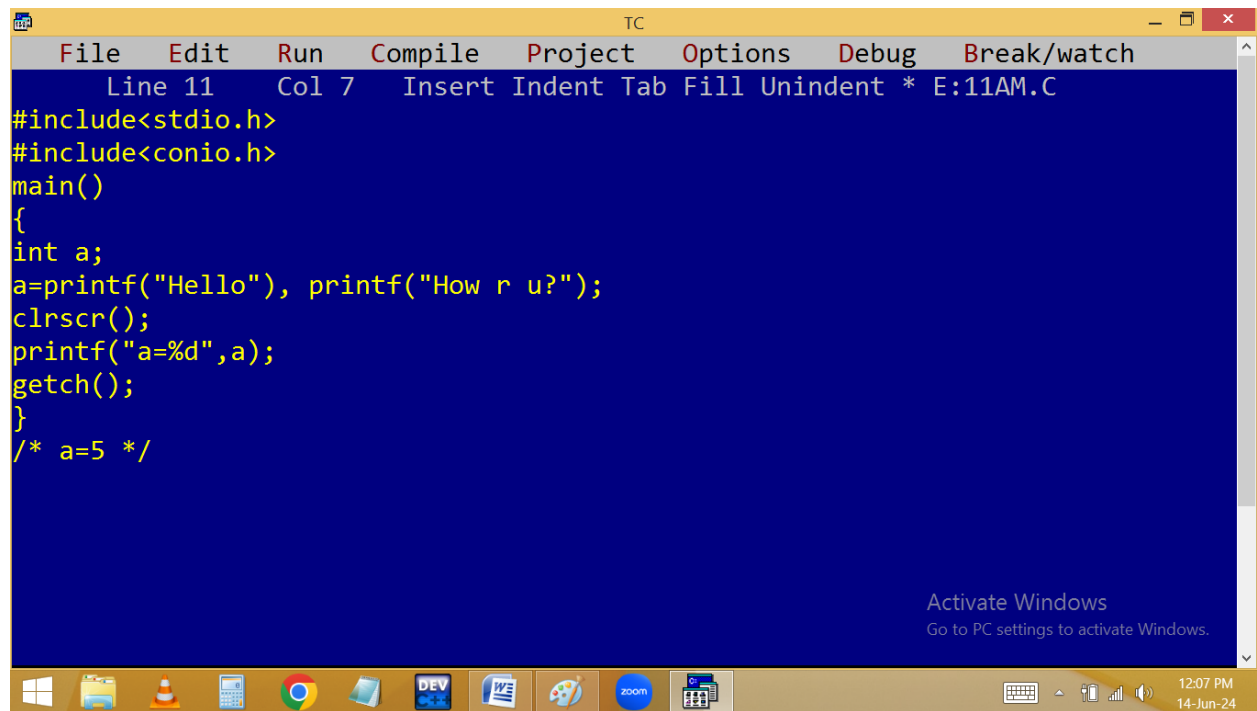
$\xleftarrow{\quad}$

```
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 7 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a;
a=0,1,(2),3;
clrscr();
printf("a=%d",a);
getch();
}
/* a=0 */
```

a = 0, 1 , (2), 3;

↓

a = 0, 1, 2, 3;



TC

File Edit Run Compile Project Options Debug Break/watch

Line 11 Col 7 Insert Indent Tab Fill Unindent * E:11AM.C

```
#include<stdio.h>
#include<conio.h>
main()
{
int a;
a=printf("Hello"), printf("How r u?");
clrscr();
printf("a=%d",a);
getch();
}
/* a=5 */
```

Activate Windows
Go to PC settings to activate Windows.

12:07 PM
14-Jun-24

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the editor, displaying a C program with the following code:

```
Line 11 Col 1 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a;
clrscr();
a=printf("Hello"), printf("How r u?");
printf("a=%d",a);
getch();
}
```

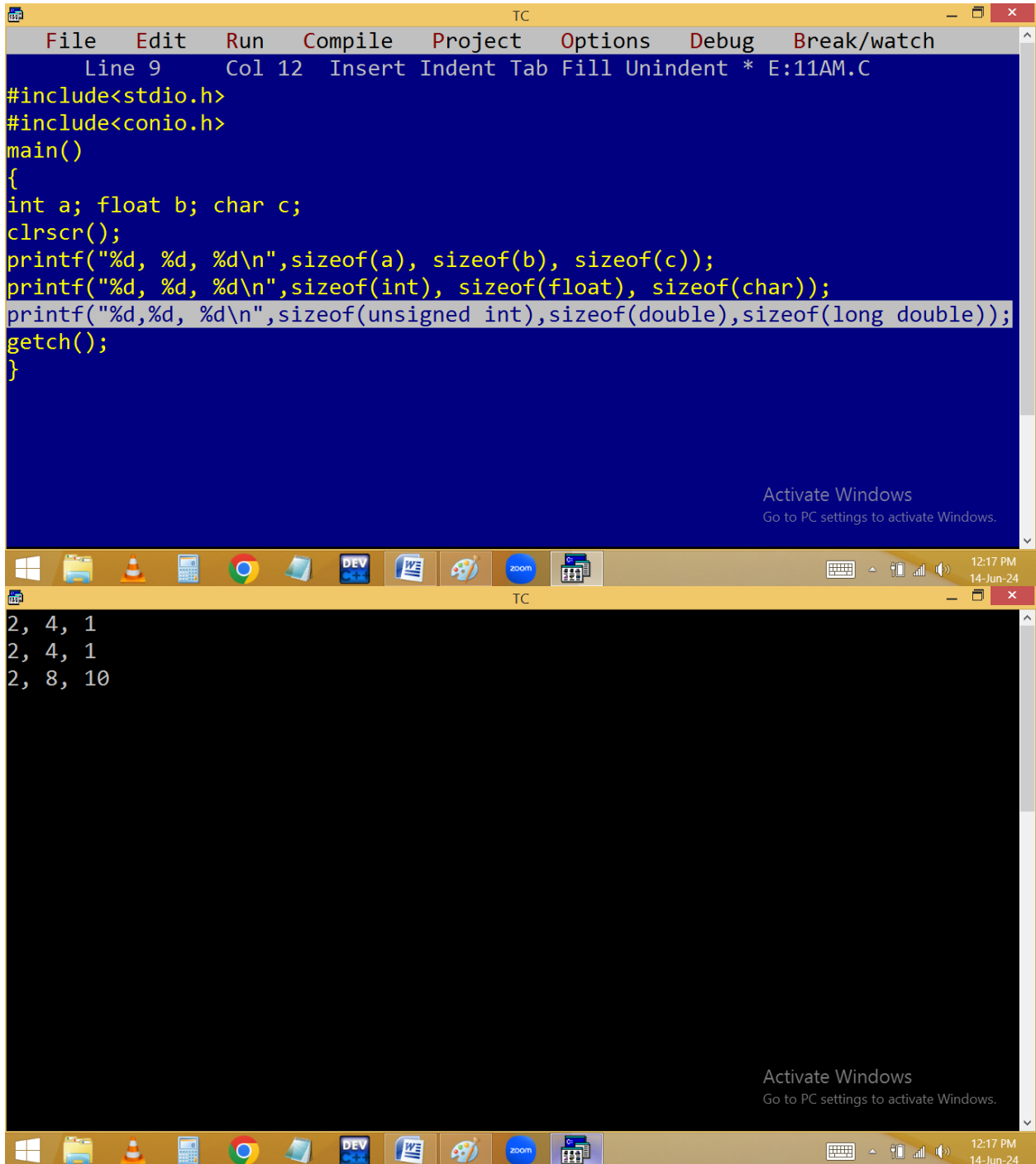
The bottom window shows the output of the program, which is:

```
HelloHow r u?a=5_
```

The Windows taskbar at the bottom shows the time as 12:09 PM on 14-Jun-24. There is also a watermark that says "Activate Windows Go to PC settings to activate Windows."


a = 5, 8;

sizeof() operator: It returns the no of bytes taken by a variable / data type / value.



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 12 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a; float b; char c;
clrscr();
printf("%d, %d, %d\n",sizeof(a), sizeof(b), sizeof(c));
printf("%d, %d, %d\n",sizeof(int), sizeof(float), sizeof(char));
printf("%d,%d, %d\n",sizeof(unsigned int),sizeof(double),sizeof(long double));
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

```
TC
2, 4, 1
2, 4, 1
2, 8, 10
```

Activate Windows
Go to PC settings to activate Windows.

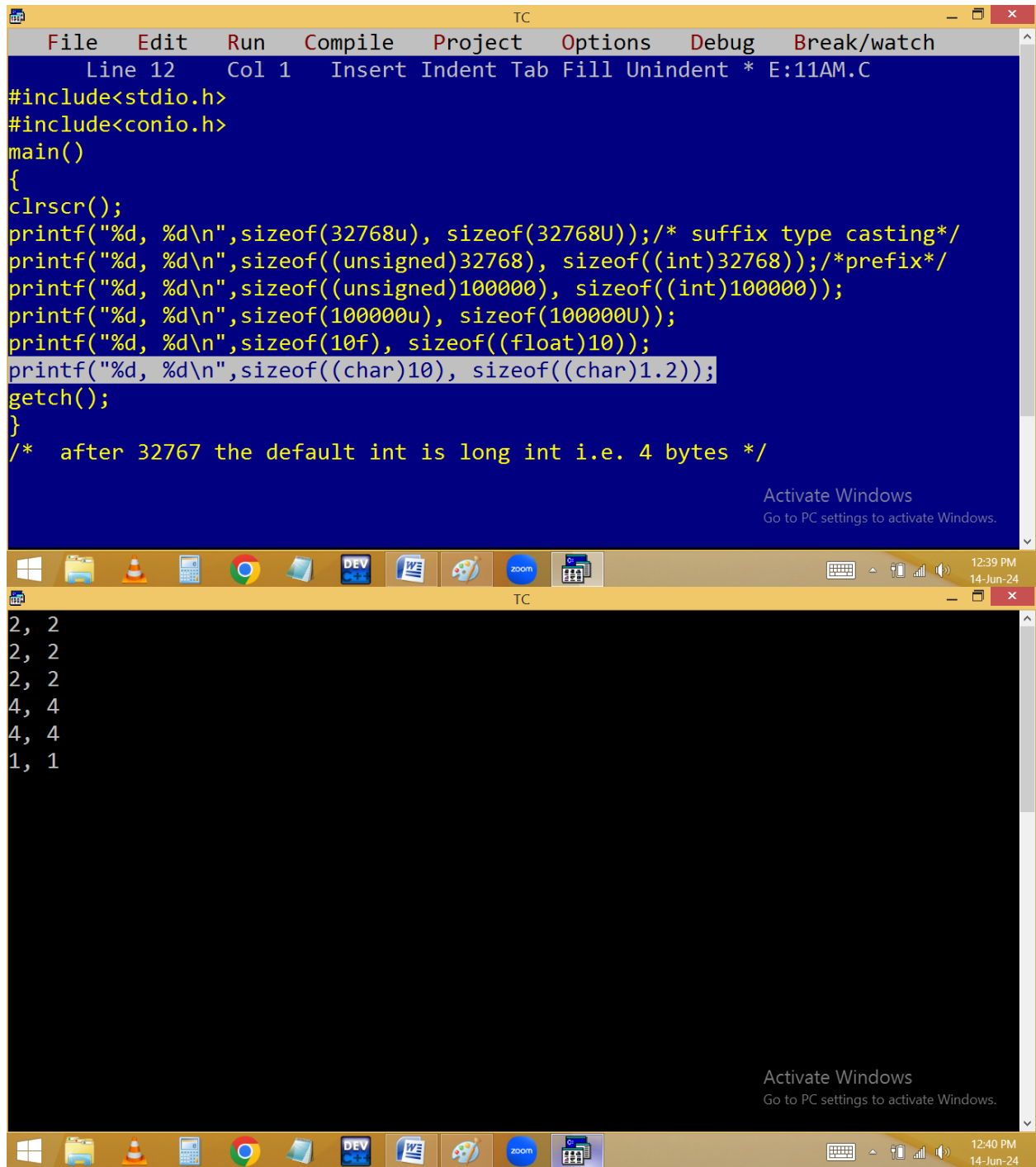
The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program with the following code:

```
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 46 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
main()
{
int a=32768;
unsigned int b=65000;
clrscr();
printf("%d, %d\n",sizeof(-5), sizeof(5));
printf("%d, %d\n",sizeof(32767), sizeof(32768));
printf("%d, %d\n",sizeof(a), sizeof(65000));
printf("%d, %d\n",sizeof(b), sizeof(100000));
getch();
}
/* after 32767 the default int is long int i.e. 4 bytes */
```

The bottom window shows the output of the program:

```
2, 2
2, 4
2, 4
2, 4
```

Both windows include a taskbar at the bottom with various application icons and a system tray showing the time as 12:25 PM on 14-Jun-24. An "Activate Windows" watermark is visible in the bottom right corner of both windows.



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program that calculates the memory size of various data types using the `sizeof` operator. The program includes `stdio.h` and `conio.h`, and uses `printf` to output the results. The output window below shows the results of the program's execution.

TC

File Edit Run Compile Project Options Debug Break/watch

Line 12 Col 1 Insert Indent Tab Fill Unindent * E:11AM.C

```
#include<stdio.h>
#include<conio.h>
main()
{
clrscr();
printf("%d, %d\n",sizeof(32768u), sizeof(32768U));/* suffix type casting*/
printf("%d, %d\n",sizeof((unsigned)32768), sizeof((int)32768));/*prefix*/
printf("%d, %d\n",sizeof((unsigned)100000), sizeof((int)100000));
printf("%d, %d\n",sizeof(100000u), sizeof(100000U));
printf("%d, %d\n",sizeof(10f), sizeof((float)10));
printf("%d, %d\n",sizeof((char)10), sizeof((char)1.2));
getch();
}
/* after 32767 the default int is long int i.e. 4 bytes */
```

Activate Windows
Go to PC settings to activate Windows.

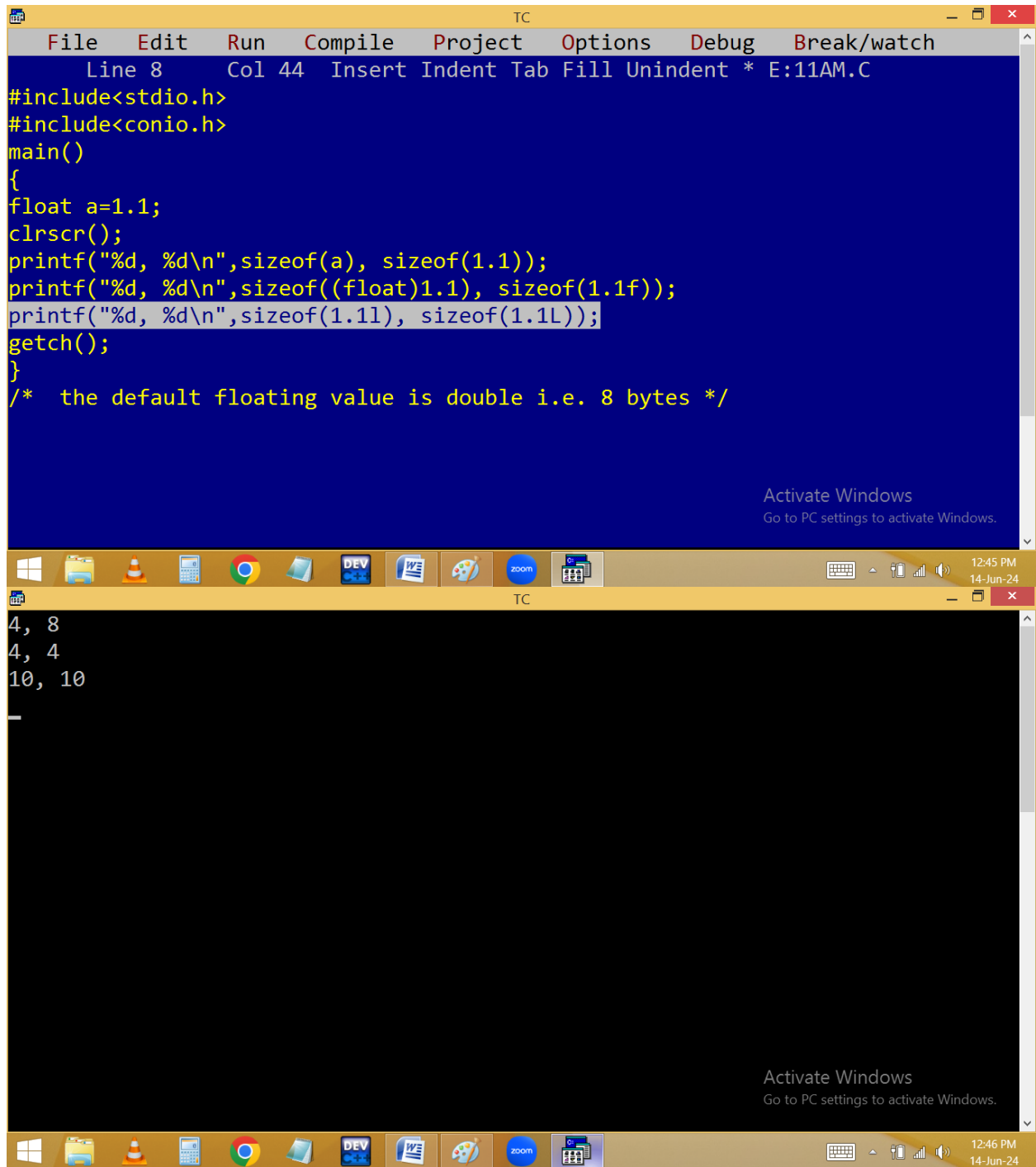
TC

```
2, 2
2, 2
2, 2
4, 4
4, 4
1, 1
```

Activate Windows
Go to PC settings to activate Windows.

12:39 PM
14-Jun-24

12:40 PM
14-Jun-24



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the source code editor, and the bottom window is the output console. Both windows have a yellow title bar and a menu bar with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom of each window shows 'Line 8 Col 44' and 'Insert Indent Tab Fill Unindent * E:11AM.C'. The output console also displays an 'Activate Windows' watermark.

```
#include<stdio.h>
#include<conio.h>
main()
{
float a=1.1;
clrscr();
printf("%d, %d\n",sizeof(a), sizeof(1.1));
printf("%d, %d\n",sizeof((float)1.1), sizeof(1.1f));
printf("%d, %d\n",sizeof(1.1l), sizeof(1.1L));
getch();
}
/* the default floating value is double i.e. 8 bytes */
```

4, 8
4, 4
10, 10

