

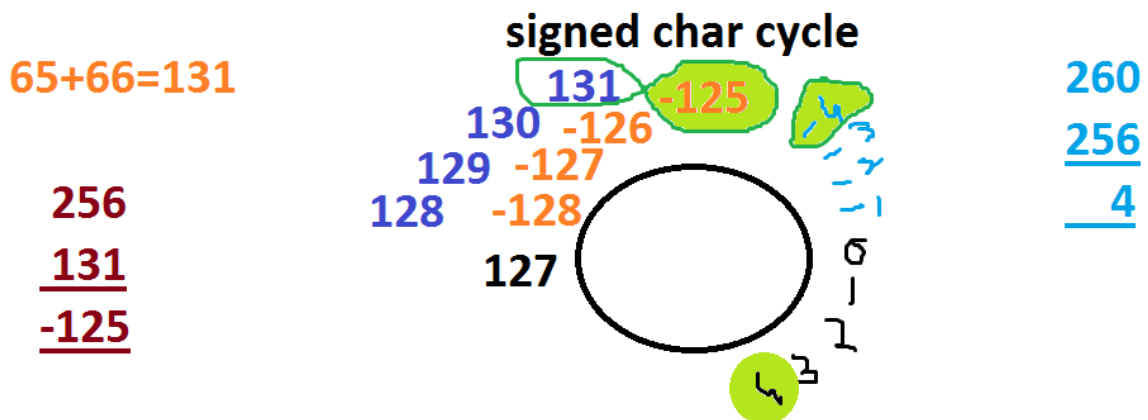
```

TC
File Edit Run Compile Project Options Debug Break/watch
Edit
Line 9 Col 18 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
char a=65, b=66, c=a+b;
clrscr();
printf("c=%d\n",c);
c=260;
printf("c=%d\n",c);
c=-260;
printf("c=%d\n",c);
getch();
}

```

Activate Windows
Go to PC settings to activate Windows.

char - ASCII - 256 char -
 { signed char ==> -128 to +127
 unsigned char ==> 0 to 255

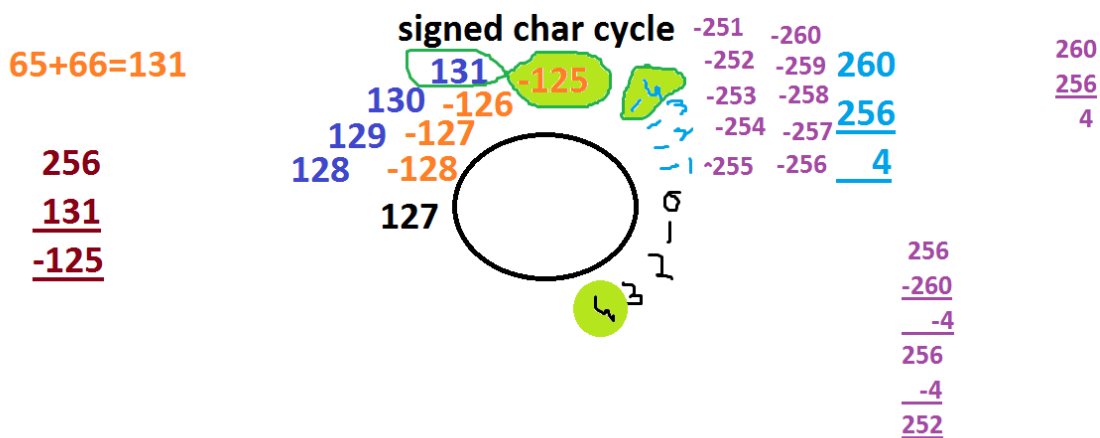


```

TC
File Edit Run Compile Project Options Debug Break/watch
Edit
Line 5 Col 10 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    unsigned _char a=65, b=66, c=a+b;
    clrscr();
    printf("c=%d\n",c);
    c=260;
    printf("c=%d\n",c);
    c=-260;
    printf("c=%d\n",c);
    getch();
}

```

Activate Windows
Go to PC settings to activate Windows.



Variables:

Variable is a container is used to store the values in our programs.

Variable is a named memory location where we can store and manipulate [modify] the values in our programs.

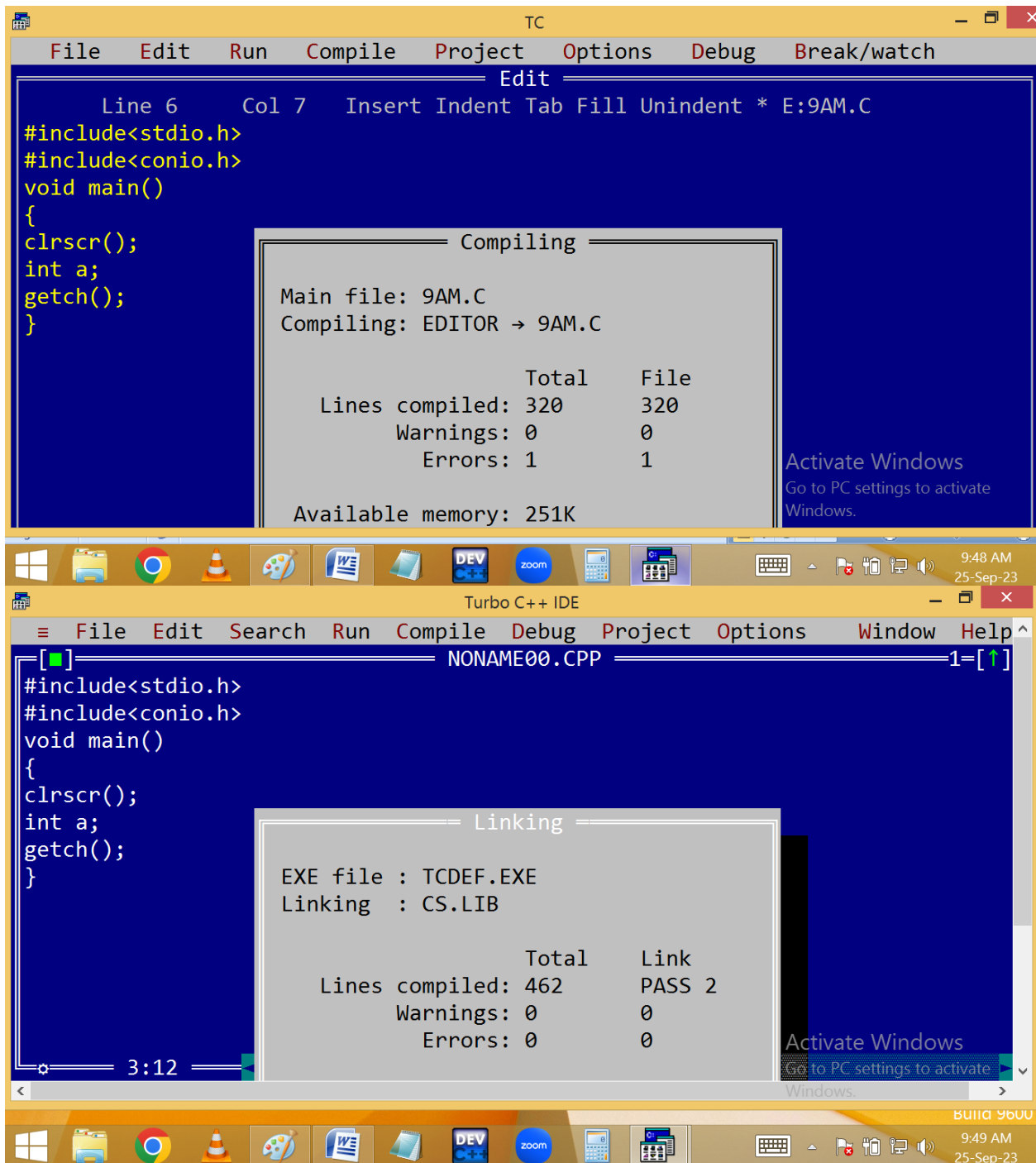
Always the variables stored in **primary memory** i.e. RAM Only. Due to this when the program execution is completed, automatically all the variables deleted from memory.

Variables are case sensitive. i.e. lower and upper are different.

```
Int a=100;
```

```
Int A=200;
```

In C compiler the variable should be declared at the first line of any function. In C++ we can declare anywhere.



Every variable is having 2 stages.

1. Variable declaration / declared

Eg: `int a;`

2. Variable initialization / defined

Eg: `a=100;`

When the variable is initialized then only memory allocated.

Syntax:

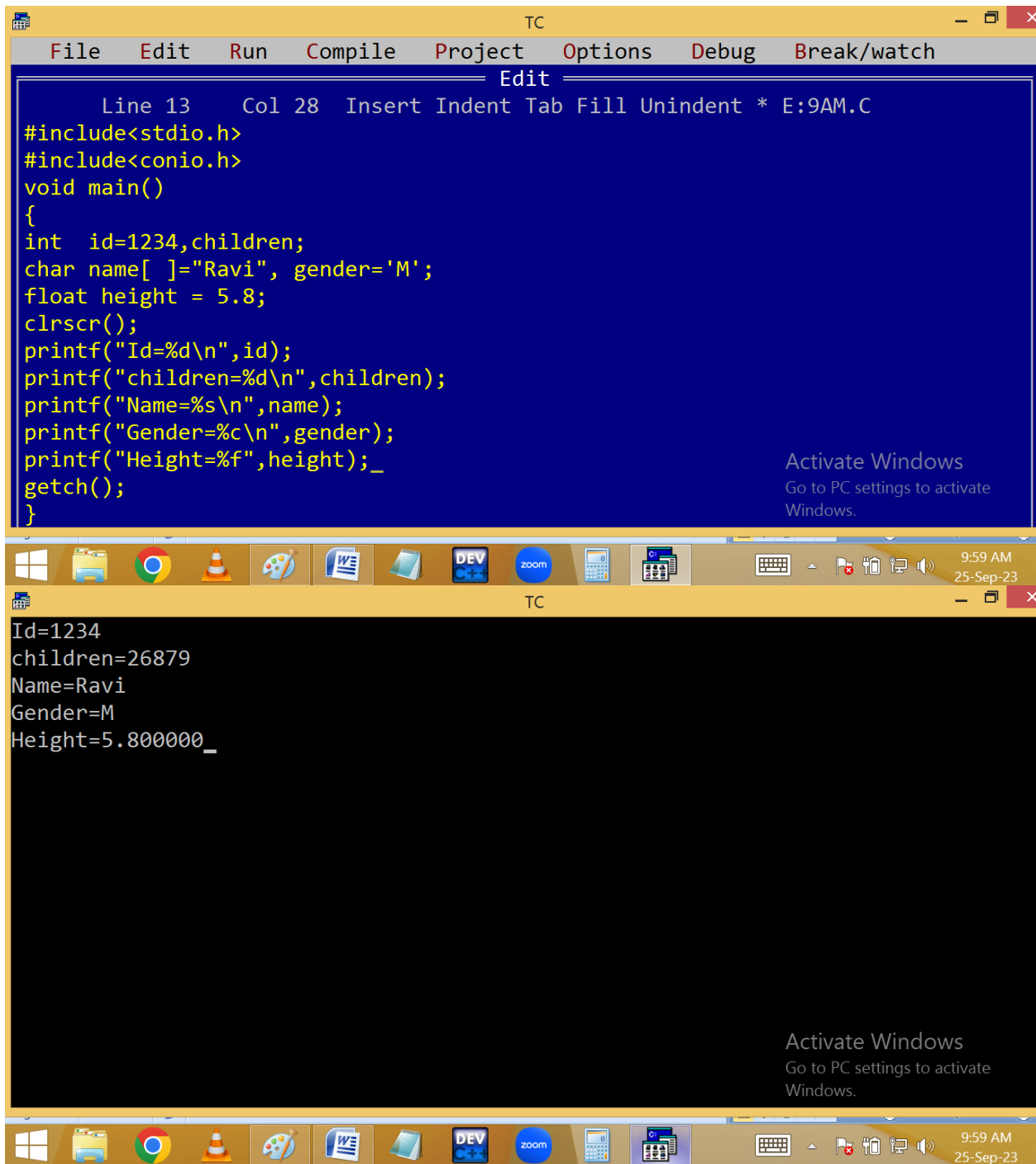
`datatype variable[=value], variable[=value],...;`

Eg:

`int id=1234, children=2;`

`char name[]="Ravi", gender='M';`

`float height = 5.8;`



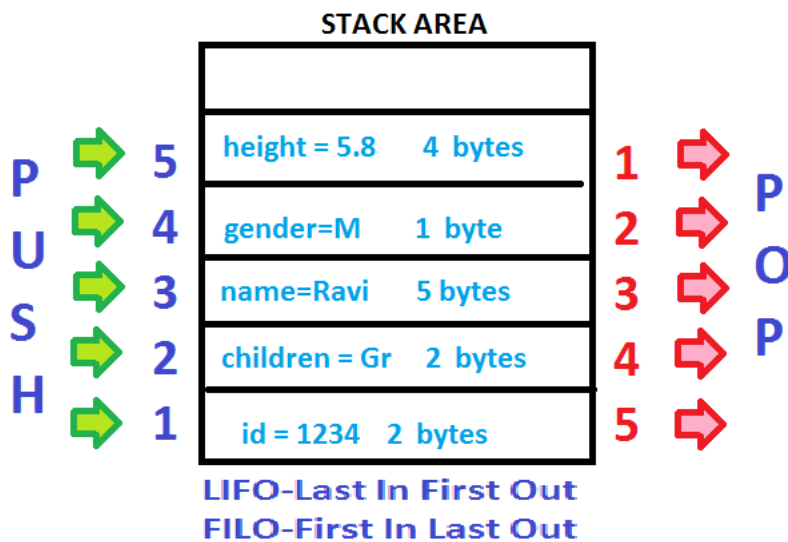
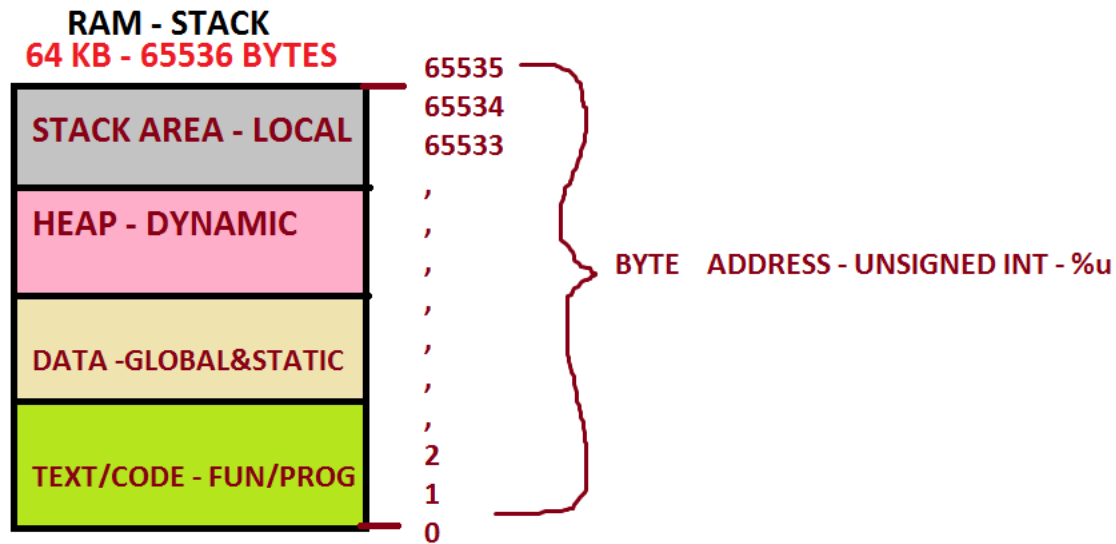
The image shows a screenshot of a Turbo C++ (TC) IDE. The top window, titled 'TC', displays a C program in a blue editor. The code defines variables for id, children, name, gender, and height, and uses printf to output their values. The bottom window, also titled 'TC', shows the program's output on a black background. The Windows taskbar at the bottom includes icons for various applications and shows the system clock as 9:59 AM on 25-Sep-23. An 'Activate Windows' watermark is visible in the bottom right of both windows.

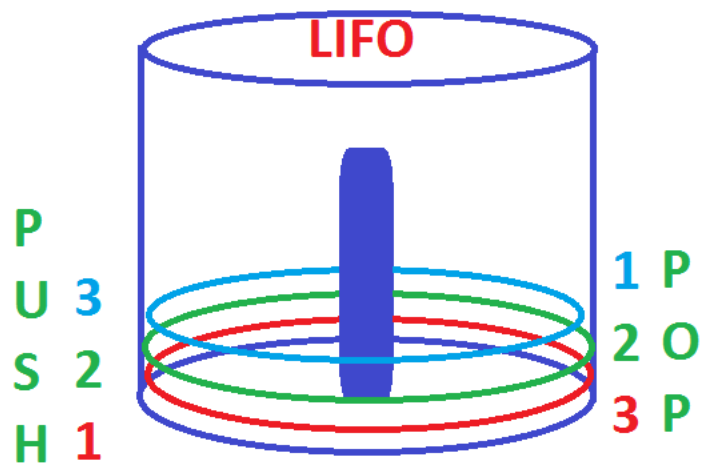
```
Line 13   Col 28   Insert  Indent  Tab  Fill  Unindent  * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int  id=1234,children;
    char name[ ]="Ravi", gender='M';
    float height = 5.8;
    clrscr();
    printf("Id=%d\n",id);
    printf("children=%d\n",children);
    printf("Name=%s\n",name);
    printf("Gender=%c\n",gender);
    printf("Height=%f",height);_
    getch();
}
```

Id=1234
children=26879
Name=Ravi
Gender=M
Height=5.800000_

Memory allocation for variables:

4 BITS = 1 NIBBLE
 8 BITS = 1 BYTE / 2 NIBBLES
 1024 BYTES = 1KB
 1024 KB = 1 MB
 1024MB = 1 GB
 1024GB = 1 TB





Finding area of a rectangle.

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 10 Col 2 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
float length=5.5, breadth=9.25, area;
clrscr();
area = length * breadth;
printf("Area = %f", area);
getch();
}_
```

Activate Windows
Go to PC settings to activate Windows.

TC

```
Area = 50.875000_
```

Activate Windows
Go to PC settings to activate Windows.

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 5 Col 56 Insert Indent Tab Fill Unindent * E:9AM.C

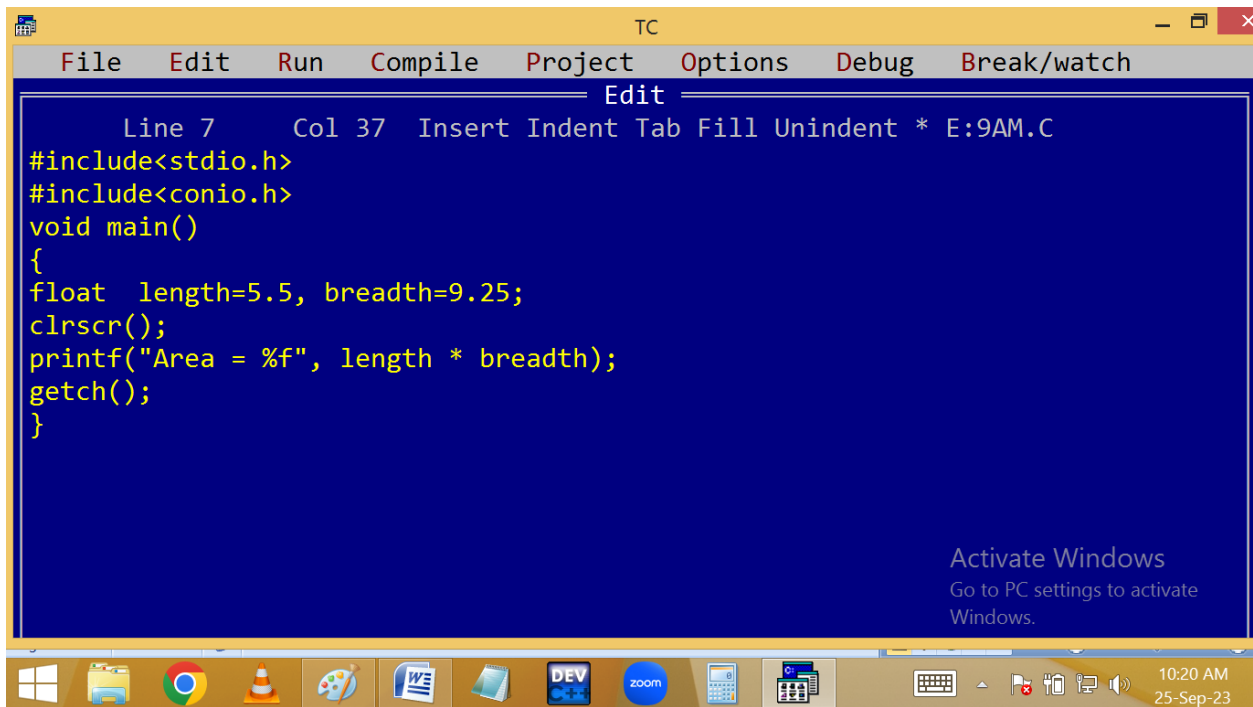
```
#include<stdio.h>
#include<conio.h>
void main()
{
float length=5.5, breadth=9.25, area= length * breadth;
clrscr();
printf("Area = %f", area);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

TC

Area = 50.875000_

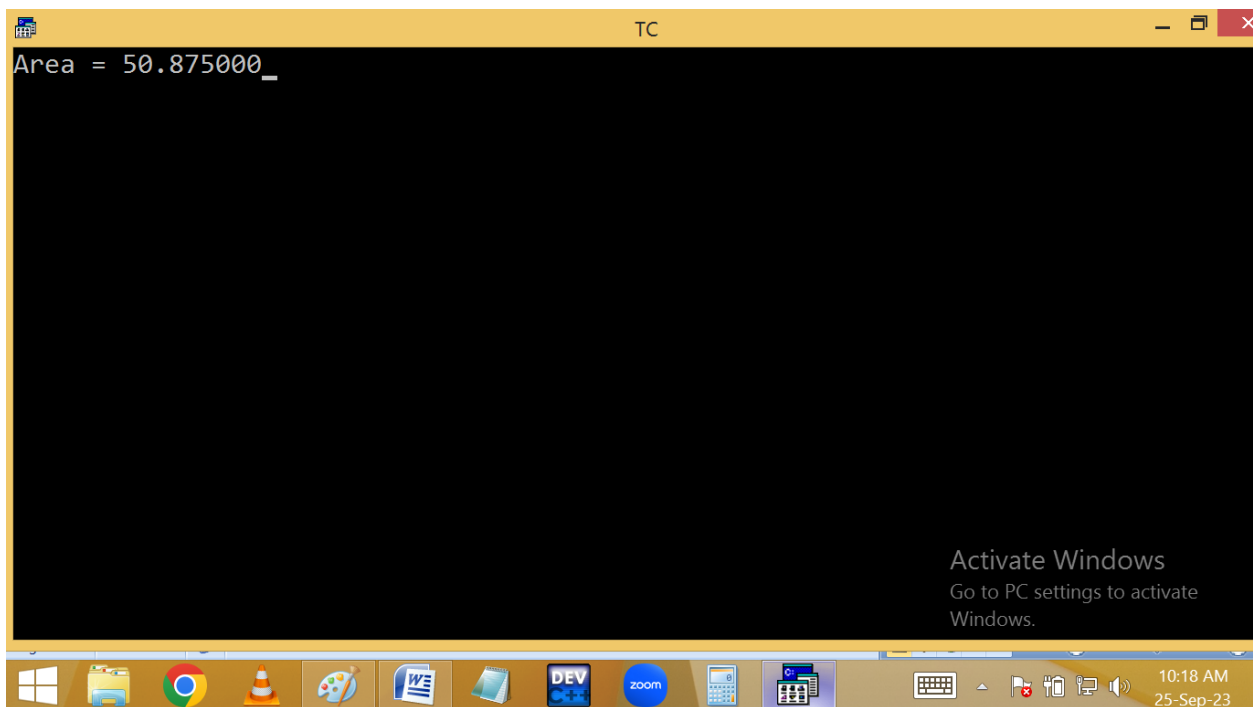
Activate Windows
Go to PC settings to activate Windows.



The screenshot shows the Turbo C++ (TC) editor window. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 7 Col 37 Insert Indent Tab Fill Unindent * E:9AM.C'. The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
float  length=5.5, breadth=9.25;
clrscr();
printf("Area = %f", length * breadth);
getch();
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the editor window. The Windows taskbar at the bottom shows the time as 10:20 AM on 25-Sep-23.



The screenshot shows the Turbo C++ (TC) editor window after execution. The output 'Area = 50.875000_' is displayed in the top left of the black editor area. An 'Activate Windows' watermark is visible in the bottom right corner. The Windows taskbar at the bottom shows the time as 10:18 AM on 25-Sep-23.

Finding cube value:

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 9 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C

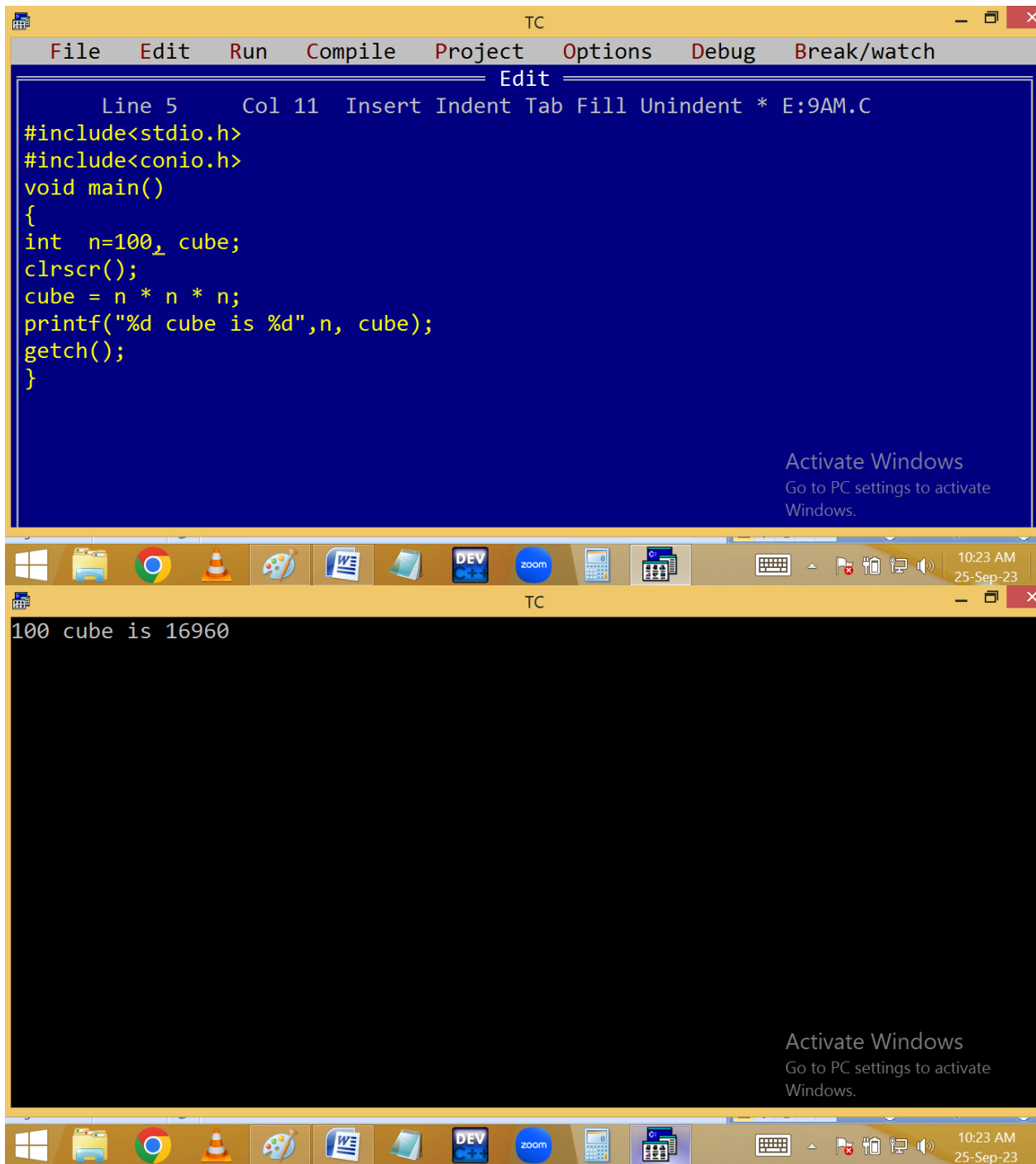
```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n=10, cube;
    clrscr();
    cube = n * n * n;
    printf("%d cube is %d",n, cube);
    getch();
}
```

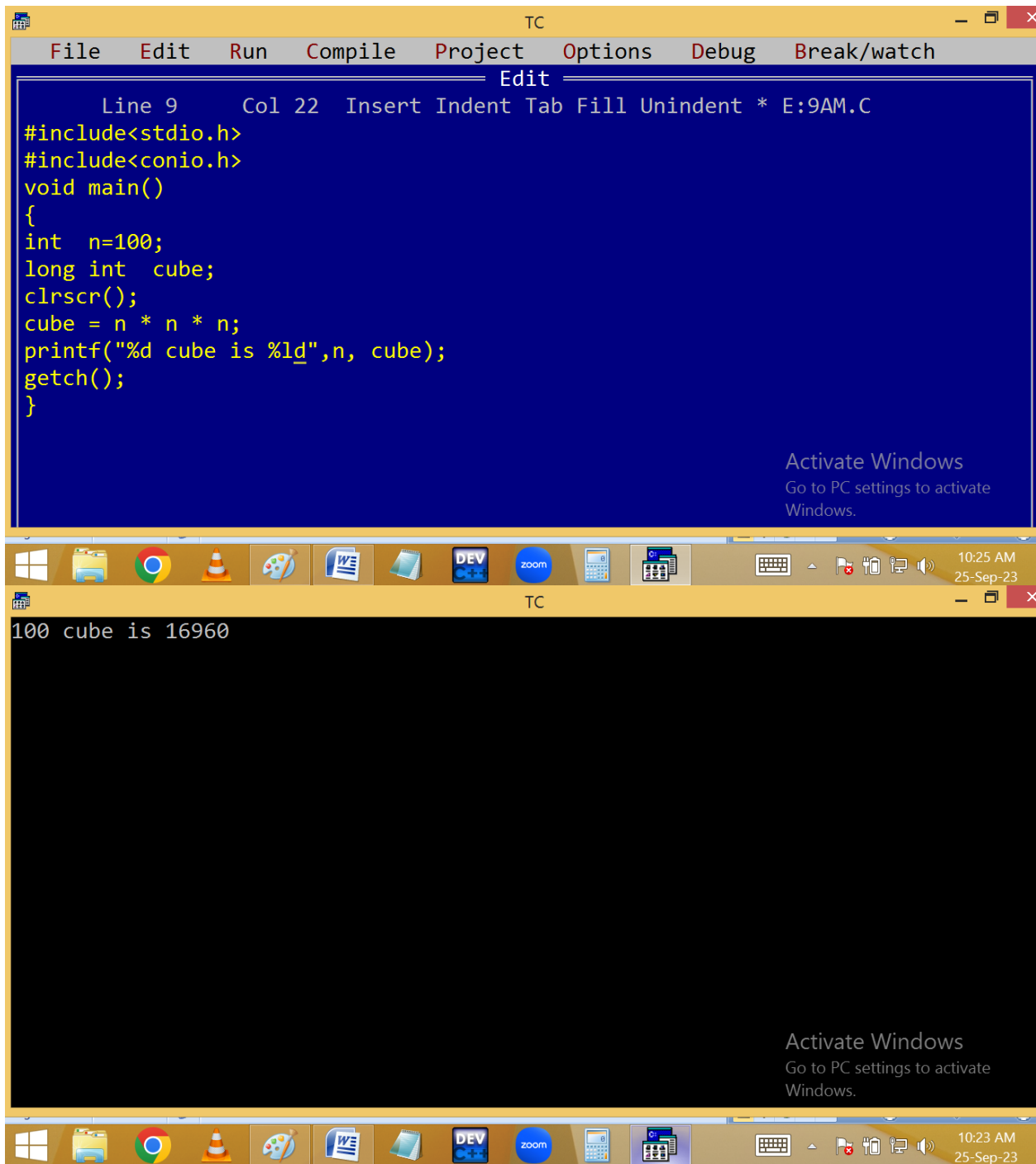
Activate Windows
Go to PC settings to activate Windows.

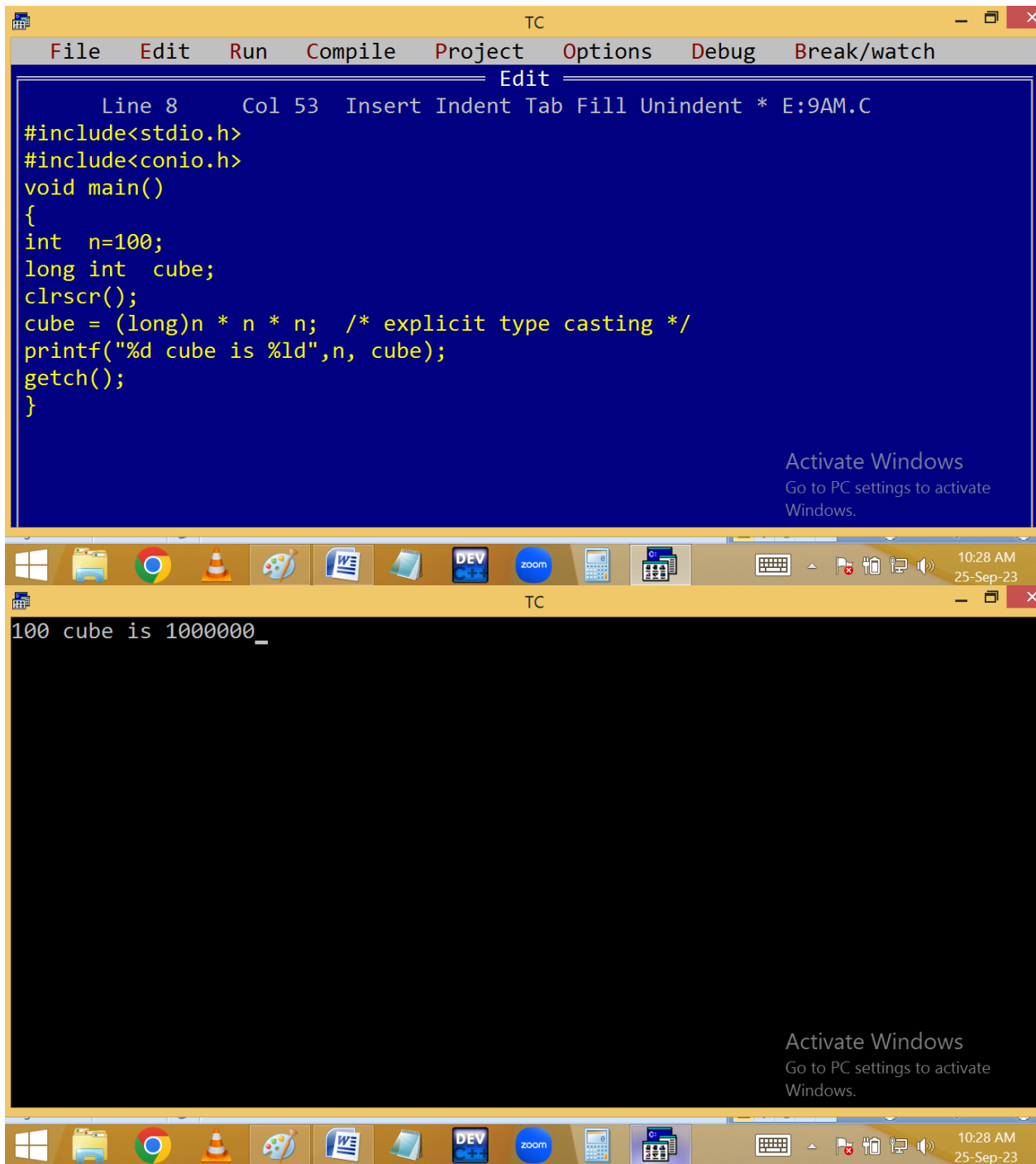
TC

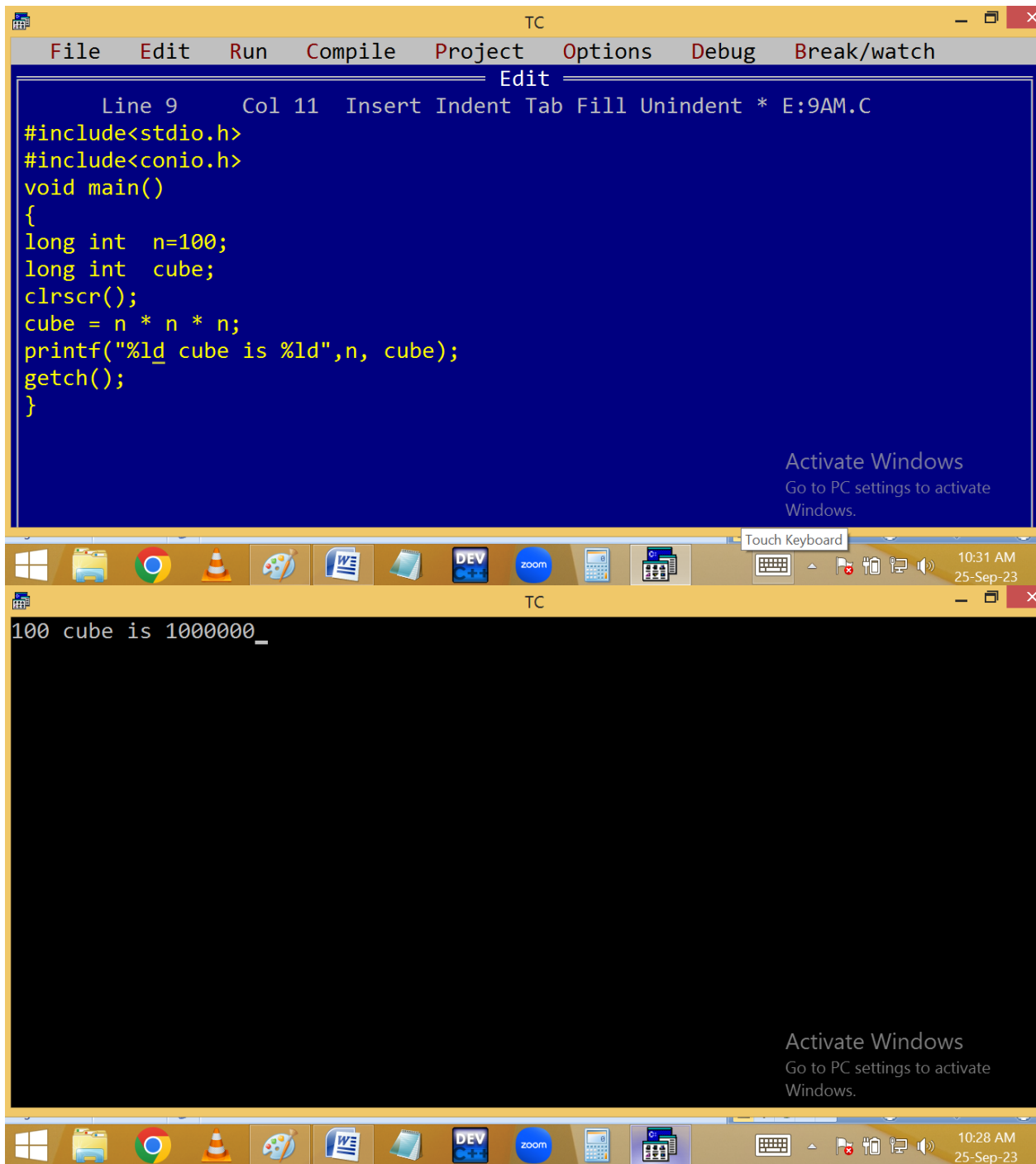
```
10 cube is 1000_
```

Activate Windows
Go to PC settings to activate Windows.









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

```
Line 7      Col 69  Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int  n=100;
    clrscr();
    printf("%d cube is %ld",n, (long)n*n*n); /* explicit type casting */
    getch();
}
```

The bottom window, also titled 'TC', shows the output of the program: '100 cube is 1000000_'. The Windows taskbar at the bottom indicates the time is 10:32 AM on 25-Sep-23. An 'Activate Windows' watermark is visible in the bottom right corner of both windows.

Finding power value:

$$2^5 = 32$$

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

```
Line 10    Col 73  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 = %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)); /* explicit type casting */
    getch();
}
```

The bottom window is the 'TC' window, showing the output of the program. The output is as follows:

```
2 ^ 5 = 32.000000
2 ^ 5 = 32
2 ^ 5 = 32_
```

The Windows taskbar at the bottom shows the time as 10:39 AM on 25-Sep-23. The system tray includes icons for the keyboard, volume, and network. The Windows logo is visible on the left side of the taskbar.

Add two numbers without using + operator:

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 10 Col 27 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
#include<math.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();
}
```

Activate Windows
Go to PC settings to activate Windows.

TC

Sum=30
Sum=30
Sum=30
_

Activate Windows
Go to PC settings to activate Windows.

a=10

b=20

a-(~b)-1

10-(~20)-1

10-(-21)-1

10+21-1

31-1=30

Swap [interchange] of two numbers

1. Without using operators
2. Using 3rd variable
3. Without using 3rd variable