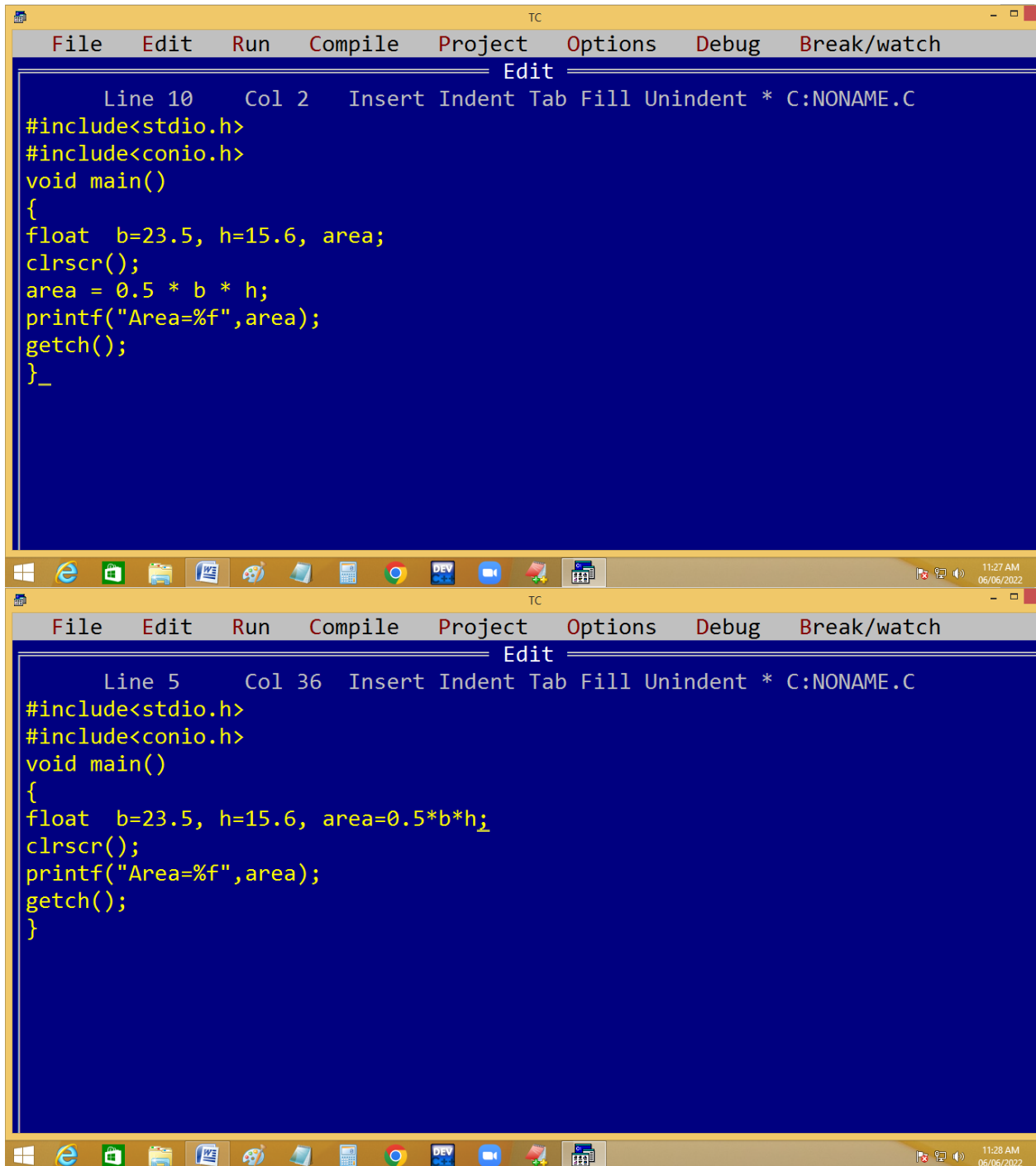


Finding area of a triangle.



The image displays two screenshots of the Turbo C++ (TC) IDE, showing the development of a C program to calculate the area of a triangle.

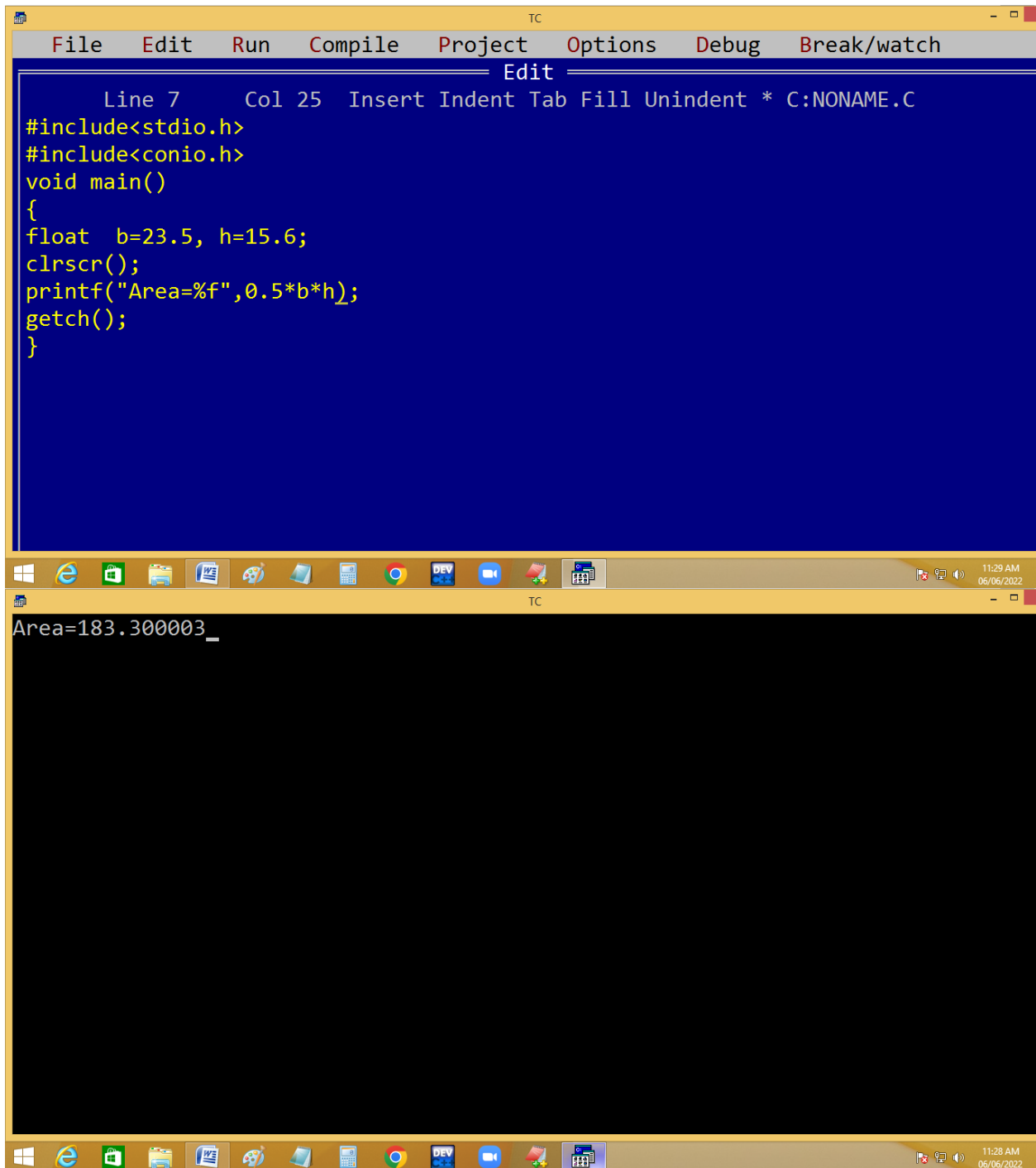
Top Screenshot: The editor window shows the following code:

```
Line 10    Col 2    Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
float  b=23.5, h=15.6, area;
clrscr();
area = 0.5 * b * h;
printf("Area=%f",area);
getch();
}_
```

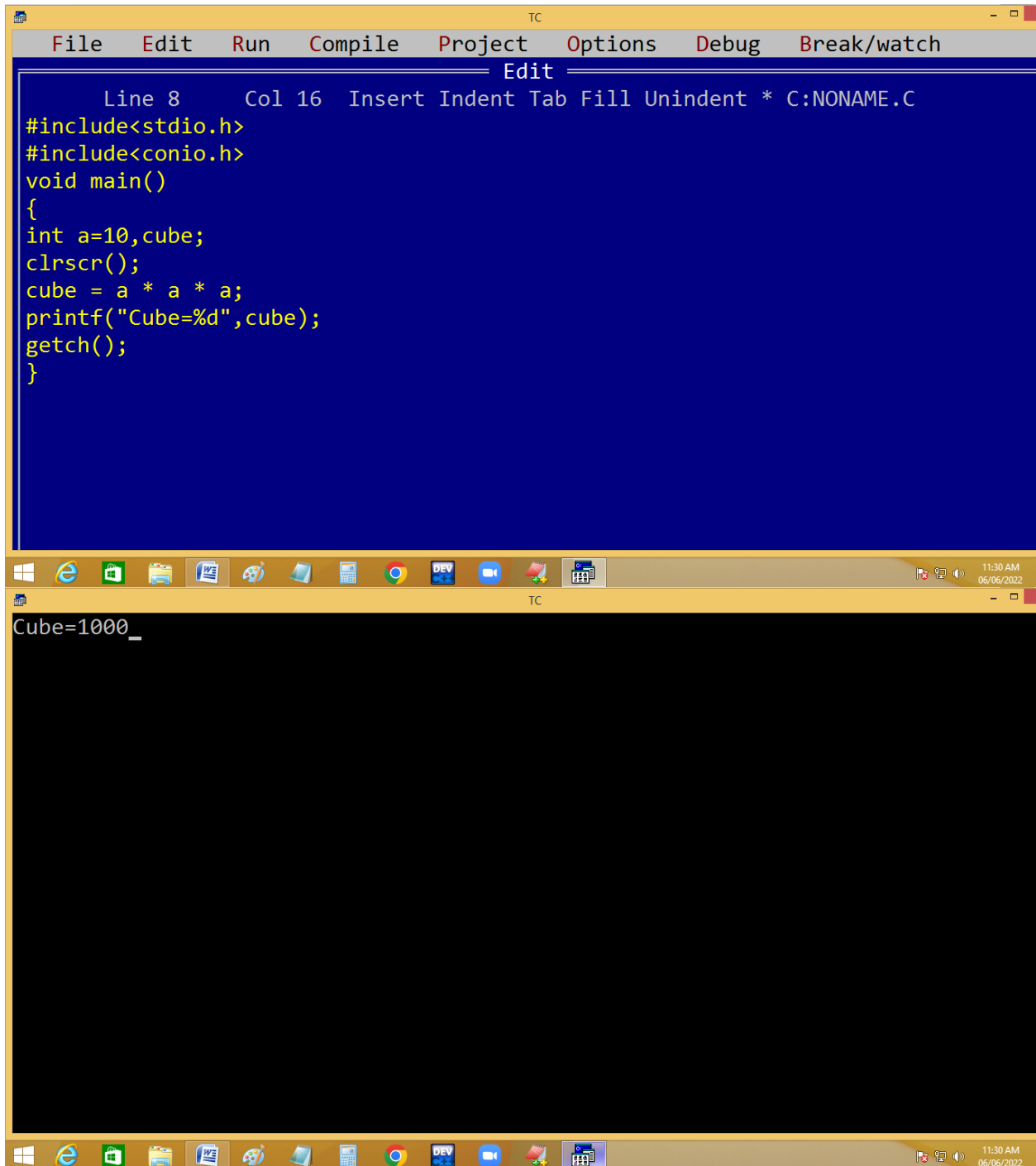
Bottom Screenshot: The editor window shows the same code, but with a correction to the area calculation line:

```
Line 5      Col 36   Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
float  b=23.5, h=15.6, area=0.5*b*h;
clrscr();
printf("Area=%f",area);
getch();
}
```

The code in both screenshots includes the necessary headers (`<stdio.h>` and `<conio.h>`), defines the `main` function, declares variables `b`, `h`, and `area`, clears the screen (`clrscr()`), calculates the area using the formula $\text{area} = 0.5 \times b \times h$, prints the result, and waits for a key press (`getch()`) before ending the program.



Finding cube value.



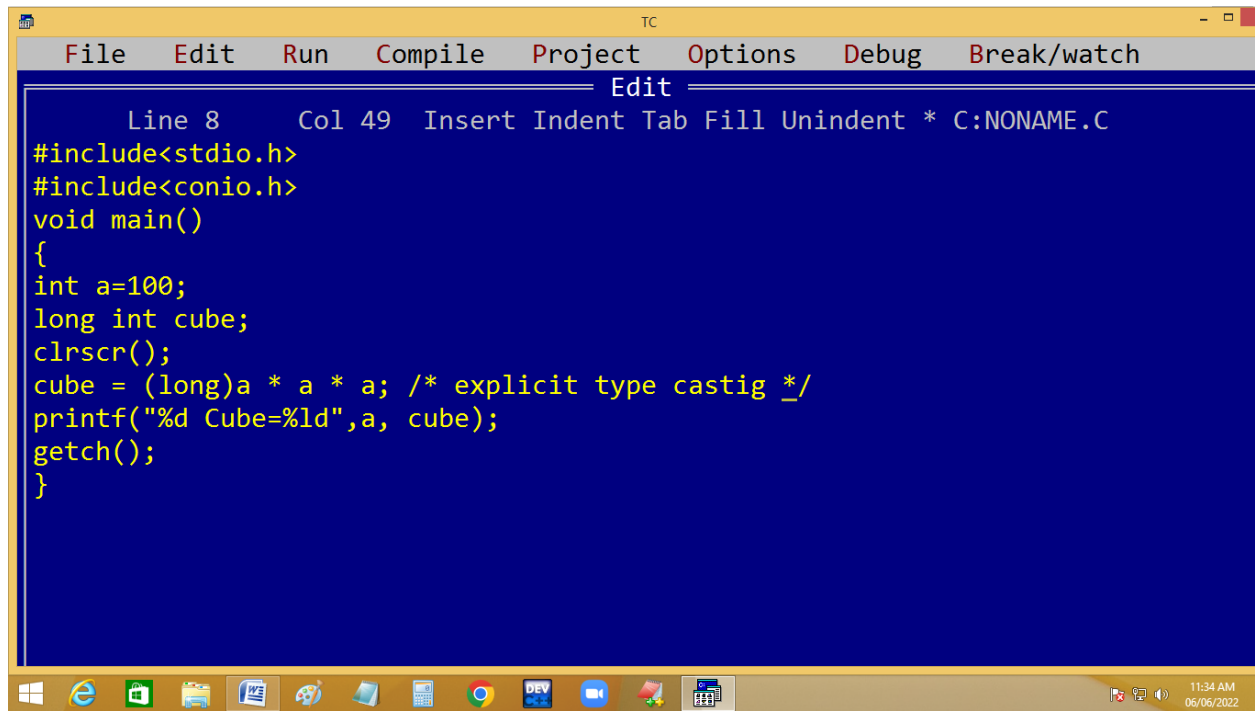
The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the 'Edit' window, displaying a C program to calculate the cube of a number. The code is as follows:

```
Line 8      Col 16  Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
  int a=10,cube;
  clrscr();
  cube = a * a * a;
  printf("Cube=%d",cube);
  getch();
}
```

The bottom window is the output window, which shows the result of the program's execution:

```
Cube=1000_
```

The IDE's menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom right indicates the time as 11:30 AM on 06/06/2022.



The image shows a screenshot of a Turbo C++ (TC) IDE window. The window has a yellow title bar with the text "TC" and standard window controls. Below the title bar is a menu bar with the following options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The main editing area has a dark blue background with yellow text. At the top of the editing area, there is a status bar that reads "Line 8 Col 49 Insert Indent Tab Fill Unindent * C:NONAME.C". The code being edited is a C program that calculates the cube of a number. The code is as follows:

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

At the bottom of the window is a Windows taskbar with various icons, including the Start button, Internet Explorer, Microsoft Word, and several other applications. The system clock in the bottom right corner shows the time as 11:34 AM on 06/06/2022.

TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 5 Col 16 Insert Indent Tab Fill Unindent * C:NONAME.C

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

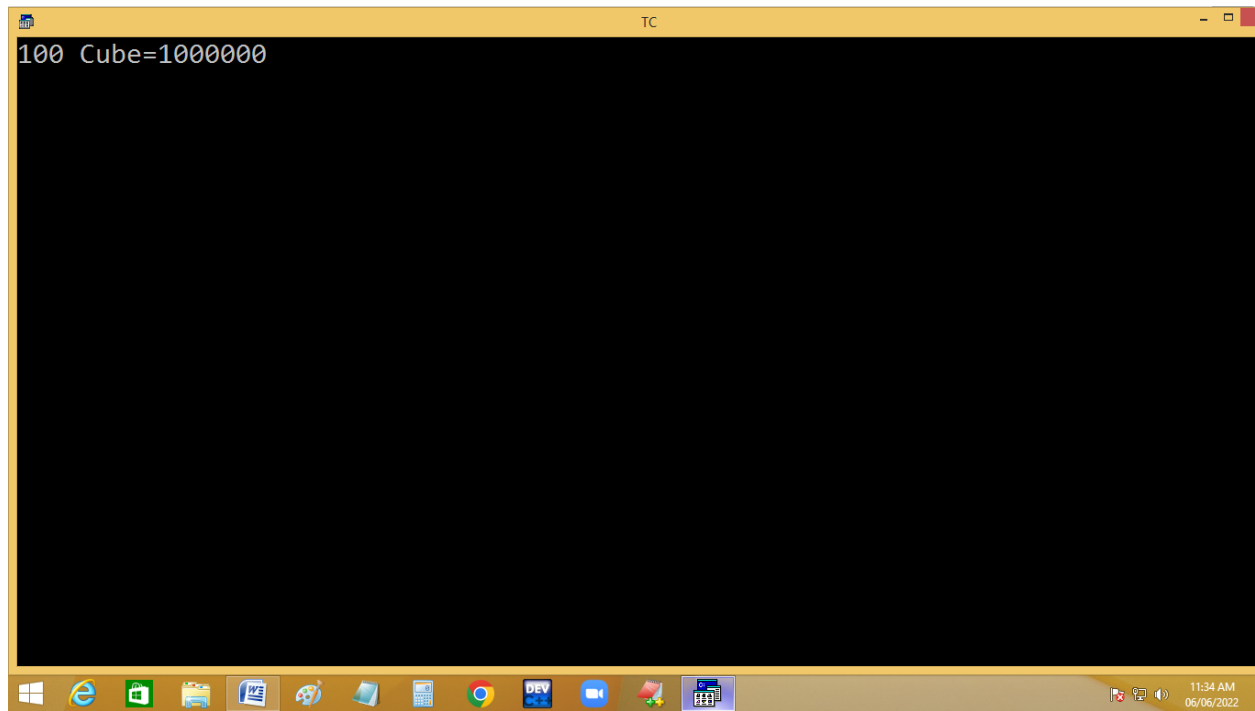
TC

File Edit Run Compile Project Options Debug Break/watch

Edit

Line 7 Col 36 Insert Indent Tab Fill Unindent * C:NONAME.C

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



Eg. 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 menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom of the window shows 'Line 9', 'Col 63', and 'Insert Indent Tab Fill Unindent * C:NONAME.C'. The code in the editor is as follows:

```
Line 9      Col 63  Insert Indent Tab Fill Unindent * C:NONAME.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\n",b,p,(int)pow(b,p)); /* type casting */
getch();
}
```

The bottom window is the 'TC' output window, which shows the execution results of the program. It displays three lines of output, each representing the calculation of 2 to the power of 5:

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

The Windows taskbar at the bottom of the screen shows the time as 11:43 AM on 06/06/2022.

Eg. add two numbers without using + operator.

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the 'Edit' window, displaying a C program. The status bar at the top indicates 'Line 9 Col 28 Insert Indent Tab Fill Unindent * C:NONAME.C'. The code in the editor is as follows:

```
Line 9 Col 28 Insert Indent Tab Fill Unindent * C:NONAME.C
#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", a-(~b)-1);

getch();
}
```

The bottom window is the 'Output' window, which shows the execution results. It displays three lines of output, each showing 'Sum = 30'. The status bar at the bottom right indicates the time as 11:48 AM on 06/06/2022.

$$a-(\sim b)-1$$

$$10-(\sim 20)-1$$

$$10-(-21)-1$$

$$10+21-1$$

$$31-1=30$$

Swap of two numbers [interchange]:

Method 1 without using operators:

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the editor, displaying a C program for swapping two numbers. The code is as follows:

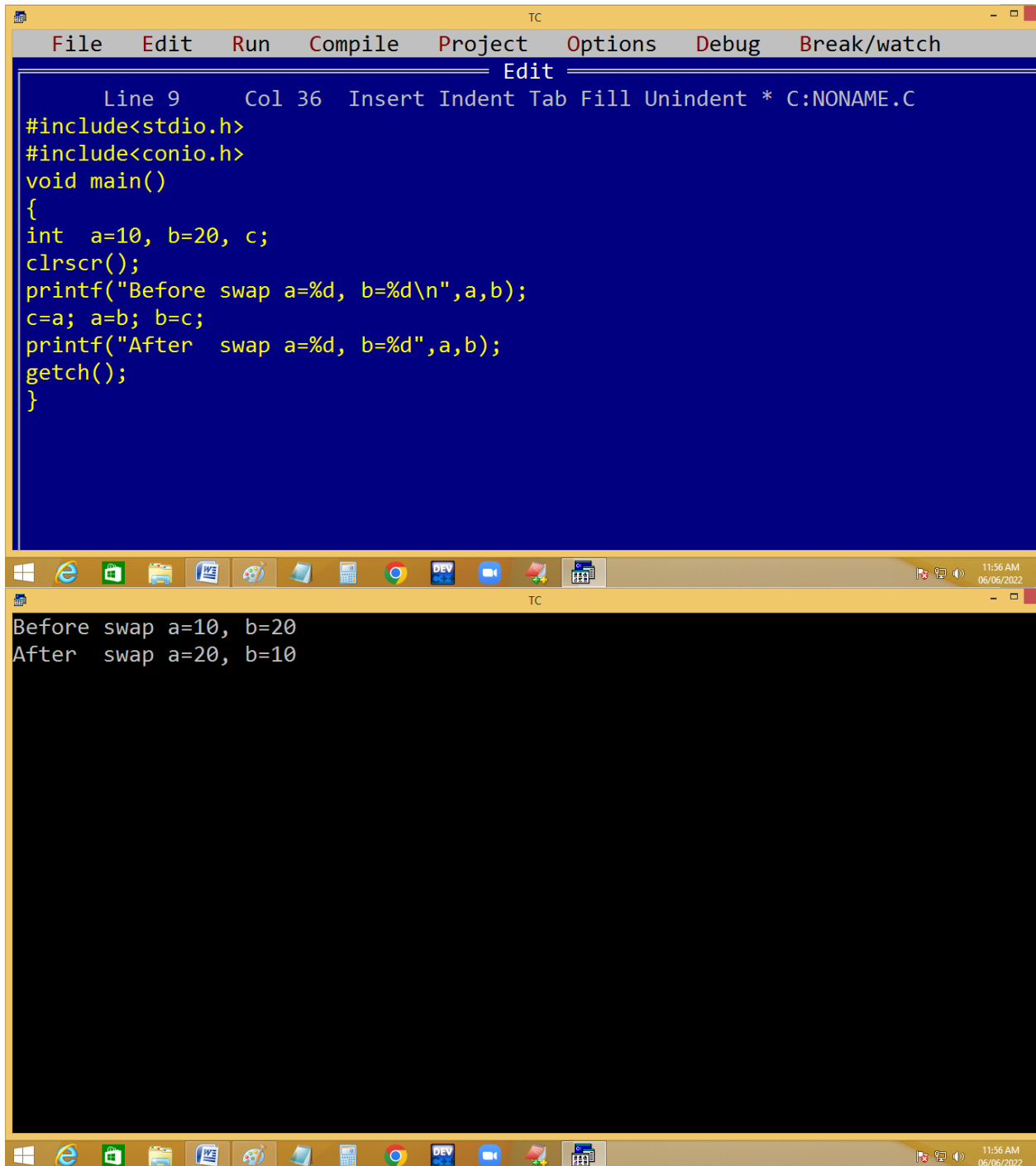
```
Line 8      Col 38  Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int  a=10, b=20;
clrscr();
printf("Before swap a=%d, b=%d\n",a,b);
printf("After  swap a=%d, b=%d",b,a);
getch();
}
```

The bottom window shows the output of the program:

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

The IDE interface includes a menu bar with File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom right indicates the time as 11:53 AM and the date as 06/06/2022.

Method 2: using 3rd variable.



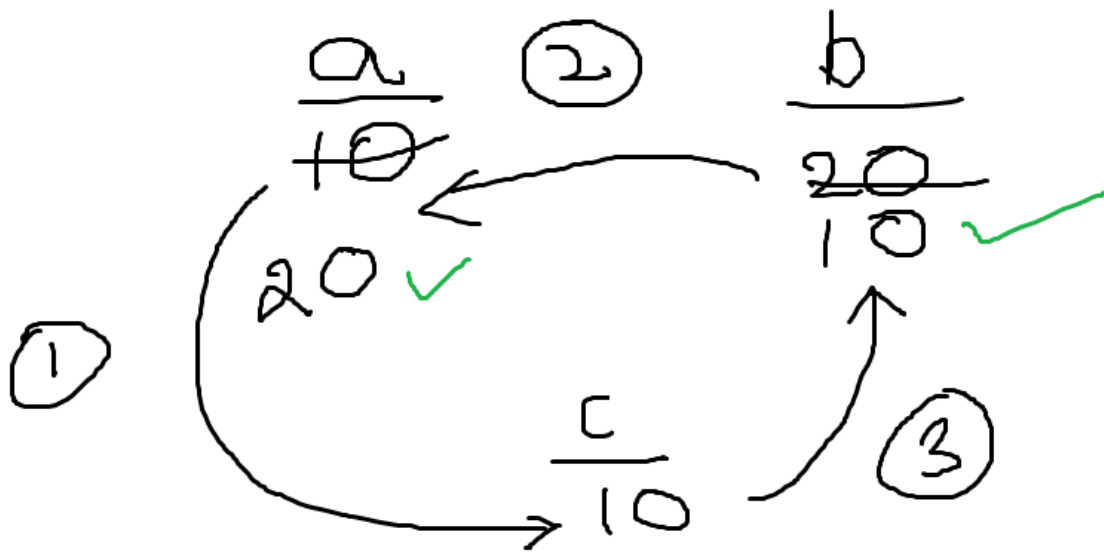
The screenshot displays the Turbo C++ (TC) IDE interface. The top window, titled 'Edit', shows a C program for swapping two numbers using a third variable. The code is as follows:

```
Line 9      Col 36  Insert Indent Tab Fill Unindent * C:NONAME.C
#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",a,b);
  getch();
}
```

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

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

The IDE's menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom right indicates the time as 11:56 AM on 06/06/2022.



Method 3: without using 3rd variable.

```
TC
File Edit Run Compile Project Options Debug Break/watch
Edit
Line 10 Col 21 Insert Indent Tab Fill Unindent * C:NONAME.C
#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",a,b);
    getch();
}
```

~~a=10~~ ~~30~~ 20
~~b=20~~ 10

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

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

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

~~a=10~~ ~~200~~ 20
~~b=20~~ 10

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

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

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

$a = 10 \Rightarrow 1010$
 $b = 20 \Rightarrow 10100$

$$\begin{array}{r} 2 \overline{) 10} \\ 2 \overline{) 5-0} \\ 2 \overline{) 2-1} \\ 1-0 \end{array}$$

$$\begin{array}{r} 2 \overline{) 20} \\ 2 \overline{) 10-0} \\ 2 \overline{) 5-0} \\ 2 \overline{) 2-1} \\ 1-0 \end{array}$$

$a=10, b=20$

$a = a \wedge b; \leftarrow$

$a=10 \Rightarrow 01010$
 $b=20 \Rightarrow \underline{10100}$
 $\underline{11110} = 30$

4 3 2 1
 $2+2+2+2$

$16+8+4+2 = 30$

$a=30$
 $b=20$

$a=30, b=20$

$b = a \wedge b \leftarrow$

$a=30 \Rightarrow 11110$
 $b=20 \Rightarrow \underline{10100}$
 $\underline{01010} = 10$

i.e. $a=30, b=10$

$a=30, b=10$

$a = a \wedge b \leftarrow$

$a=30 \Rightarrow 11110$
 $b=10 \Rightarrow \underline{01010}$
 $\underline{10100} = 20$

i.e. $a=20, b=10$