

Compound assignment / short hand operators:

$+=$, $-=$, $*=$, $\%=$, $/=$, $<<=$, $>>=$,

Eg:

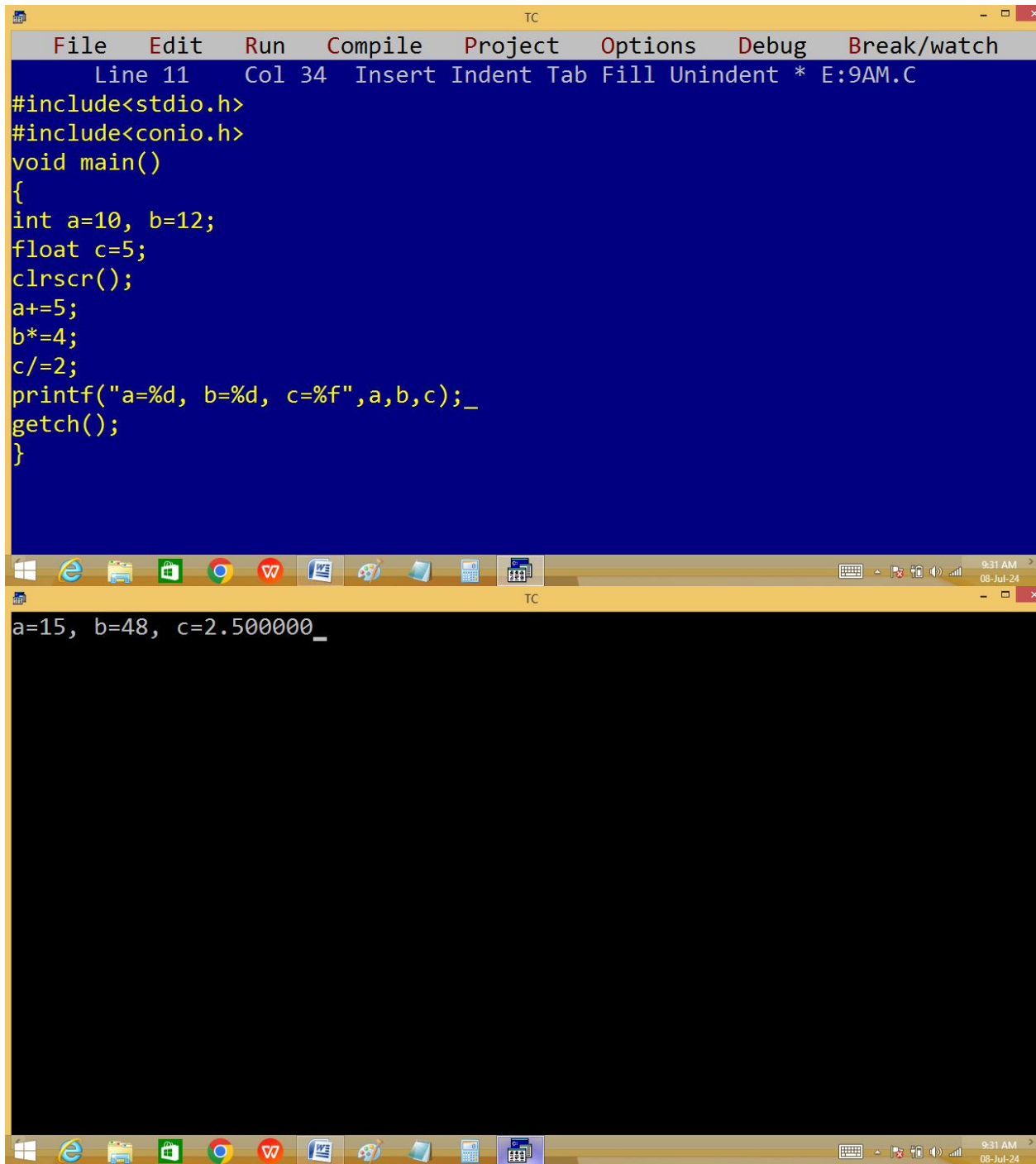
`int a=10, b=12;`

`float c=5;`

`a+=5;` i.e. $a=a+5 \rightarrow a=10+5=15$

`b*=4;` i.e. $b=b*4 \rightarrow b=12*4=48$

`c/=2;` i.e. $c=c/2 \rightarrow c=c/2 \rightarrow 2.500000$



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 yellow text. It contains a C program that calculates the sum of two integers and the average of three numbers. The code is as follows:

```
Line 11 Col 34 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=12;
float c=5;
clrscr();
a+=5;
b*=4;
c/=2;
printf("a=%d, b=%d, c=%f",a,b,c);_
getch();
}
```

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

```
a=15, b=48, c=2.500000_
```

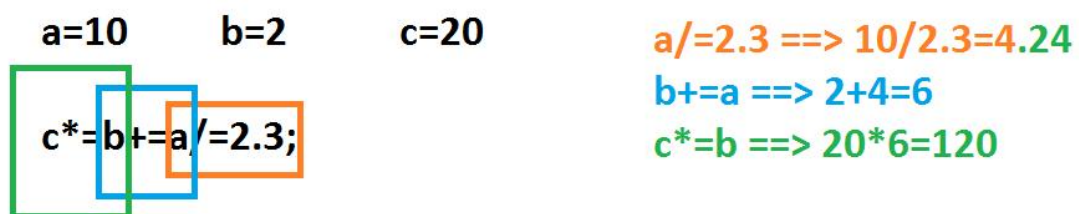
The Windows taskbar is visible at the bottom of the screen, showing various application icons and the system clock indicating 9:31 AM on 08-Jul-24.

The screenshot shows a Turbo C++ IDE window titled 'TC'. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 8 Col 25 Insert Indent Tab Fill Unindent * E:9AM.C'. The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10.5, b=2.5,c=20.5;
clrscr();
c*=b+=a/=2.3;
printf("a=%d, b=%d, c=%d",a,b,c);
getch();
}
```

Below the code editor, the output window shows the result of the program execution:

```
a=4, b=6, c=120
```



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

```
Line 5 Col 18 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10, b=2,c=4;
clrscr();
c+=a*b;
printf("a=%d, b=%d, c=%d",a,b,c);
getch();
}
```

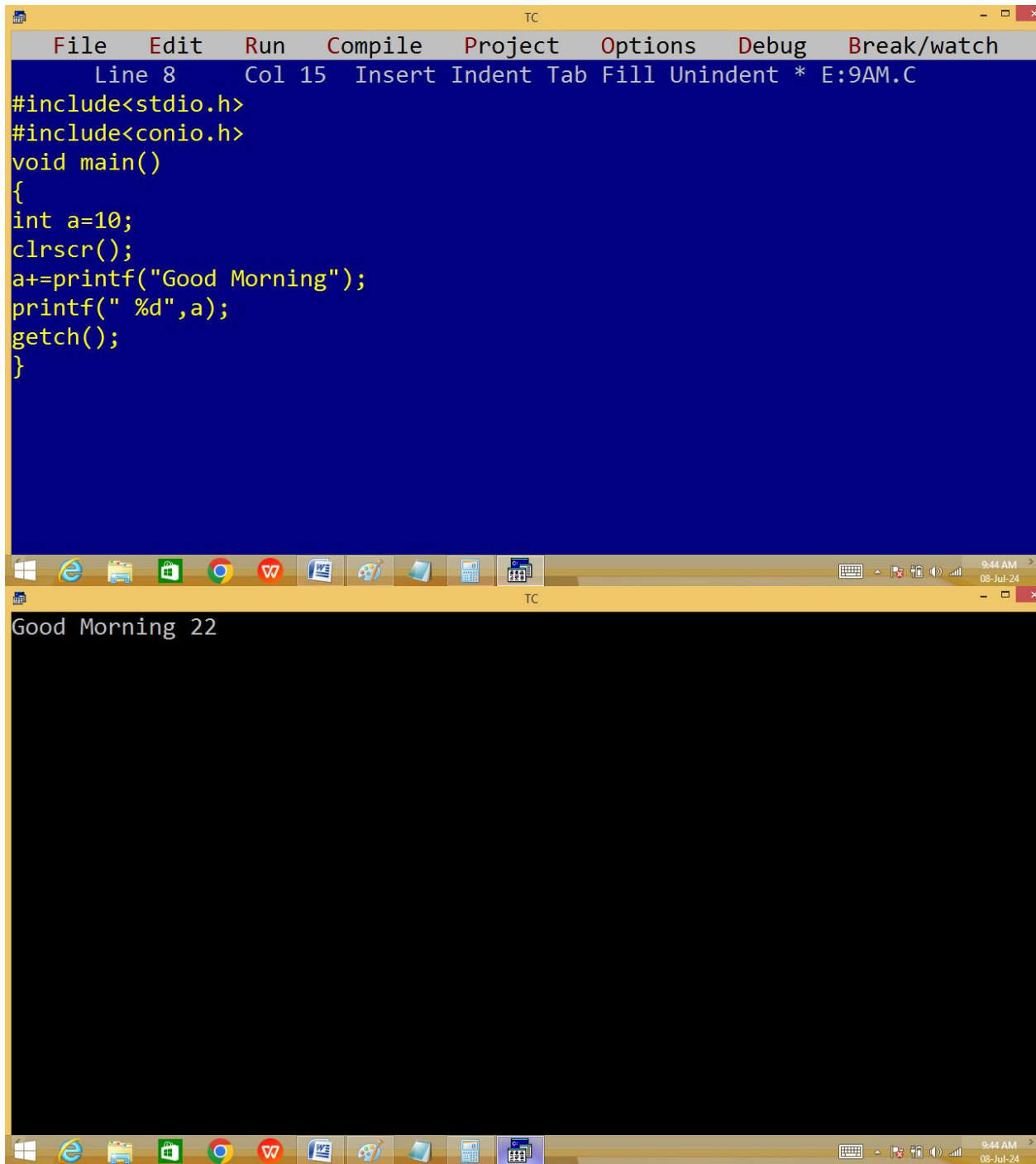
The bottom window shows the output of the program:

```
a=10, b=2, c=24
```

The Windows taskbar at the bottom shows the time as 9:40 AM on 08-Jul-24.

a=10 b=2 c=4

c+= a*b ==> c = c + a*b ==> 4 + 10*2 ==> 4+20=24

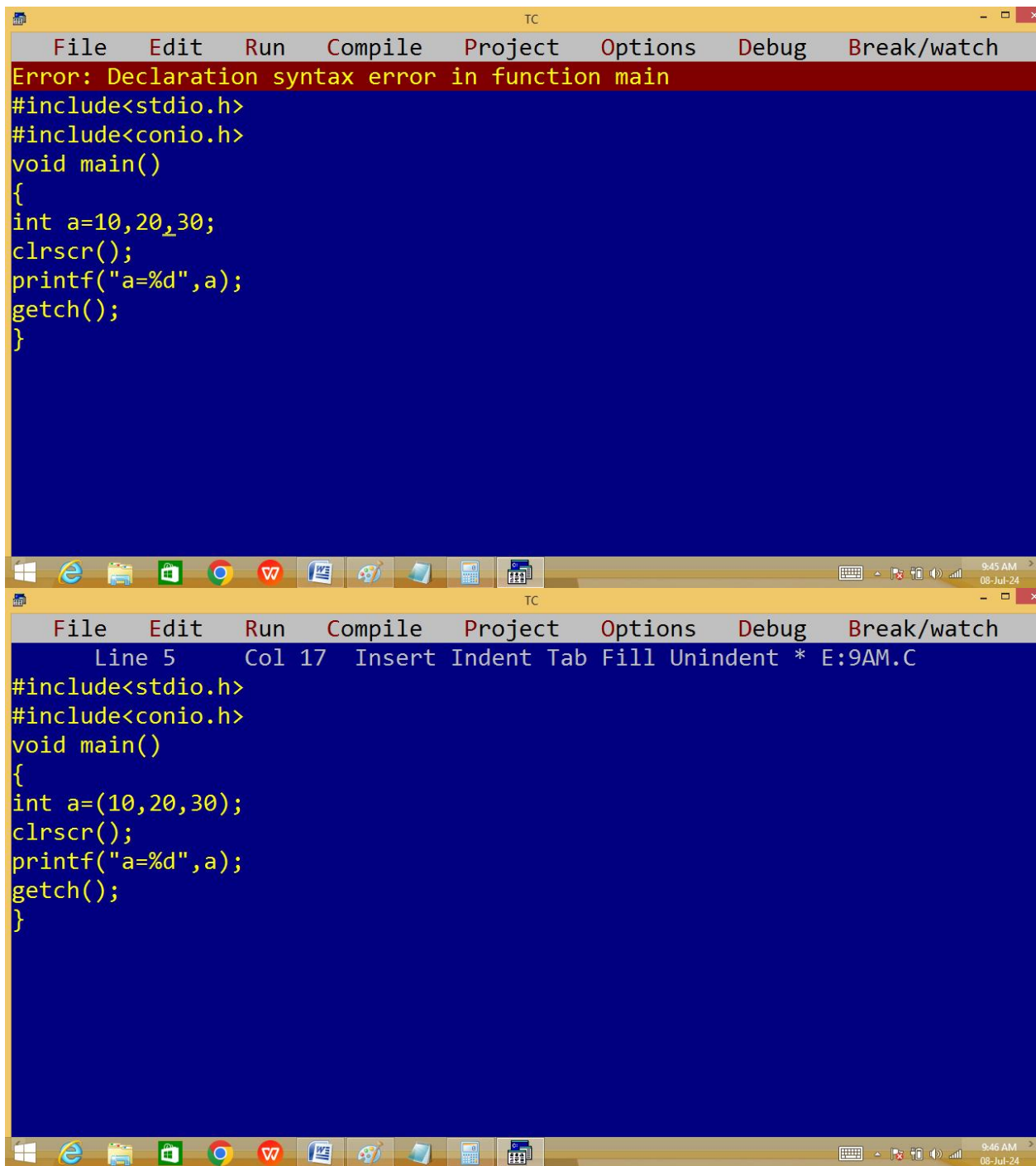


The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the editor, which has a blue background and a menu bar with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top of the editor shows 'Line 8', 'Col 15', and 'Insert Indent Tab Fill Unindent * E:9AM.C'. The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10;
clrscr();
a+=printf("Good Morning");
printf(" %d",a);
getch();
}
```

The bottom window is the output console, which has a black background. It displays the text 'Good Morning 22'. The Windows taskbar is visible at the bottom of the screen, showing various application icons and the system clock indicating 9:44 AM on 08-Jul-24.

() and , separators:




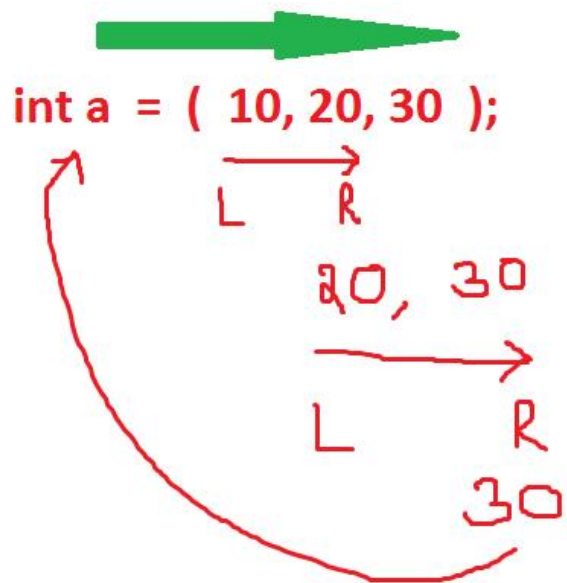
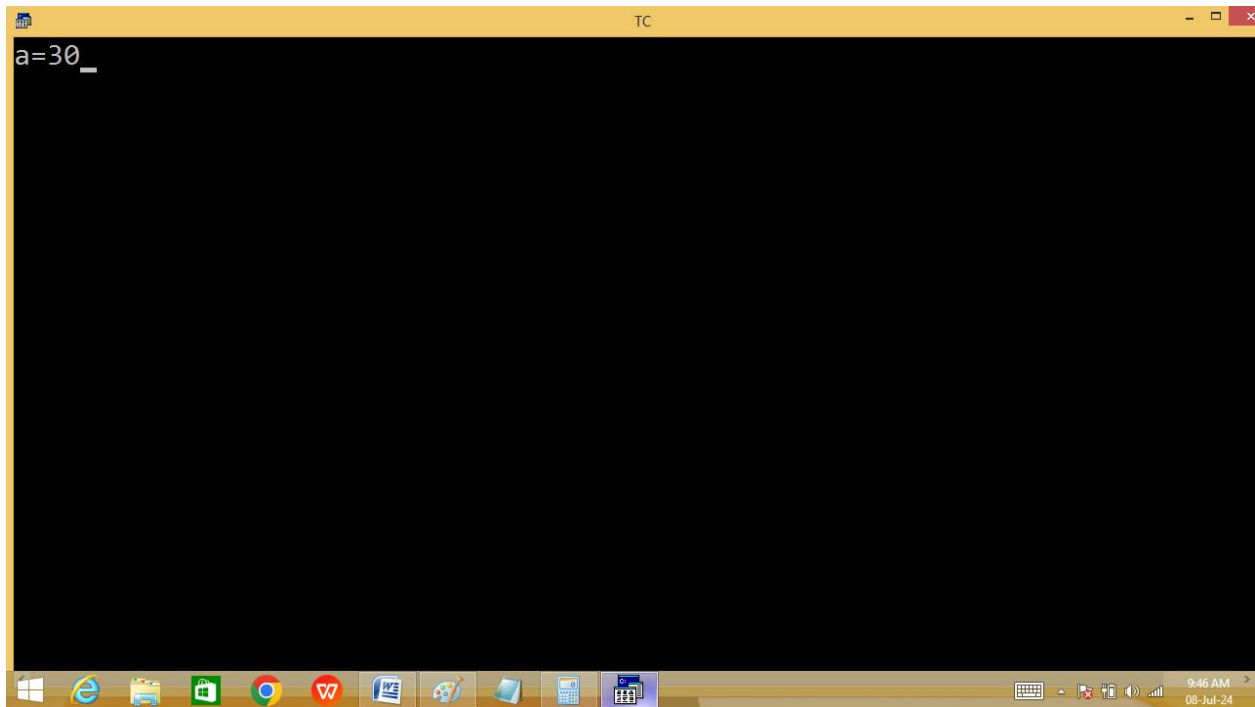
The image shows two screenshots of the Turbo C++ (TC) IDE. The top screenshot displays a compilation error. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A red error message bar at the top reads "Error: Declaration syntax error in function main". The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10,20,30;
clrscr();
printf("a=%d",a);
getch();
}
```

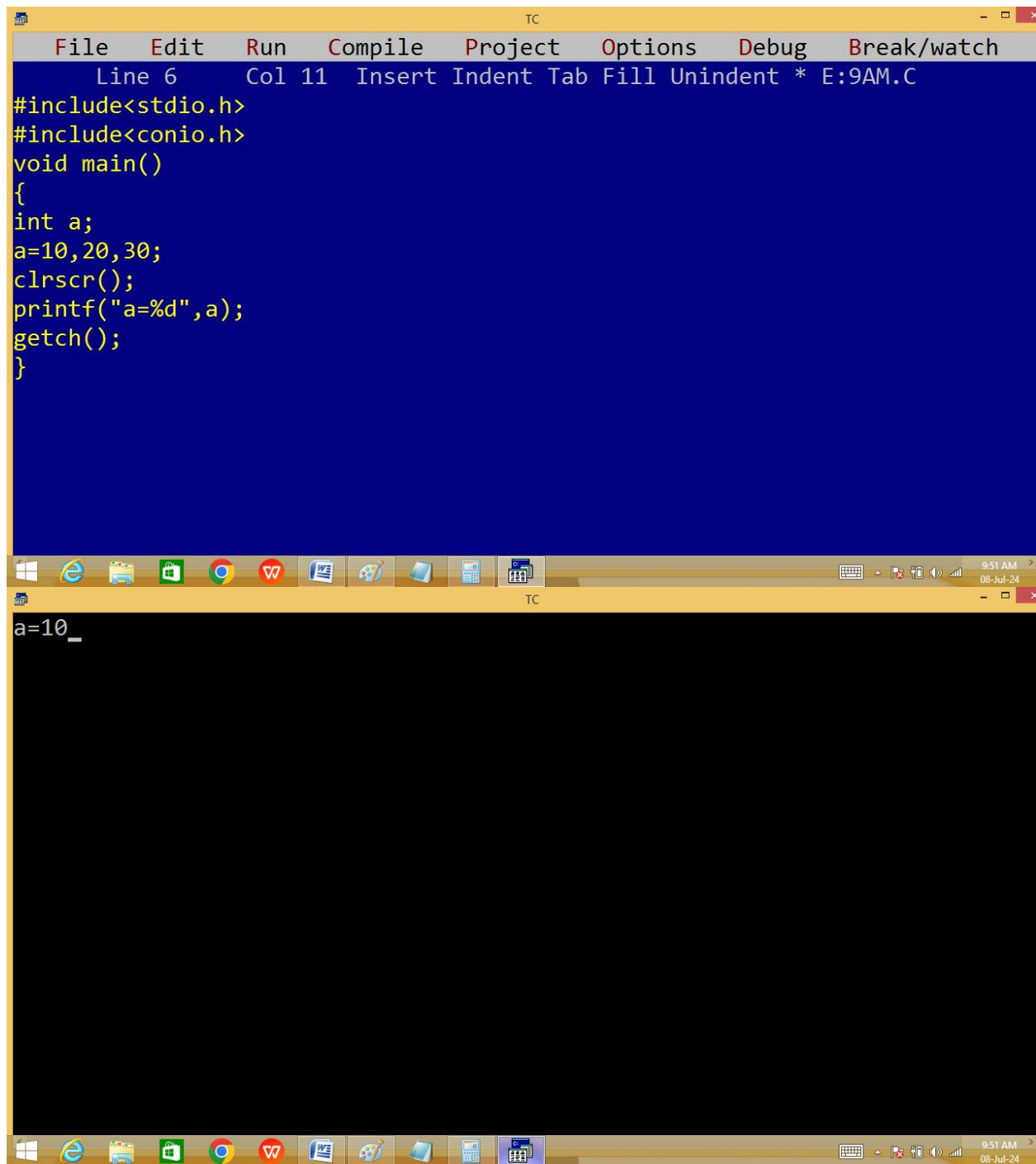
The bottom screenshot shows the same code after a successful compilation. The menu bar is identical. A status bar at the top of the editor area shows "Line 5 Col 17 Insert Indent Tab Fill Unindent * E:9AM.C". The code is the same as in the top screenshot:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=(10,20,30);
clrscr();
printf("a=%d",a);
getch();
}
```

Both screenshots show a Windows taskbar at the bottom with icons for various applications and the system clock indicating 9:45 AM and 9:46 AM on 08-Jul-24.



```
a=10;  
a=20;  
a=30;  
printf(a);
```

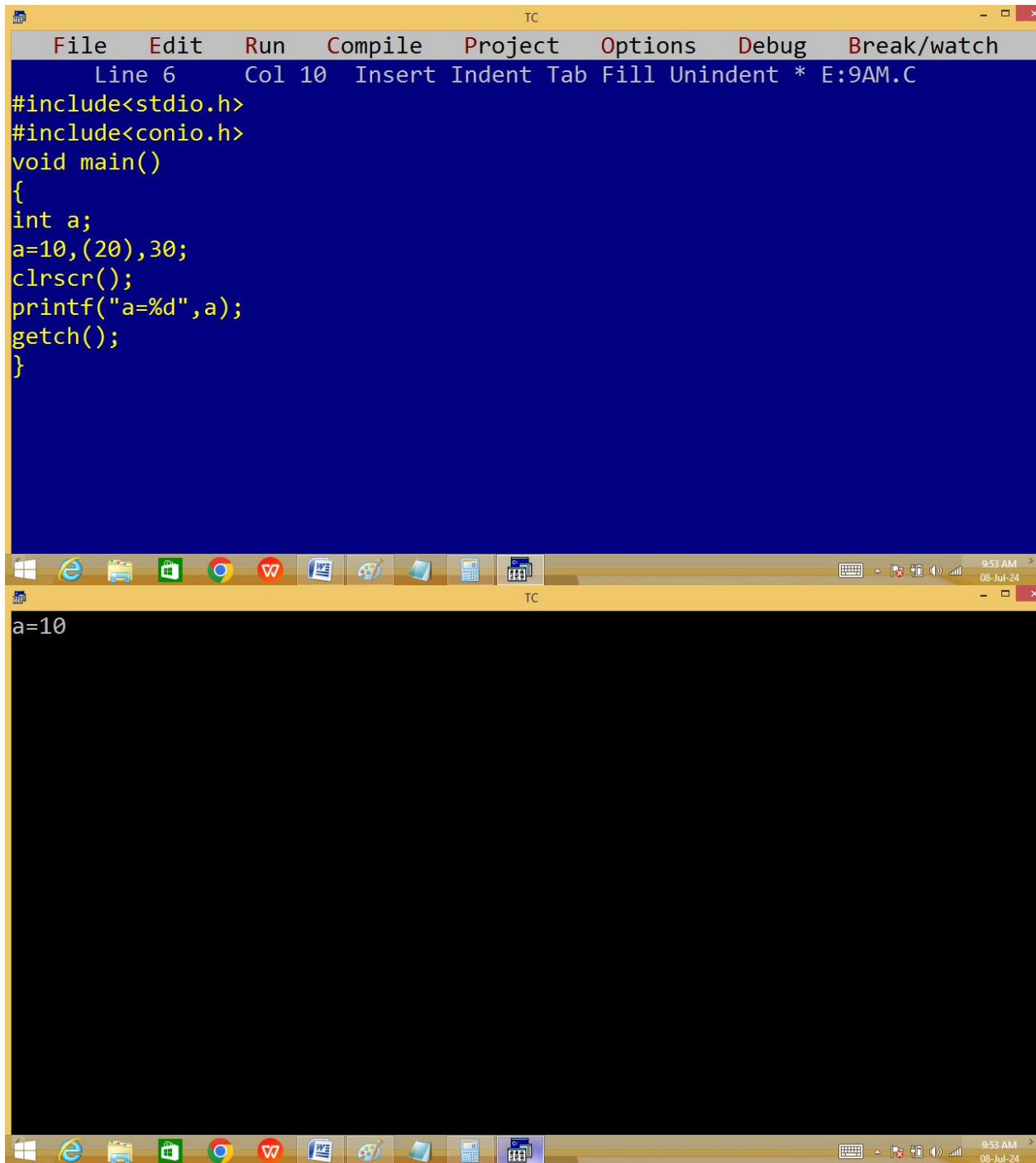
The image shows two windows of the Turbo C++ (TC) IDE. The top window is the source code editor, titled 'TC', with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 6, Col 11, Insert, Indent, Tab, Fill, Unindent, *, E:9AM.C). The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
a=10,20,30;
clrscr();
printf("a=%d",a);
getch();
}
```

The bottom window is the output console, also titled 'TC', showing the output of the program: 'a=10_'. The Windows taskbar at the bottom shows the time as 9:51 AM on 08-Jul-24.

Note: = have more priority than , operator.


a = 10, 20, 30;



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

```
Line 6 Col 10 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
a=10,(20),30;
clrscr();
printf("a=%d",a);
getch();
}
```

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

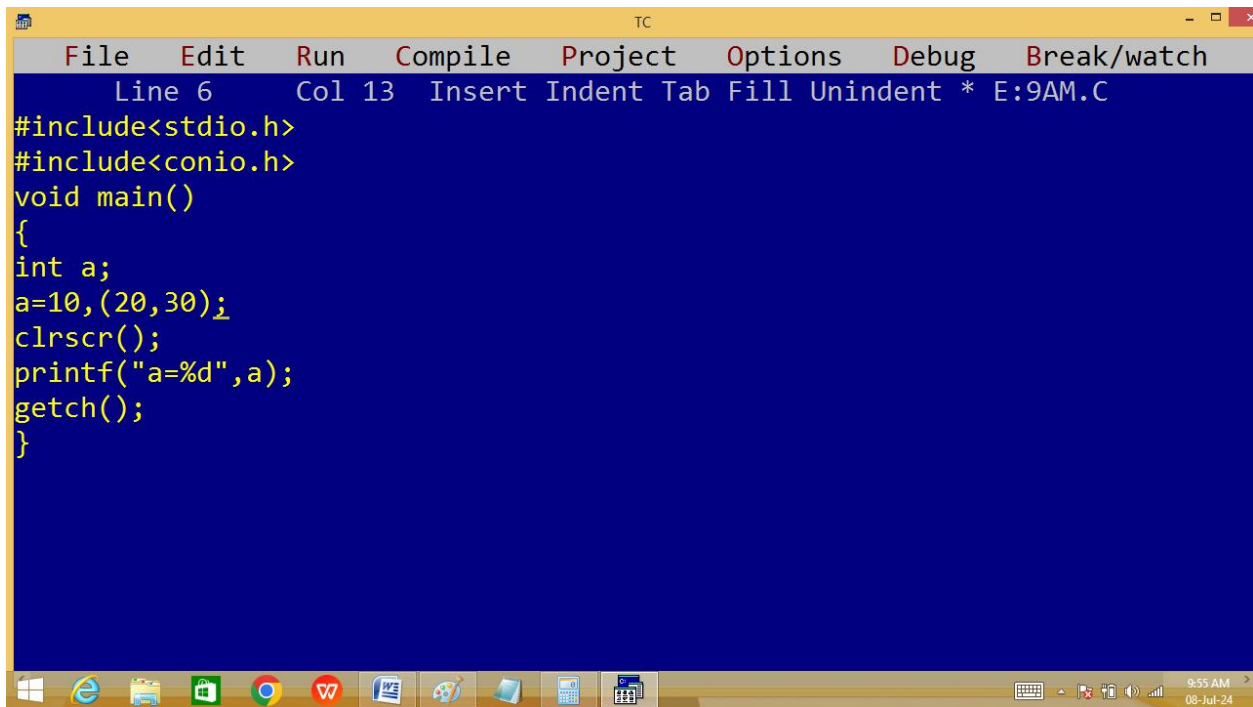
```
a=10
```

The IDE's status bar at the bottom shows the time as 9:53 AM on 08-Jul-24. The taskbar at the very bottom includes icons for various applications like a web browser, file explorer, and the TC IDE itself.

a = 10, (20), 30;



a = 10, 20, 30;



The screenshot shows a Turbo C++ IDE window titled "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 6 Col 13 Insert Indent Tab Fill Unindent * E:9AM.C". The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
a=10,(20,30);
clrscr();
printf("a=%d",a);
getch();
}
```

The Windows taskbar at the bottom shows various application icons and the system clock displaying "9:55 AM 08-Jul-24".

```
TC
a=10_
```

a = 10, (20, 30);



a = 10, 30;
↖

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 a yellow title bar labeled 'TC'. It contains a C program with the following code:

```
File Edit Run Compile Project Options Debug Break/watch
Line 6 Col 21 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
a=(10,20),30,(40,50);
clrscr();
printf("a=%d",a);
getch();
}
```

The bottom window is the output console, which has a black background and a yellow title bar labeled 'TC'. It displays the output of the program:

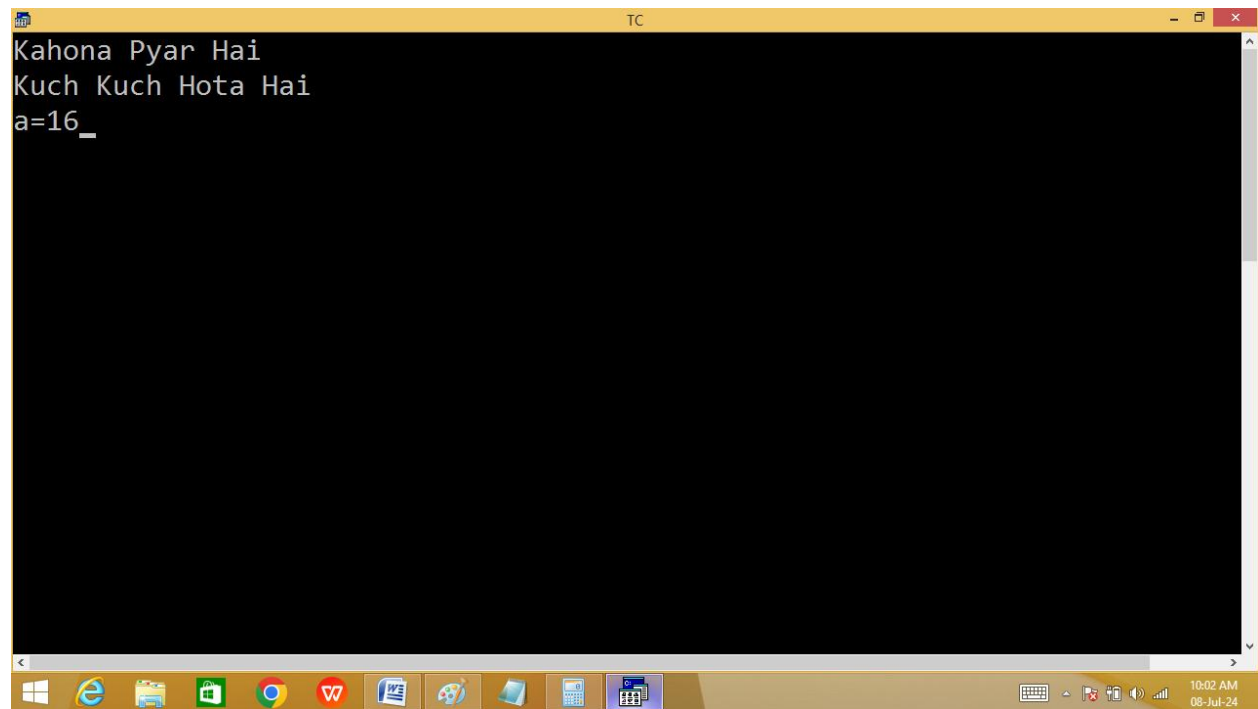
```
a=20_
```

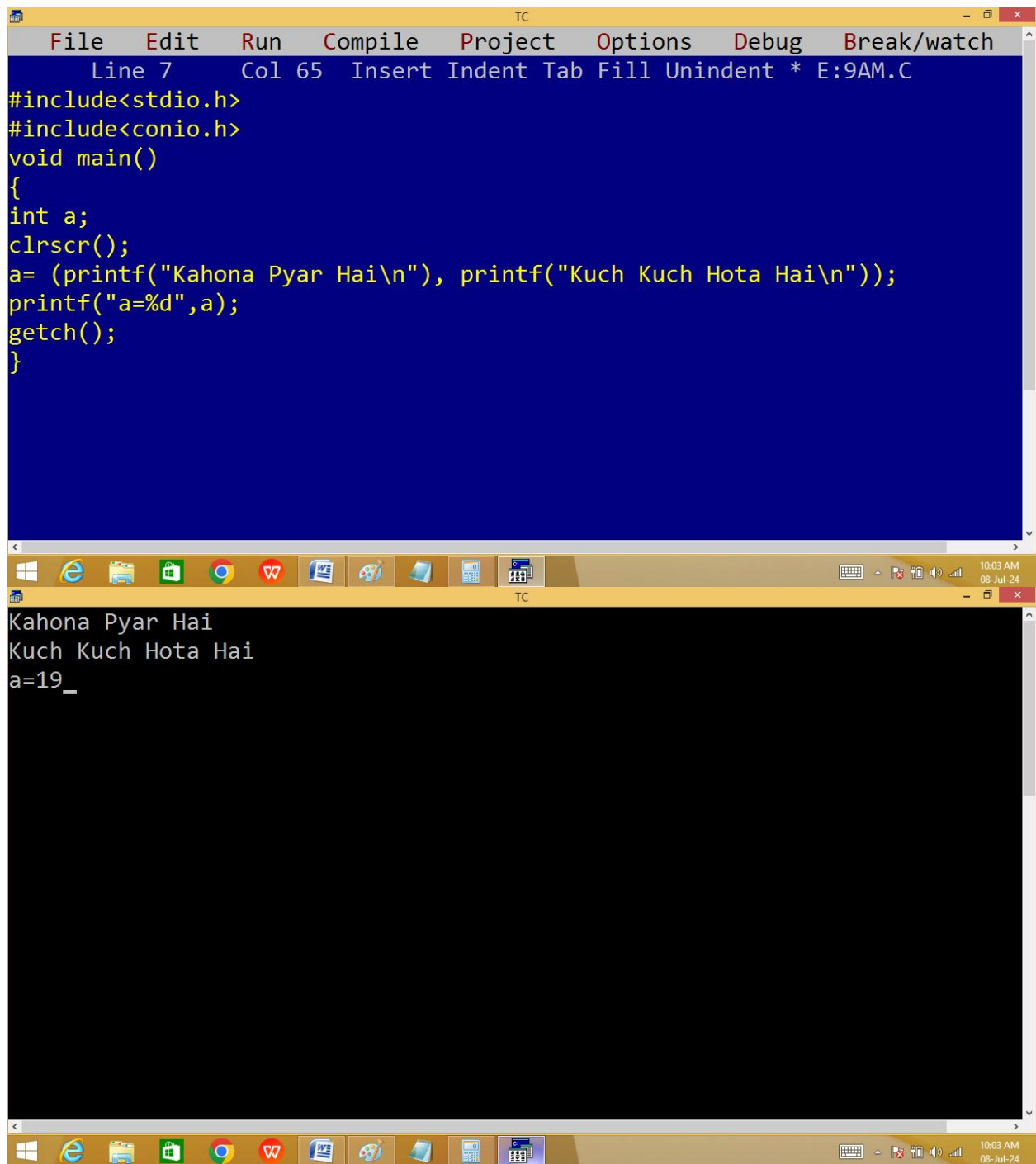
The Windows taskbar is visible at the bottom of the screen, showing icons for various applications and the system clock indicating 9:57 AM on 08-Jul-24.

a = (10, 20), 30 , (40, 50);

→ →
a = 20, 30, 50
↖

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 6 Col 10 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
clrscr();_
a= printf("Kahona Pyar Hai\n"), printf("Kuch Kuch Hota Hai\n");
printf("a=%d",a);
getch();
}
```





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 7 Col 65 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a;
clrscr();
a= (printf("Kahona Pyar Hai\n"), printf("Kuch Kuch Hota Hai\n"));
printf("a=%d",a);
getch();
}
```

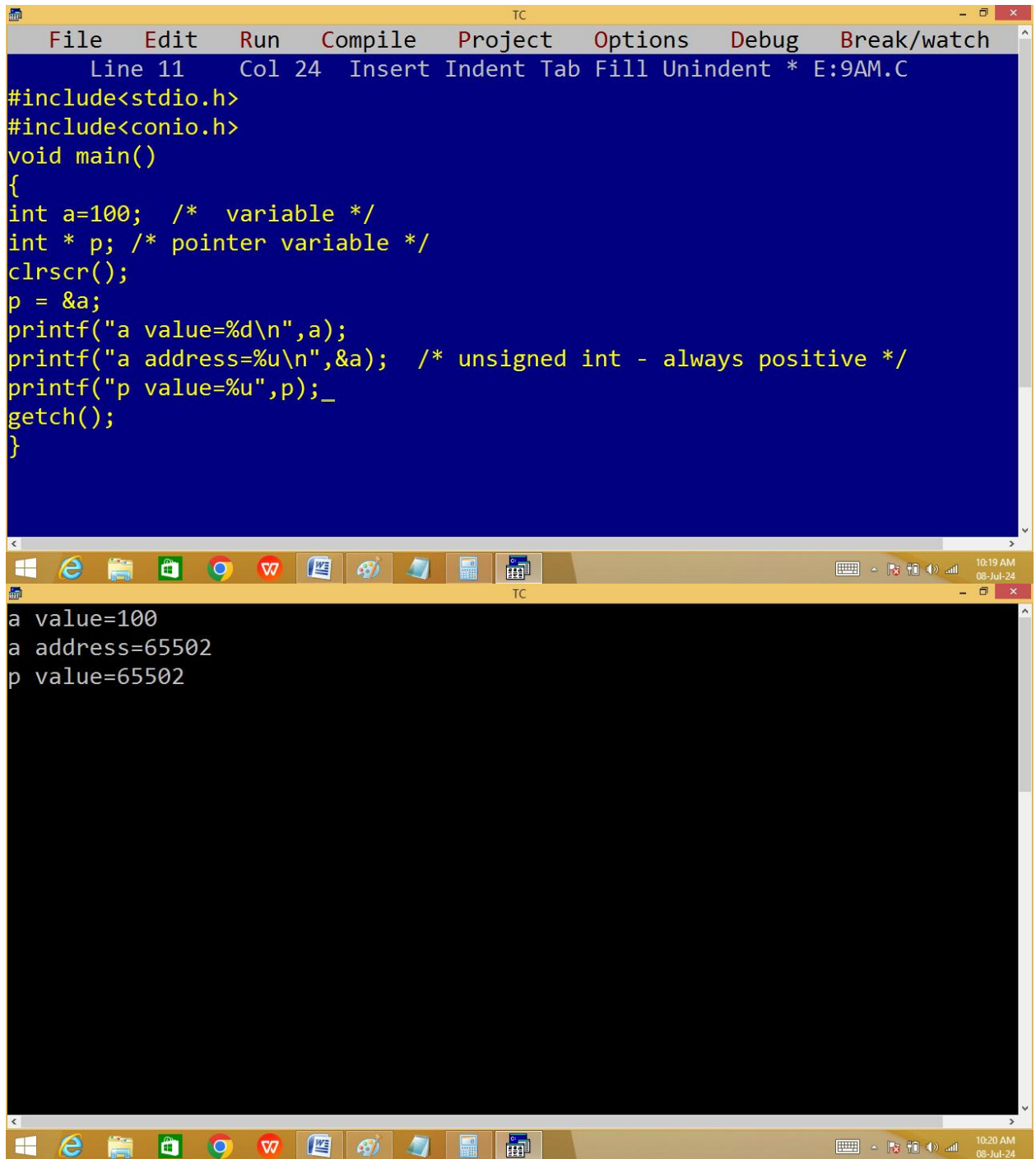
The bottom window shows the output of the program:

```
Kahona Pyar Hai
Kuch Kuch Hota Hai
a=19_
```

The Windows taskbar at the bottom shows the time as 10:03 AM on 08-Jul-24.

Address operators:

1. & - Address of variable
2. * - pointer – address of another variable



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

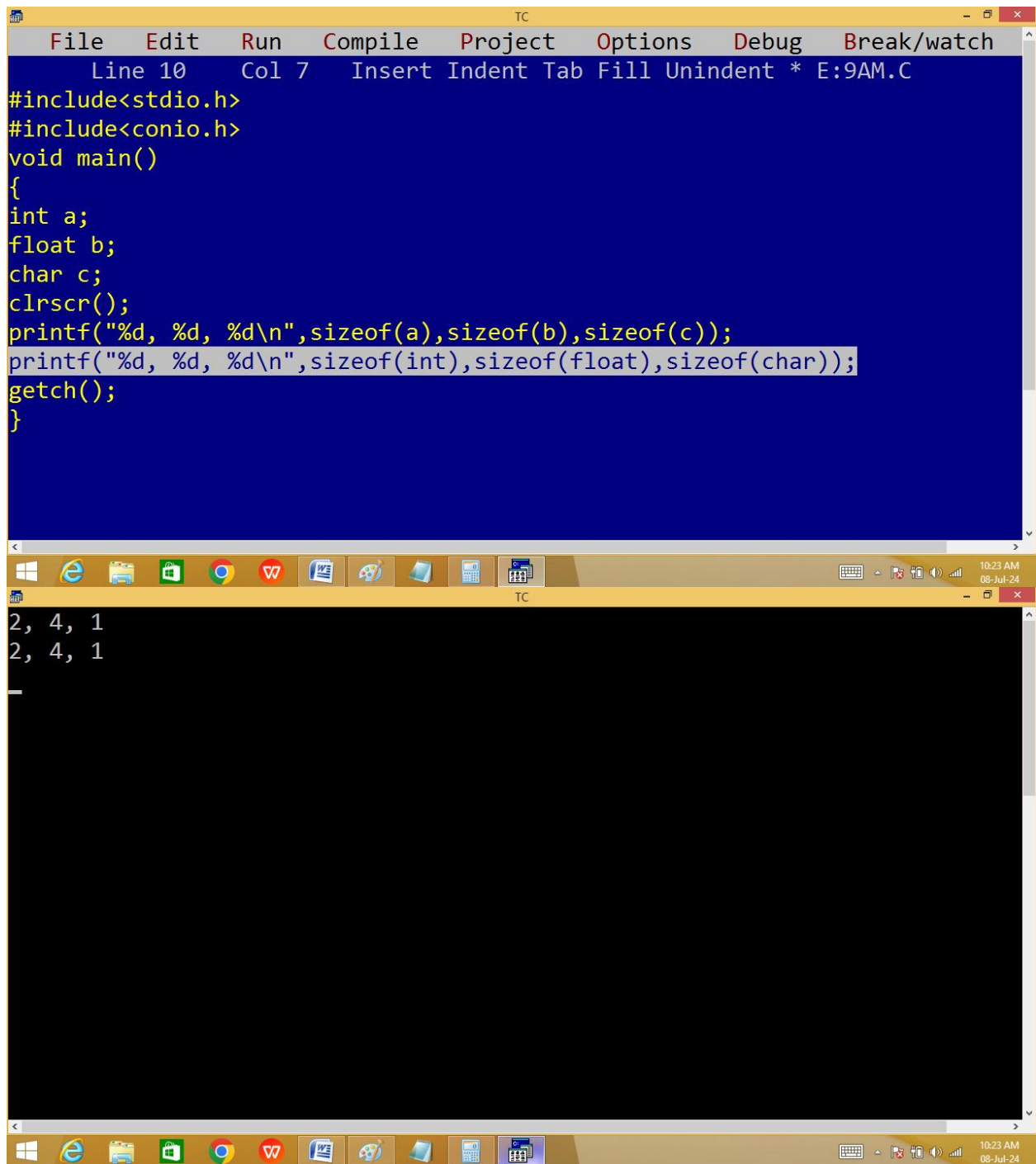
```
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 24 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=100; /* variable */
int * p; /* pointer variable */
clrscr();
p = &a;
printf("a value=%d\n",a);
printf("a address=%u\n",&a); /* unsigned int - always positive */
printf("p value=%u",p);_
getch();
}
```

The bottom window shows the output of the program:

```
a value=100
a address=65502
p value=65502
```

The Windows taskbar at the bottom shows the time as 10:19 AM and 10:20 AM on 08-Jul-24.

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



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the source code editor, which has a blue background. It contains a C program that includes `<stdio.h>` and `<conio.h>`, defines a `main` function, declares variables `a` (int), `b` (float), and `c` (char), clears the screen with `clrscr()`, and prints the sizes of these variables using `printf`. The second window is the output console, which has a black background and shows the program's output: `2, 4, 1` on the first line and `2, 4, 1` on the second line. The Windows taskbar at the bottom shows the time as 10:23 AM on 08-Jul-24.

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 7 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void 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));
getch();
}

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

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 51 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a=32768;
unsigned b=50000;
int c=100000;
clrscr();
printf("%d, %d, %d\n",sizeof(-5),sizeof(5),sizeof(32767));
printf("%d, %d, %d\n",sizeof(32768),sizeof(50000),sizeof(100000));
printf("%d, %d, %d\n",sizeof(a),sizeof(b),sizeof(c));
getch();
}
/*Note: After 32767 every default int is long int i.e. 4 bytes */

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

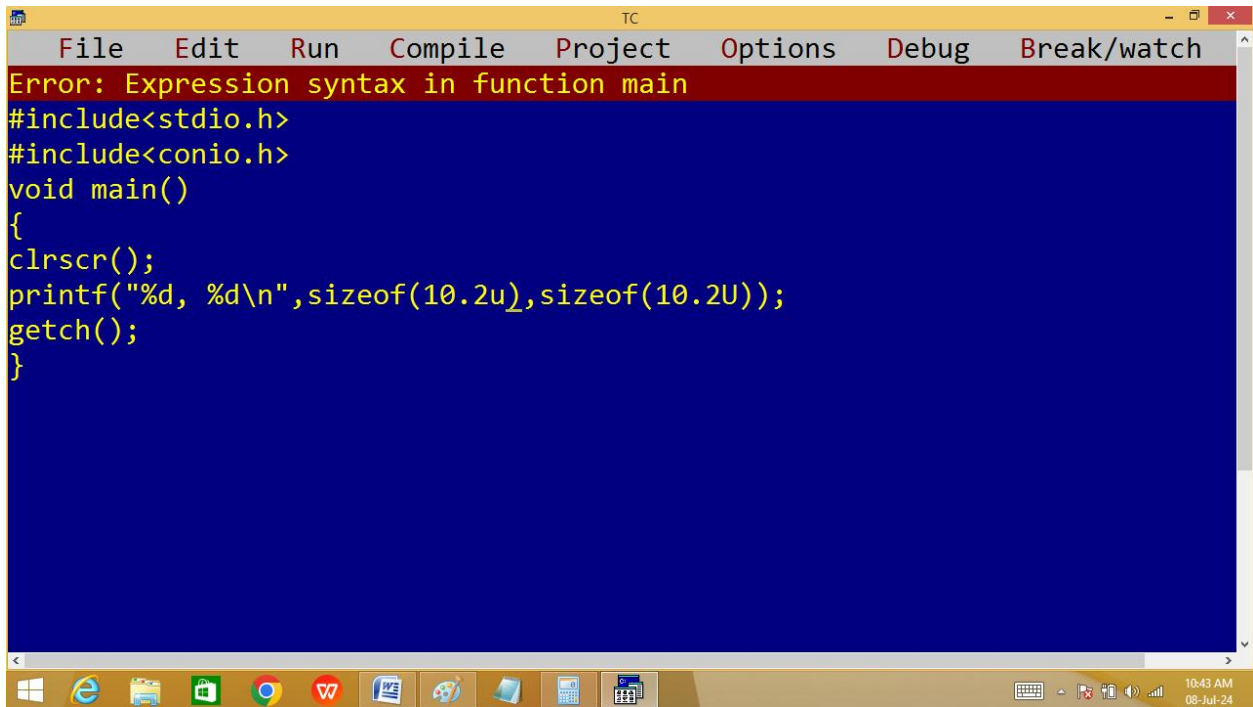
The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program with the following code:

```
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d, %d\n",sizeof(50000u),sizeof(50000U)); /*suffix type casting*/
printf("%d, %d\n",sizeof((int)50000),sizeof((unsigned)50000)); /*prefix ty
printf("%d, %d\n",sizeof((unsigned)100000),sizeof(100000u));
printf("%d, %d\n",sizeof(10l),sizeof(10L));
printf("%d, %d\n",sizeof(10f),sizeof((float)10));
printf("%d, %d\n",sizeof((char)10),sizeof((double)10));
getch();
}
```

The bottom window shows the output of the program:

```
2, 2
2, 2
2, 4
4, 4
4, 4
1, 8
```

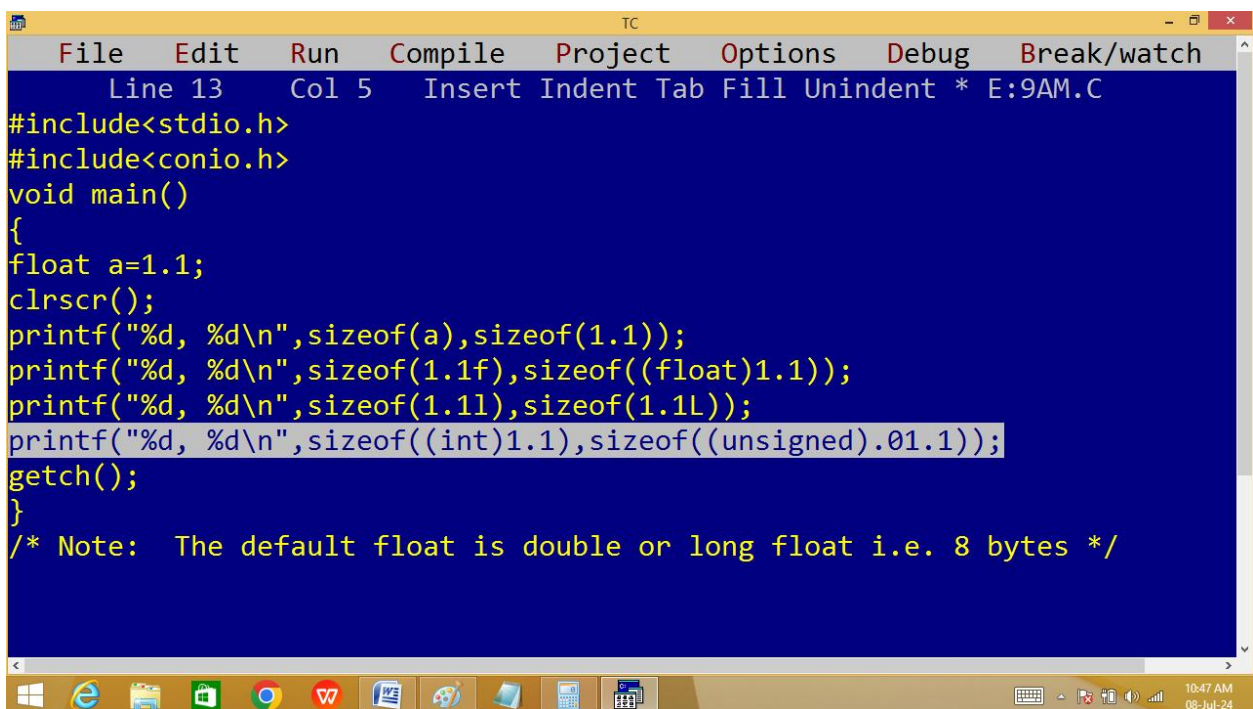
The IDE interface includes a menu bar with options like File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom right shows the time as 10:42 AM and 10:43 AM, and the date as 08-Jul-24.



The screenshot shows the Turbo C++ (TC) IDE with a yellow title bar and a menu bar containing File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A red error message bar at the top reads "Error: Expression syntax in function main". The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d, %d\n",sizeof(10.2u),sizeof(10.2U));
getch();
}
```

The Windows taskbar at the bottom shows various application icons and the system clock indicating 10:43 AM on 08-Jul-24.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar. A status bar at the top of the code area displays "Line 13 Col 5 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 a=1.1;
clrscr();
printf("%d, %d\n",sizeof(a),sizeof(1.1));
printf("%d, %d\n",sizeof(1.1f),sizeof((float)1.1));
printf("%d, %d\n",sizeof(1.1l),sizeof(1.1L));
printf("%d, %d\n",sizeof((int)1.1),sizeof((unsigned).01.1));
getch();
}
/* Note: The default float is double or long float i.e. 8 bytes */
```

The Windows taskbar at the bottom shows various application icons and the system clock indicating 10:47 AM on 08-Jul-24.

