

Ternary / Conditional operator(? :)

It is similar to if else / ladder if in working style.

It allows to complete if else / ladder if in a single statement.

When we are working with if else/ladder if it is going to take more than one line of statements. Ternary operator is going to finish the same task in a single statement.




But the difference between if ...else and ternary operator is ternary operator supports only one statement at a time and if supports any number of statements.

It is having 3 expressions. Hence it is called ternary operator.

It is starting with a condition. Hence it is called conditional operator.

Syntax:

condition ? true statement : false statement ;

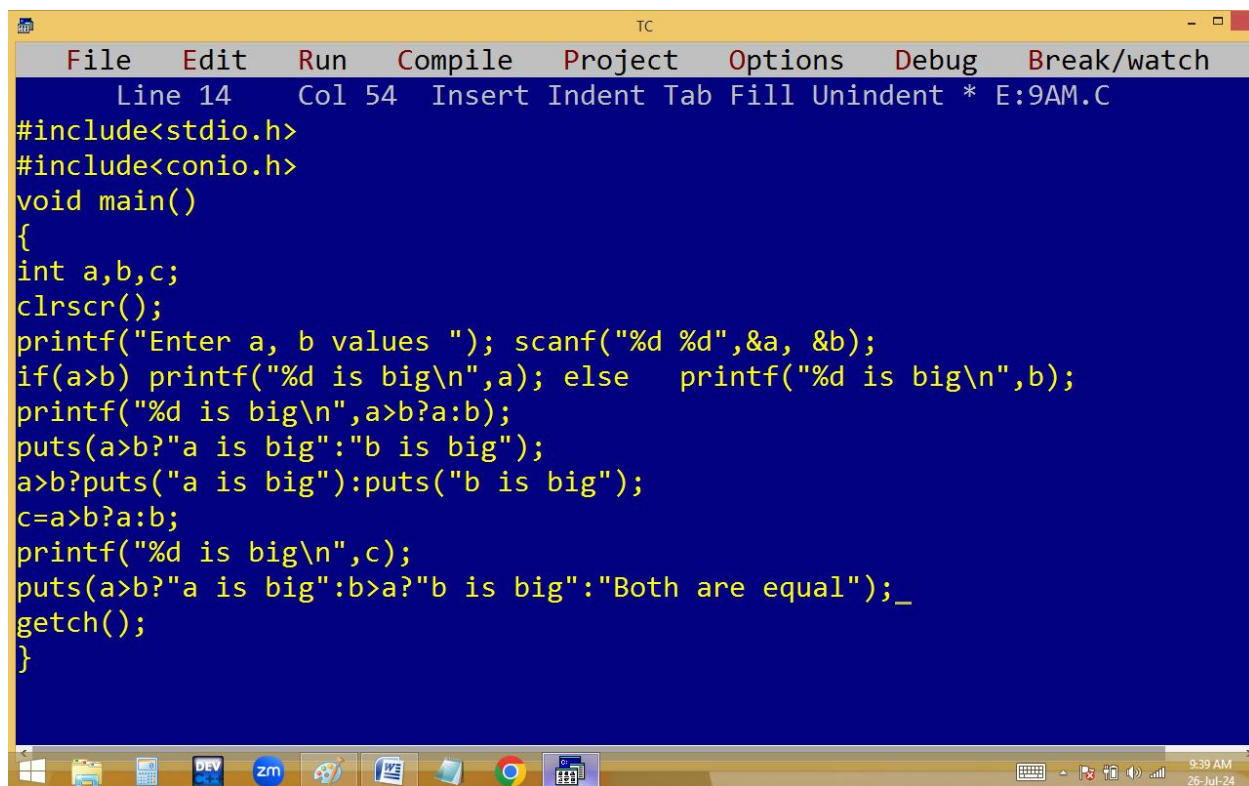
exp1/op1 exp2/op2 exp3/op3

If condition true, statement after ? executed.

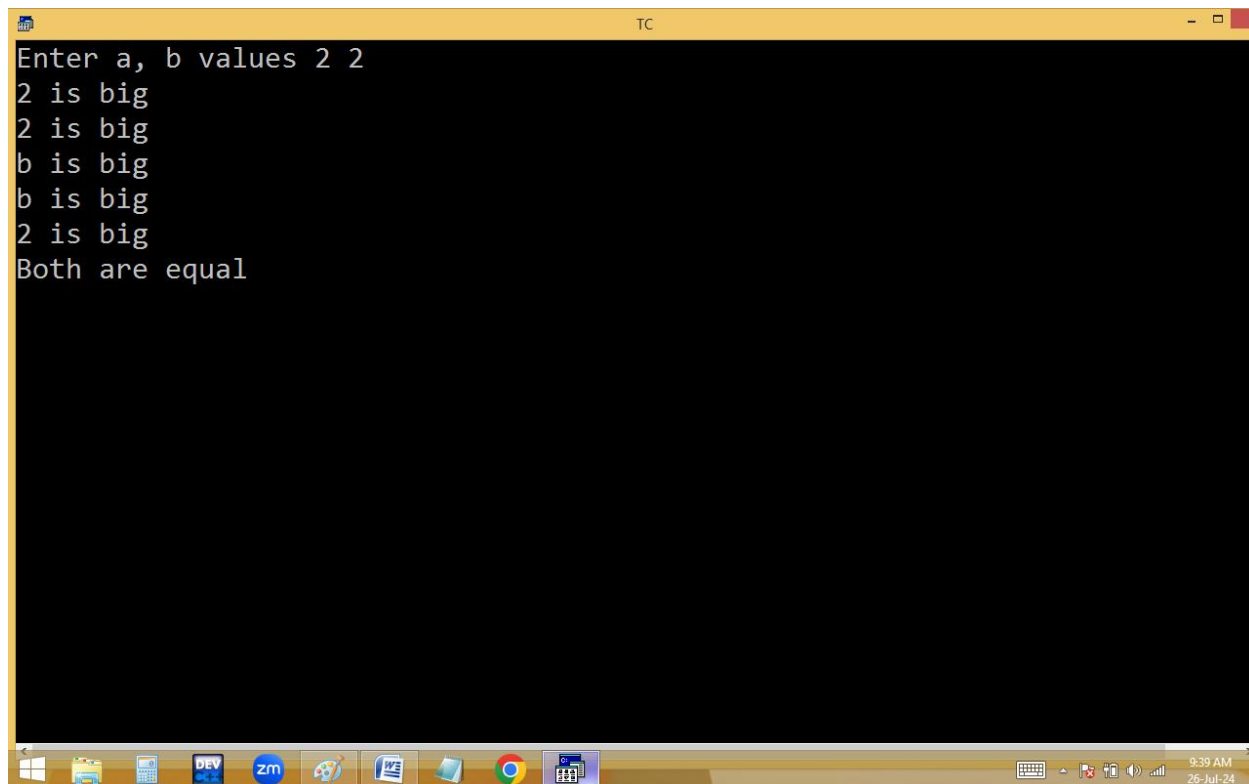
If condition false, statement after : is executed.

When compared with if else, conditional operator **performance is high**.

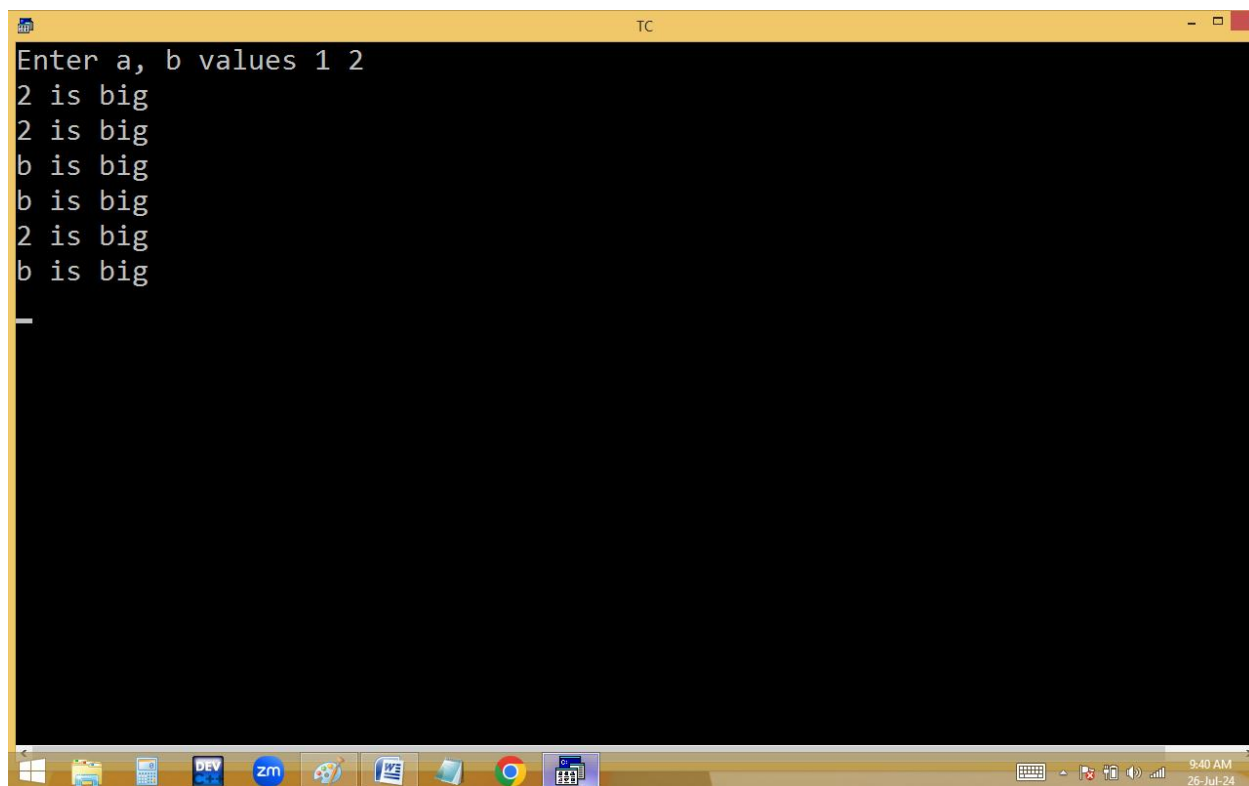
Eg: Finding big in two no's using ternary operator.



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 14 Col 54 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("Enter a, b values "); scanf("%d %d",&a, &b);
if(a>b) printf("%d is big\n",a); else printf("%d is big\n",b);
printf("%d is big\n",a>b?a:b);
puts(a>b?"a is big":"b is big");
a>b?puts("a is big"):puts("b is big");
c=a>b?a:b;
printf("%d is big\n",c);
puts(a>b?"a is big":b>a?"b is big":"Both are equal");_
getch();
}
```



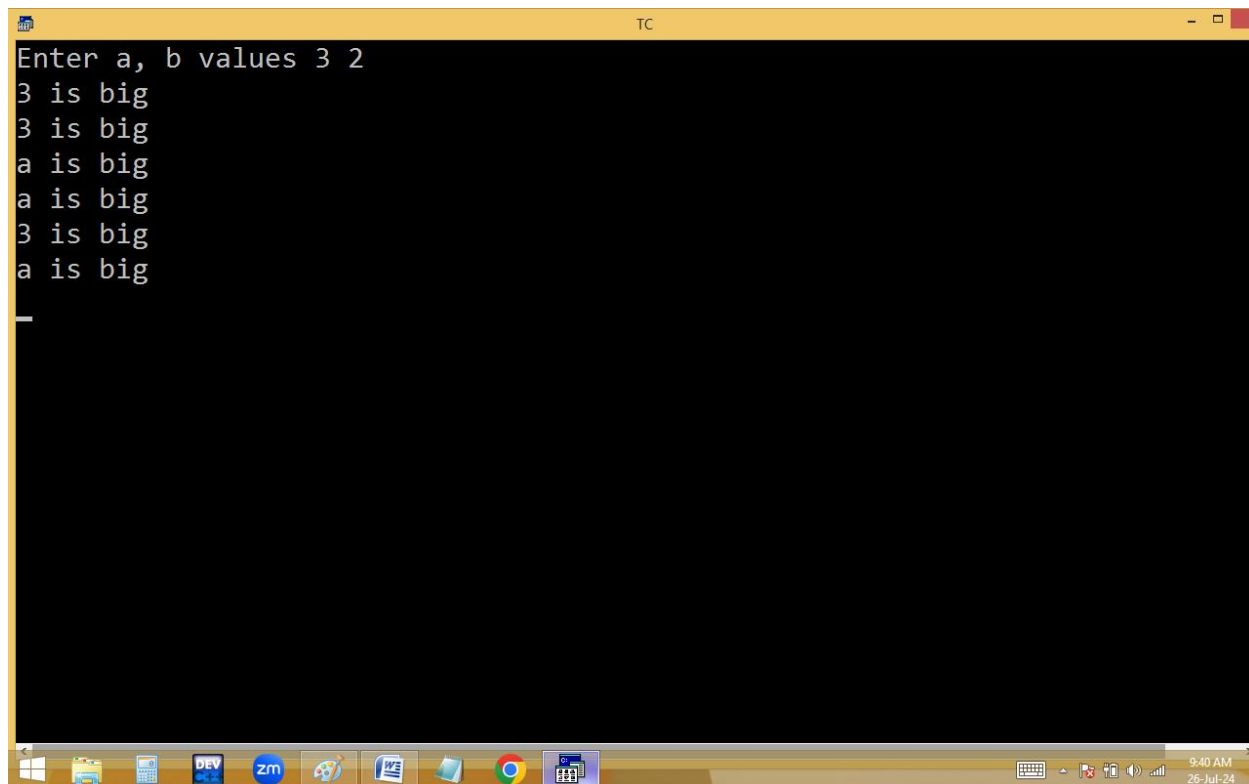
```
TC
Enter a, b values 2 2
2 is big
2 is big
b is big
b is big
2 is big
Both are equal
9:39 AM
26-Jul-24
```



The screenshot shows a Turbo C++ (TC) window with a yellow title bar. The text inside the window is as follows:

```
Enter a, b values 1 2
2 is big
2 is big
b is big
b is big
2 is big
b is big
_
```

The window's taskbar at the bottom shows various icons including Windows Explorer, DEV C++, Zm, and others. The system clock in the bottom right corner indicates 9:40 AM on 26-Jul-24.

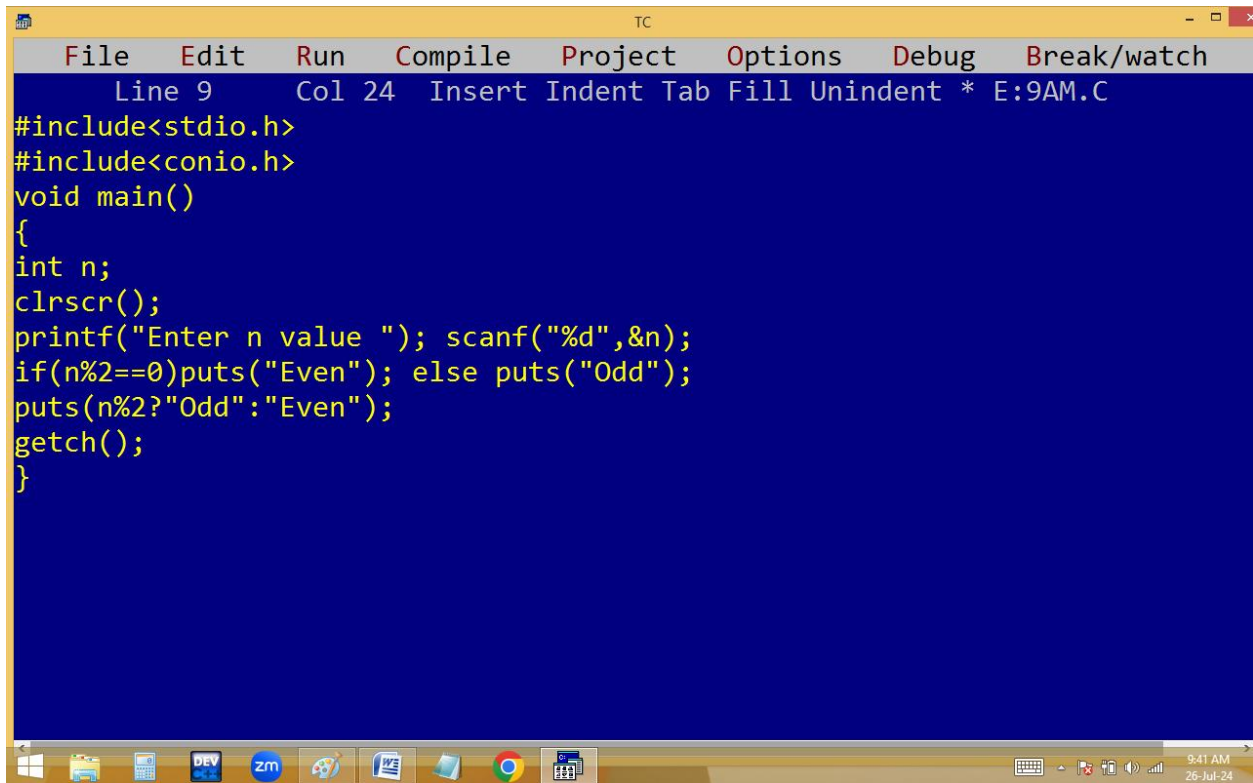


The screenshot shows a Turbo C++ (TC) window with a yellow title bar. The text inside the window is as follows:

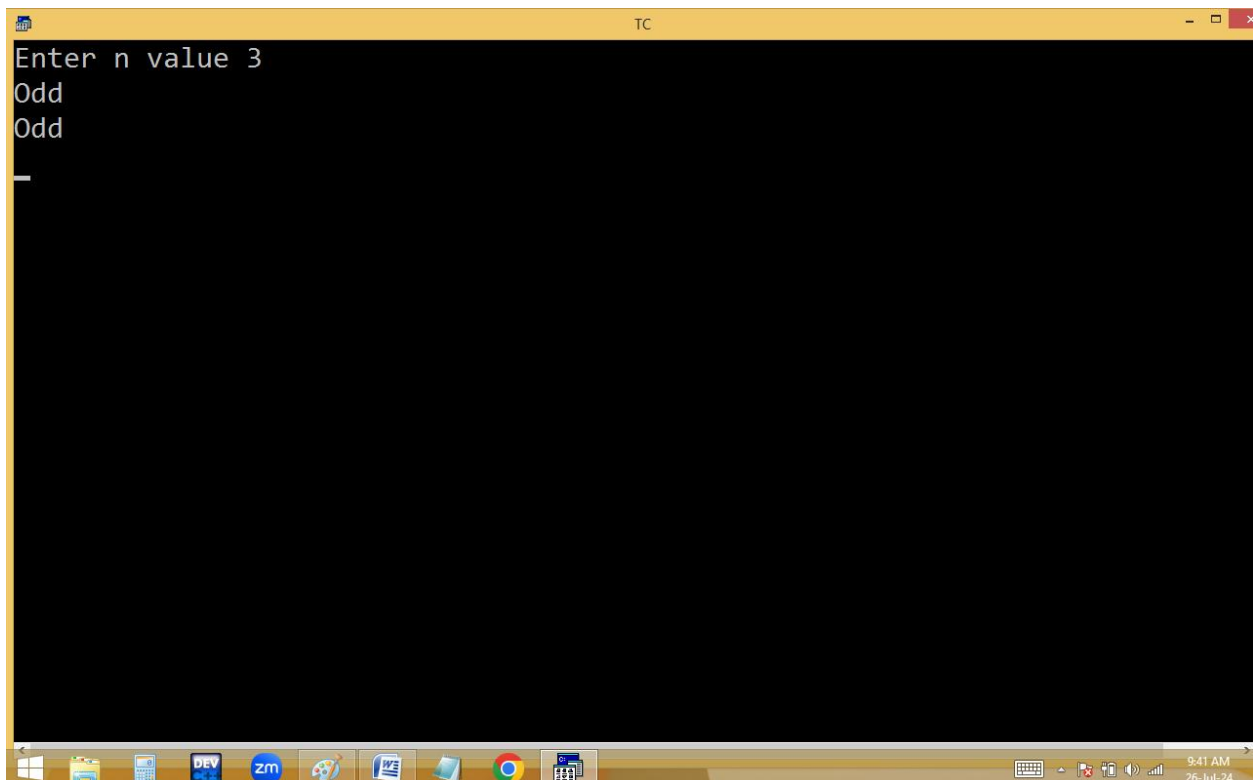
```
Enter a, b values 3 2
3 is big
3 is big
a is big
a is big
3 is big
a is big
_
```

The window's taskbar at the bottom shows various icons including Windows Explorer, DEV C++, Zm, and others. The system clock in the bottom right corner indicates 9:40 AM on 26-Jul-24.

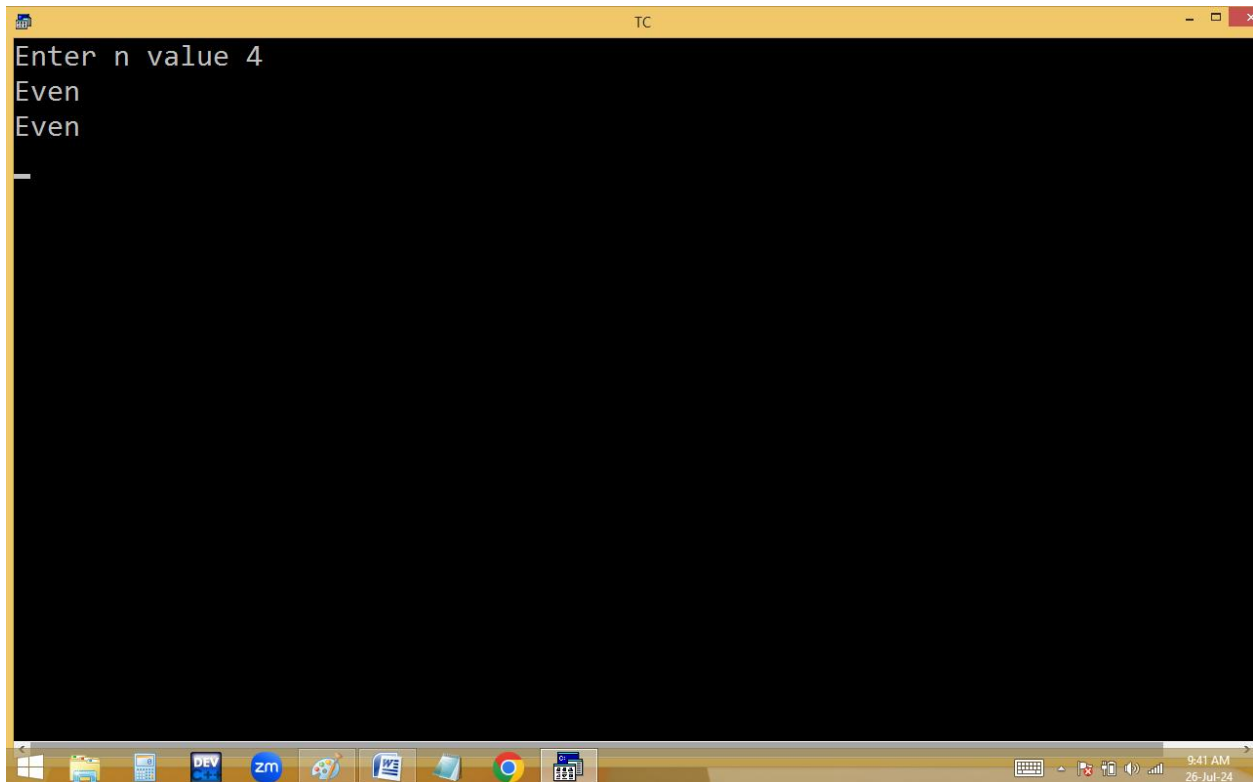
Finding even/odd using ternary operator:



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 24 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
if(n%2==0)puts("Even"); else puts("Odd");
puts(n%2?"Odd":"Even");
getch();
}
```



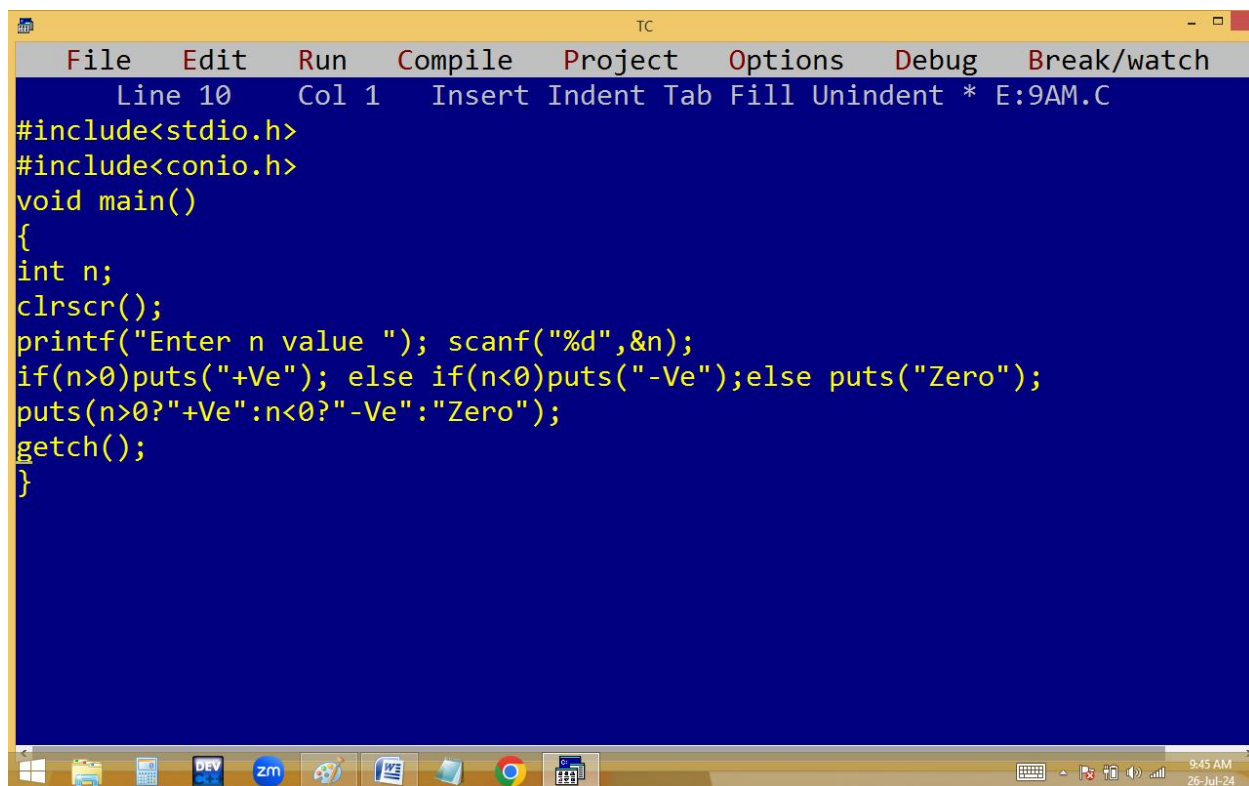
```
TC
Enter n value 3
Odd
Odd
_
```



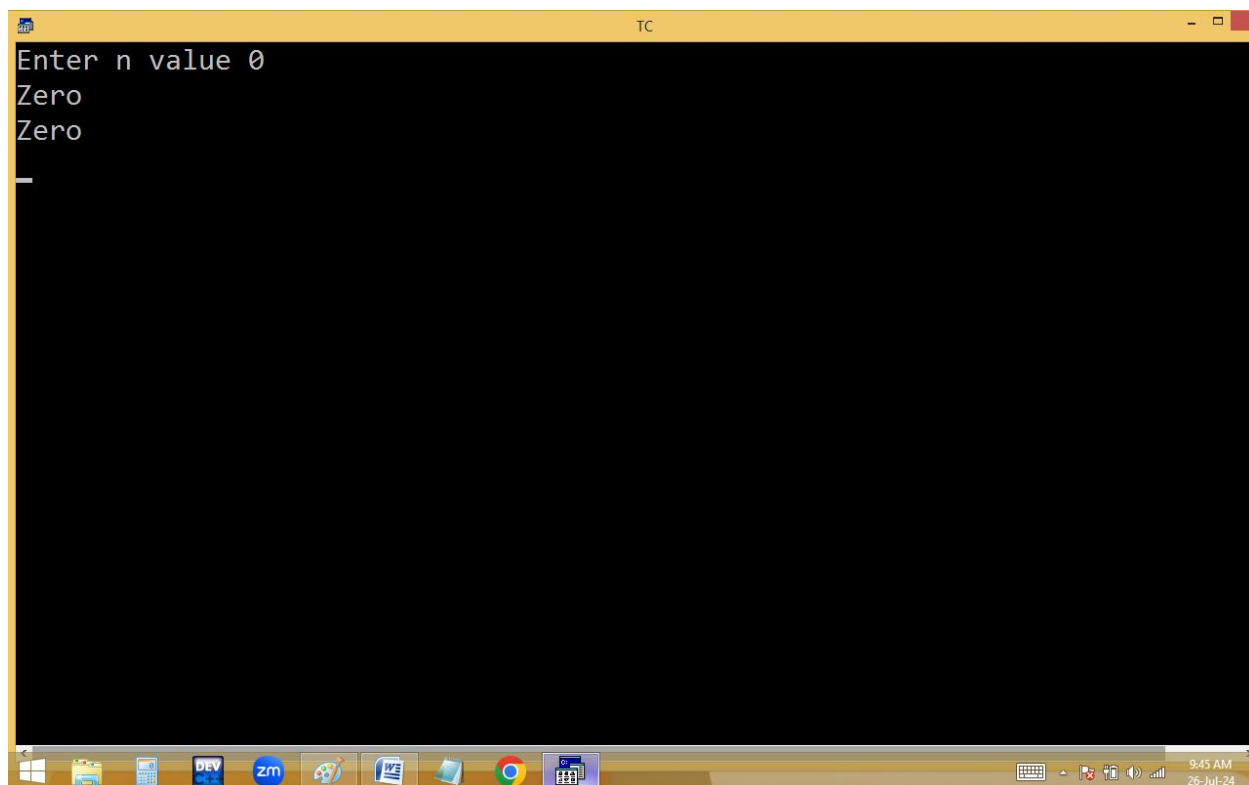
```
Enter n value 4
Even
Even
```

$4 \% 2 = 0$ ———→
`puts(n%2 ? "Odd" : "Even");`
 $3 \% 2 = 1$ ———→

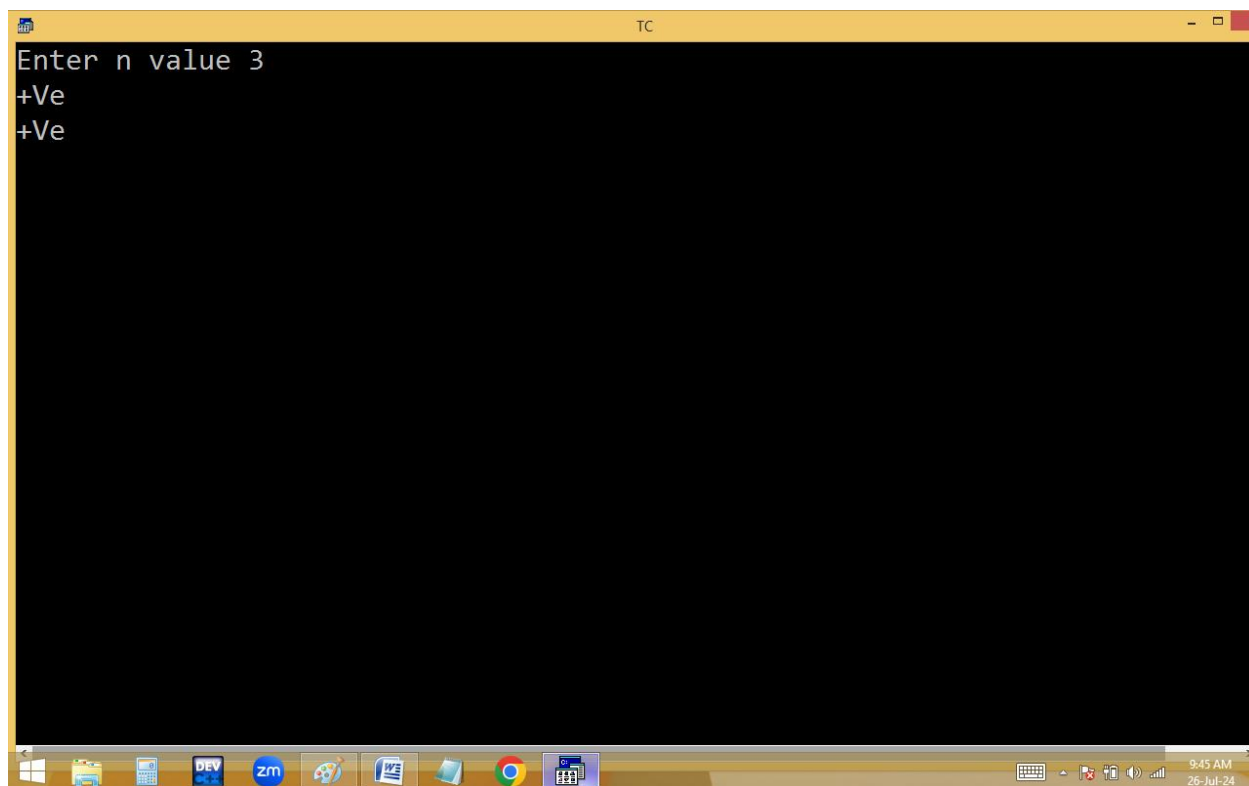
Finding +Ve / -Ve / 0 using ternary operator:



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
if(n>0)puts("+Ve"); else if(n<0)puts("-Ve");else puts("Zero");
puts(n>0?" +Ve":n<0?" -Ve":"Zero");
getch();
}
```



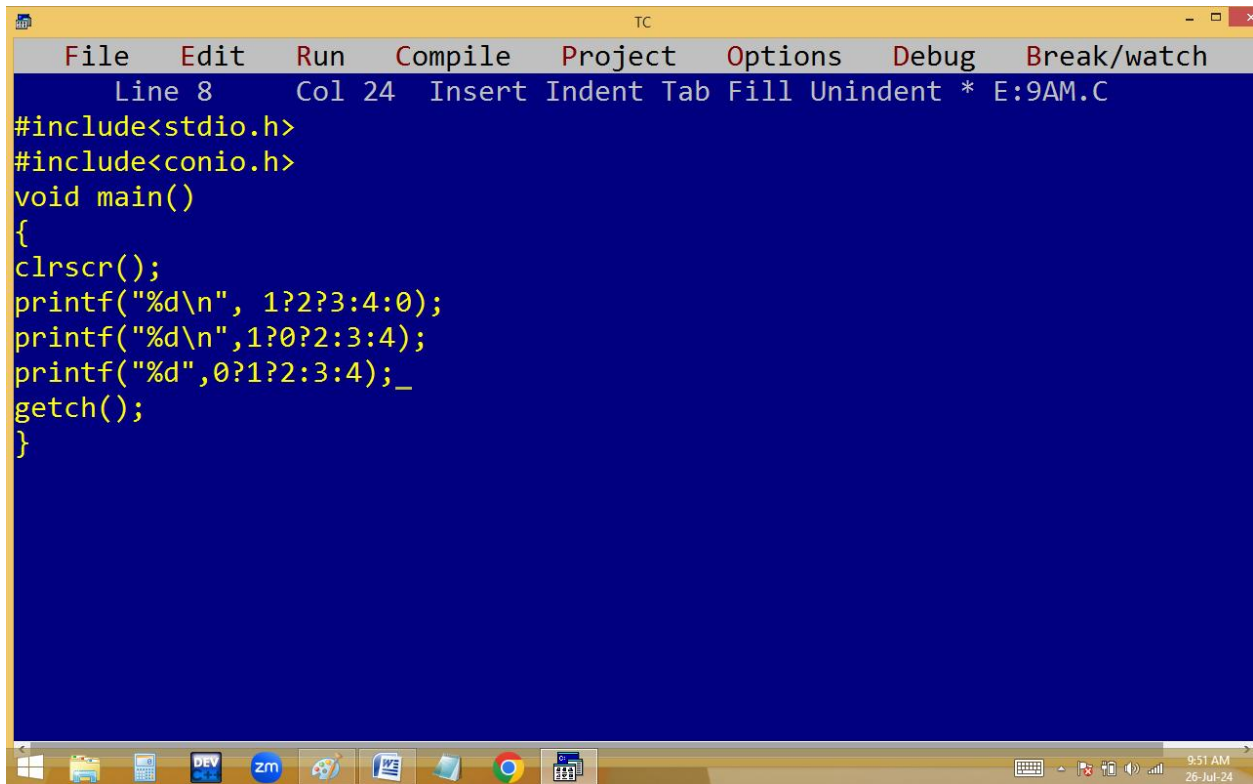
```
TC
Enter n value 0
Zero
Zero
_
```

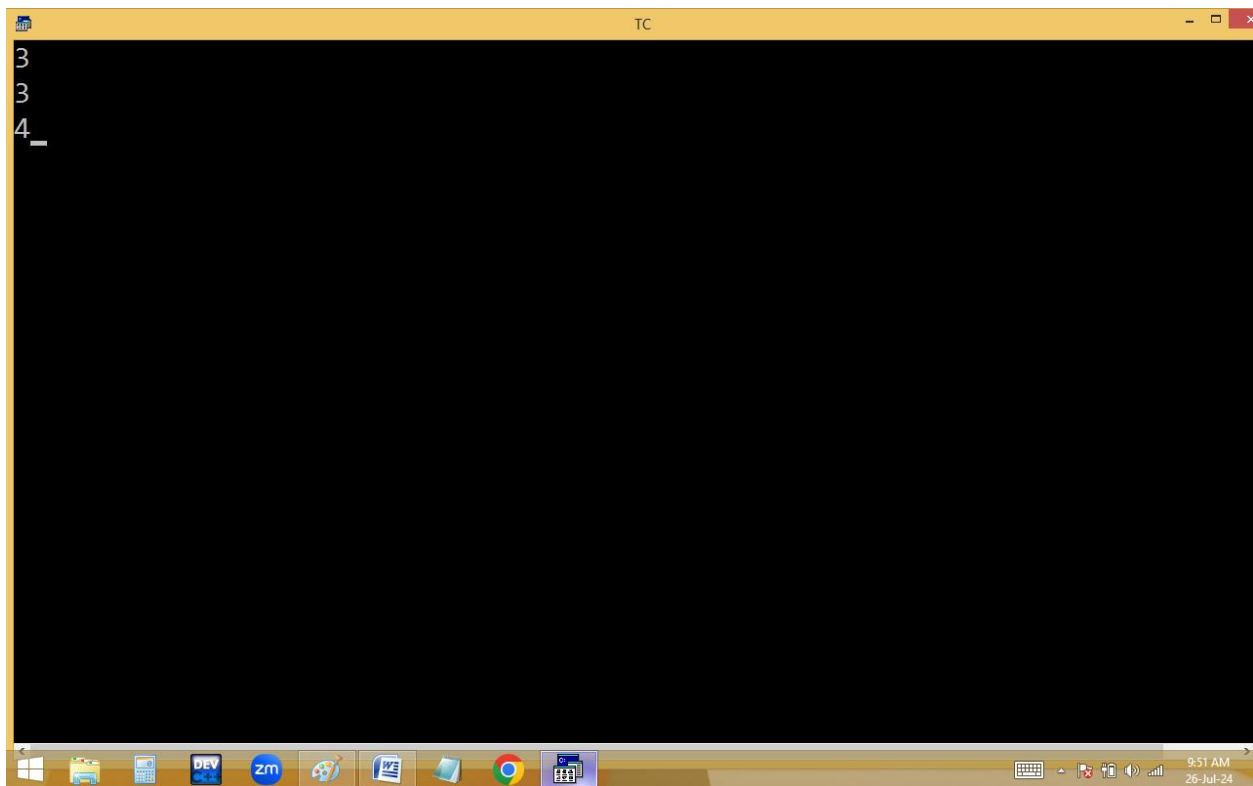
```
TC
Enter n value 3
+Ve
+Ve
```



```
TC
Enter n value -0
Zero
Zero
```



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 24 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d\n", 1?2?3:4:0);
printf("%d\n",1?0?2:3:4);
printf("%d",0?1?2:3:4);_
getch();
}
```



```
TC
3
3
4_
```

$\text{con} \quad ? \quad \text{t} \quad : \quad \text{f}$
 $1 \quad ? \quad \boxed{2 \quad ? \quad 3 \quad : \quad 4} \quad : \quad 0$
 $\text{con} \quad ? \quad \quad \quad \text{t} \quad \quad \quad : \quad \text{f}$

```

if( 1 )
{
  if( 2 ) p( 3 );
  else p( 4 );
}
else p( 0 )

```

$\text{con} \quad ? \quad \text{t} \quad : \quad \text{f}$
 $1 \quad ? \quad \boxed{0 \quad ? \quad 2 \quad : \quad 3} \quad : \quad 4$
 $\text{con} \quad ? \quad \quad \quad \text{t} \quad \quad \quad : \quad \text{f}$

```

if( 1 )
{
  if( 0 ) p( 2 );
  else p( 3 );
}
else p( 4 )

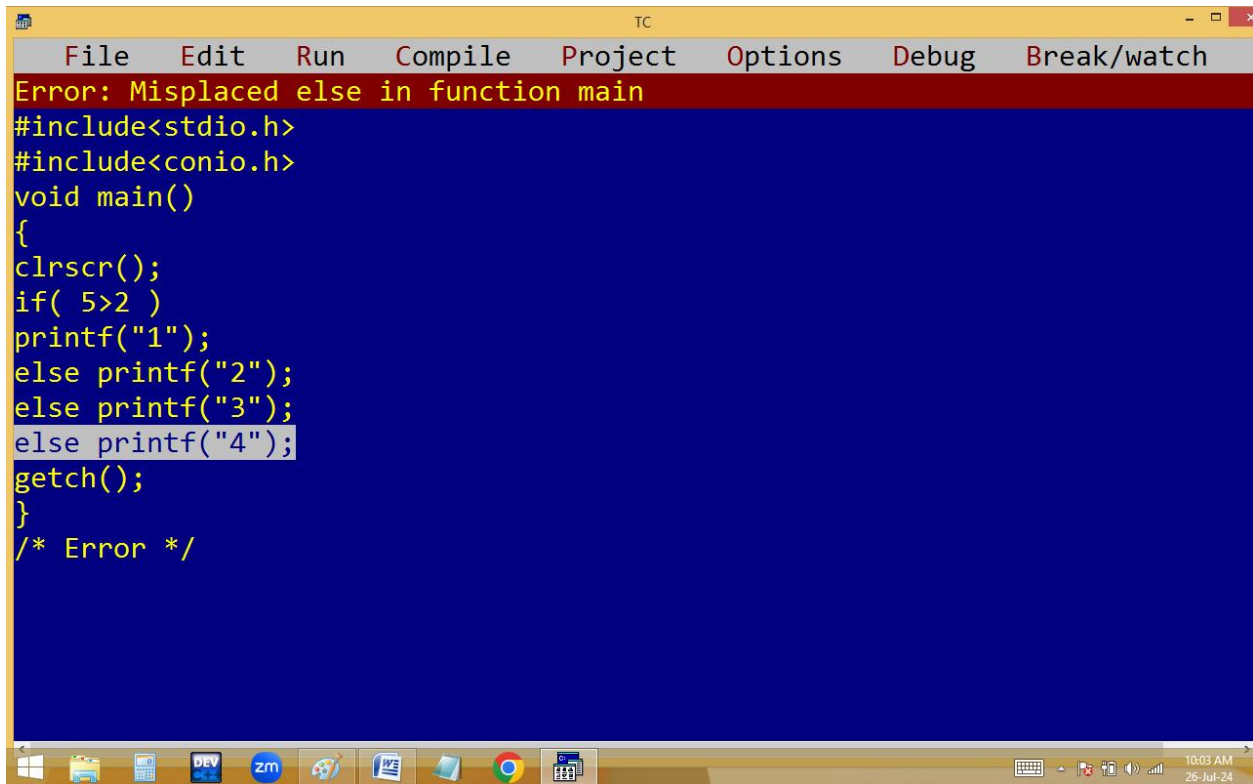
```

$\text{con} \quad ? \quad \text{t} \quad : \quad \text{f}$
 $0 \quad ? \quad \boxed{1 \quad ? \quad 2 \quad : \quad 3} \quad : \quad 4$
 $\text{con} \quad ? \quad \quad \quad \text{t} \quad \quad \quad : \quad \text{f}$

```

if( 0 )
{
  if( 1 ) p( 2 );
  else p( 3 );
}
else p( 4 )

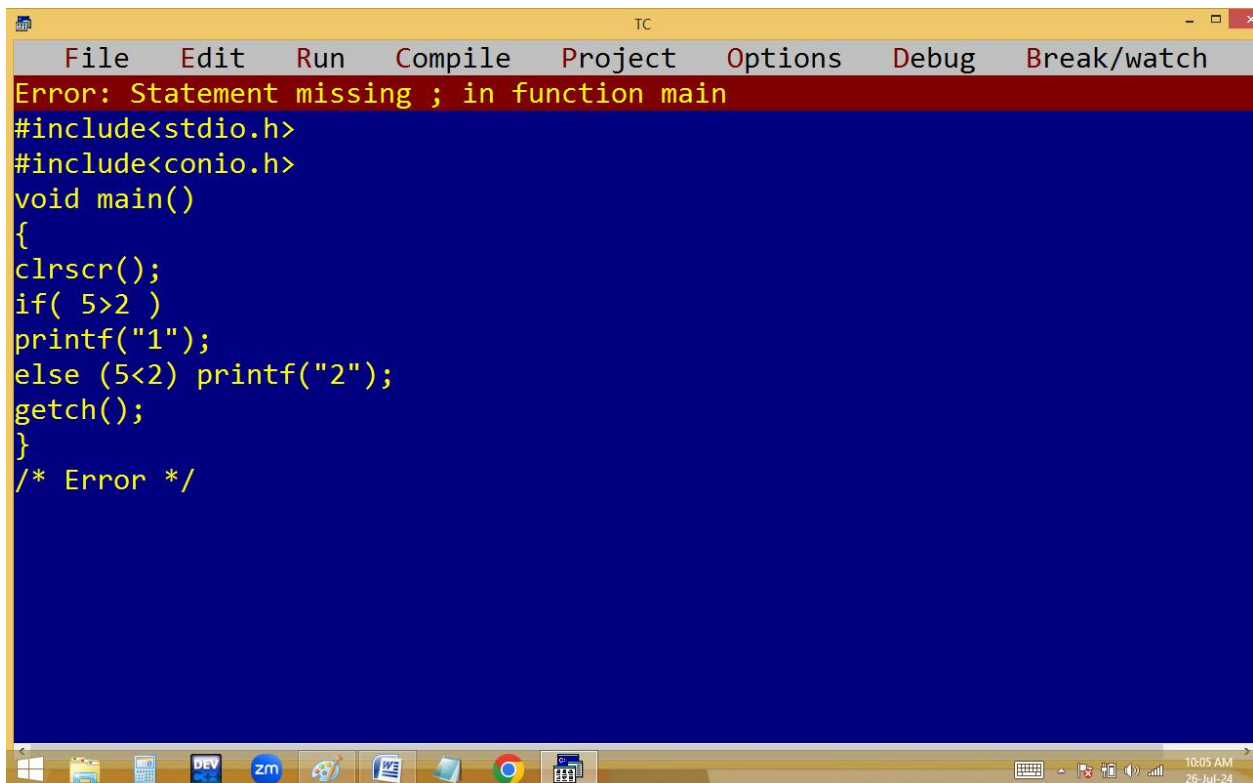
```



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

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if( 5>2 )
printf("1");
else printf("2");
else printf("3");
else printf("4");
getch();
}
/* Error */
```

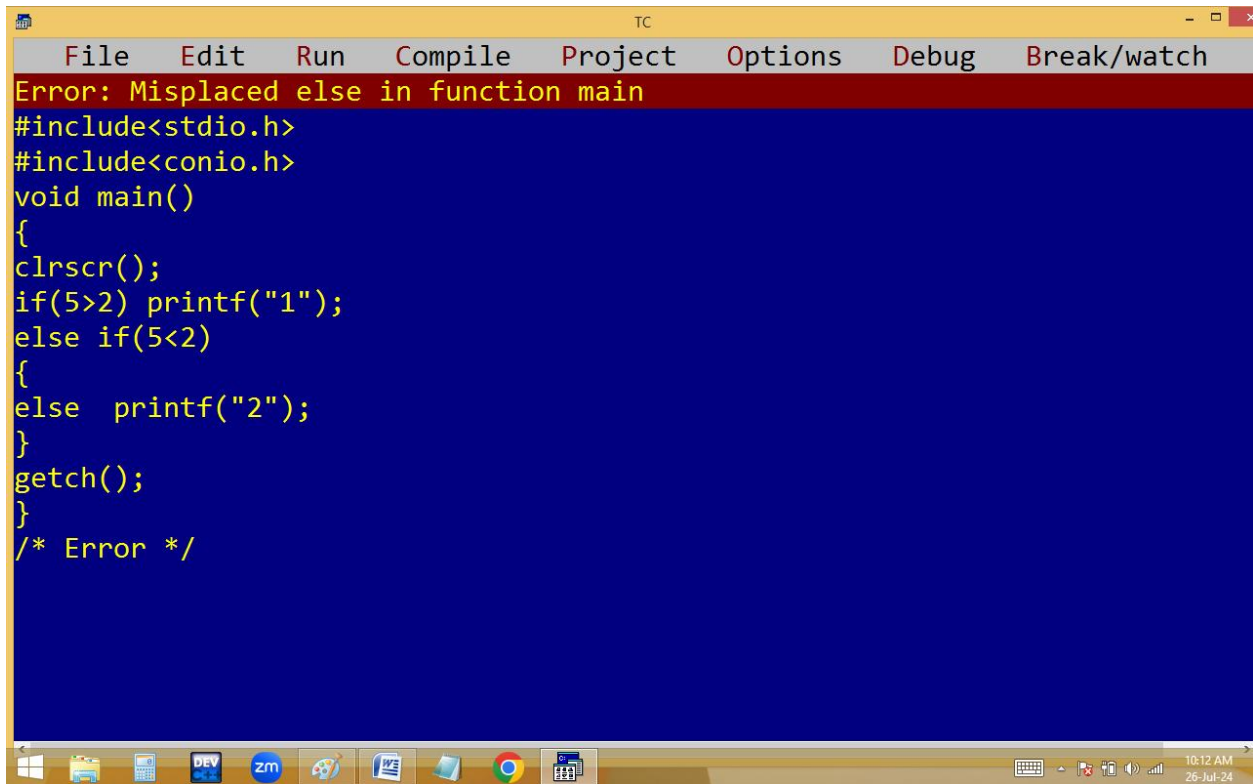
The taskbar at the bottom shows various application icons and the system clock indicating 10:03 AM on 26-Jul-24.



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

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if( 5>2 )
printf("1");
else (5<2) printf("2");
getch();
}
/* Error */
```

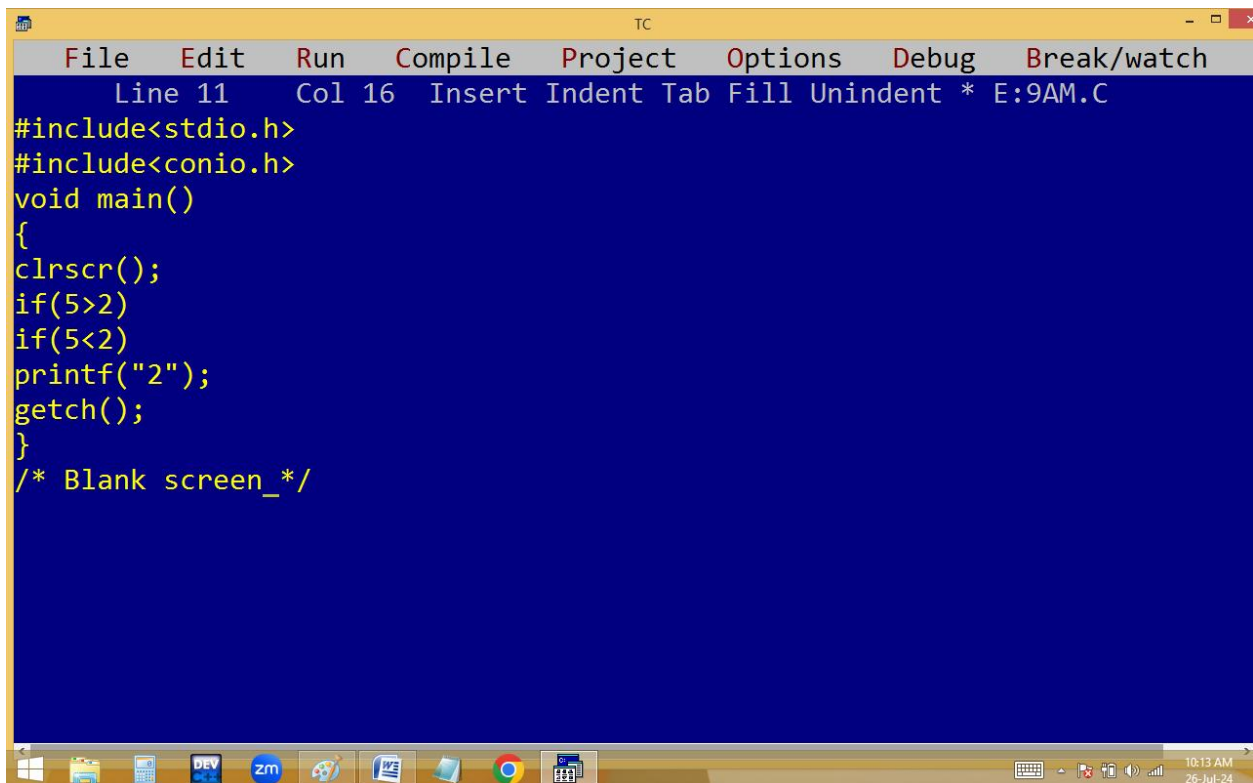
The taskbar at the bottom shows various application icons and the system clock indicating 10:05 AM on 26-Jul-24.



The screenshot shows the Turbo C++ (TC) IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. A red error message banner at the top reads "Error: Misplaced else in function main". The code editor has a dark blue background with yellow text. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if(5>2) printf("1");
else if(5<2)
{
else printf("2");
}
getch();
}
/* Error */
```

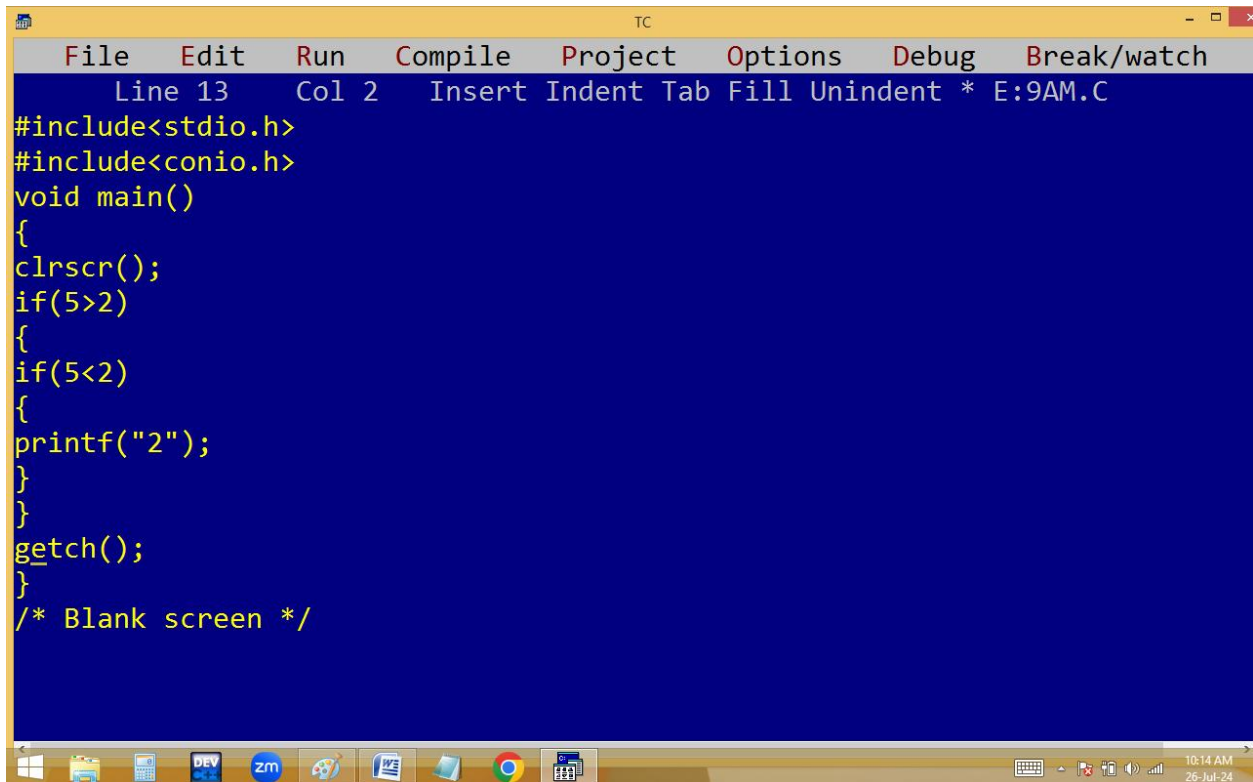
The Windows taskbar at the bottom shows the Start button, several application icons (including DEV, zm, and a folder), and the system clock indicating 10:12 AM on 26-Jul-24.



The screenshot shows the Turbo C++ (TC) IDE interface after the error has been corrected. The menu bar is the same. The status bar at the top of the editor area displays "Line 11 Col 16 Insert Indent Tab Fill Unindent * E:9AM.C". The code editor has a dark blue background with yellow text. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if(5>2)
if(5<2)
printf("2");
getch();
}
/* Blank screen_*/
```

The Windows taskbar at the bottom shows the Start button, several application icons, and the system clock indicating 10:13 AM on 26-Jul-24.



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 2 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if(5>2)
{
if(5<2)
{
printf("2");
}
}
getch();
}
/* Blank screen */
```

SWITCH

It is a selection statement.

It is used to execute one case of statements from no of cases according to the switch expression value matched with case expression value. In switch the program is jumped to matching case like the go to label.

It is similar to ladder if in working style.

Switch performance is high when compared with ladder if because of it jumps to matching case.

Syntax:

```
switch(condition / expression)  
{  
  case  constexp1:  
    statements;  
    break;  
  case  constexp2:  
    statements;  
    break;
```

```
case constexprN:  
statements;  
break;  
[ default: statements; ]  
}
```

Here switch, case, break, default are the keywords.

In between case and case expression / value at least one space should be provided. **Otherwise it will become a label.**

case expression/value should be a **constant integer/char value**. i.e. float / string not allowed.

One case contains one expression only.

case expression doesn't contain any separators like , . etc.

case expression should be end with **: (colon)**

Each case should be separated with break keyword. Otherwise remaining cases also executed.

Duplicate cases not allowed.

default is similar to the else and all cases are failed then default statements are executed. Default is

optional and we can declare it anywhere in our switch.

Outside case expressions not considered in switch.