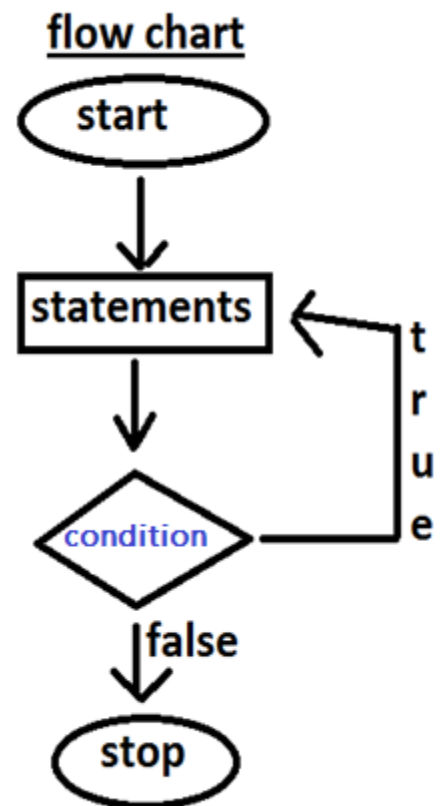
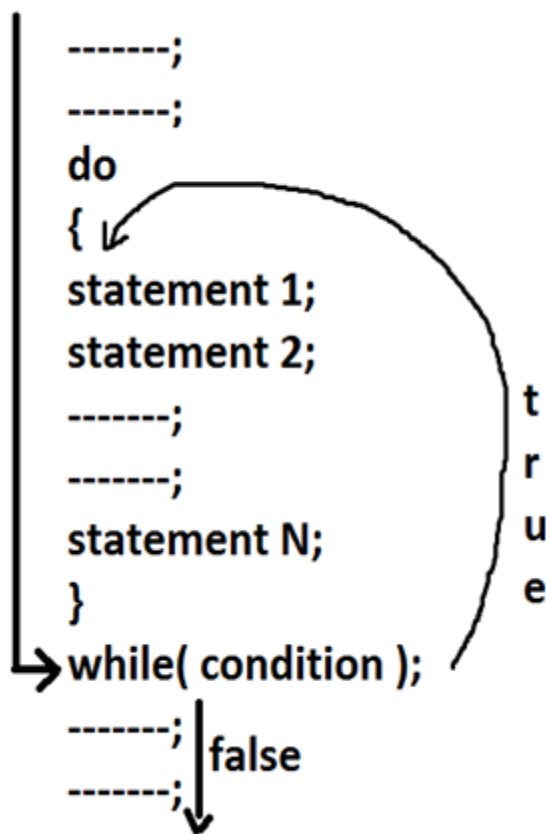


do .. while:

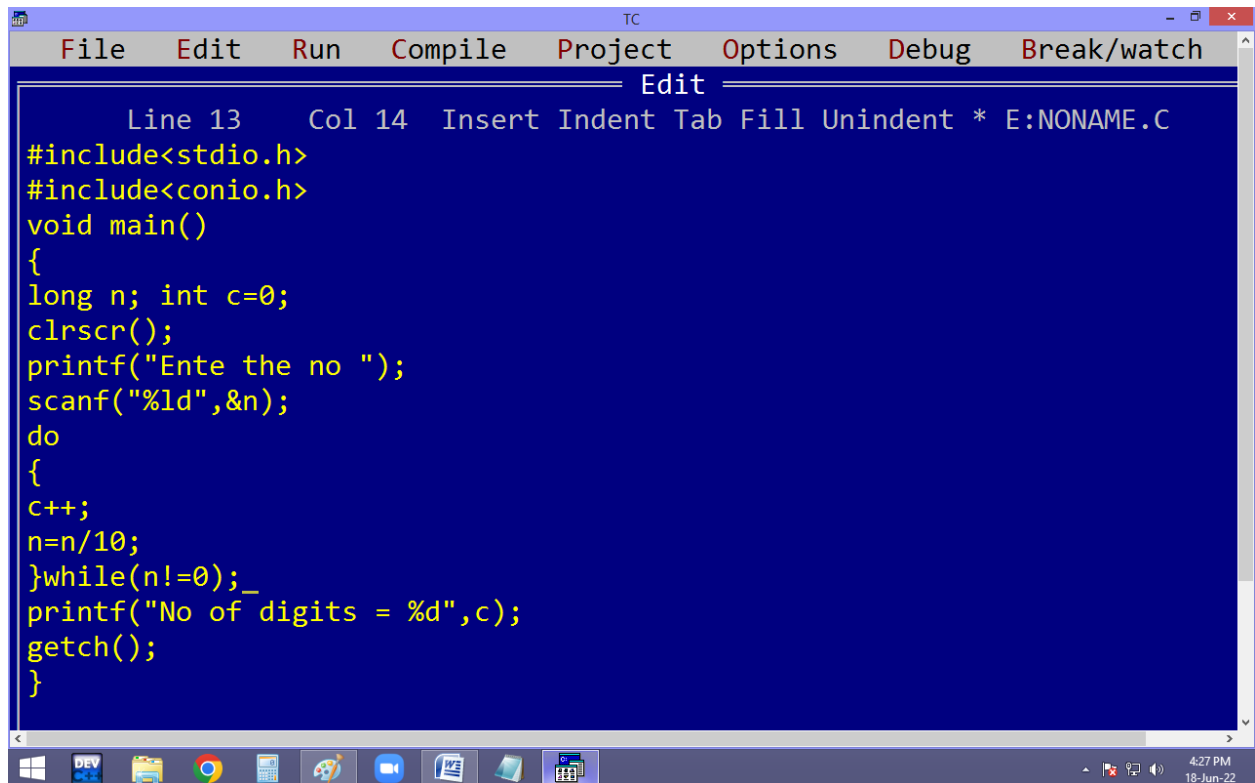
- It is an exit control loop. i.e. in a do while the condition is tested at last.
- Here do , while are the keywords.
- It is also used to repeat a program several times based on a condition.
- In a do while, do block statements are executed first and later while condition is tested. If the while condition is true then once again the do block statements are repeated. Like this the process is continued until the while condition becomes false.
- In do while, the while should be end with semicolon (;) .
- Regardless of while condition, the do statements are executed at least one

time. Due to this sometimes we are getting unwanted results [garbage values].

- Use do while whenever it is compulsory because of in do while the program is controlled at the bottom / last.

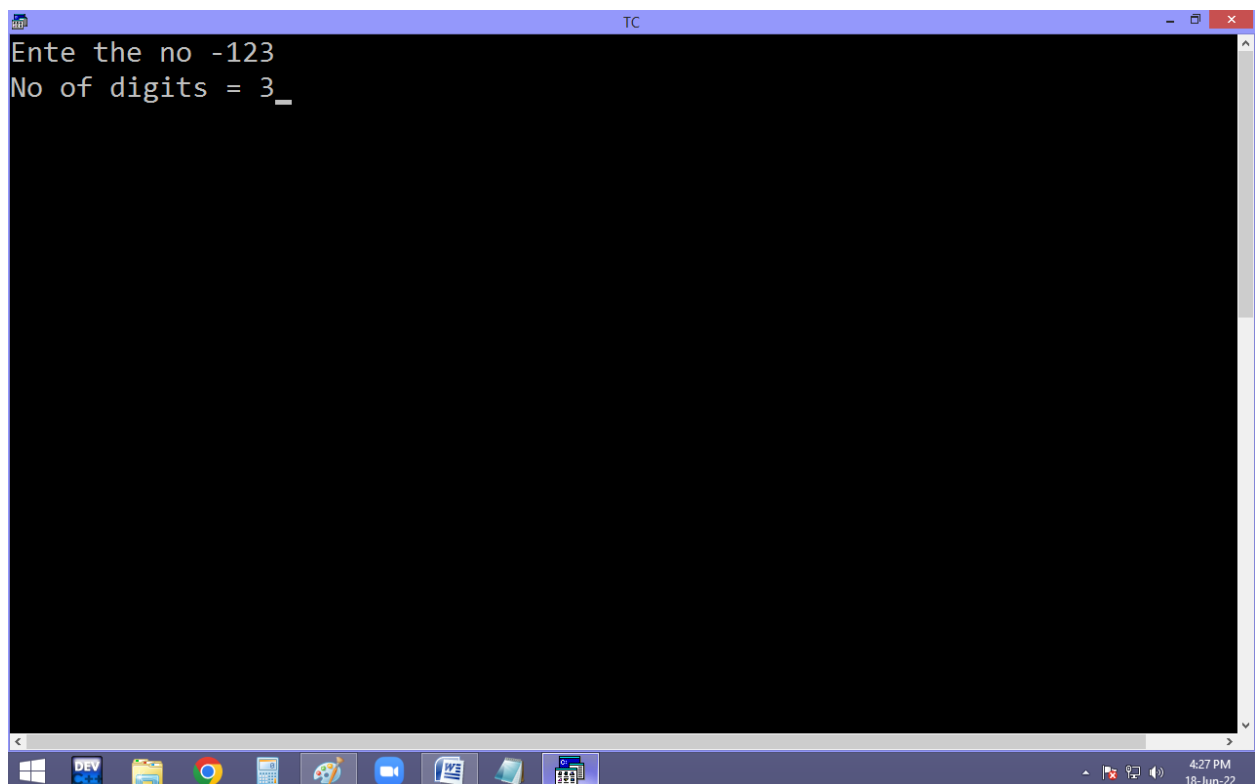


Eg. finding no of digits in given no.



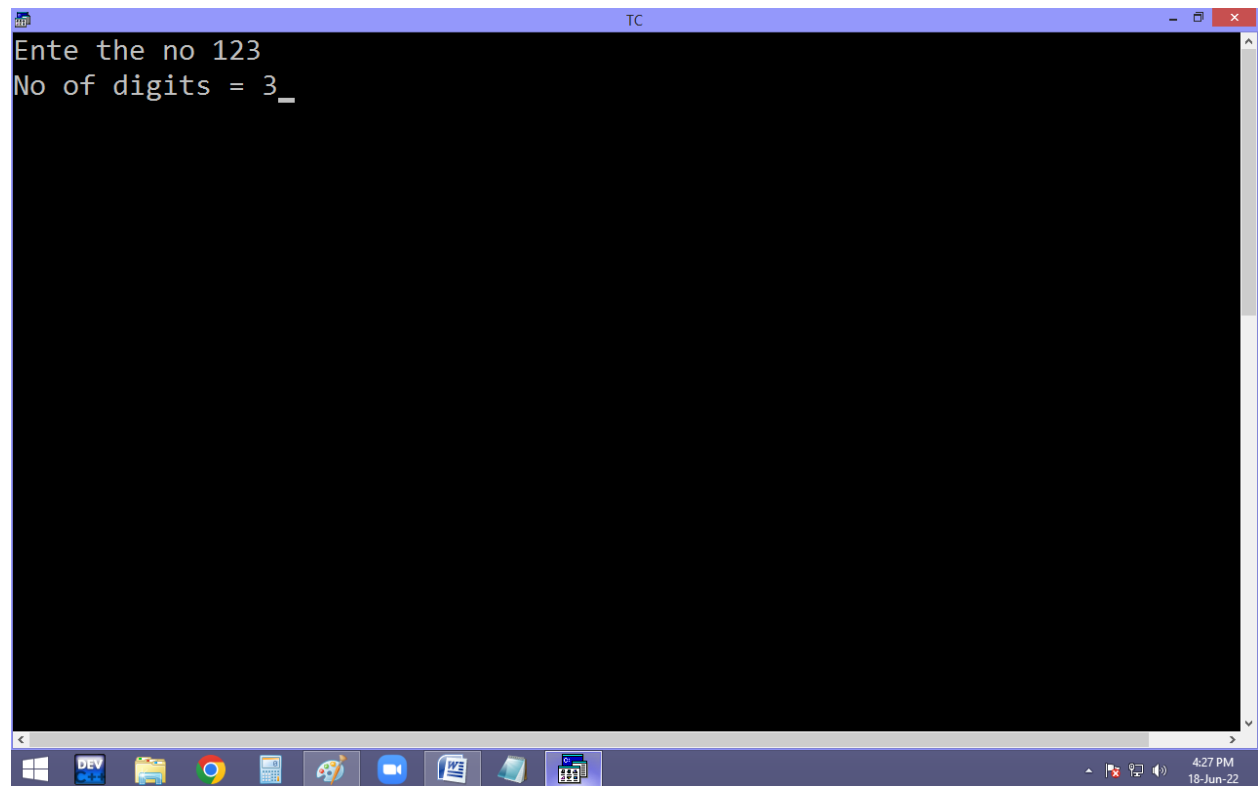
The screenshot shows the Turbo C++ IDE with the following code in the editor:

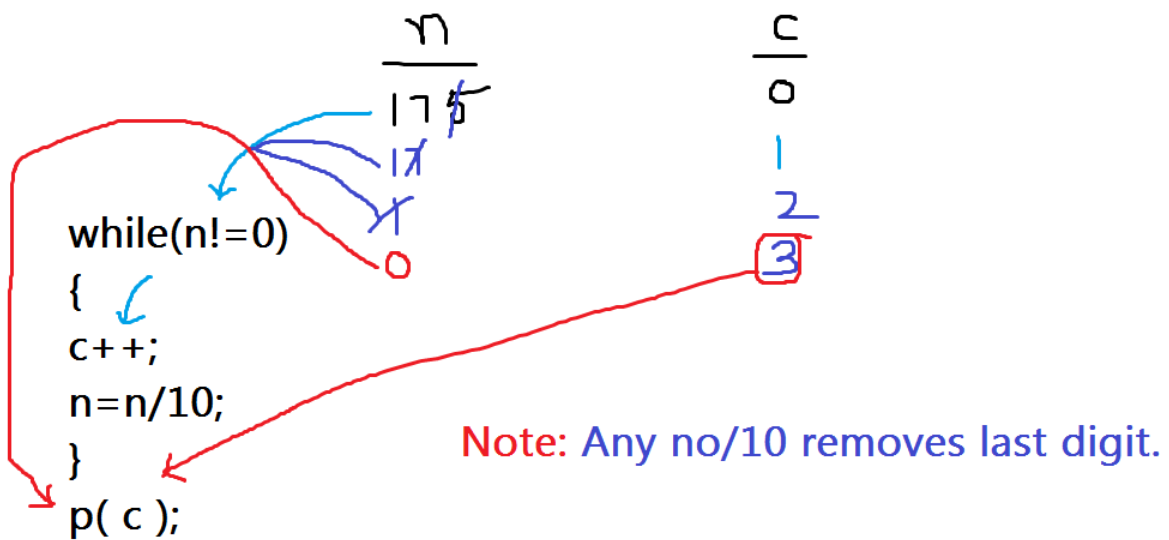
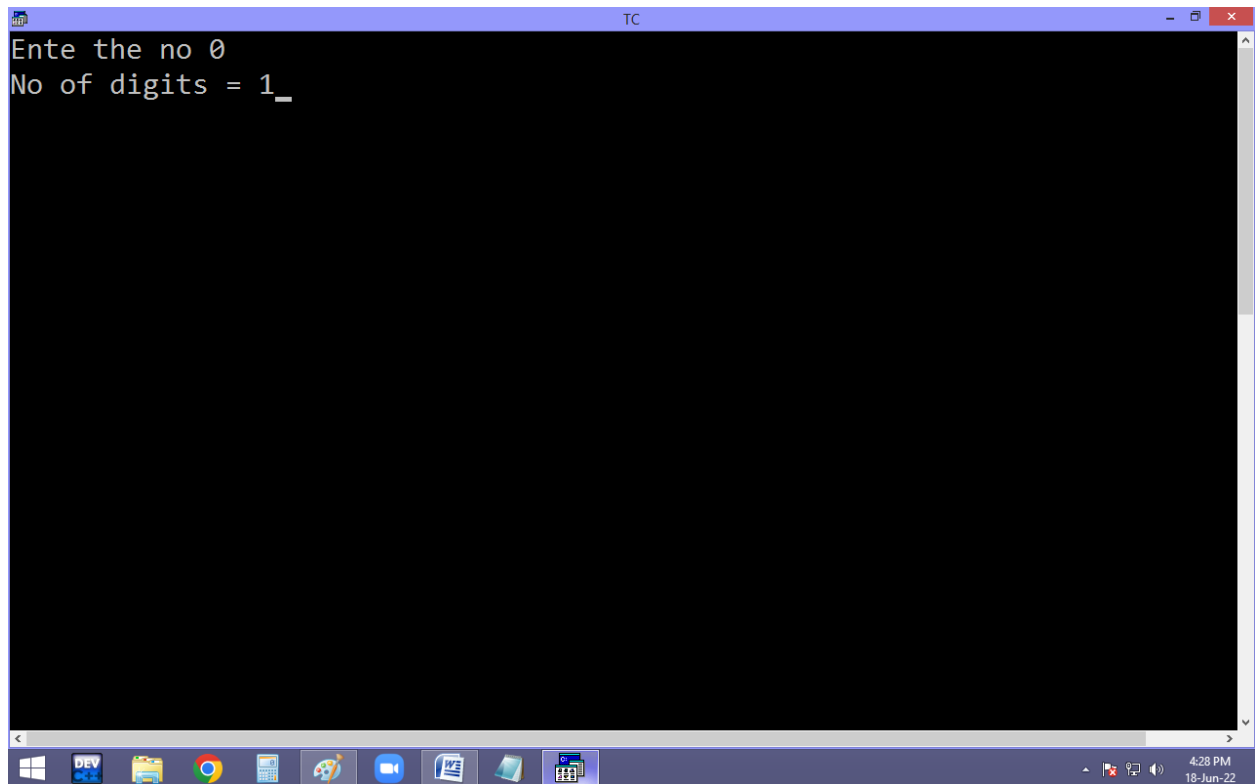
```
Line 13   Col 14   Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int c=0;
clrscr();
printf("Ente the no ");
scanf("%ld",&n);
do
{
c++;
n=n/10;
}while(n!=0);_
printf("No of digits = %d",c);
getch();
}
```



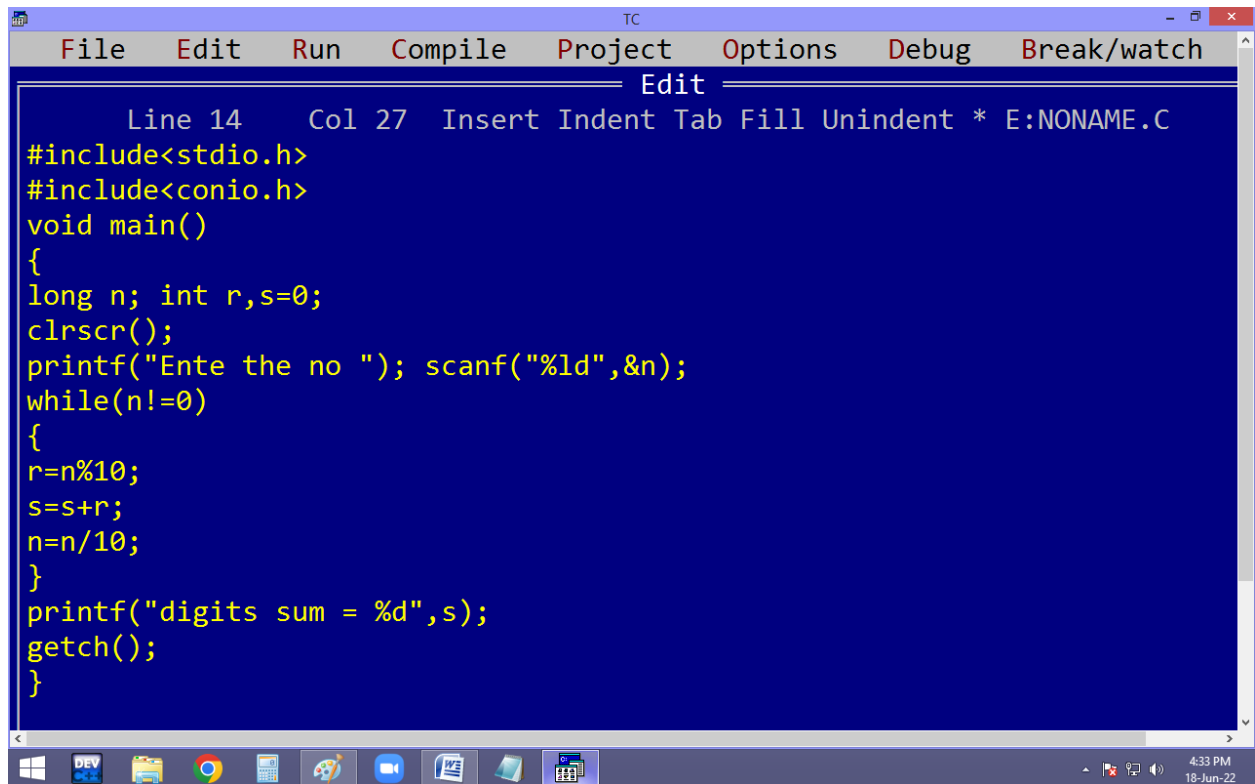
The screenshot shows the Turbo C++ IDE with the following output:

```
Ente the no -123
No of digits = 3_
```



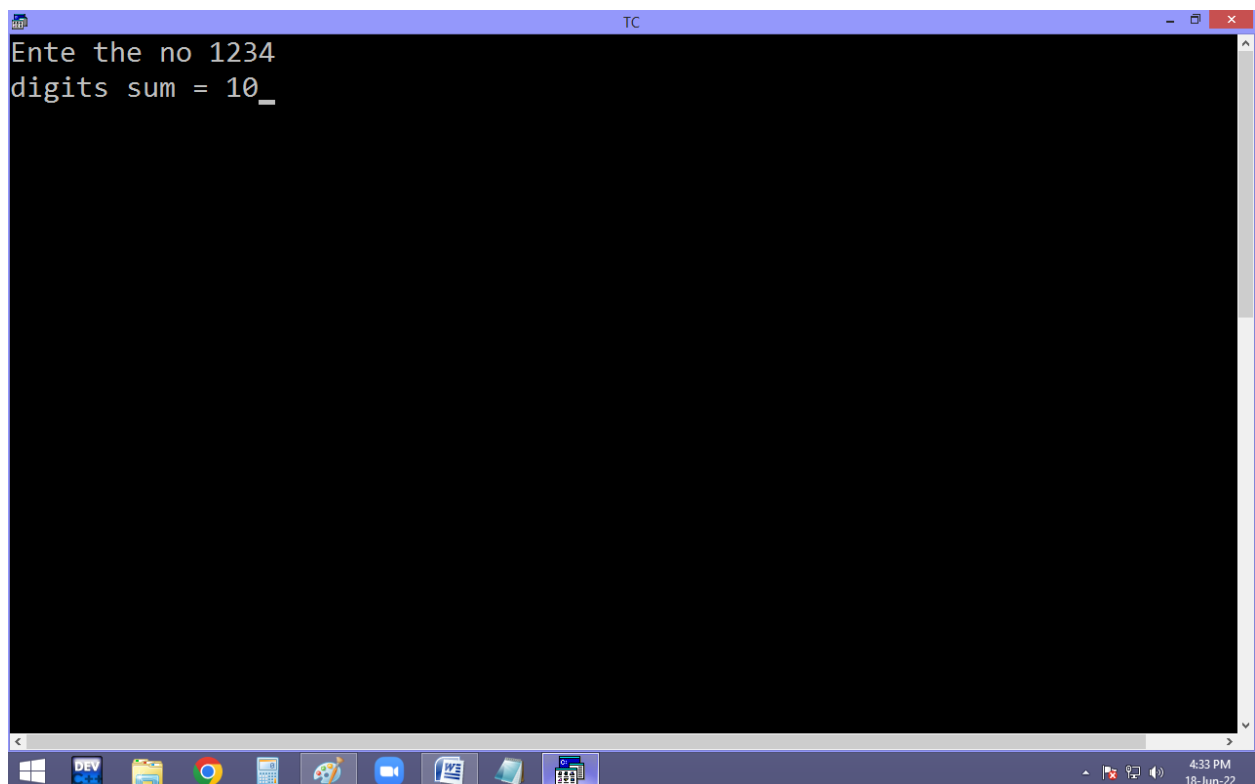


Eg. finding digits sum.



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The main window displays a C program in a blue editor. The code calculates the sum of digits of a number entered by the user. The status bar at the bottom shows the file path as E:\NONAME.C. The Windows taskbar at the bottom includes icons for Windows, DEV, File Explorer, Chrome, Calculator, Paint, and other applications, with a system clock showing 4:33 PM on 18-Jun-22.

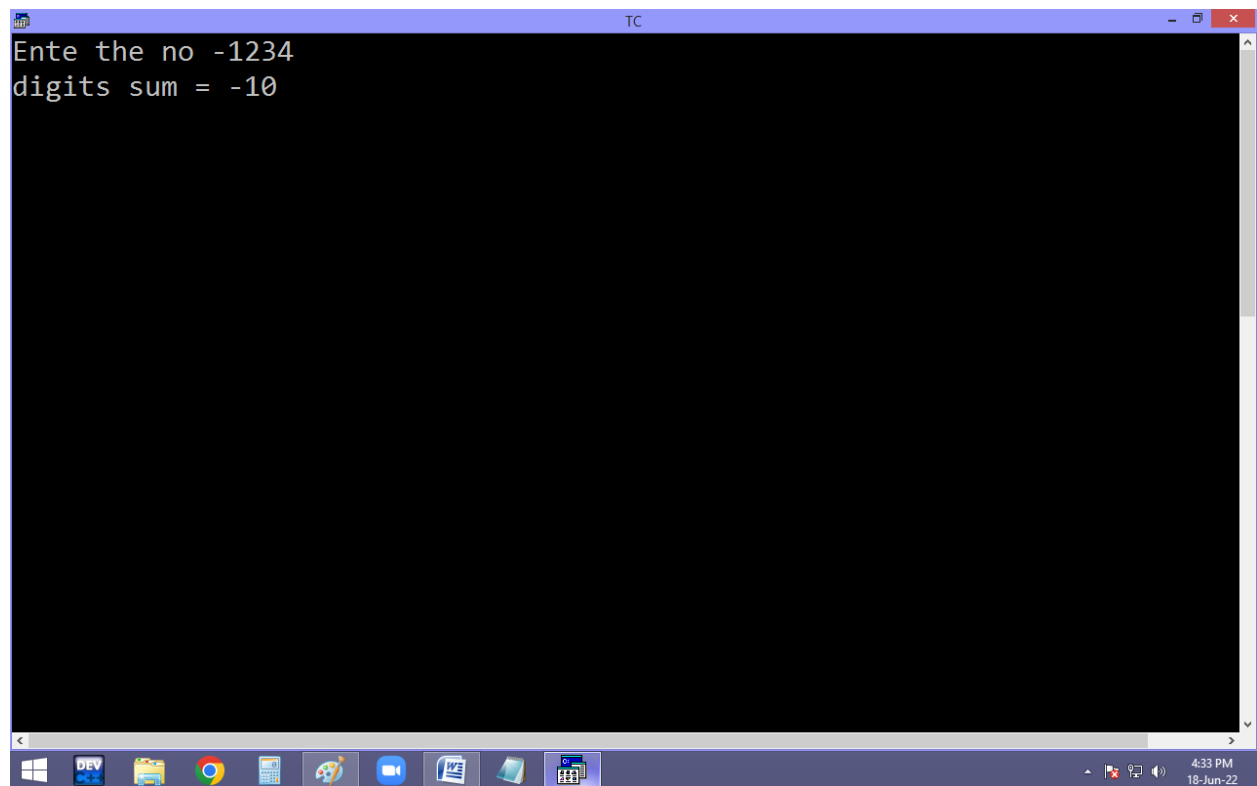
```
Line 14 Col 27 Insert Indent Tab Fill Unindent * E:\NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,s=0;
clrscr();
printf("Ente the no "); scanf("%ld",&n);
while(n!=0)
{
r=n%10;
s=s+r;
n=n/10;
}
printf("digits sum = %d",s);
getch();
}
```



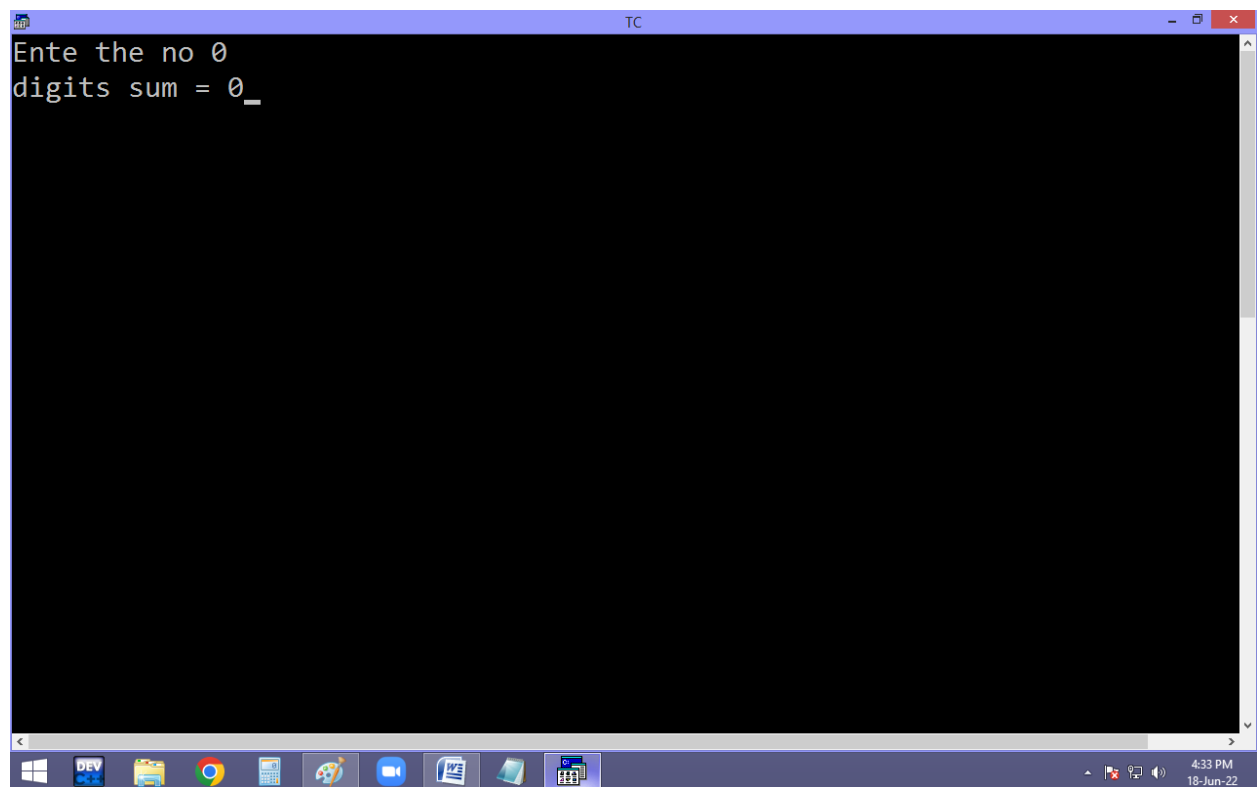
The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and toolbar. The main window now displays the output of the program. It shows the prompt "Ente the no" followed by the user input "1234", and then the output "digits sum = 10_". The status bar at the bottom shows the file path as E:\NONAME.C. The Windows taskbar at the bottom is identical to the first screenshot, showing the same set of application icons and a system clock showing 4:33 PM on 18-Jun-22.

```
Ente the no 1234
digits sum = 10_
```

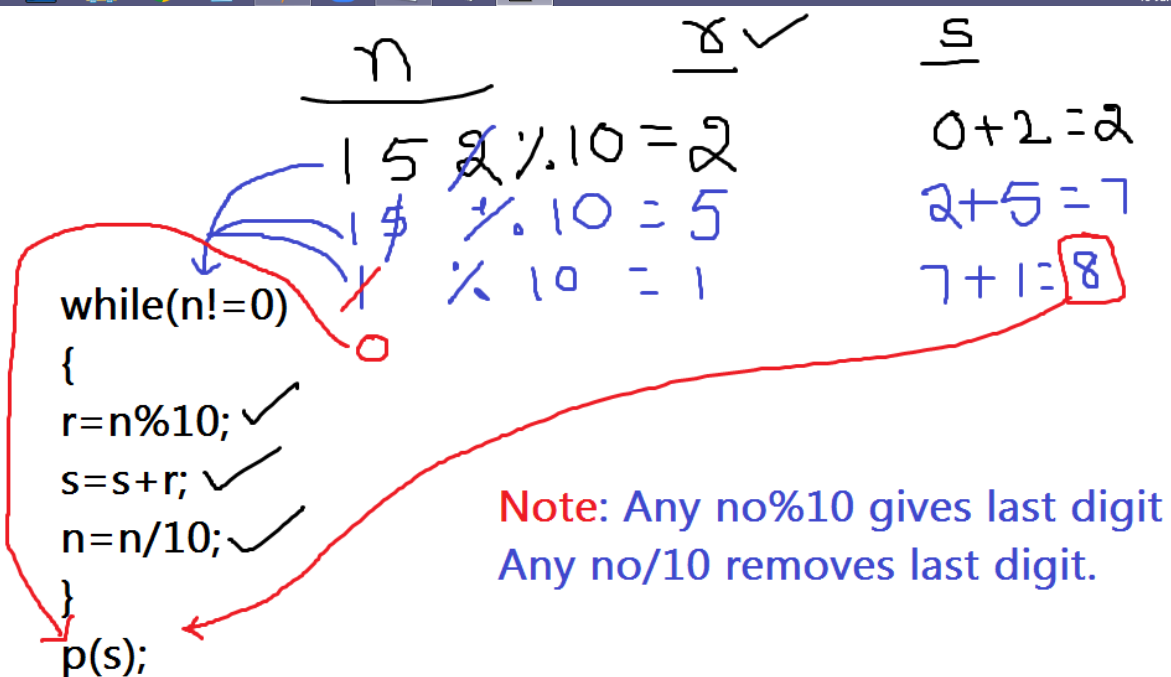
```
TC
Ente the no -1234
digits sum = -10
```



```
TC
Ente the no 0
digits sum = 0_
```

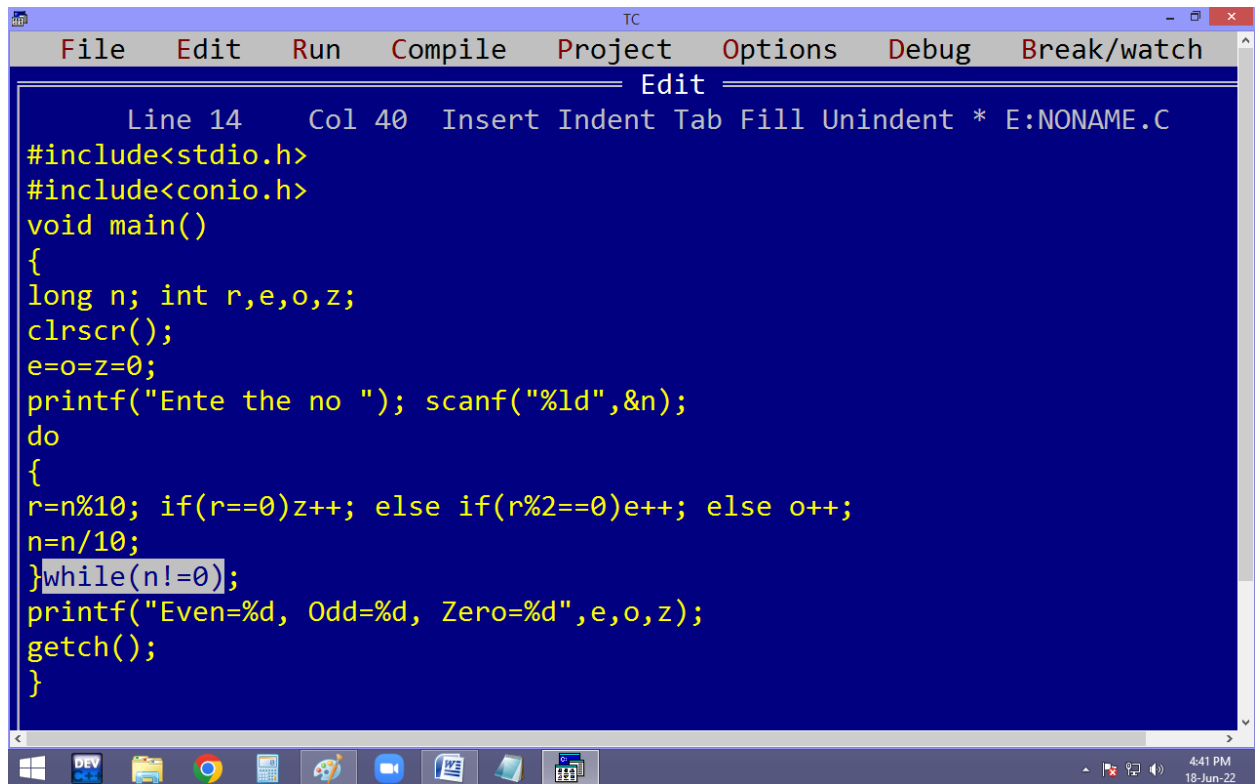


```
TC
File Edit Run Compile Project Options Debug Break/watch
Edit
Line 8 Col 3 Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,s=0;
clrscr();
printf("Ente the no "); scanf("%ld",&n);
do_
{
r=n%10;
s=s+r;
n=n/10;
}while(n!=0);
printf("digits sum = %d",s);
getch();
}
```



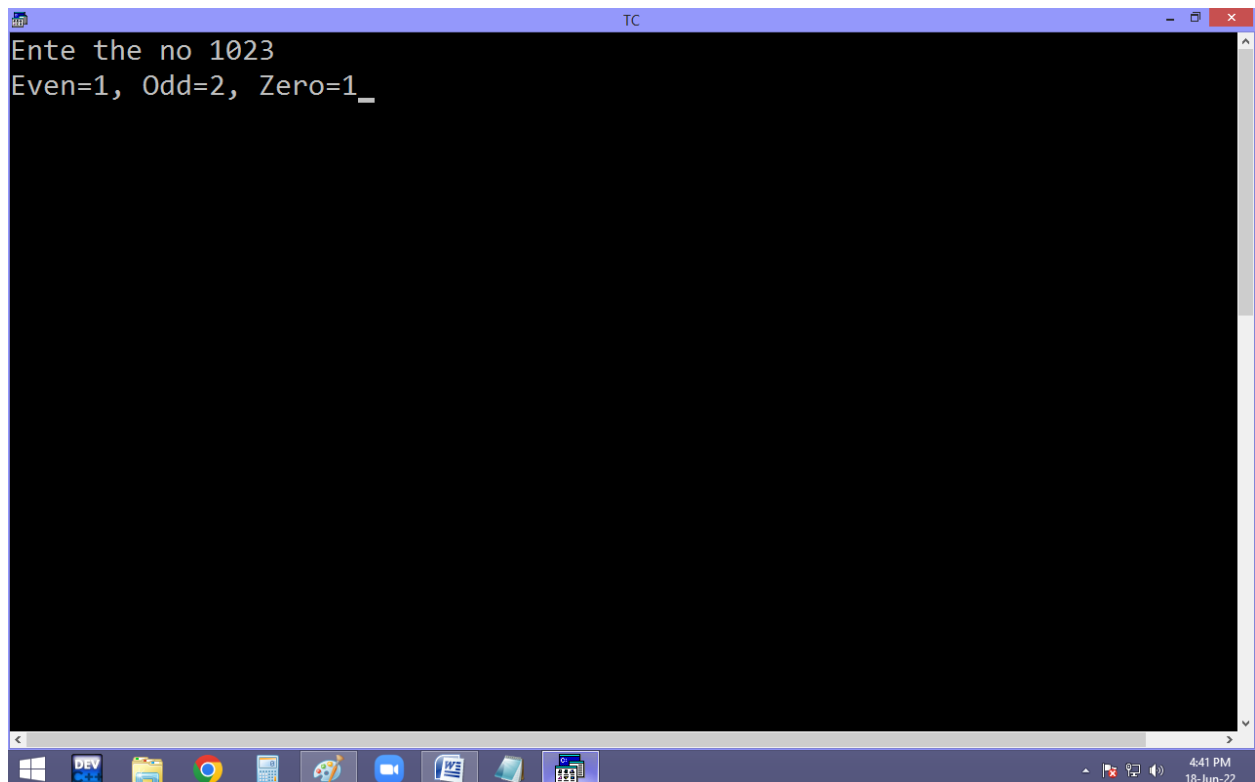
Eg. finding no of even, odd, zero digits in given no.

For example 1023 → 1 even, 2 odd, 1 zero



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The main window is titled 'Edit' and displays a C program. The status bar at the bottom indicates 'Line 14 Col 40 Insert Indent Tab Fill Unindent * E:NONAME.C'. The code is as follows:

```
Line 14 Col 40 Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,e,o,z;
clrscr();
e=o=z=0;
printf("Ente the no "); scanf("%ld",&n);
do
{
r=n%10; if(r==0)z++; else if(r%2==0)e++; else o++;
n=n/10;
}while(n!=0);
printf("Even=%d, Odd=%d, Zero=%d",e,o,z);
getch();
}
```



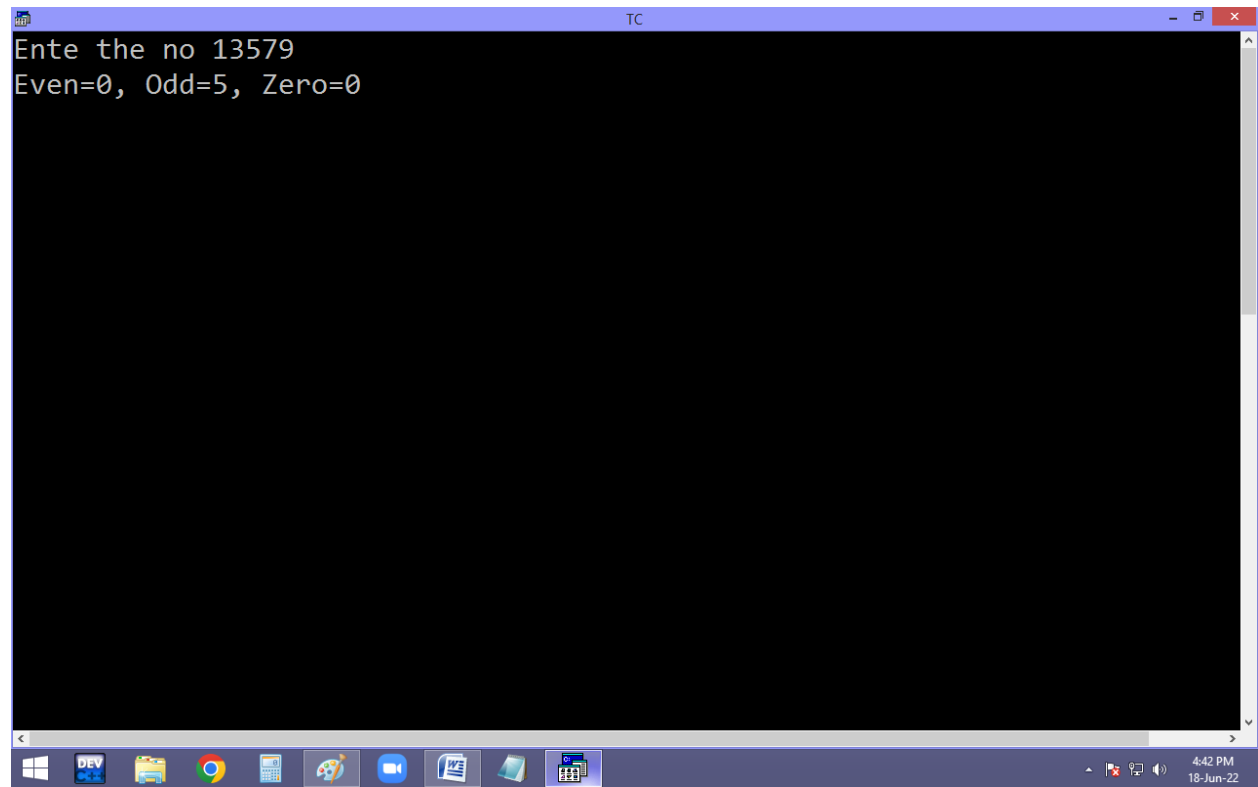
The screenshot shows the Turbo C++ (TC) IDE in its execution state. The main window displays the output of the program. The status bar at the bottom indicates '4:41 PM 18-Jun-22'. The output is as follows:

```
Ente the no 1023
Even=1, Odd=2, Zero=1_
```

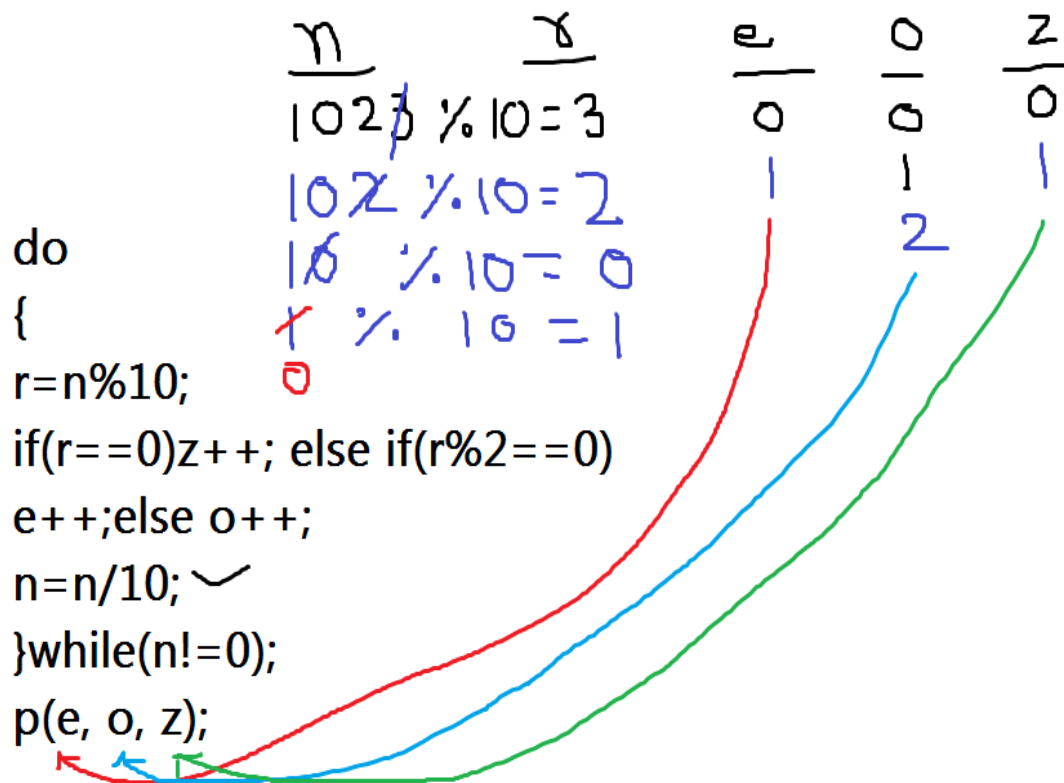
```
TC
Ente the no -1023
Even=1, Odd=2, Zero=1_
```

```
TC
Ente the no 2468
Even=4, Odd=0, Zero=0
```

```
TC
Ente the no 13579
Even=0, Odd=5, Zero=0
```

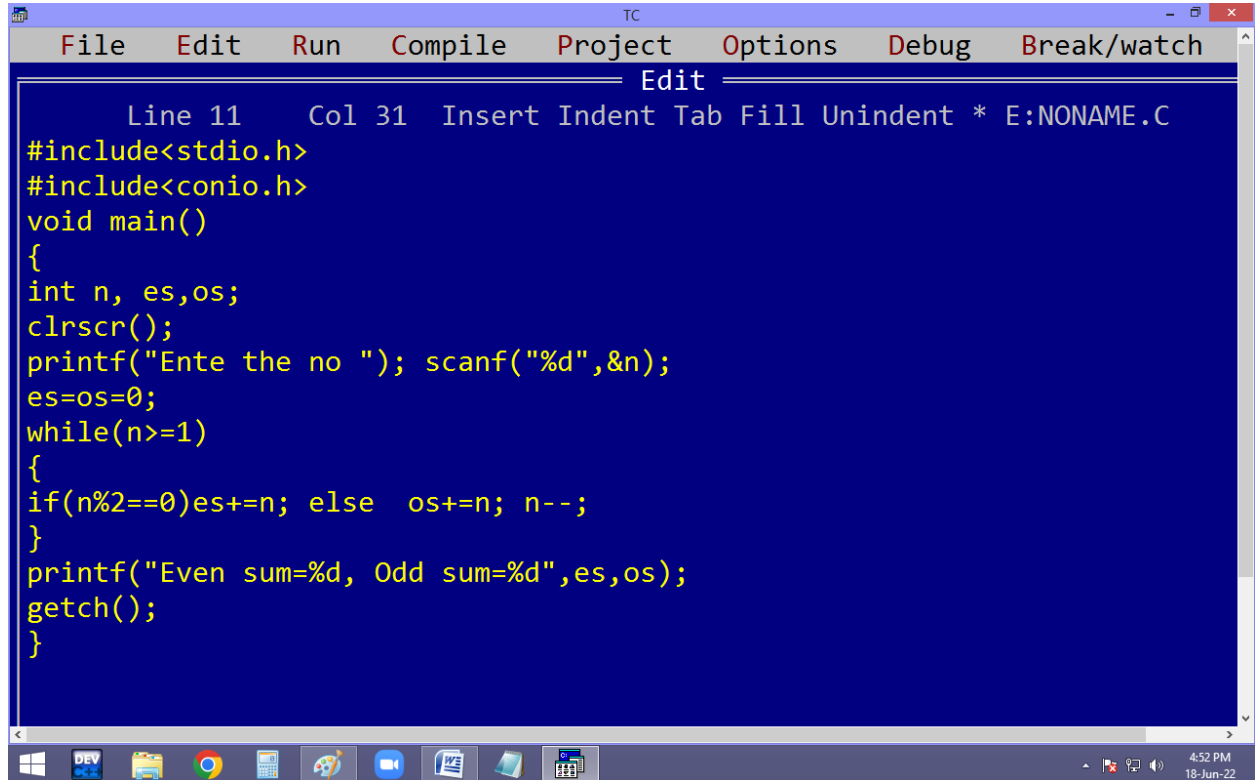


```
TC
Ente the no 0000
Even=0, Odd=0, Zero=1
```



Finding 1..n even, odd numbers sum.

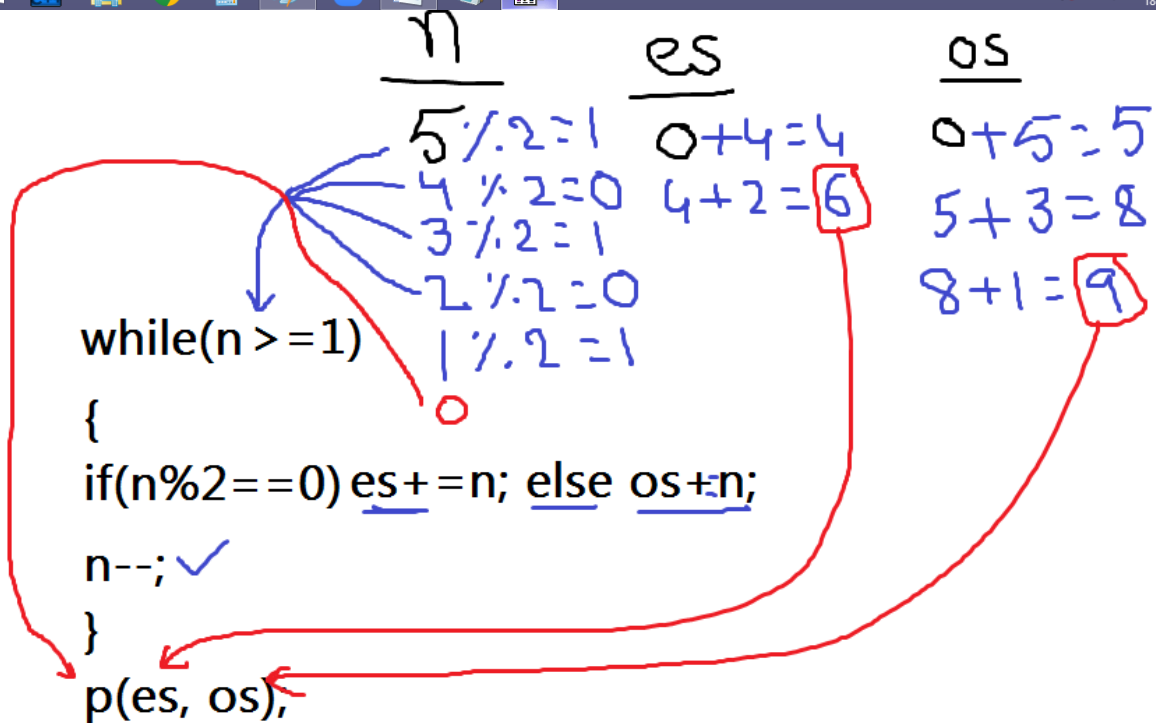
$$n=5 \begin{cases} 1+3+5=9 \checkmark \\ 2+4=6 \checkmark \end{cases}$$



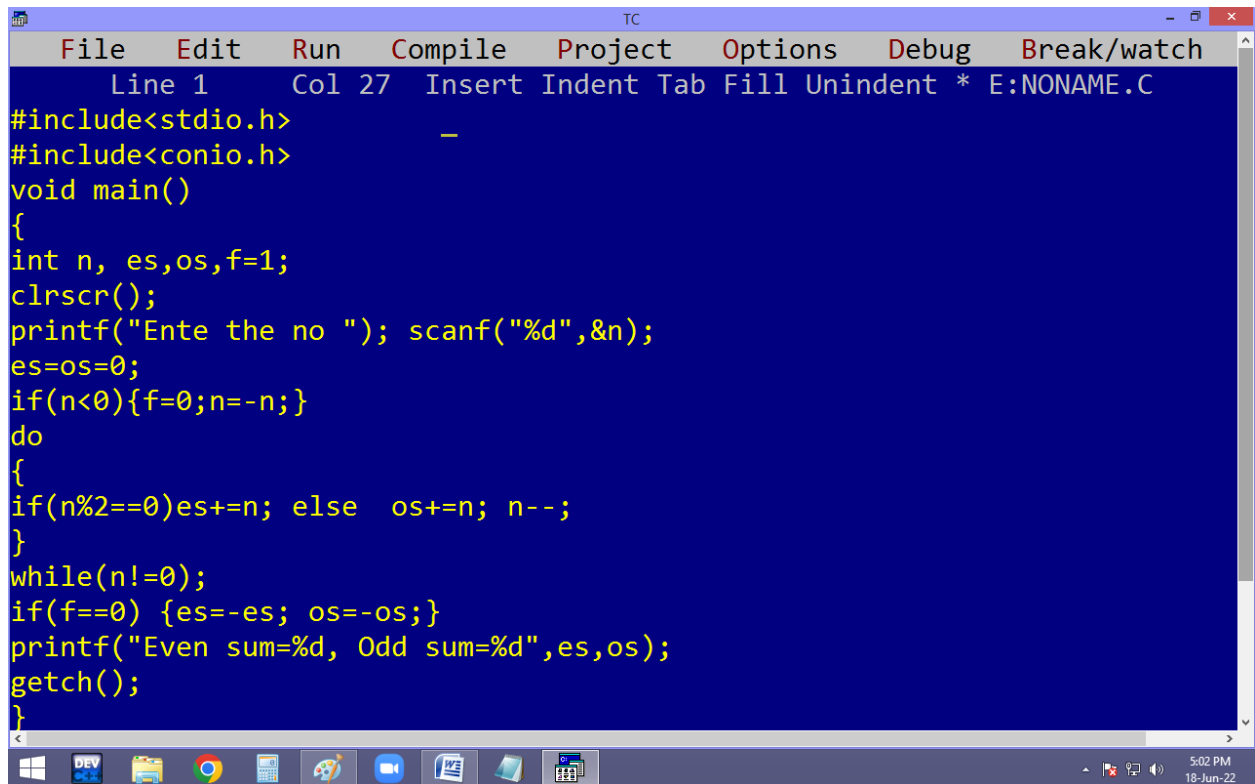
```
TC
File Edit Run Compile Project Options Debug Break/watch
Edit
Line 11 Col 31 Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int n, es,os;
    clrscr();
    printf("Ente the no "); scanf("%d",&n);
    es=os=0;
    while(n>=1)
    {
        if(n%2==0)es+=n; else os+=n; n--;
    }
    printf("Even sum=%d, Odd sum=%d",es,os);
    getch();
}
```

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 editor window shows a C program that prompts the user to enter a number 'n'. It then calculates the sum of even numbers (es) and odd numbers (os) from 1 to n using a while loop. The program prints the results and waits for a key press before exiting. The status bar at the bottom indicates the file is 'E:NONAME.C' and the time is 4:52 PM on 18-Jun-22.

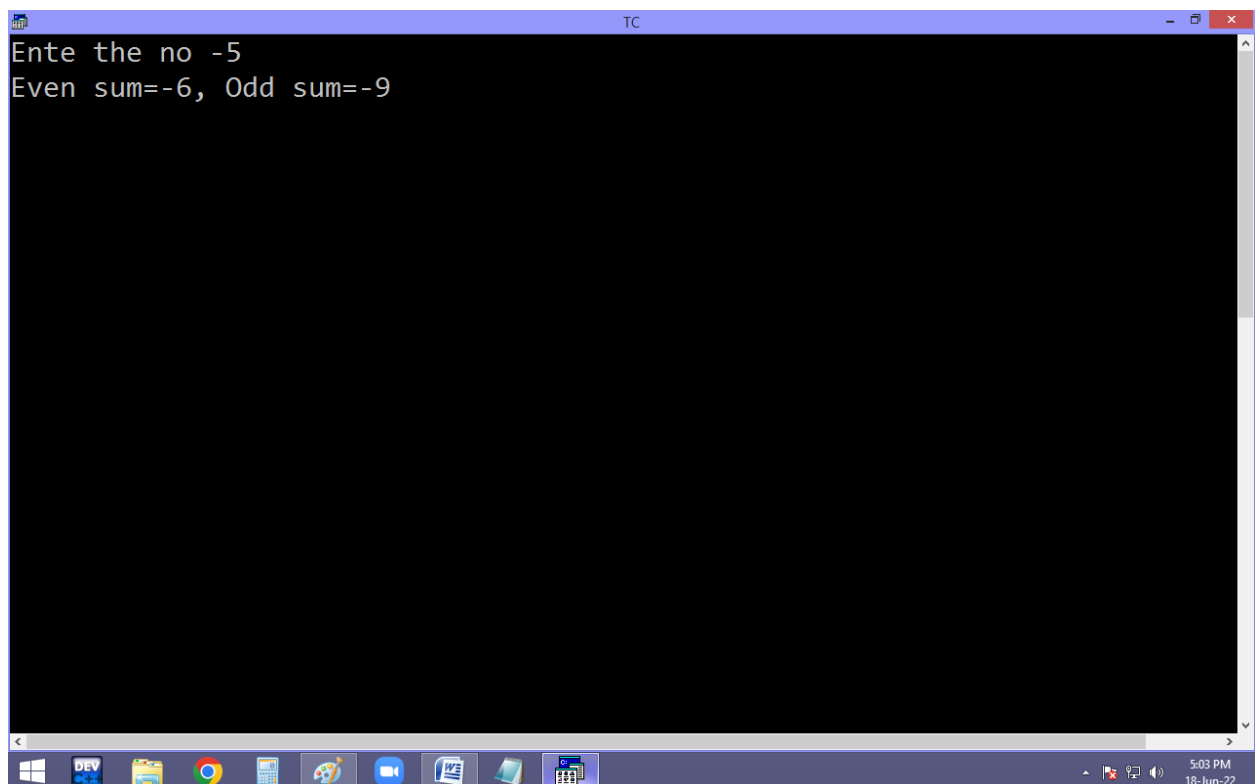
```
TC
Ente the no 5
Even sum=6, Odd sum=9_
```



For both +Ve & -Ve no's:



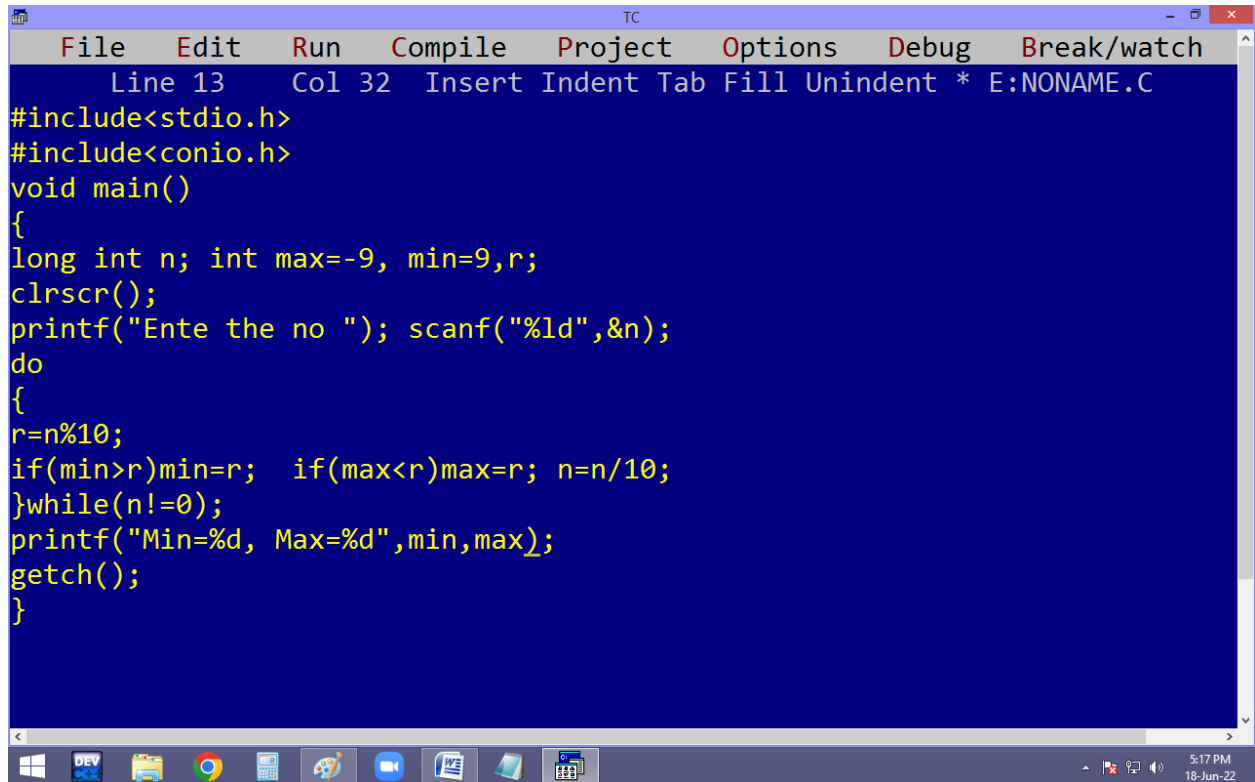
```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 1 Col 27 Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, es,os,f=1;
clrscr();
printf("Ente the no "); scanf("%d",&n);
es=os=0;
if(n<0){f=0;n=-n;}
do
{
if(n%2==0)es+=n; else os+=n; n--;
}
while(n!=0);
if(f==0) {es=-es; os=-os;}
printf("Even sum=%d, Odd sum=%d",es,os);
getch();
}
```



```
TC
Ente the no -5
Even sum=-6, Odd sum=-9
```

Eg. finding max, min digits in given no.

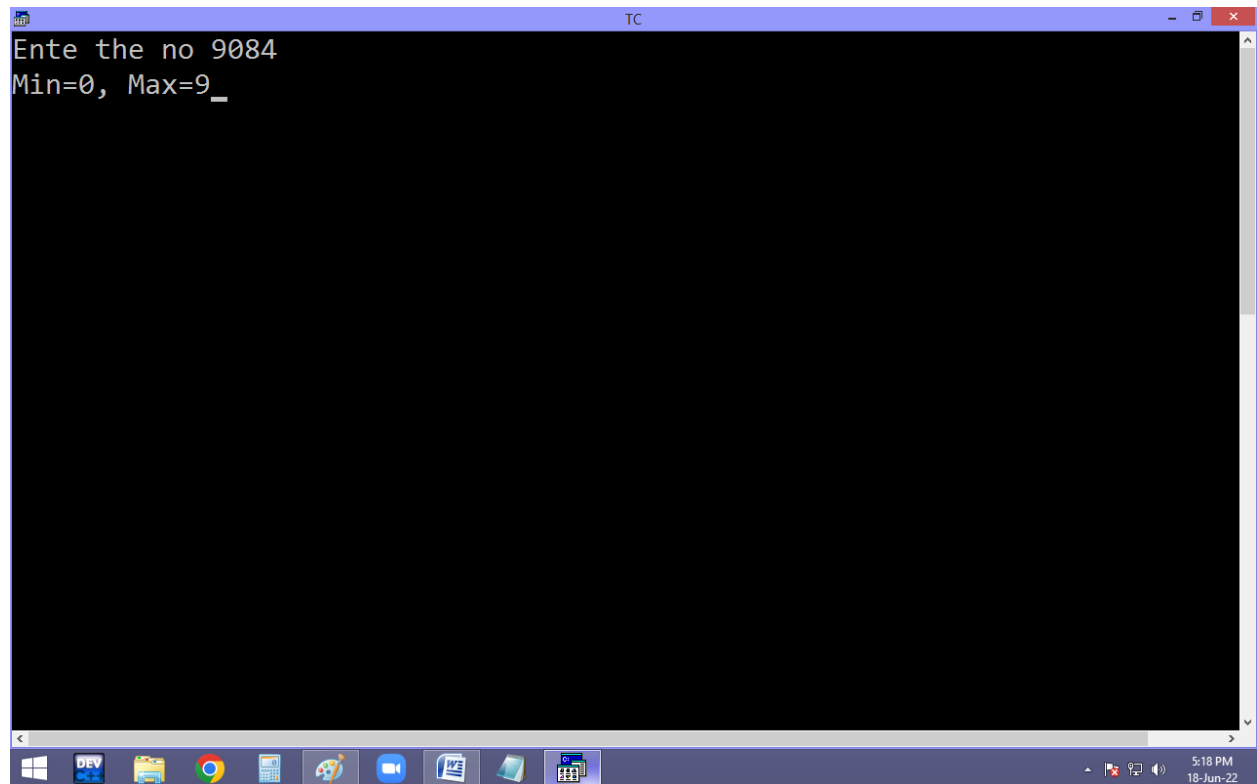
For example 9083 → 0 is min, 9 is max



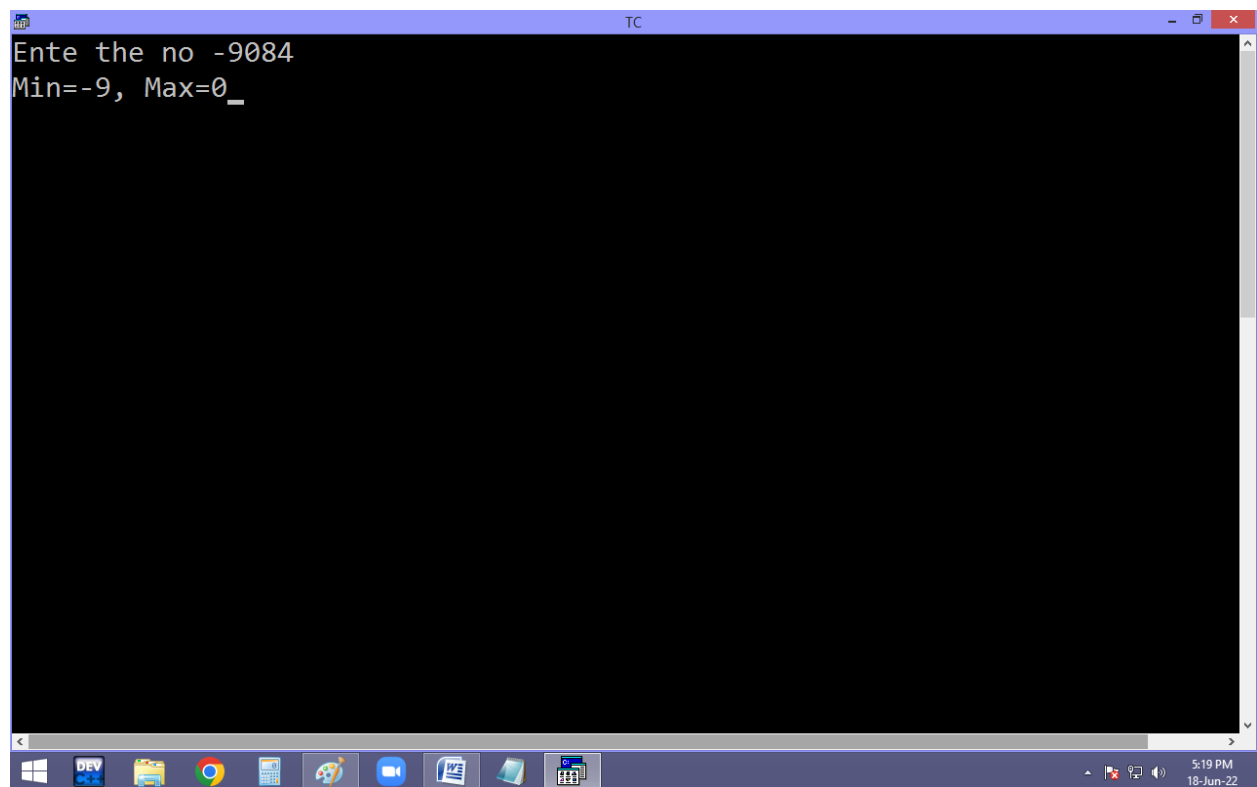
```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 32 Insert Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
long int n; int max=-9, min=9,r;
clrscr();
printf("Ente the no "); scanf("%ld",&n);
do
{
r=n%10;
if(min>r)min=r; if(max<r)max=r; n=n/10;
}while(n!=0);
printf("Min=%d, Max=%d",min,max);
getch();
}
```



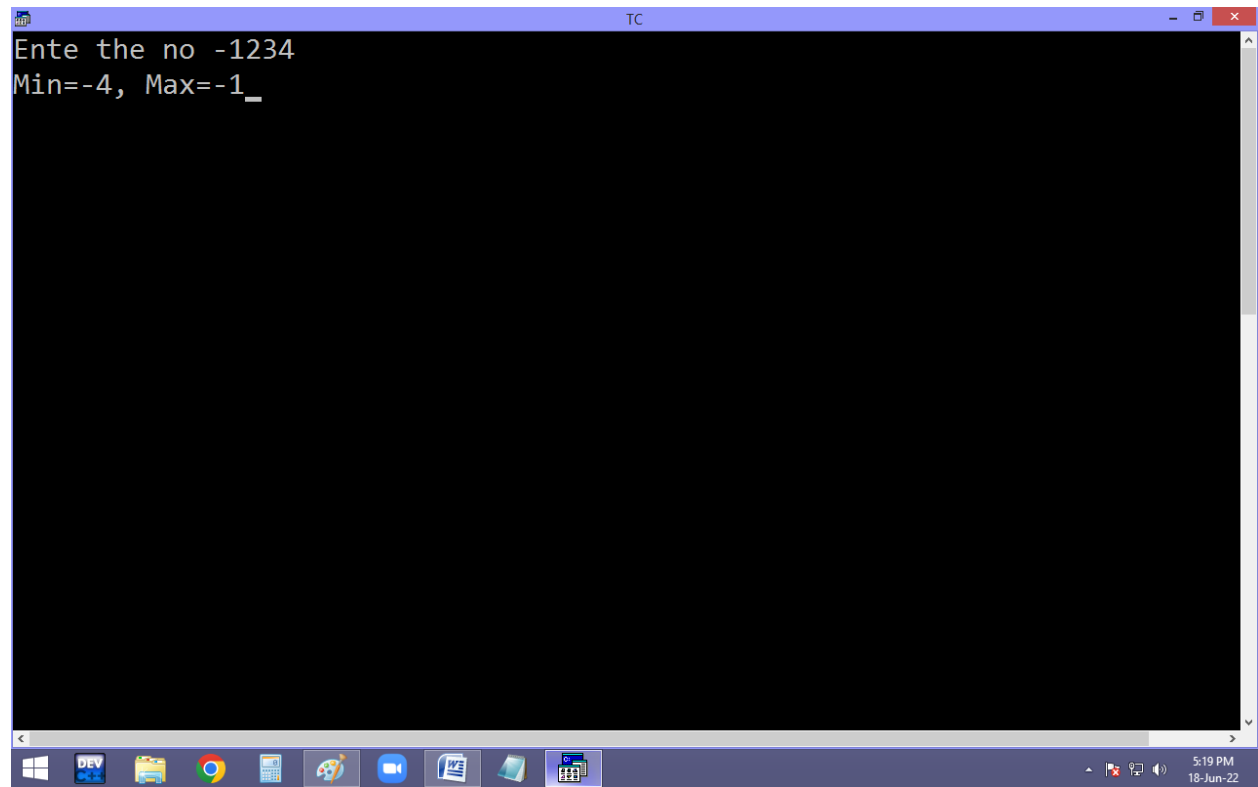
```
TC
Ente the no 9084
Min=0, Max=9_
```

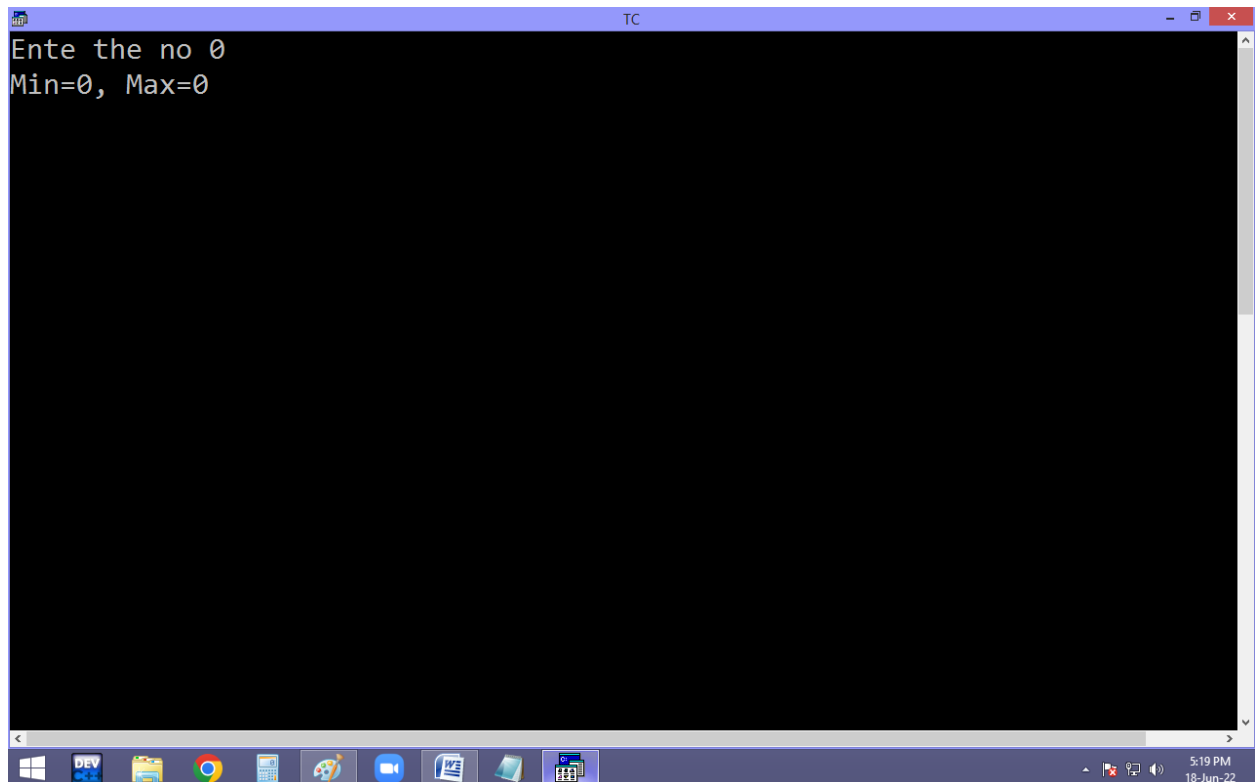


```
TC
Ente the no -9084
Min=-9, Max=0_
```



```
TC
Ente the no -1234
Min=-4, Max=-1_
```

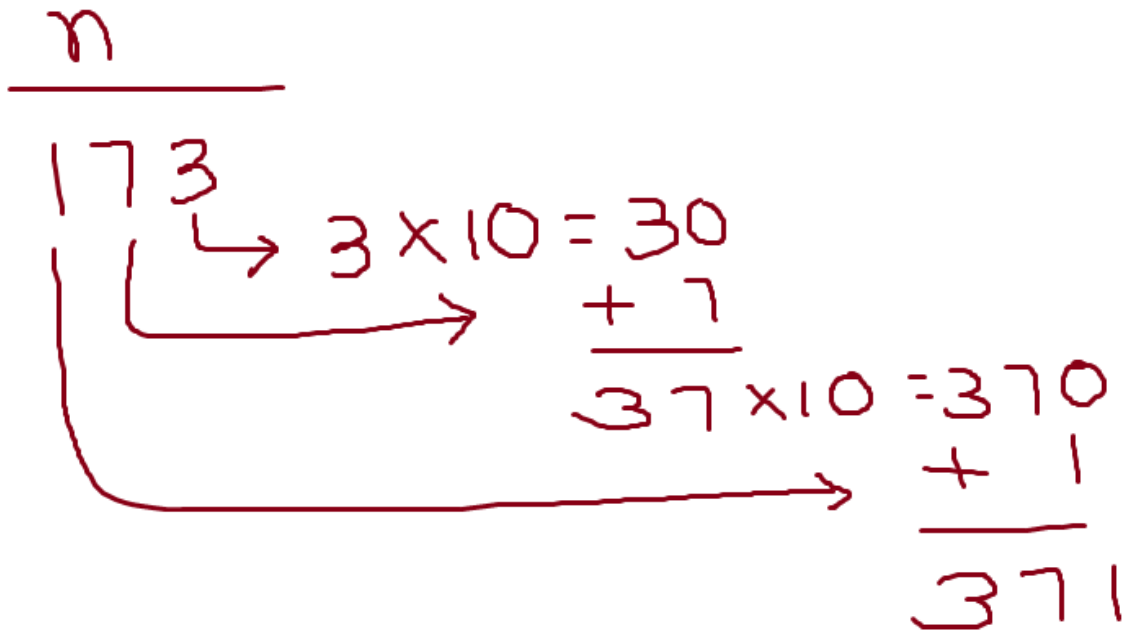




	<u>n</u>	<u>r</u>	<u>max</u>	<u>min</u>
	9083	$9083 \% 10 = 3$	9 < 3	9 > 3
		$908 \% 10 = 8$	↖	↖
do		$90 \% 10 = 0$	3 < 8	3 > 0
{		9 < 10 = 9	↖	↖
r = n % 10;		8 < 0	↖	↖
if(min > r) min = r;		8 < 9	↖	↖
if(max < r) max = r;		8 < 9	↖	↖
n = n / 10; ✓		8 < 9	↖	↖
} while(n != 0);		8 < 9	↖	↖
p(min, max);		8 < 9	↖	↖

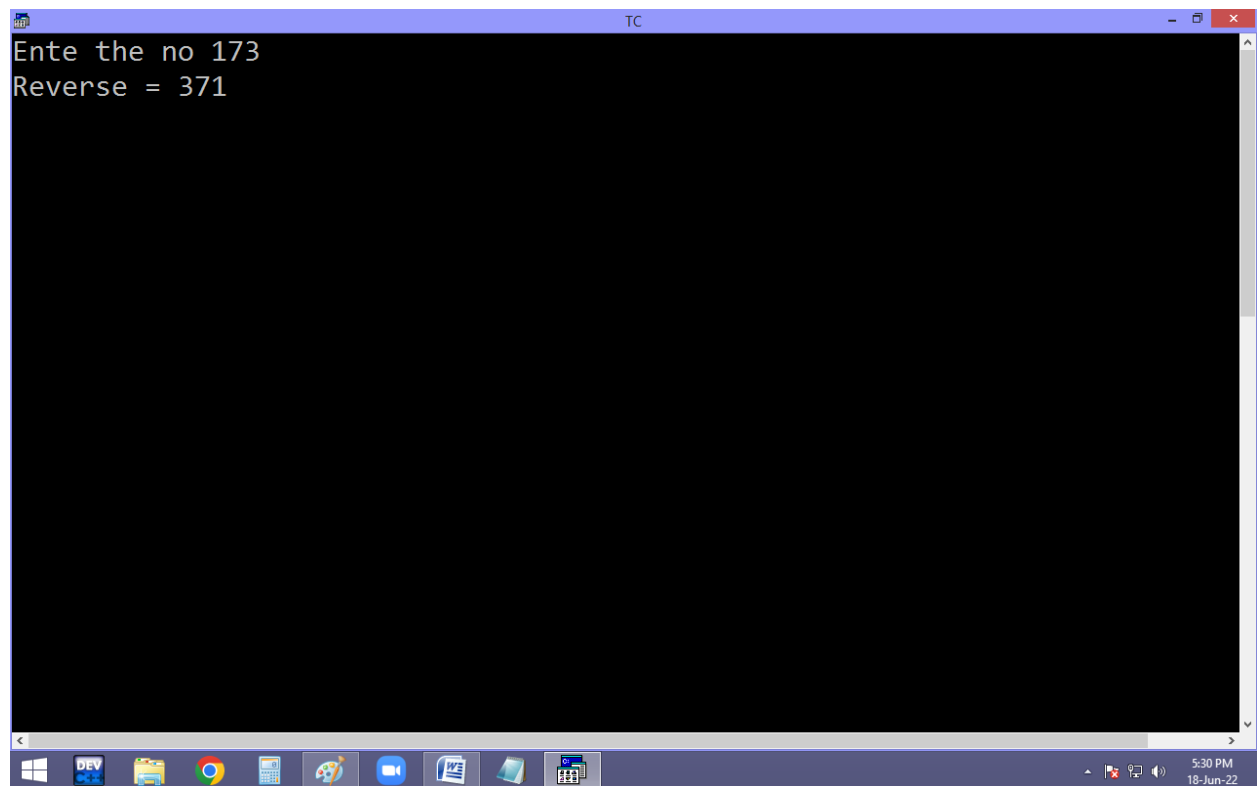
Handwritten annotations: A red circle is drawn around the '9' in the 'n' column for the row '9083'. A green box is drawn around the '9' in the 'max' column for the row '8 < 9'. A blue box is drawn around the '0' in the 'min' column for the row '0 > 9'. Arrows indicate the flow of the algorithm: a red arrow points from the '9' in the 'n' column to the '9' in the 'max' column; a green arrow points from the '9' in the 'max' column to the 'p(min, max);' line; a blue arrow points from the '0' in the 'min' column to the 'p(min, max);' line.

Reverse no.

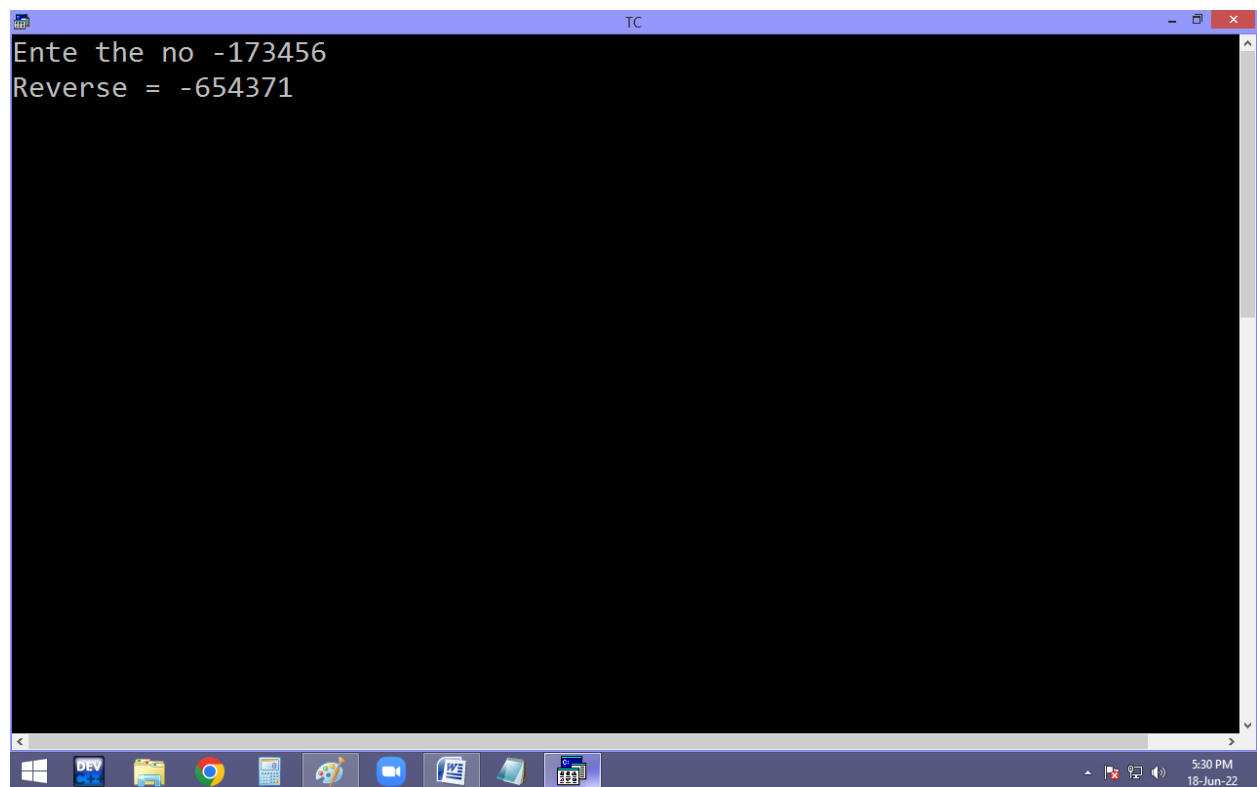


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 29 Indent Tab Fill Unindent * E:NONAME.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long int n, rev=0; int r;
    clrscr();
    printf("Ente the no "); scanf("%ld",&n);
    while(n!=0)
    {
        r=n%10; rev=rev*10+r; n=n/10;
    }
    printf("Reverse = %ld",rev);_
    getch();
}
```

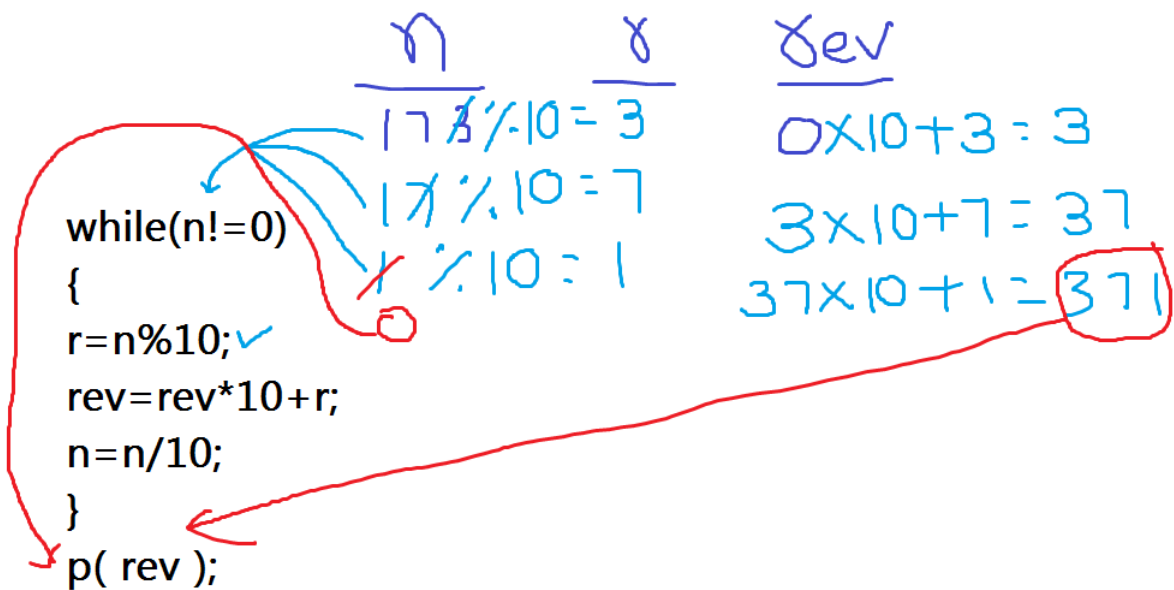
```
TC
Ente the no 173
Reverse = 371
```

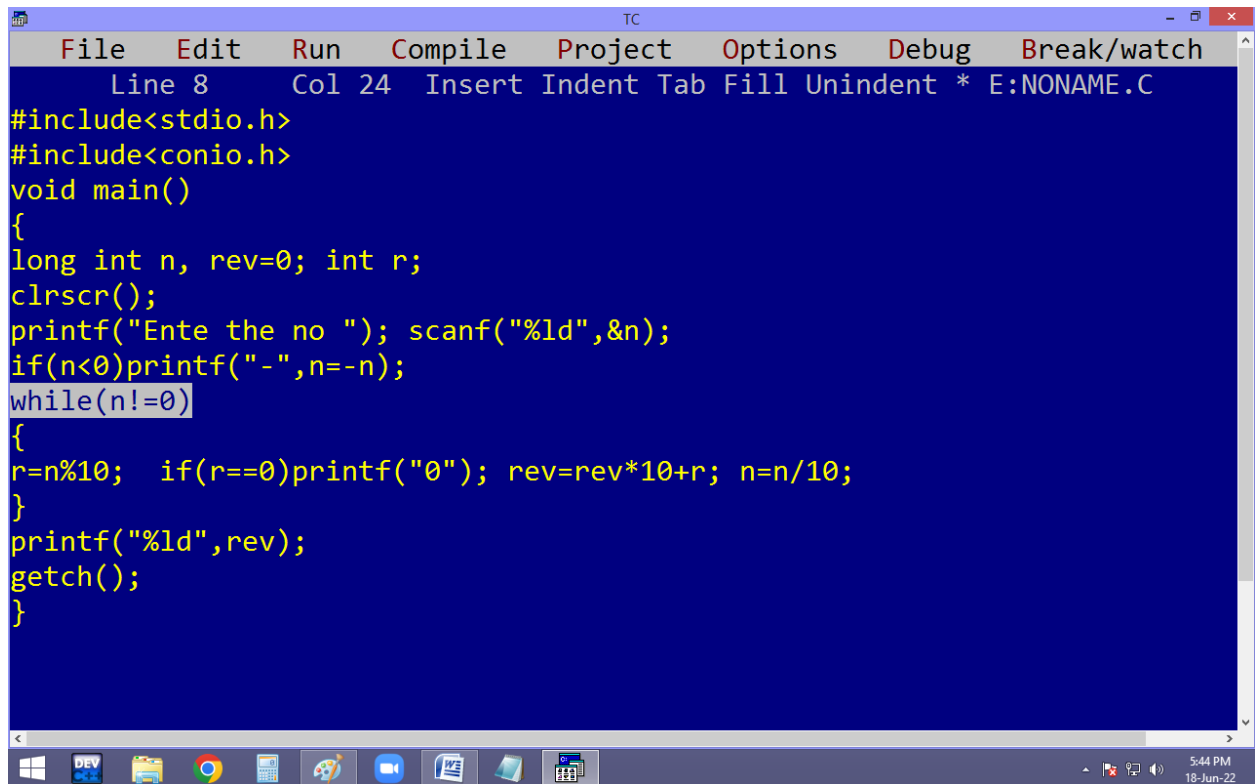
A screenshot of a Windows desktop environment. At the top, a window titled 'TC' is open, displaying the text 'Ente the no 173' and 'Reverse = 371'. The desktop background is dark blue. The taskbar at the bottom contains several icons: Windows Start button, DEV C++, File Explorer, Google Chrome, Calculator, Paint, Microsoft Edge, and a folder icon. The system tray on the right shows the time as 5:30 PM and the date as 18-Jun-22.

```
TC
Ente the no -173456
Reverse = -654371
```

A screenshot of a Windows desktop environment, similar to the one above. A window titled 'TC' is open, displaying the text 'Ente the no -173456' and 'Reverse = -654371'. The desktop background is dark blue. The taskbar at the bottom contains the same icons as the first screenshot. The system tray on the right shows the time as 5:30 PM and the date as 18-Jun-22.

```
TC
Ente the no 0
Reverse = 0_
```

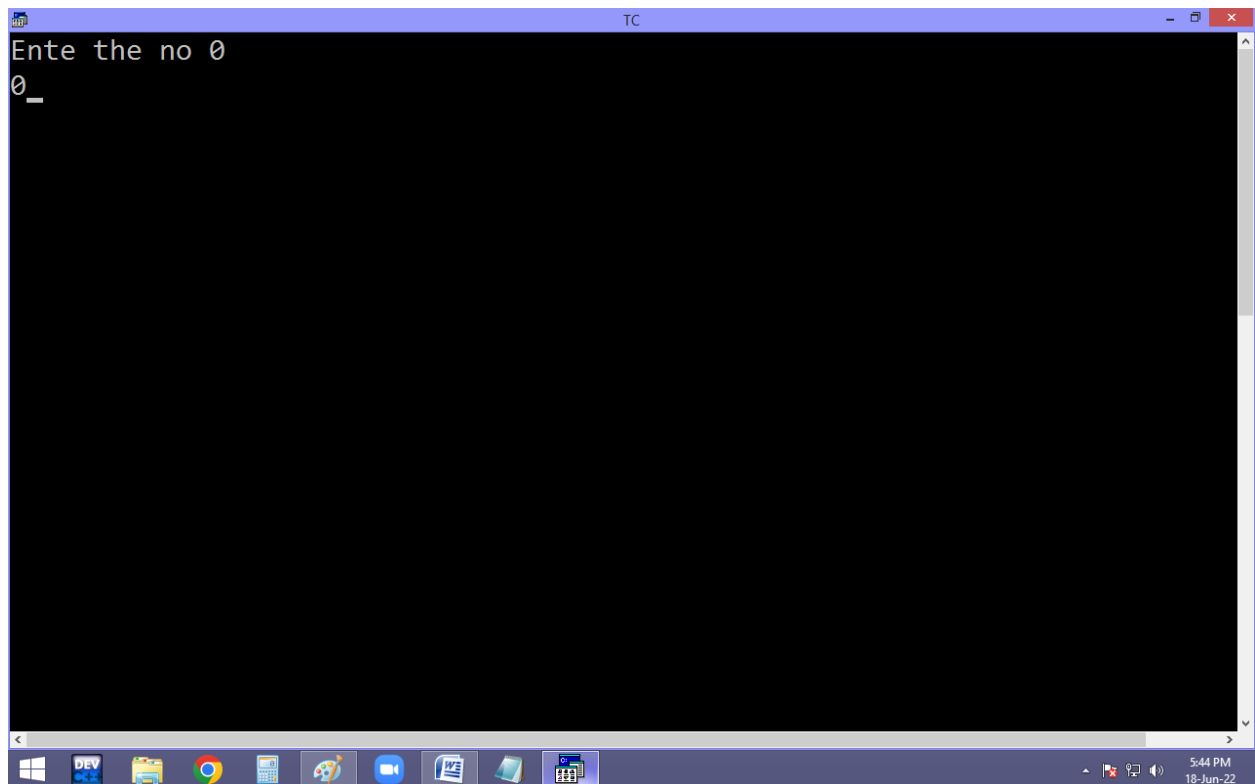




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 8, Col 24, Insert, Indent, Tab, Fill, Unindent, * E:NONAME.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long int n, rev=0; int r;
    clrscr();
    printf("Ente the no "); scanf("%ld",&n);
    if(n<0)printf("- ",n=-n);
    while(n!=0)
    {
        r=n%10; if(r==0)printf("0"); rev=rev*10+r; n=n/10;
    }
    printf("%ld",rev);
    getch();
}
```

The taskbar at the bottom shows various application icons and the system clock indicating 5:44 PM on 18-Jun-22.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar. The output window displays the program's execution:

```
Ente the no 0
0_
```

The taskbar at the bottom remains the same, showing the system clock at 5:44 PM on 18-Jun-22.

```
TC
Ente the no -123000
-000321_
```

if(n<0)p("-",n=-n);

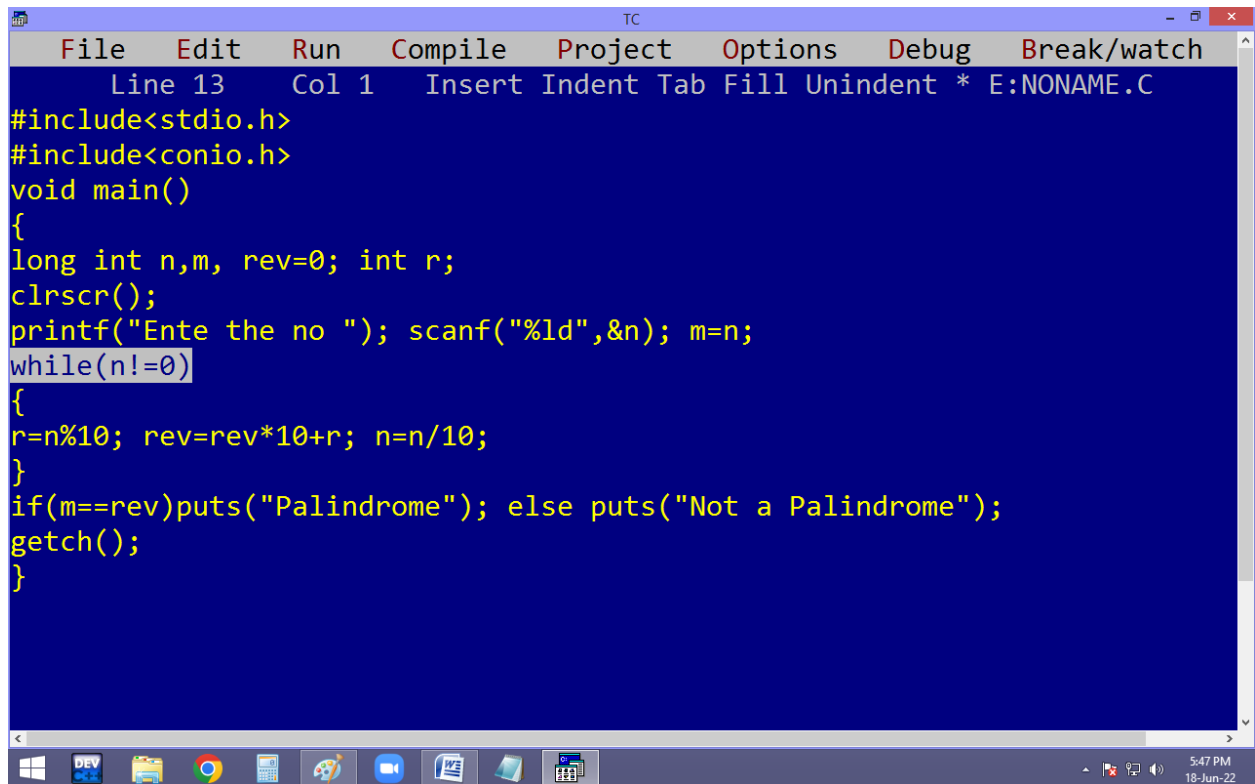
if(r==0)p(0);

$$\begin{array}{r} n \\ + 100 \cancel{0} \% 10 = 0 \\ 10 \cancel{0} \% 10 = 0 \end{array}$$



Eg. Finding palindrome

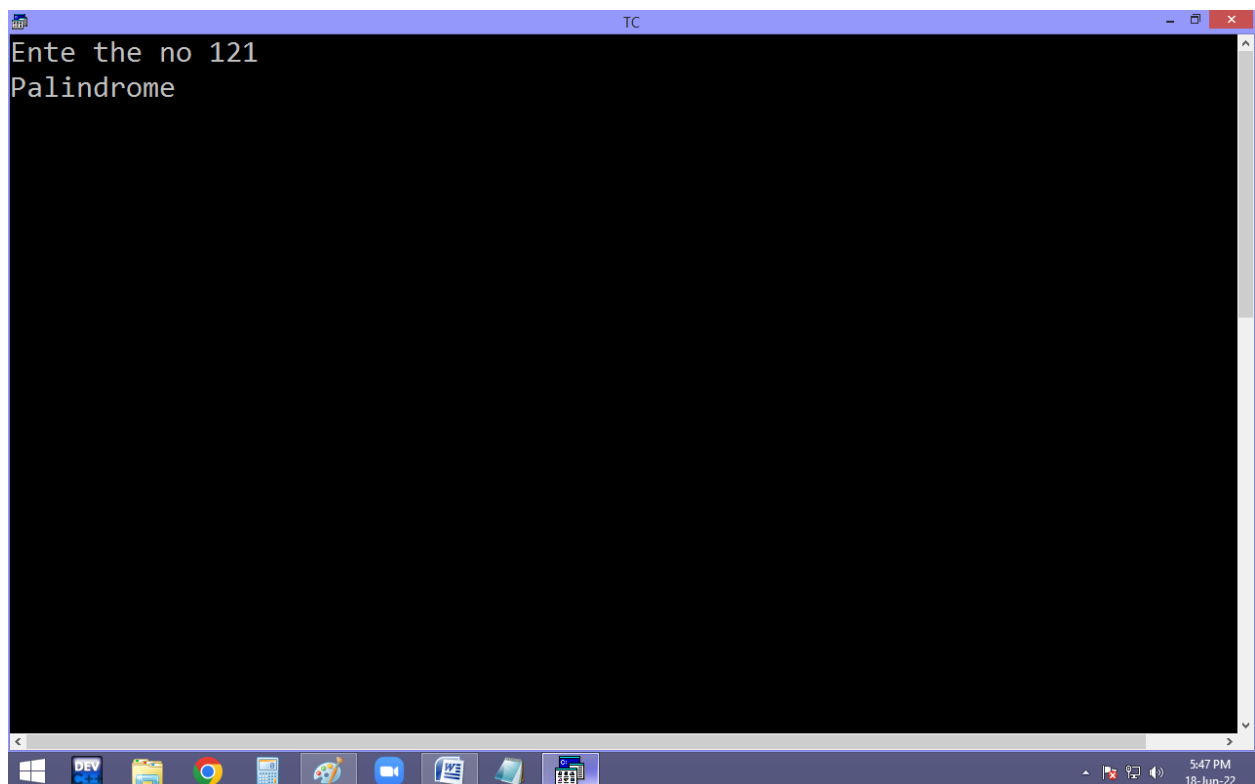
Given no and reverse no same → 121 rev 121



The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 13, Col 1, Insert, Indent, Tab, Fill, Unindent, * E:NONAME.C). The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
long int n,m, rev=0; int r;
clrscr();
printf("Ente the no "); scanf("%ld",&n); m=n;
while(n!=0)
{
r=n%10; rev=rev*10+r; n=n/10;
}
if(m==rev)puts("Palindrome"); else puts("Not a Palindrome");
getch();
}
```

The Windows taskbar at the bottom shows icons for Windows, DEV C++, File Explorer, Google Chrome, Calculator, Paint, VLC, Word, and a folder icon. The system clock indicates 5:47 PM on 18-Jun-22.

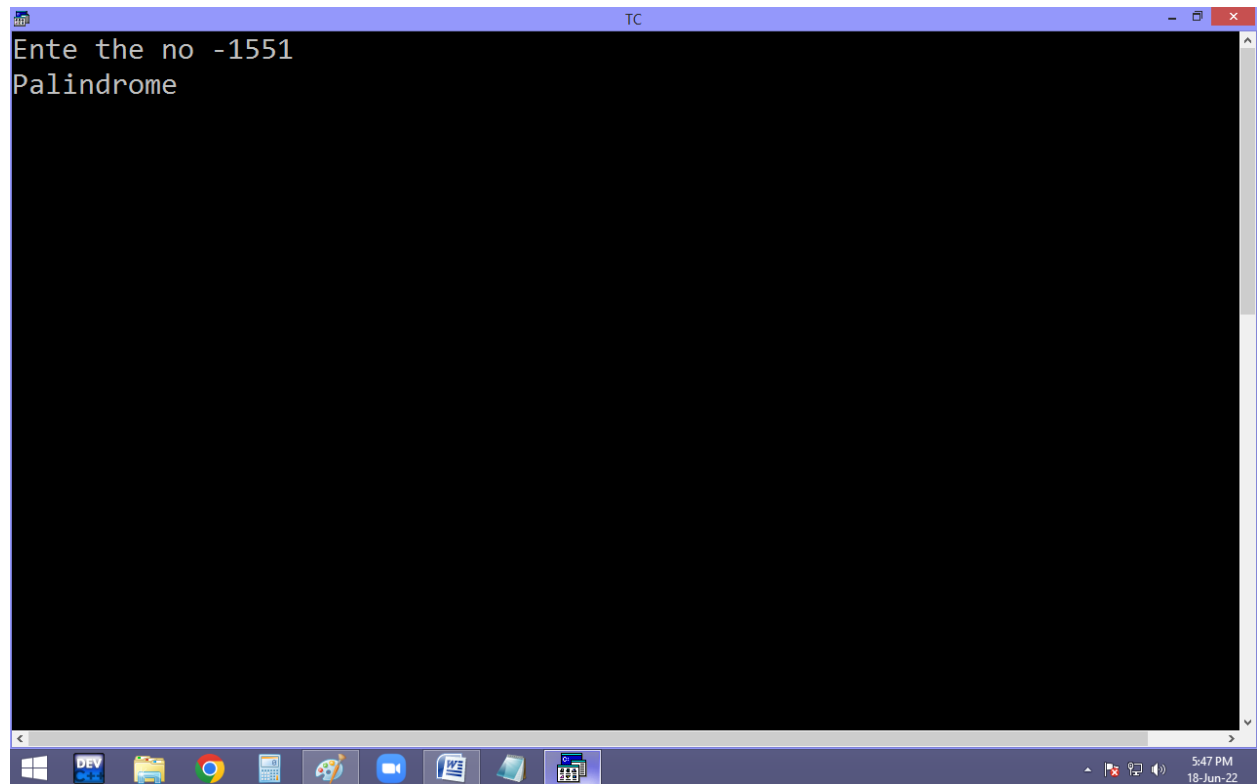


The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar. The output window displays the following text:

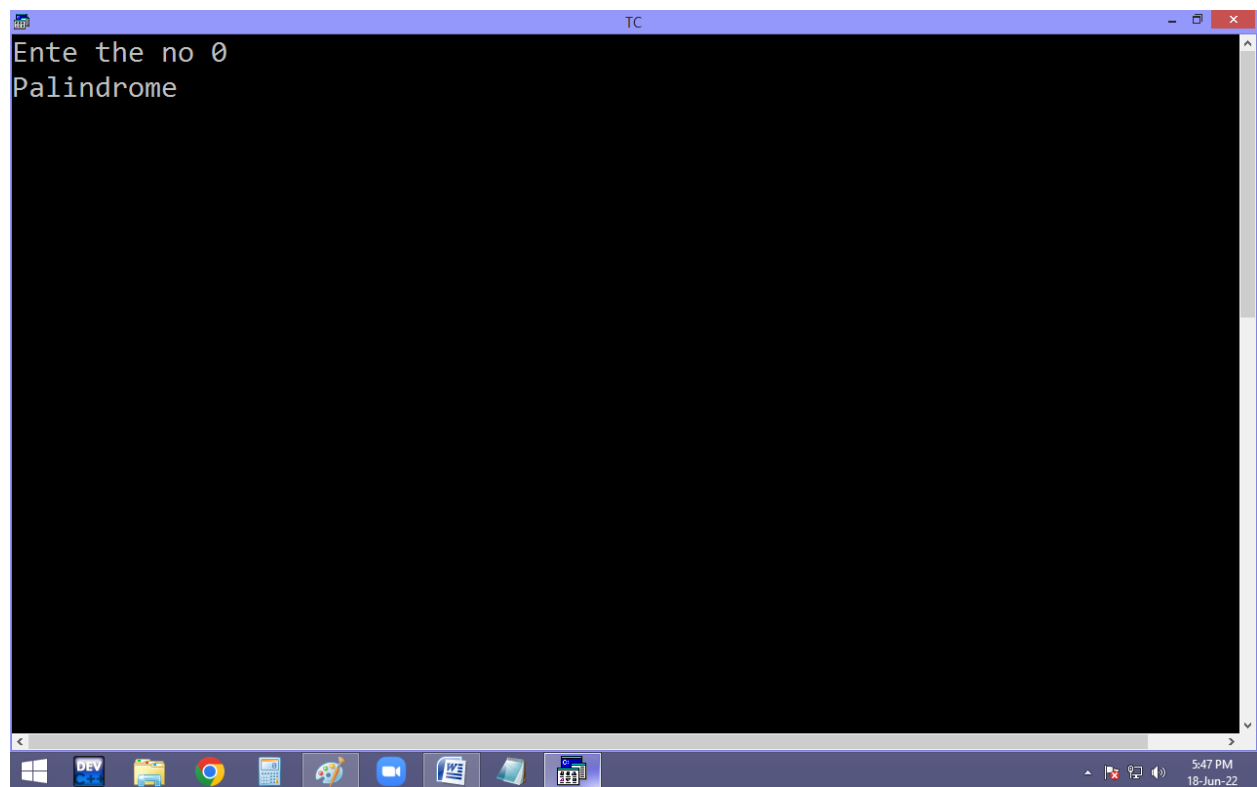
```
Ente the no 121
Palindrome
```

The Windows taskbar at the bottom is identical to the first screenshot, showing the same icons and system clock (5:47 PM on 18-Jun-22).

```
TC
Ente the no -1551
Palindrome
```



```
TC
Ente the no 0
Palindrome
```



```
TC
Ente the no 123
Not a Palindrome
```

Handwritten notes and code snippets:

$f \rightarrow m \leftarrow g$

173

121

$173 \div 10 = 3$

$17 \div 10 = 7$

$1 \div 10 = 1$

rev

$0 \times 10 + 3 = 3$

$3 \times 10 + 7 = 37$

$37 \times 10 + 1 = 371$

121

```
while(n!=0)
{
    r=n%10;
    rev=rev*10+r;
    n=n/10;
}
p( rev );
```