

Finding gcd / hcf of given two numbers:

4 factors are 1, 2, 4

6 factors are 1, 2, 3, 6

The image shows two screenshots of the Turbo C++ (TC) IDE. The top screenshot displays the source code for a program to find the Greatest Common Divisor (GCD) of two numbers, a and b. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 3 Col 1 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,i=1,gcd;
clrscr();
printf("Enter a, b values ");scanf("%d %d",&a,&b);
while(i<=a && i<=b)
{
if(a%i==0 && b%i==0) gcd=i;
i++;
}
printf("Gcd=%d",gcd);
getch();
}
```

The bottom screenshot shows the program's execution. It prompts the user to enter values for a and b, with '4 6' entered. The output shows 'Gcd=2_'. The status bar at the bottom of both windows indicates the time as 02:27 PM on 20-Aug-25.

```
TC
Enter a, b values 10 20
Gcd=10_
```

<u>a</u>	<u>i ≤ 4</u>	<u>b</u>	<u>i ≤ 6</u>	<u>gcd</u>
4 % 1 = 0		6 % 1 = 0		1
4 % 2 = 0		6 % 2 = 0		2
4 % 3 = 1				
4 % 4 = 0		6 % 4 = 2		
	5 ≤ 4			

`while(i ≤ a && i ≤ b)`
{
 `if(a%i==0 && b%i==0)`
 {
 `gcd=i;`
 }
 `i++;` ✓
}
→ `p(gcd);`

Finding lcm of given two numbers:

Using gcd:

$$a*b/\text{gcd} = 4*6/2=12$$

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code for a program to find the Least Common Multiple (LCM) of two numbers, 4 and 6, without using the gcd function. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 21 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,i=1,gcd;
clrscr();
printf("Enter a, b values ");scanf("%d %d",&a,&b);
while(i<=a && i<=b)
{
if(a%i==0 && b%i==0) gcd=i;
i++;
}
printf("Lcm=%d",a*b/gcd);
getch();
}
```

The bottom window shows the program's execution. It prompts the user to enter values for 'a' and 'b', which are 4 and 6. The output shows the LCM as 12.

```
Enter a, b values 4 6
Lcm=12_
```

The Windows taskbar at the bottom indicates the time is 02:29 PM on 20-Aug-25.

Without using gcd:

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code for a C program to find the Least Common Multiple (LCM) of two numbers. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 56 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,max;
clrscr();
printf("Enter a, b values ");scanf("%d %d",&a,&b);
max=a>b?a:b;
while(1)
{
if(max%a==0 && max%b==0){ printf("Lcm=%d",max);break; }_
max++;
}
getch();
}
```

The bottom window shows the execution of the program. It prompts the user to enter two values, '4' and '6', and displays the output 'Lcm=12'.

```
Enter a, b values 4 6
Lcm=12
```

The Windows taskbar at the bottom indicates the time is 02:36 PM on 20-Aug-25. Various application icons are visible on the taskbar, including Zoho Mail (zm), DEV C++, and Google Chrome.

```
TC
Enter a, b values 7 9
Lcm=63_
```

`max = a>b?a:b;`

```
while( 1 )
{
  if(max%a==0 && max%b==0)
  {
    p("Lcm=%d",max);break;
  }
  max++; ✓
}
```

<u>max</u>	<u>a</u>	<u>max</u>	<u>b</u>
6	4=2	6	6
7	4=3		
8	4=0	8	6=2
9	4=1		
10	4=2		
11	4=3		
12	4=0	12	6=0

Finding the no of digits in given no?

Eg: 2025 → 4 digit no

Without using loop?

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays the source code for a C program named E:2PM.C. The code is as follows:

```
Line 9 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int c;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
c = printf("%ld",n);
if(n<0) c--;_
printf(" is a %d digits no",c);
getch();
}
```

The bottom window shows the program's execution. It prompts the user to "Enter a no" and the input "-123" is provided. The output is "-123 is a 3 digits no_". The Windows taskbar at the bottom shows the time as 02:43 PM on 20-Aug-25.

```
TC
Enter a no 0
0 is a 1 digits no
```

```
TC
Enter a no 1234
1234 is a 4 digits no_
```

n
2025

c = printf(2025);
↖ 4

p(" is a %d digits no",c);

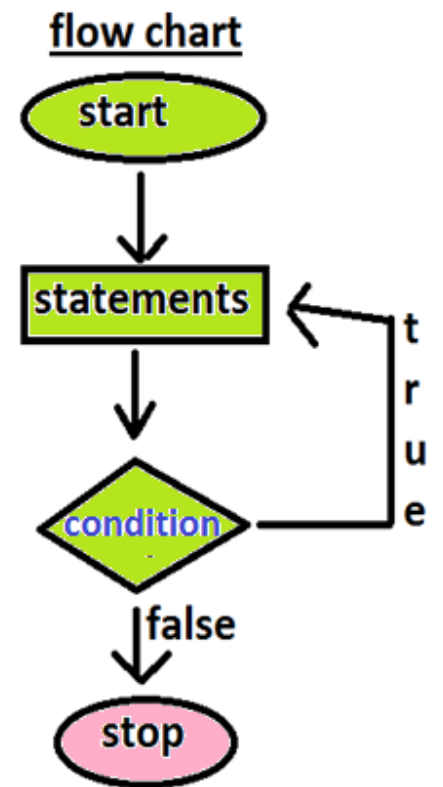
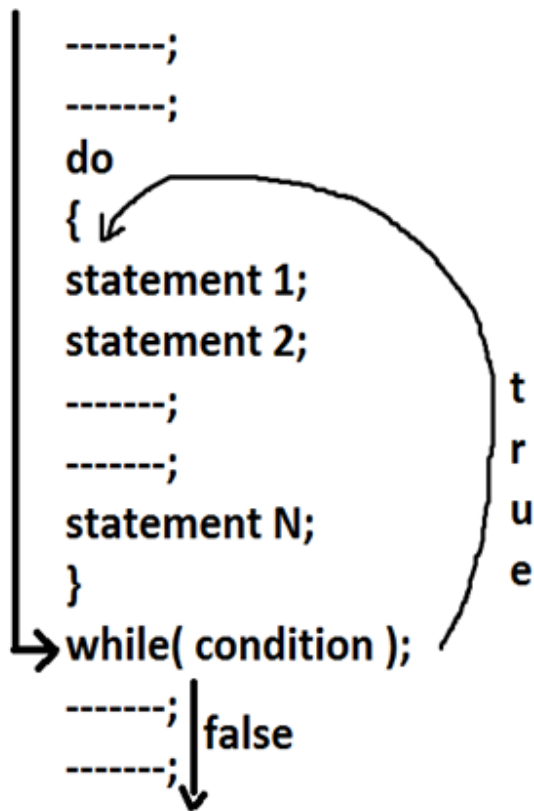
2025 is a 4 digits no

do .. while:

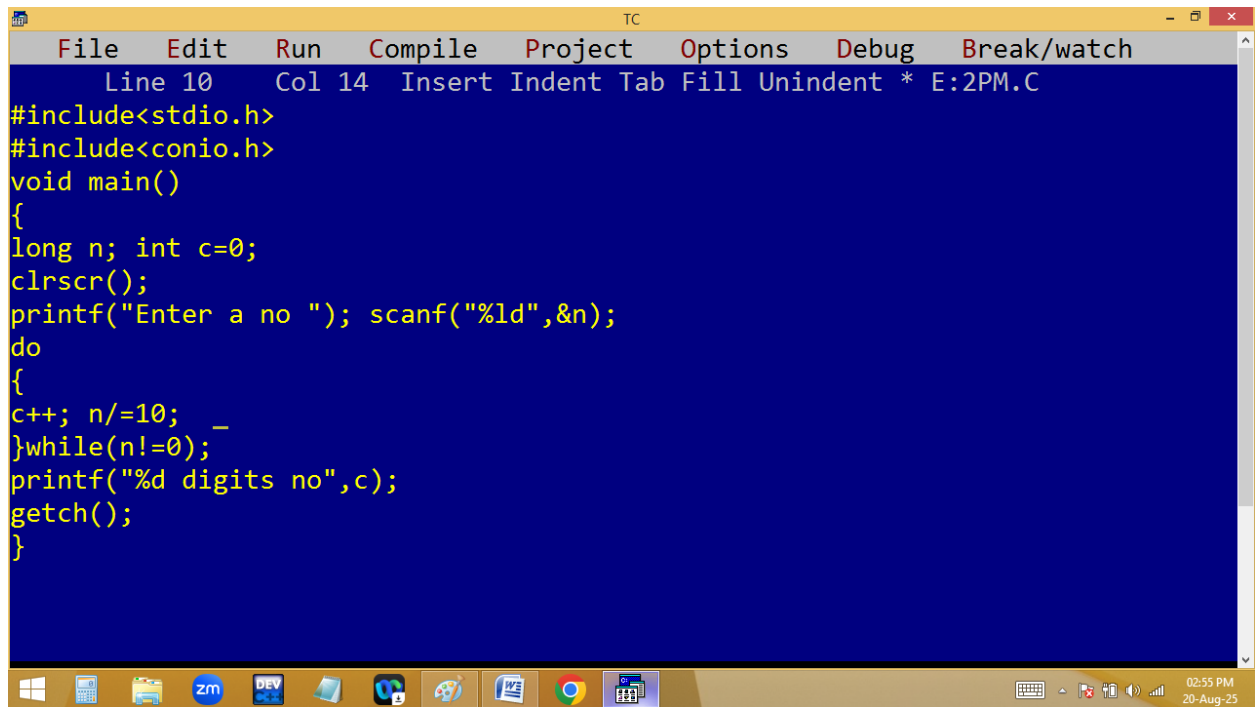
- It is an exit control loop. i.e. in a do while the condition is tested at last.
- Here do , while are the keywords.
- It is also used to repeat a program several times based on a condition.
- In a do while, do block statements are executed first and later while condition is tested. If the while condition 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.

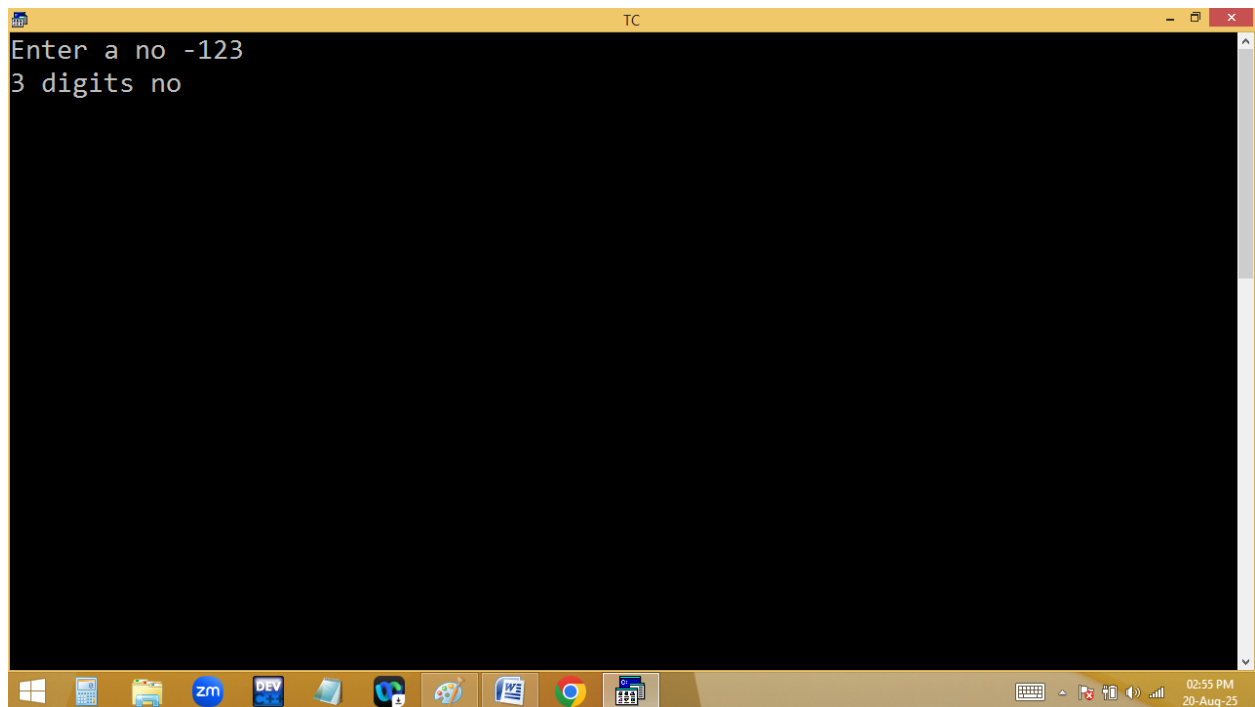


Using a loop?



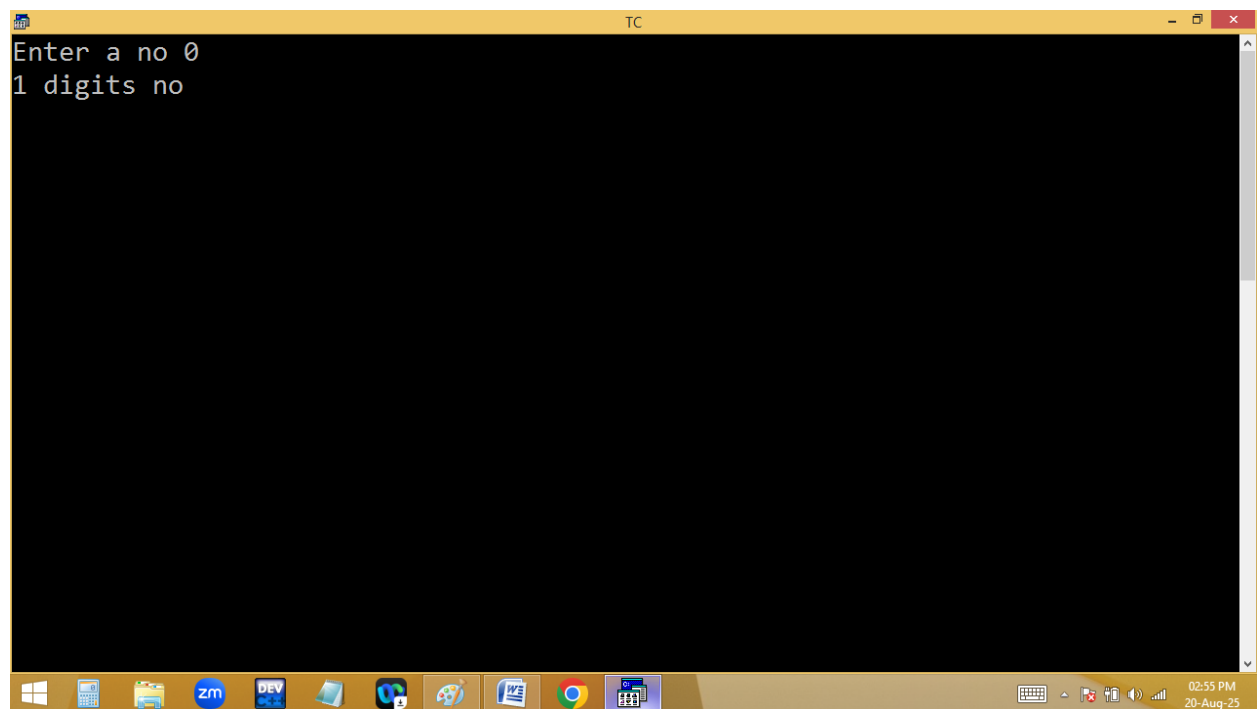
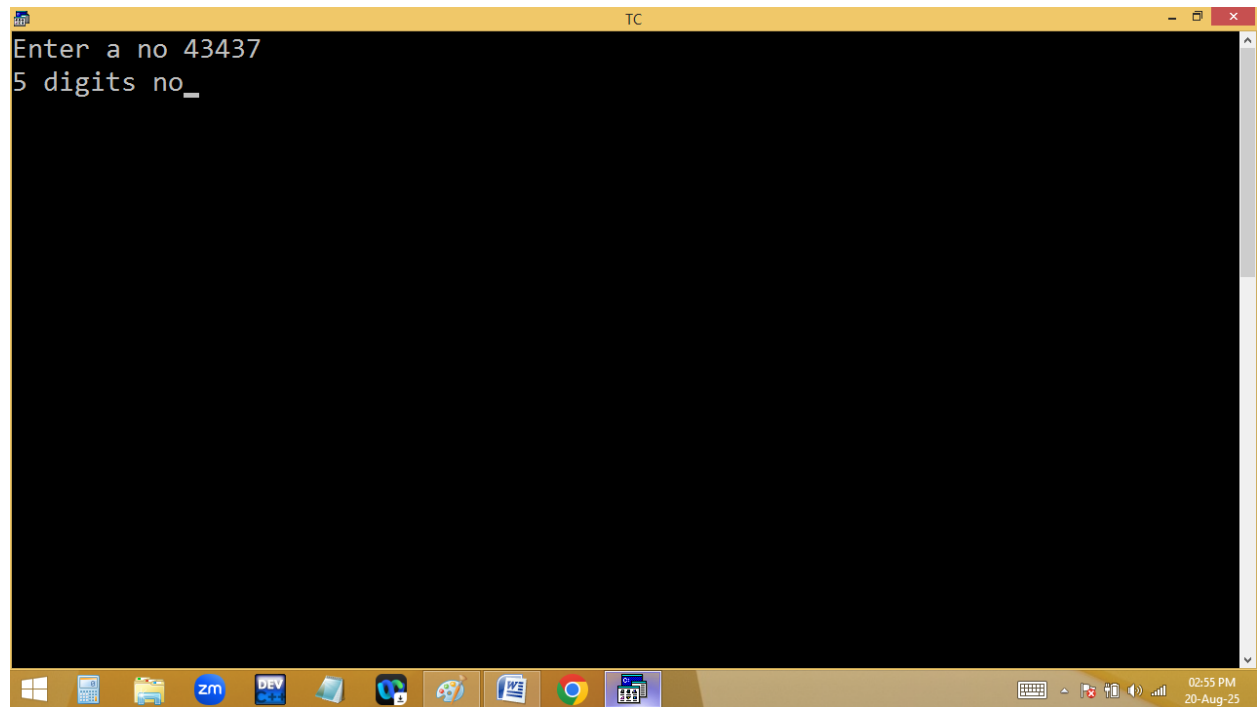
The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 10, Col 14, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code is written in a blue-themed editor. The code defines a function to count the number of digits in an integer by repeatedly dividing it by 10 until it reaches zero.

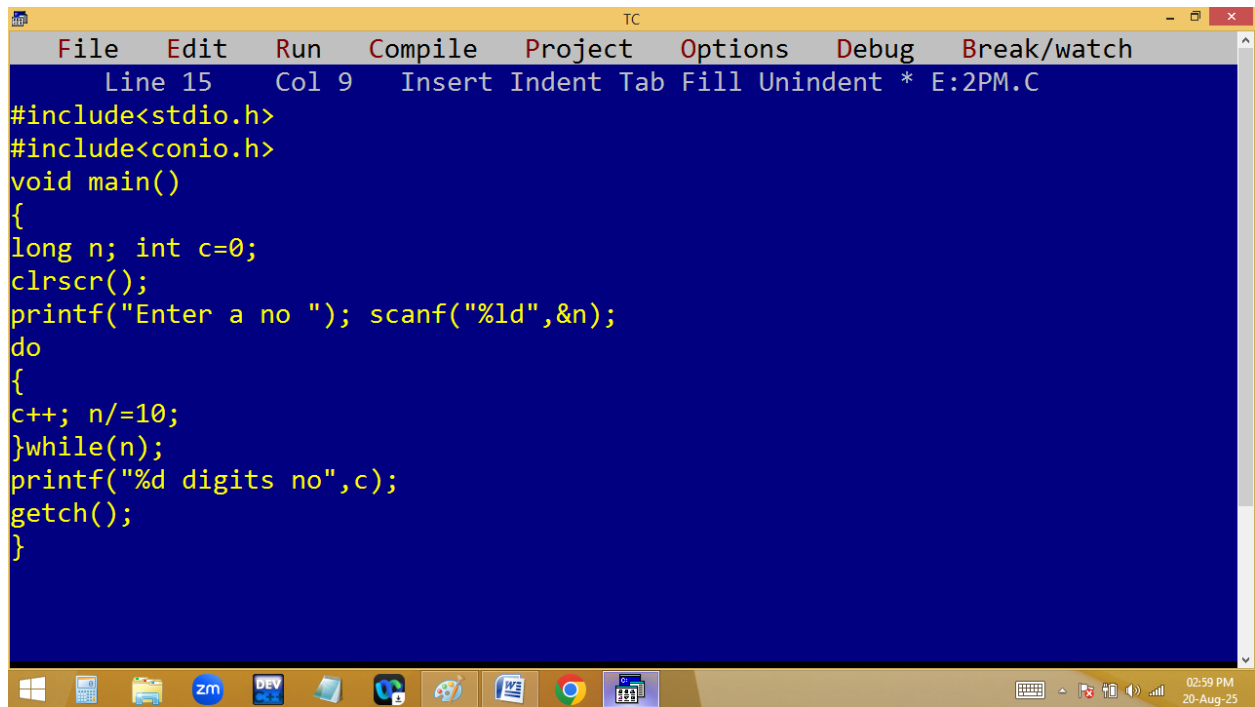
```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int c=0;
    clrscr();
    printf("Enter a no "); scanf("%ld",&n);
    do
    {
        c++; n/=10;
    }while(n!=0);
    printf("%d digits no",c);
    getch();
}
```



The screenshot shows the Turbo C++ (TC) IDE with a black-themed editor. The program has been executed, and the output is displayed. The user entered the number -123, and the program correctly identified it as having 3 digits.

```
Enter a no -123
3 digits no
```

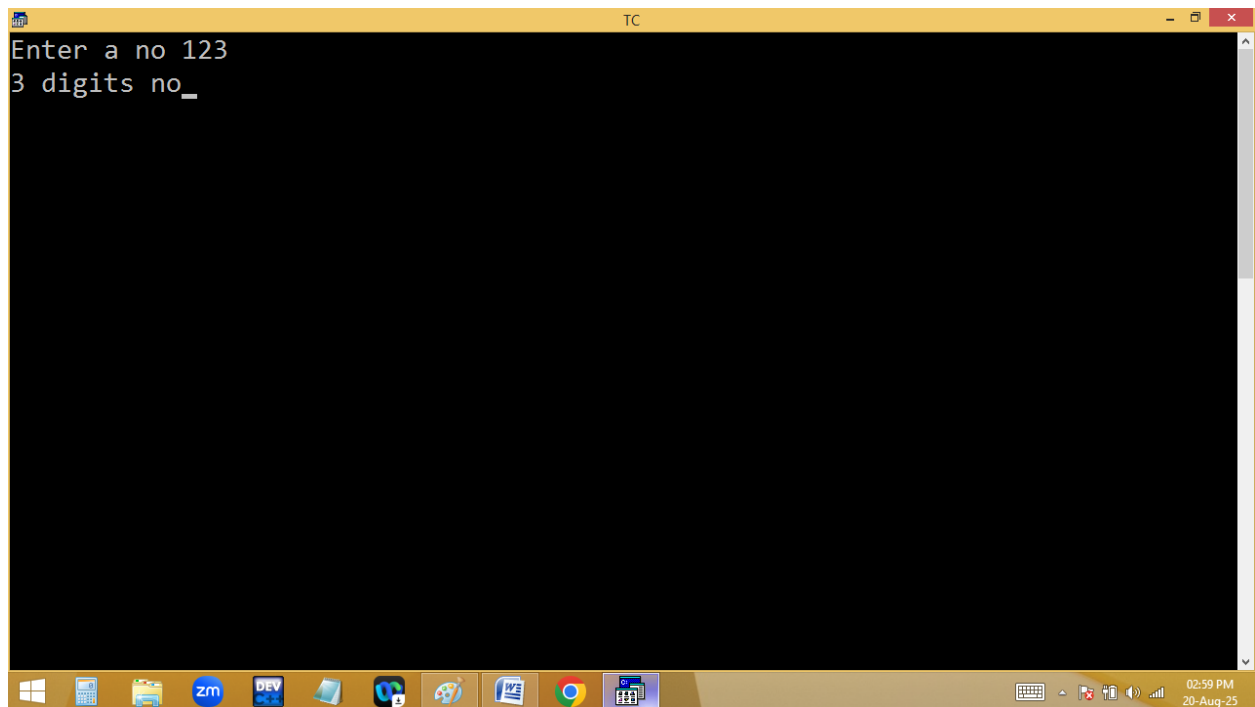




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The code is written in a blue-themed editor. The code is as follows:

```
Line 15 Col 9 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int c=0;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
do
{
c++; n/=10;
}while(n);
printf("%d digits no",c);
getch();
}
```

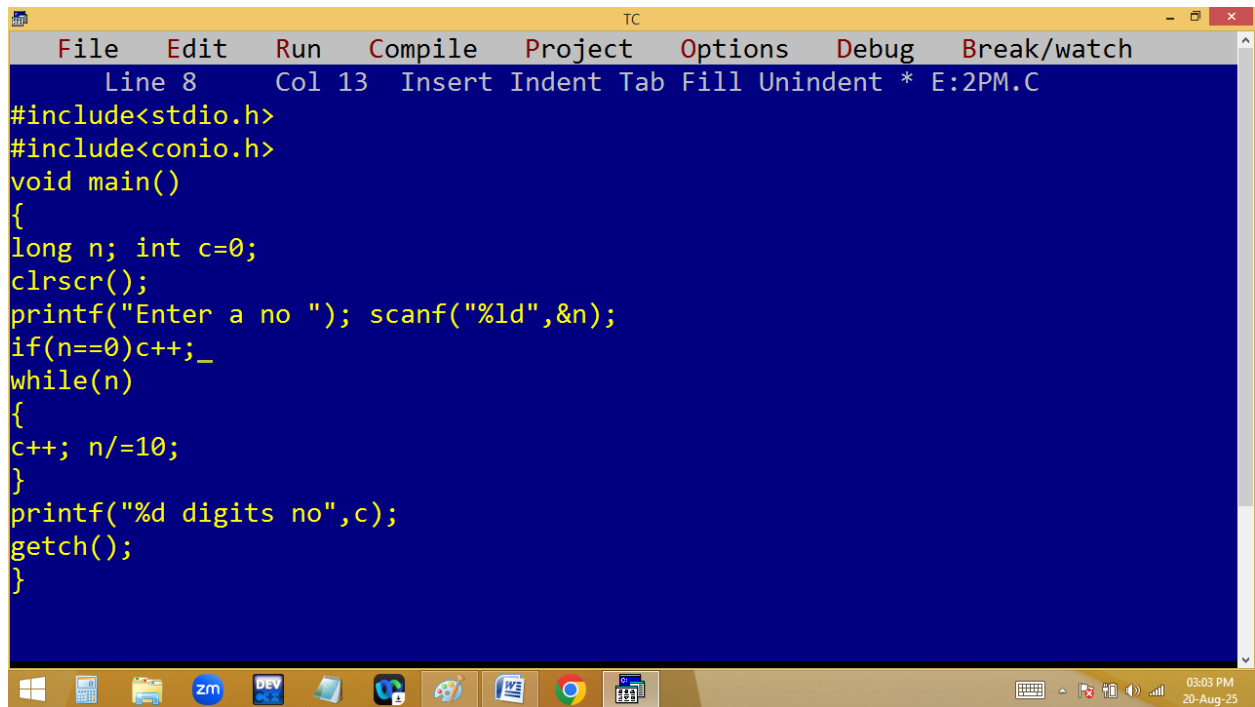
The Windows taskbar at the bottom shows the time as 02:59 PM on 20-Aug-25.



The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and toolbar. The output window is active, displaying the program's execution results:

```
Enter a no 123
3 digits no_
```

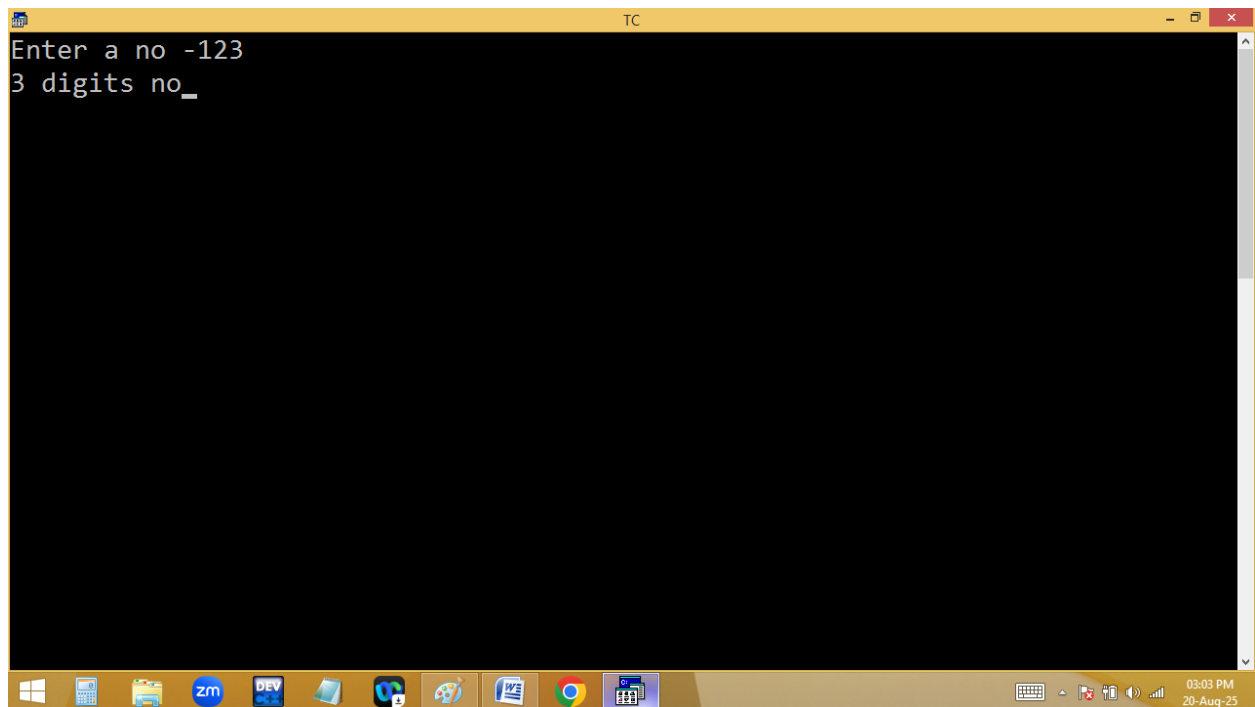
The Windows taskbar at the bottom shows the time as 02:59 PM on 20-Aug-25.



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 13, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int c=0;
    clrscr();
    printf("Enter a no "); scanf("%ld",&n);
    if(n==0)c++;_
    while(n)
    {
        c++; n/=10;
    }
    printf("%d digits no",c);
    getch();
}
```

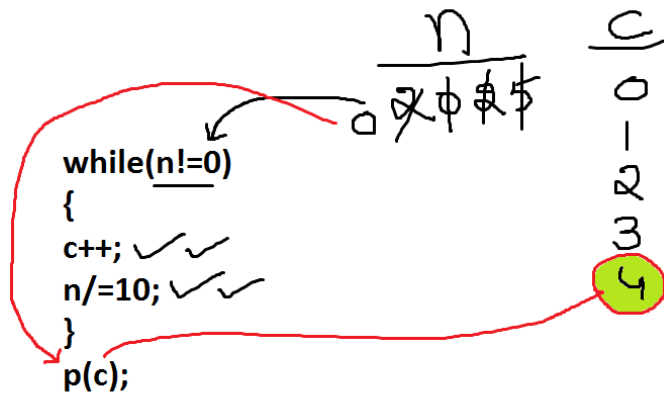
The Windows taskbar at the bottom shows the time as 03:03 PM on 20-Aug-25.



The screenshot shows the Turbo C++ (TC) IDE with the program's output. The text displayed is:

```
Enter a no -123
3 digits no_
```

The Windows taskbar at the bottom shows the time as 03:03 PM on 20-Aug-25.



2025 is a 4 digits no

Finding no of even/odd/0's in given no?

Eg: 1023 → 1 even, 2 odd, 1 zero

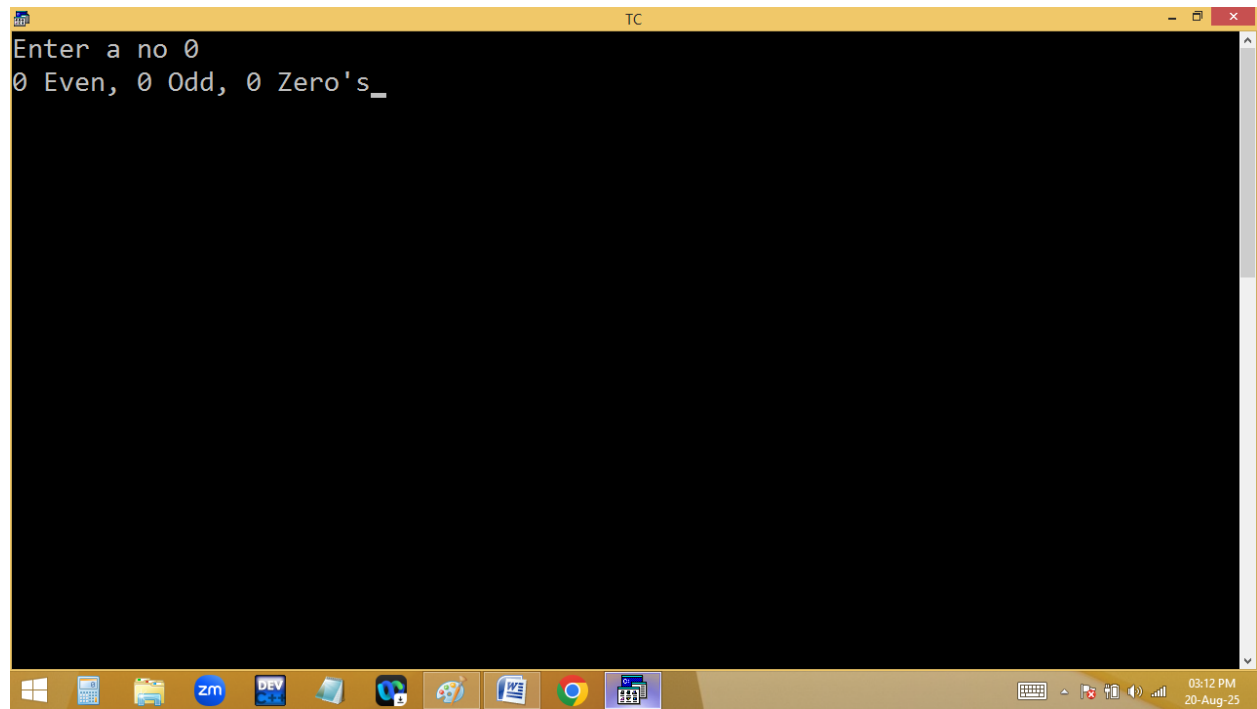
```

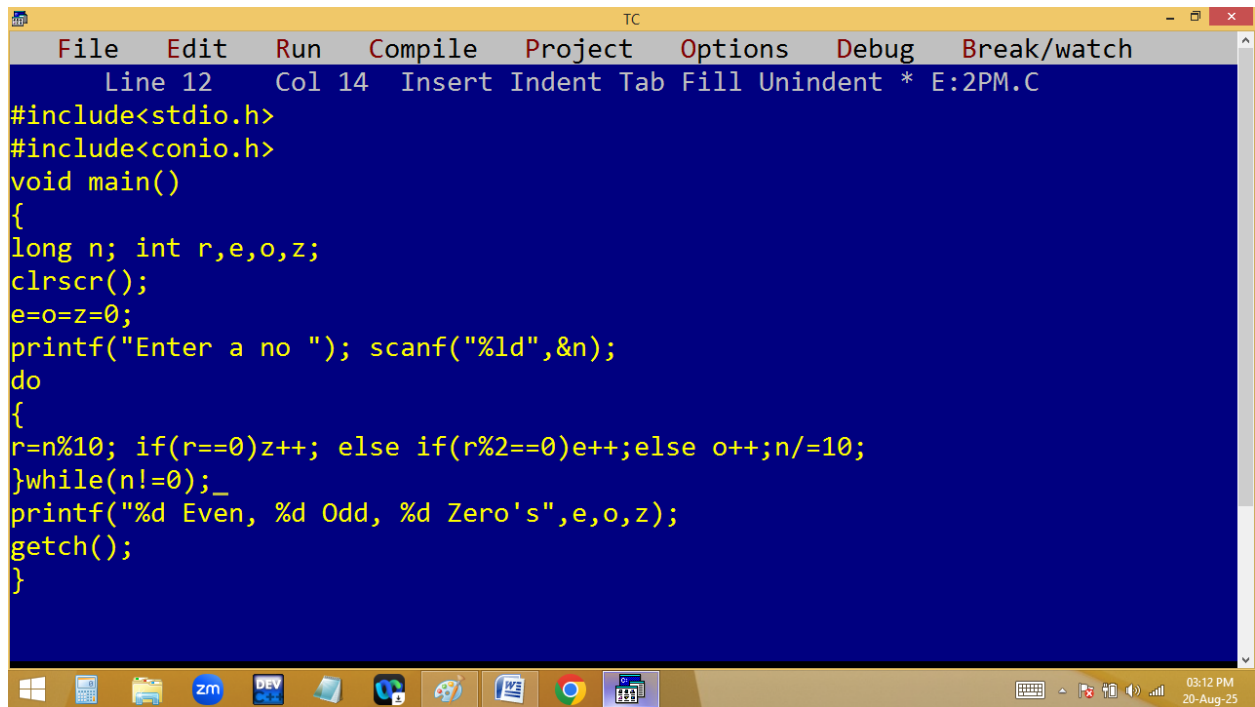
TC
File Edit Run Compile Project Options Debug Break/watch
Line 7 Col 9 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int r,e,o,z;
    clrscr();
    e=o=z=0;
    printf("Enter a no "); scanf("%ld",&n);
    while(n!=0)
    {
        r=n%10; if(r==0)z++; else if(r%2==0)e++;else o++;n/=10;
    }
    printf("%d Even, %d Odd, %d Zero's",e,o,z);
    getch();
}

```

```
TC
Enter a no 1023
1 Even, 2 Odd, 1 Zero's_
```

```
TC
Enter a no -1002
1 Even, 1 Odd, 2 Zero's
```

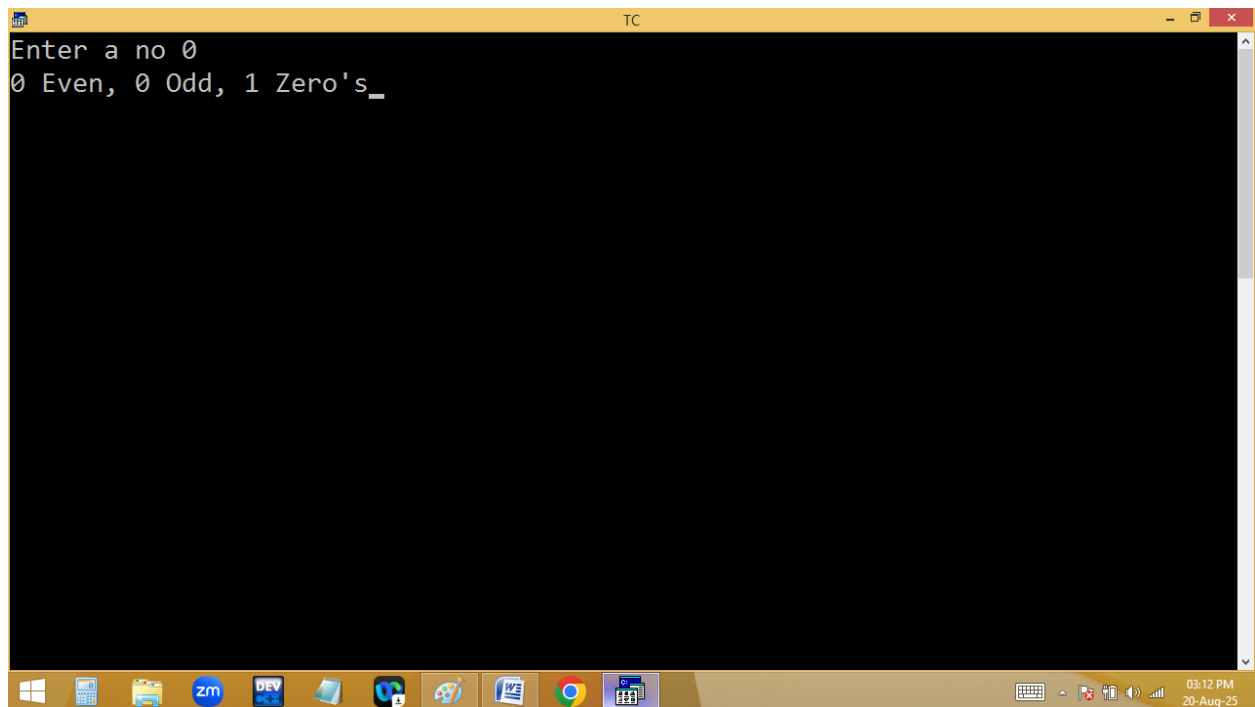




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 12, Col 14, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int r,e,o,z;
    clrscr();
    e=o=z=0;
    printf("Enter a no "); scanf("%ld",&n);
    do
    {
        r=n%10; if(r==0)z++; else if(r%2==0)e++;else o++;n/=10;
    }while(n!=0);_
    printf("%d Even, %d Odd, %d Zero's",e,o,z);
    getch();
}
```

The Windows taskbar at the bottom shows various application icons and the system clock indicating 03:12 PM on 20-Aug-25.

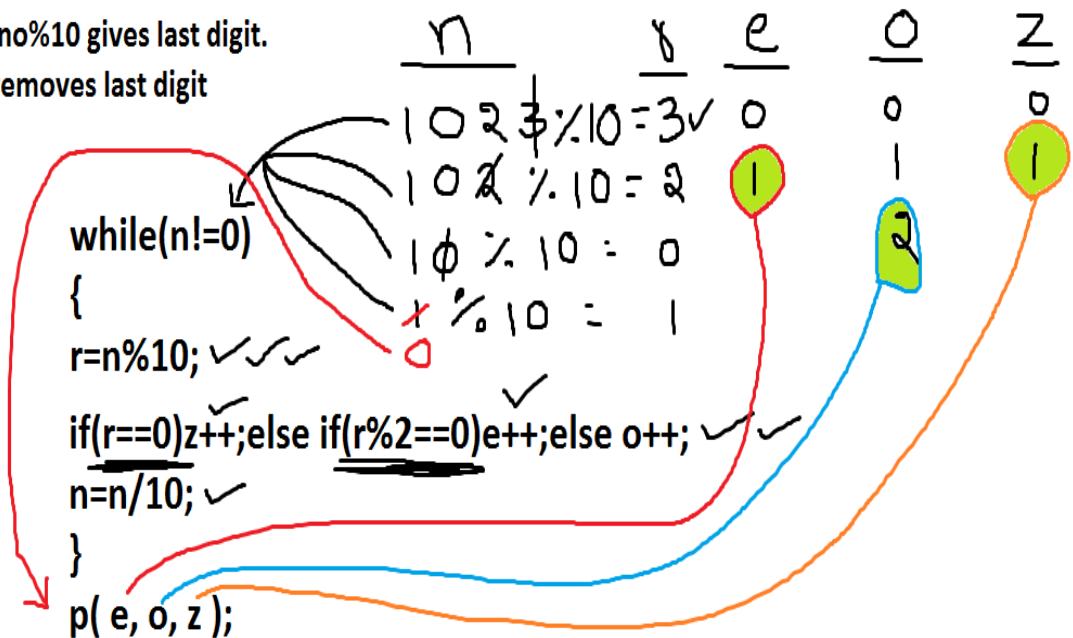


The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar as the first image. The output window displays the result of running the program with the input '0':

```
Enter a no 0
0 Even, 0 Odd, 1 Zero's_
```

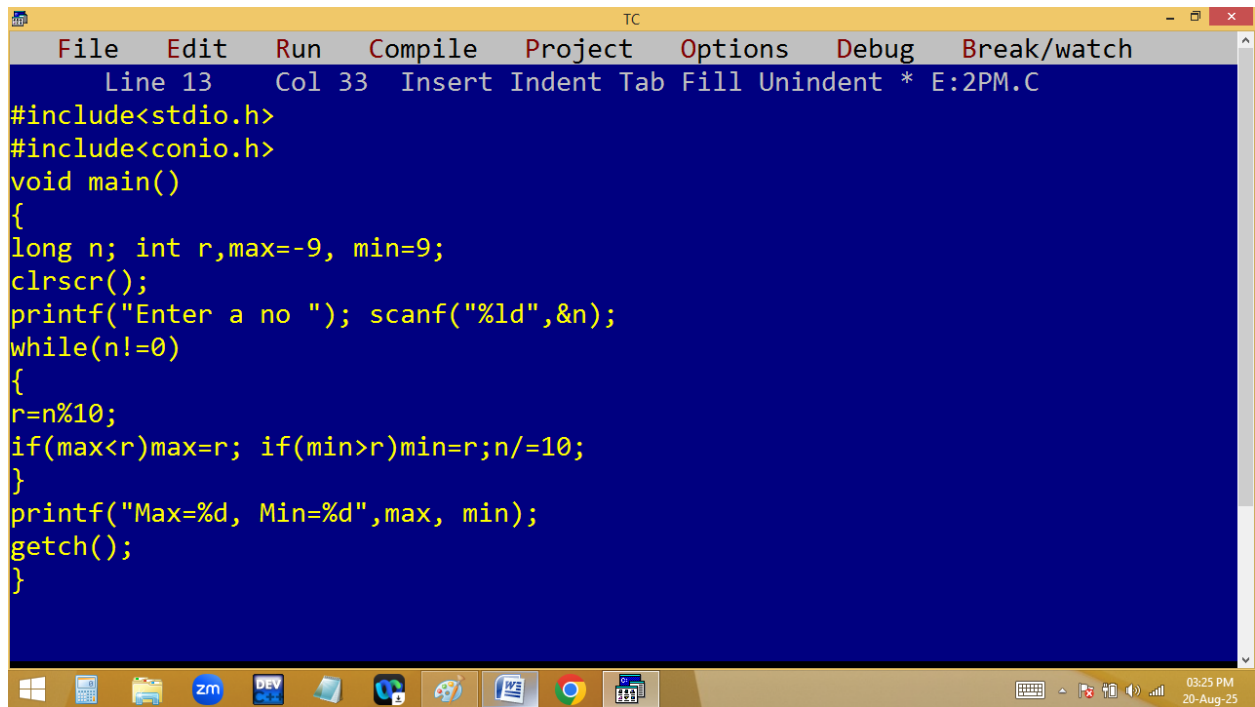
The Windows taskbar at the bottom is identical to the first image, showing the system clock at 03:12 PM on 20-Aug-25.

Note: Any $\text{no} \% 10$ gives last digit.
Any $\text{no} / 10$ removes last digit



Finding max, min digits in given no?

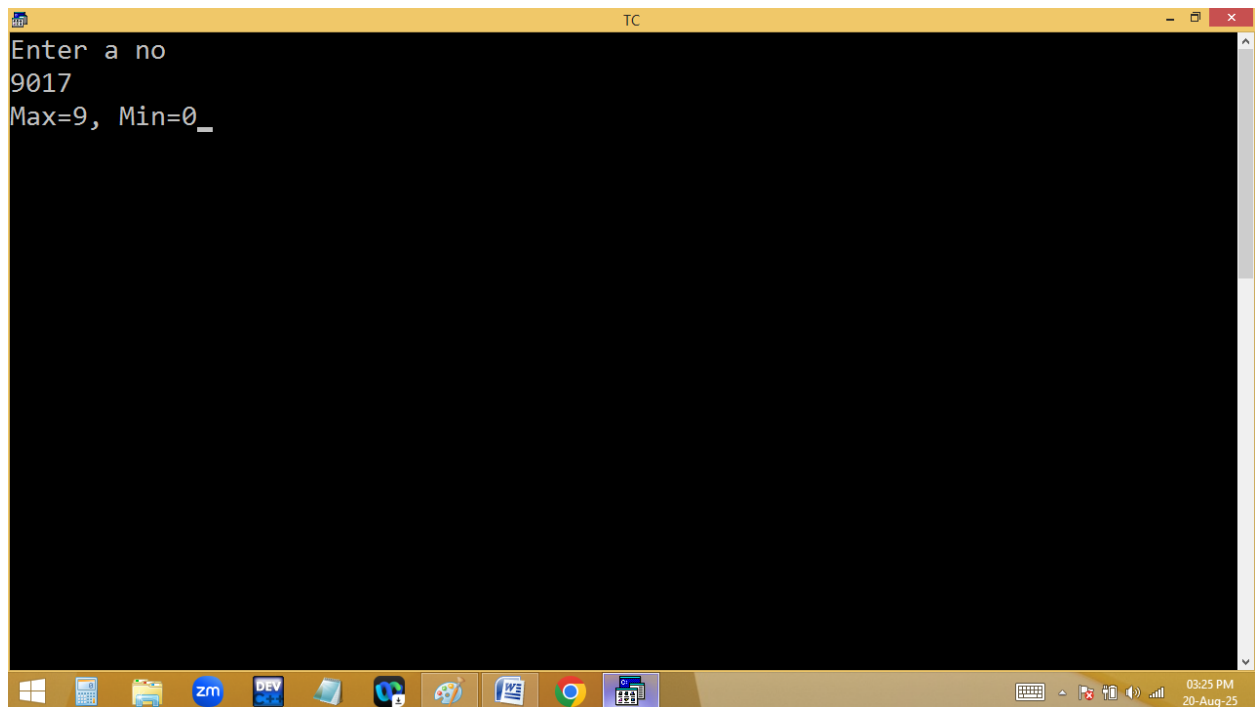
Eg: 920135 → 9 max, 0 min



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 33, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int r,max=-9, min=9;
    clrscr();
    printf("Enter a no "); scanf("%ld",&n);
    while(n!=0)
    {
        r=n%10;
        if(max<r)max=r; if(min>r)min=r;n/=10;
    }
    printf("Max=%d, Min=%d",max, min);
    getch();
}
```

The Windows taskbar at the bottom shows the time as 03:25 PM on 20-Aug-25.

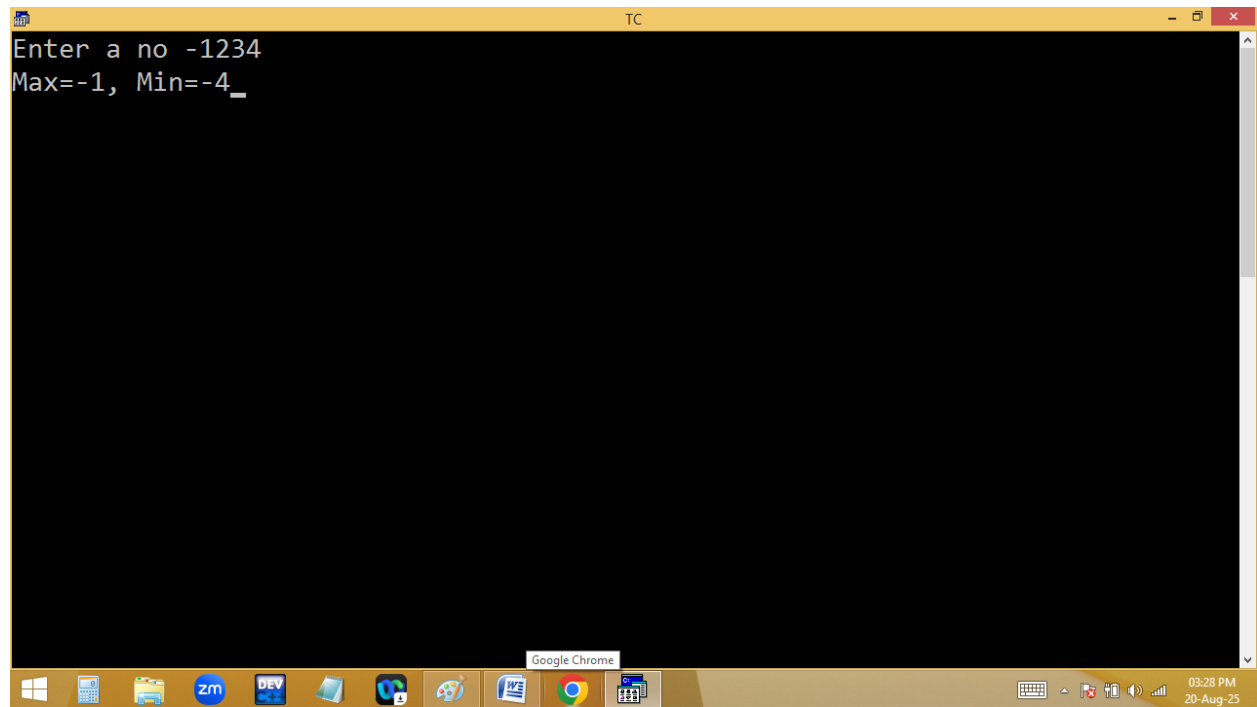


The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar. The output of the program is displayed in the main window:

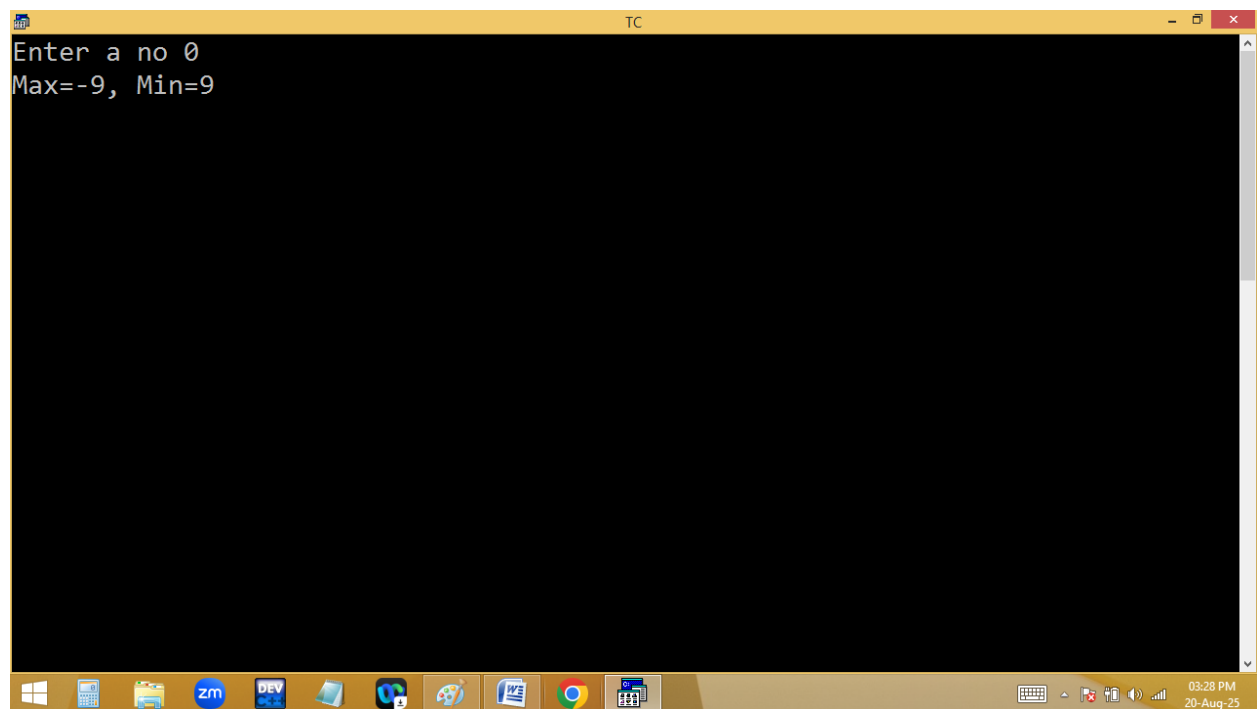
```
Enter a no
9017
Max=9, Min=0_
```

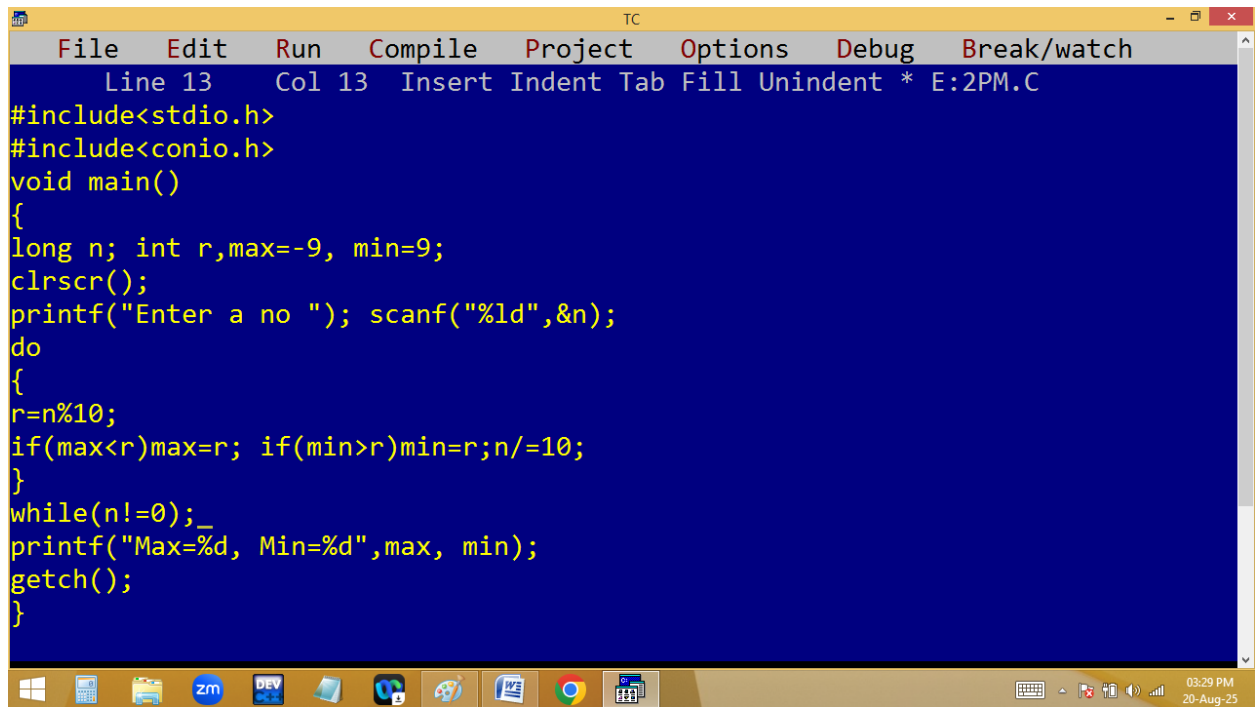
The Windows taskbar at the bottom shows the time as 03:25 PM on 20-Aug-25.

```
TC
Enter a no -1234
Max=-1, Min=-4_
```

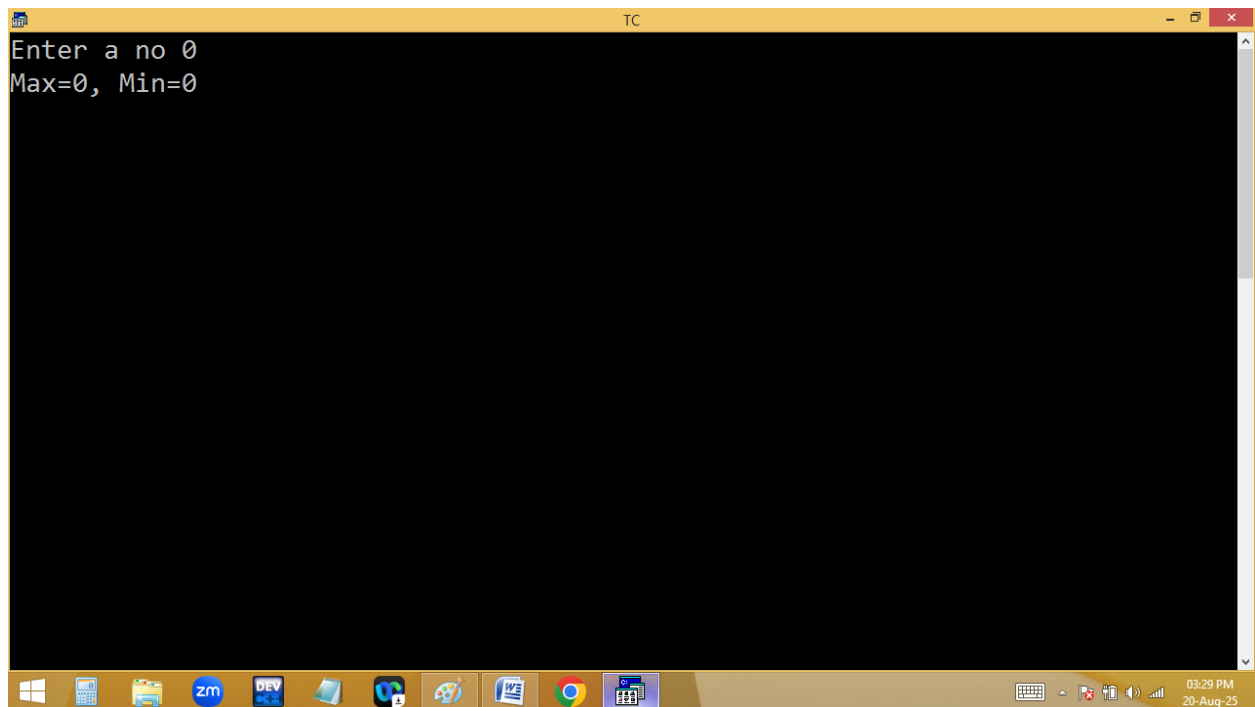


```
TC
Enter a no 0
Max=-9, Min=9
```

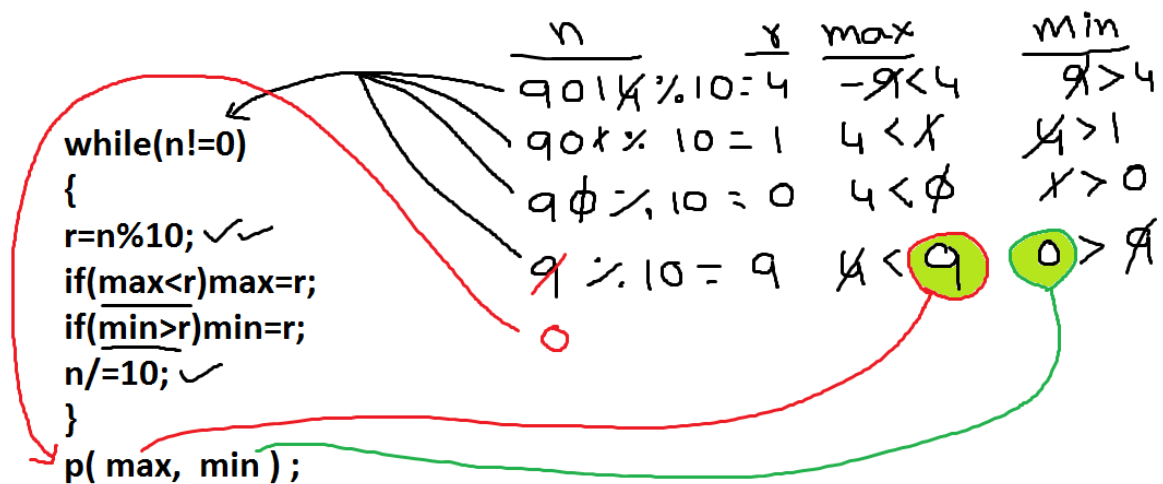




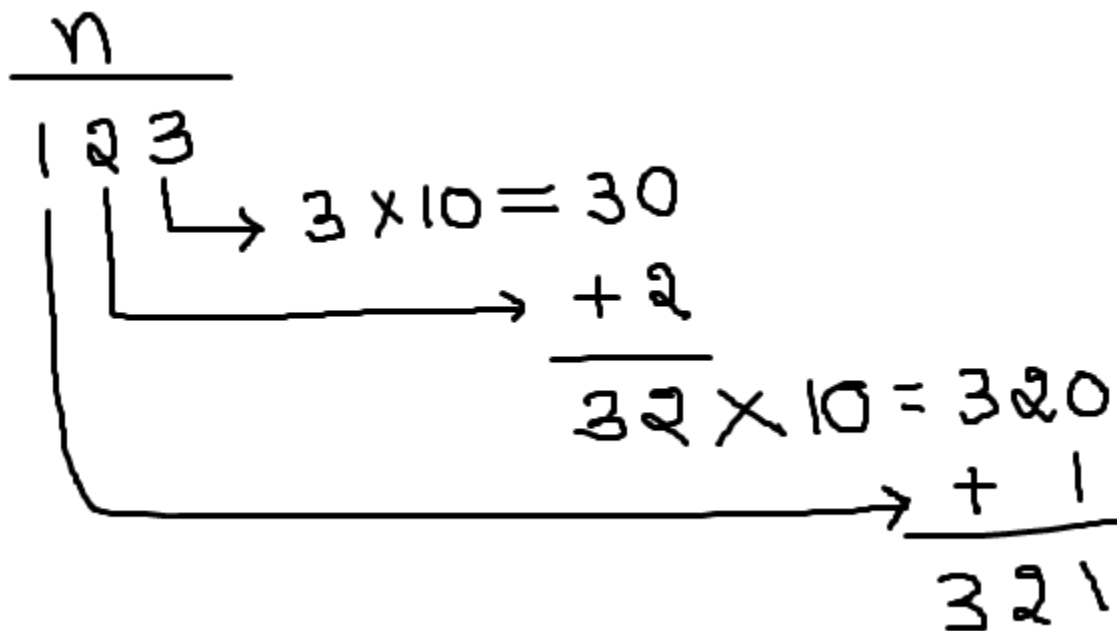
```
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,max=-9, min=9;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
do
{
r=n%10;
if(max<r)max=r; if(min>r)min=r;n/=10;
}
while(n!=0);_
printf("Max=%d, Min=%d",max, min);
getch();
}
```

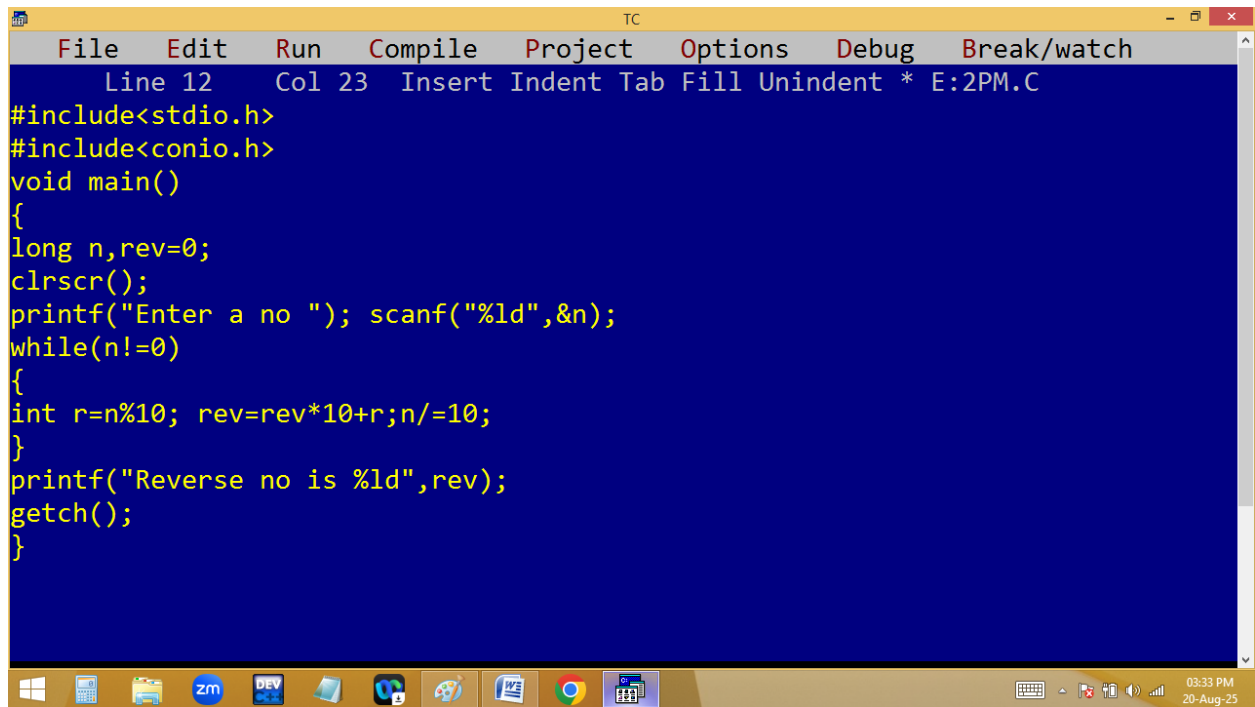


```
Enter a no 0
Max=0, Min=0
```



Reverse no?

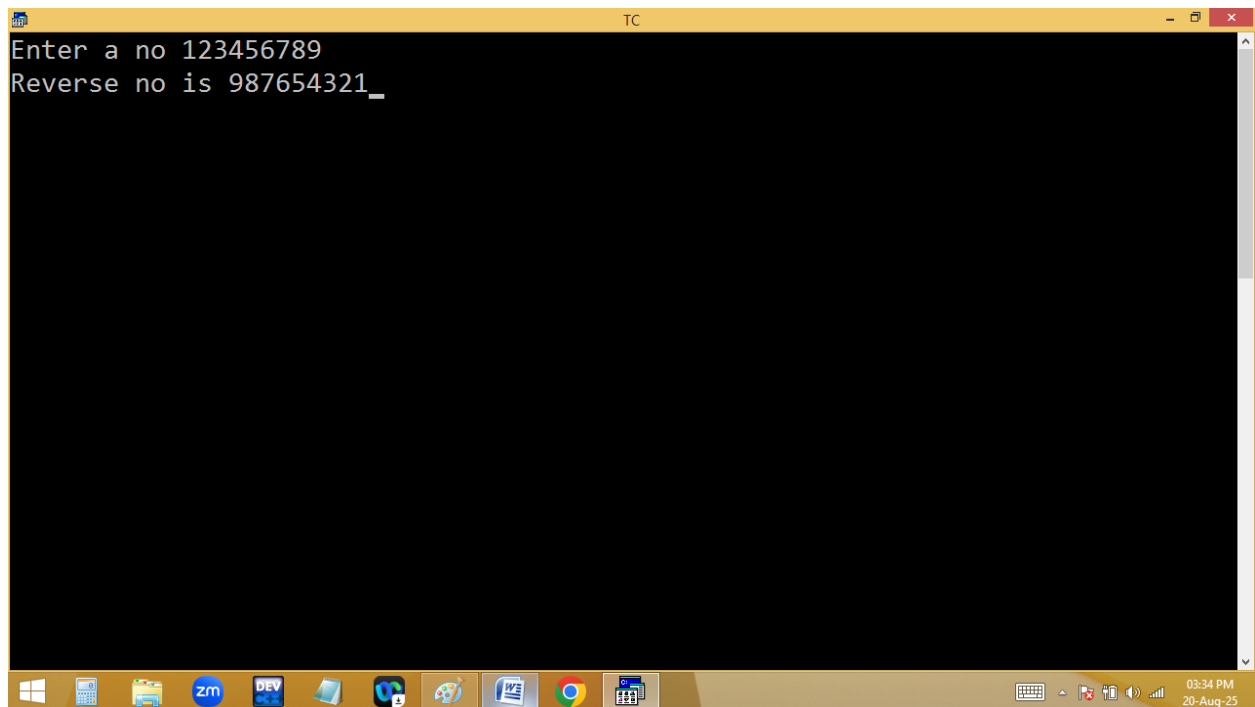




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a toolbar. The code is displayed on a blue background. The code is as follows:

```
Line 12 Col 23 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n,rev=0;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
while(n!=0)
{
int r=n%10; rev=rev*10+r;n/=10;
}
printf("Reverse no is %ld",rev);
getch();
}
```

The Windows taskbar at the bottom shows the Start button, taskbar icons for File Explorer, Zoho Mail, DEV C++, and other applications, and the system tray with the date and time (03:33 PM, 20-Aug-25).

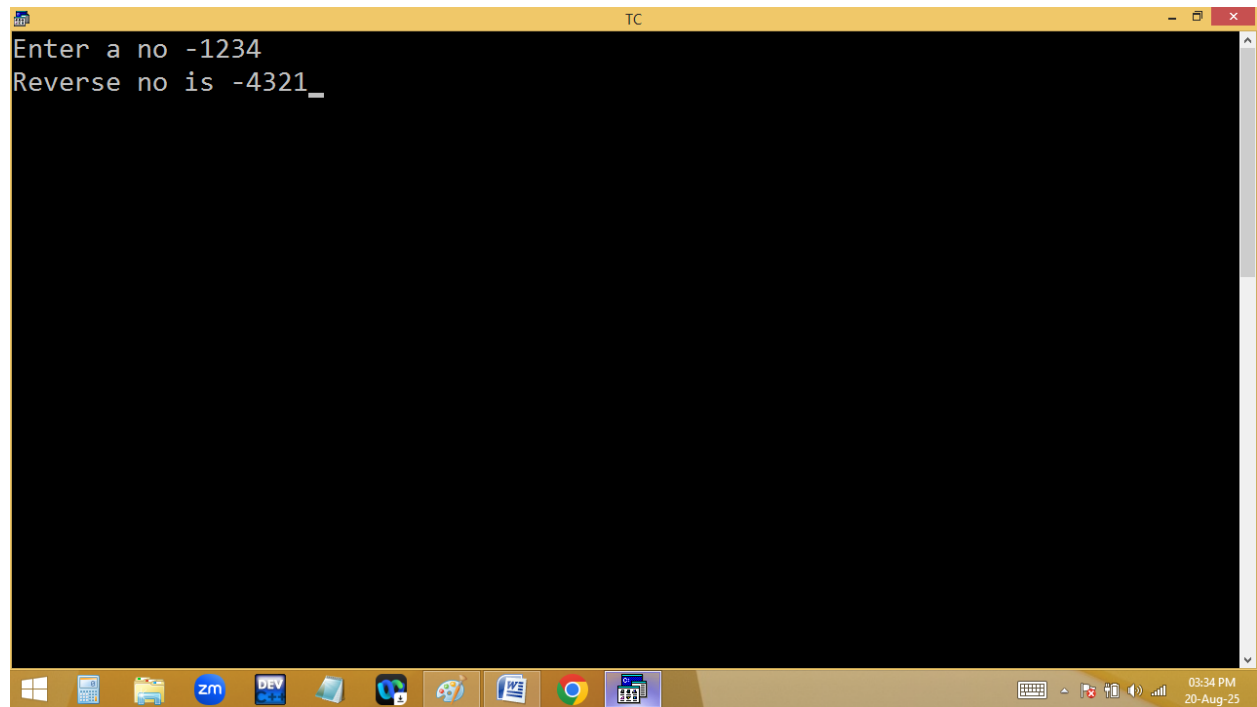


The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and toolbar as the first image. The output of the program is displayed on a black background. The output is as follows:

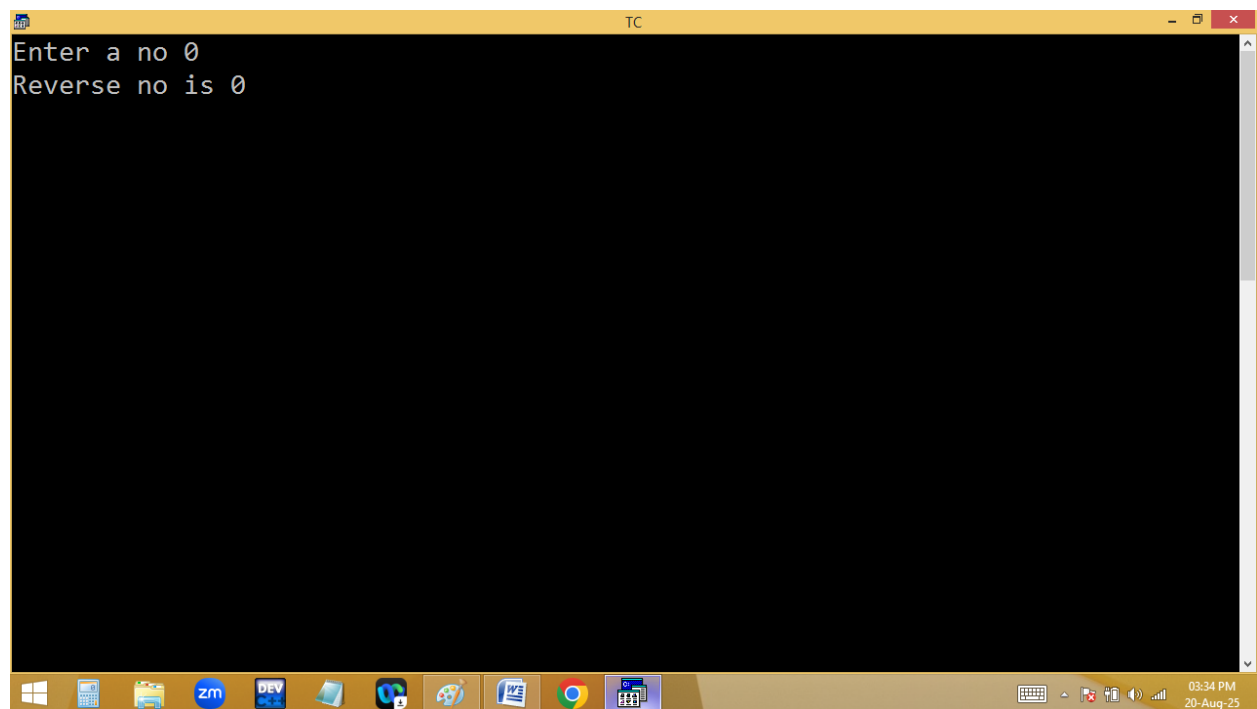
```
Enter a no 123456789
Reverse no is 987654321_
```

The Windows taskbar at the bottom shows the Start button, taskbar icons for File Explorer, Zoho Mail, DEV C++, and other applications, and the system tray with the date and time (03:34 PM, 20-Aug-25).

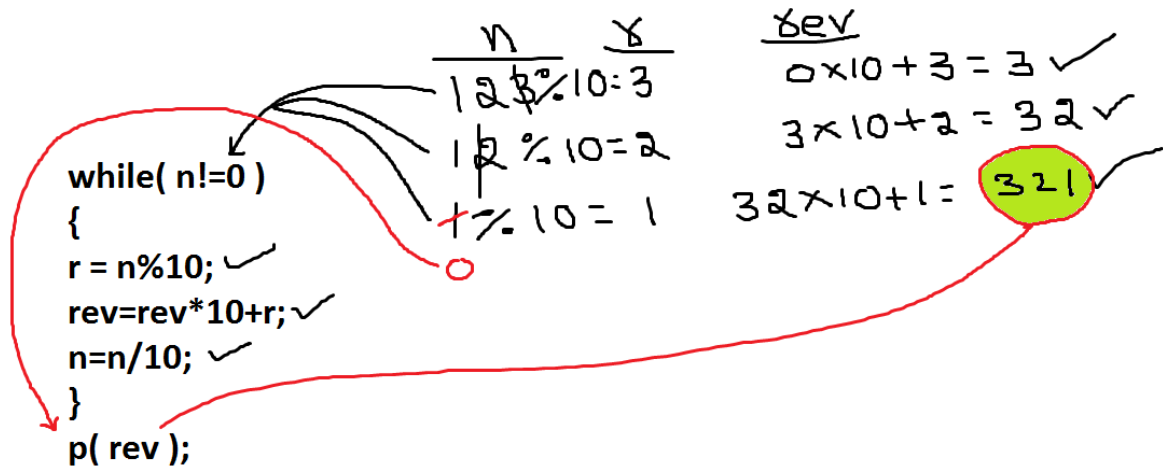
```
TC
Enter a no -1234
Reverse no is -4321_
```



```
TC
Enter a no 0
Reverse no is 0
```



```
TC
Enter a no 100
Reverse no is 1
```



	<u>n</u>	<u>Y</u>	<u>rev</u>
	100	$100 \% 10 = 0$	$0 \times 10 + 0 = 0 \checkmark$
	10	$10 \% 10 = 0$	$0 \times 10 + 0 = 0 \checkmark$
	1	$1 \% 10 = 1$	$0 \times 10 + 1 = 1 \checkmark$

\circ

```

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

```

(A red arrow points from the final '1' in the rev column to the 'p(rev);' line in the code.)

Print 100 as 001?

```

TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 25 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long n;
    clrscr();
    printf("Enter a no "); scanf("%ld",&n);
    printf("Reverse no is ");
    if(n<0)printf("-",n=-n);
    do
    {
        int r=n%10; printf("%d",r); n/=10;
    }
    while(n!=0);
    getch();
}

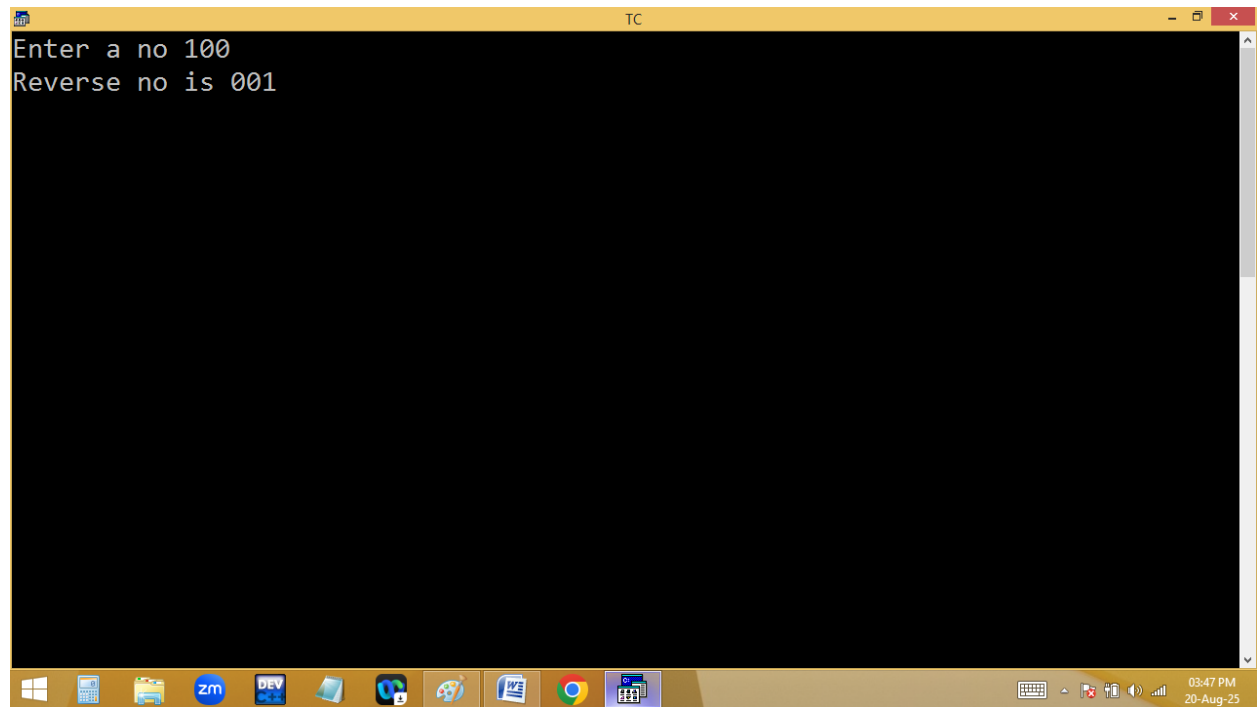
```

03:47 PM
20-Aug-25

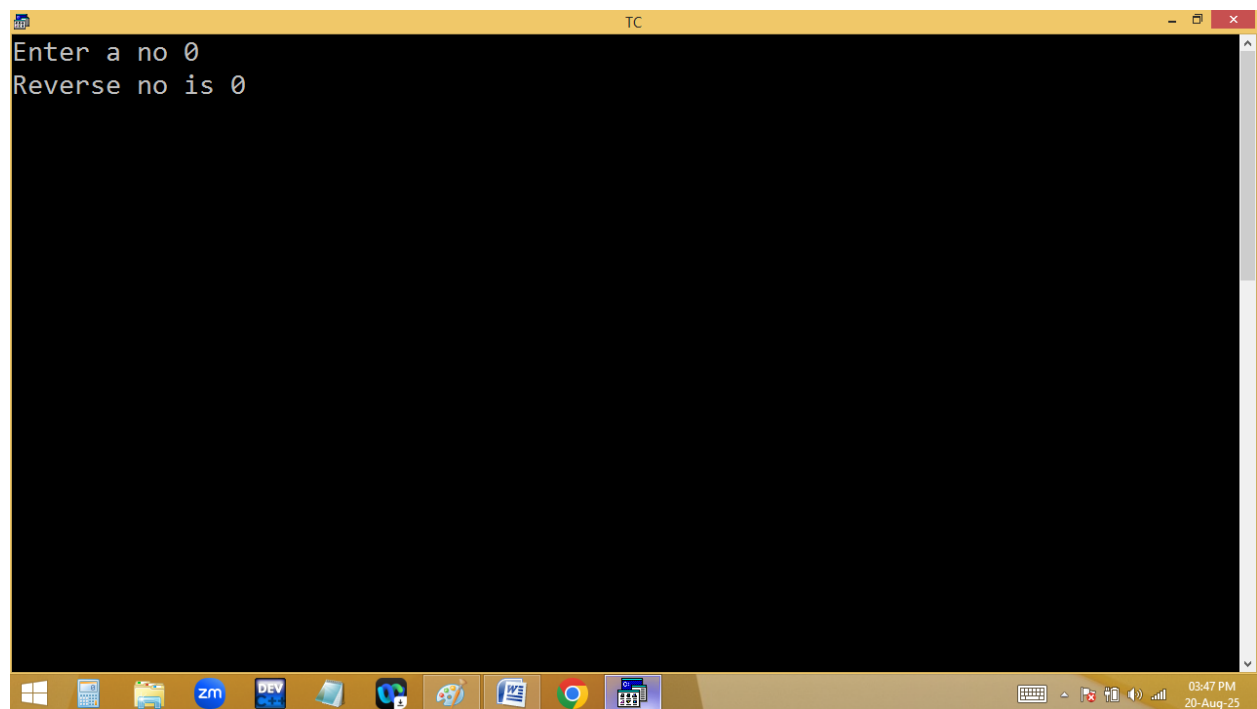
```
TC
Enter a no -123
Reverse no is -321_
```

```
TC
Enter a no -12300000
Reverse no is -00000321
```

```
TC
Enter a no 100
Reverse no is 001
```



```
TC
Enter a no 0
Reverse no is 0
```



printf

<u>n</u>	<u>r</u>
100	100 % 10 = 0
10	10 % 10 = 0
1	1 % 10 = 1
0	

while(n!=0)
{
r = n%10; ✓

n=n/10; ✓
}
p(rev);

Home work?

1. Finding palindrome no?

Given no reverse no both are same

2. 102 → One Zero Two

3. Printing 1st and last digits of given no

4. 12345678 → 78 56 34 12