

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 calculate 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. The user has entered the values 4 and 6, and the program has calculated the GCD as 2.

```
Enter a, b values 4 6
Gcd=2_
```

The Windows taskbar at the bottom of both screenshots shows the time as 02:27 PM on 20-Aug-23. The taskbar includes icons for the Start menu, Task View, File Explorer, Zoom, DEV, and several other applications.

```
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			

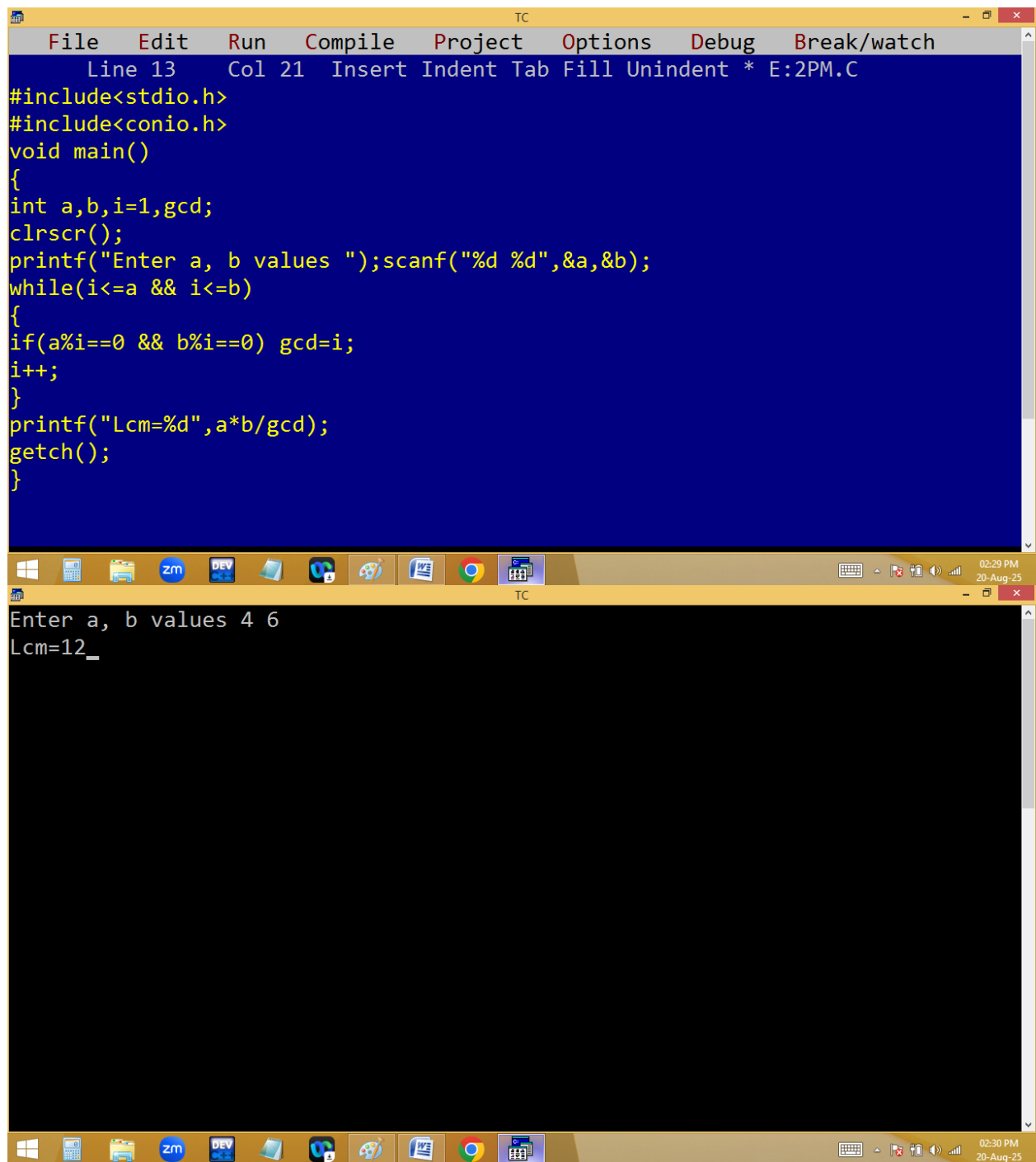

```
while( i <= a && i <= b)
{
  if(a % i == 0 && b % i == 0)
  {
    gcd = i;
  }
  i++; ✓
}
```

→ 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 C program that calculates the Least Common Multiple (LCM) of two numbers, a and b, using a while loop. 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. The user has entered 4 and 6. The program outputs the LCM as 12.

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

Without using gcd:

The image shows two screenshots of the Turbo C++ (TC) IDE. The top screenshot displays the source code of a C program designed to calculate the Least Common Multiple (LCM) of two numbers, a and b. The code includes headers for `stdio.h` and `conio.h`, and uses a `while` loop to increment the maximum of the two numbers until it is divisible by both. The bottom screenshot shows the program's execution output, where the user has entered the values 4 and 6, and the program has correctly calculated and displayed the LCM as 12.

```
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();
}
```

Enter a, b values 4 6
Lcm=12

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

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

```
while( 1 )
{
  if(max%a==0 && max%b==0)
  {
    12
    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:

```
File Edit Run Compile Project Options Debug Break/watch
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 execution of the program. It prompts the user to "Enter a no" and the input "-123" is provided. The output is "-123 is a 3 digits no_".

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

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

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

$\frac{n}{2025}$

```
c = printf(2025);
```

← 4

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

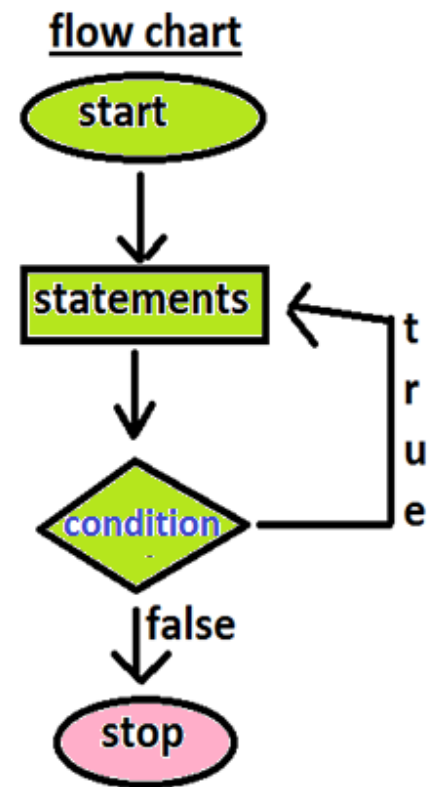
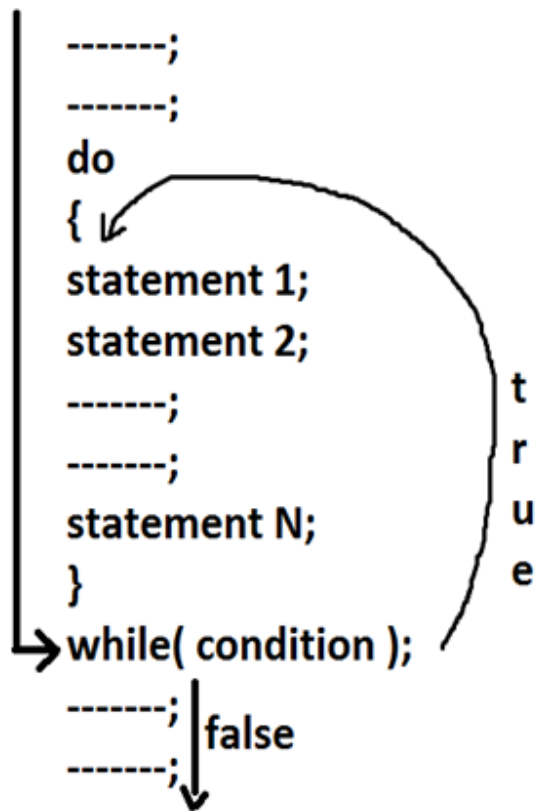
2025 is a 4 digits no

do .. while:

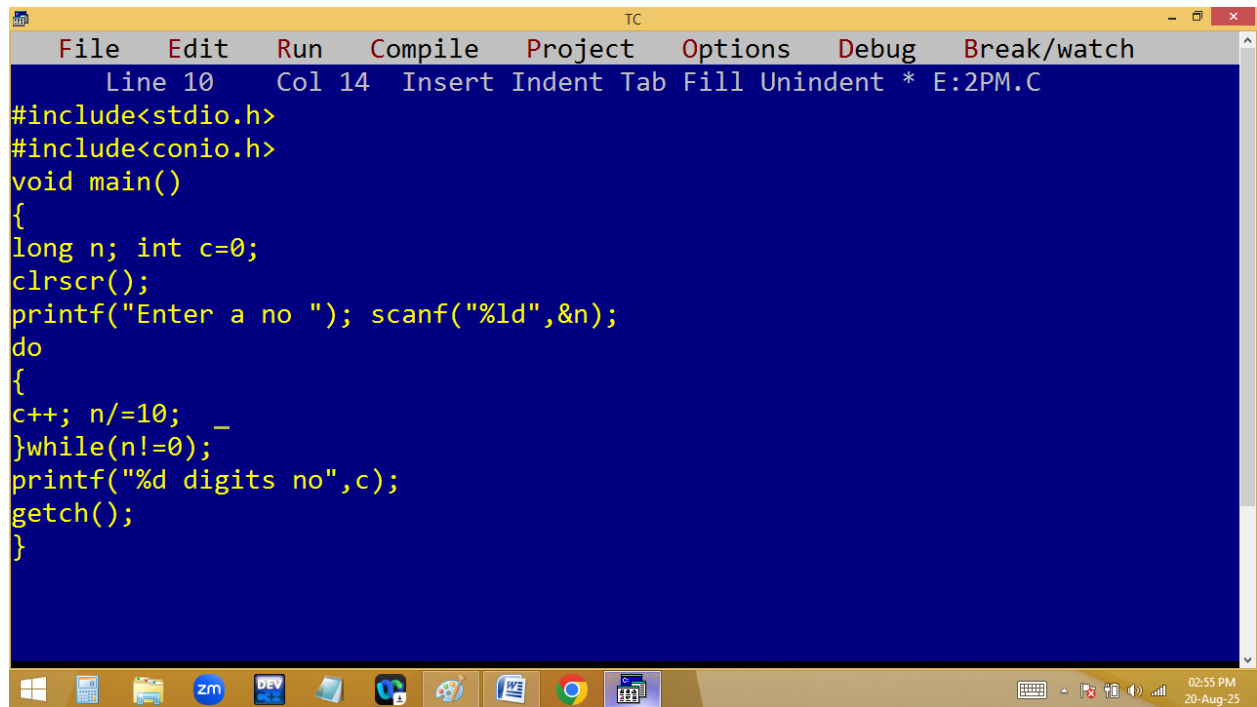
- It is an exit control loop. i.e. in a do while the condition is tested at last.
- Here do , while are the keywords.
- It is also used to repeat a program several times based on a condition.
- In a do while, do block statements are executed first and later while condition is tested. If the while condition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

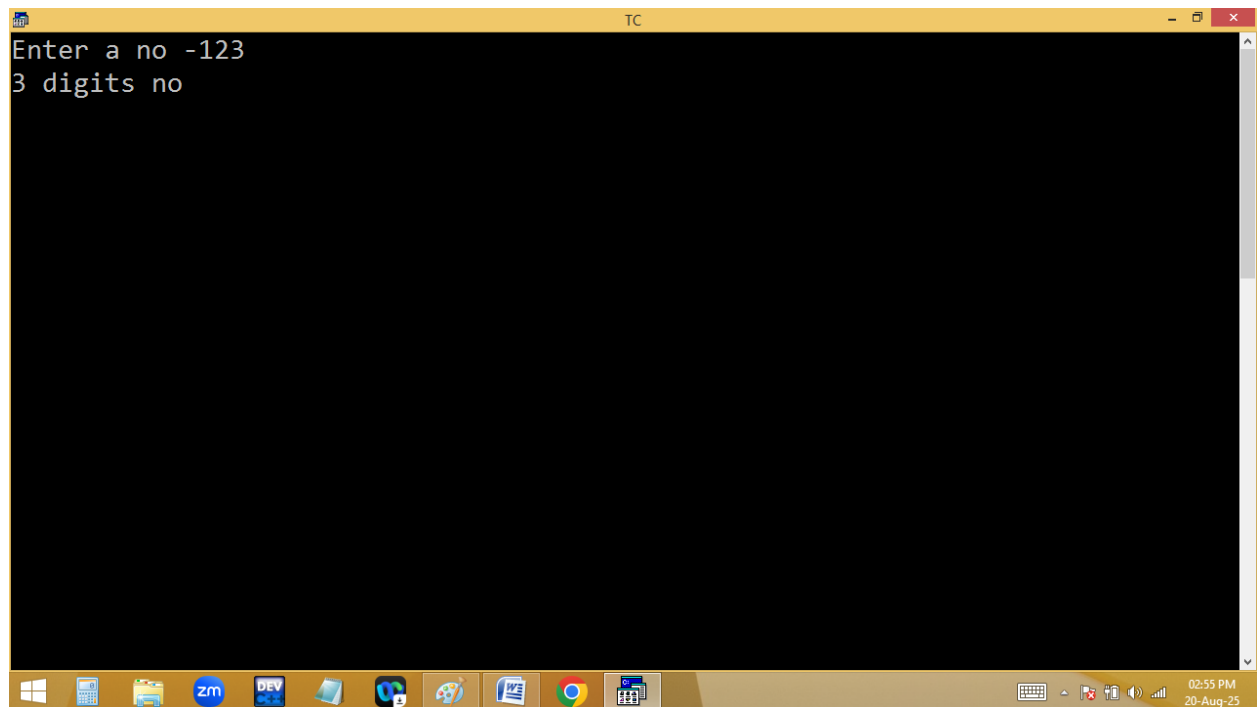


Using a loop?



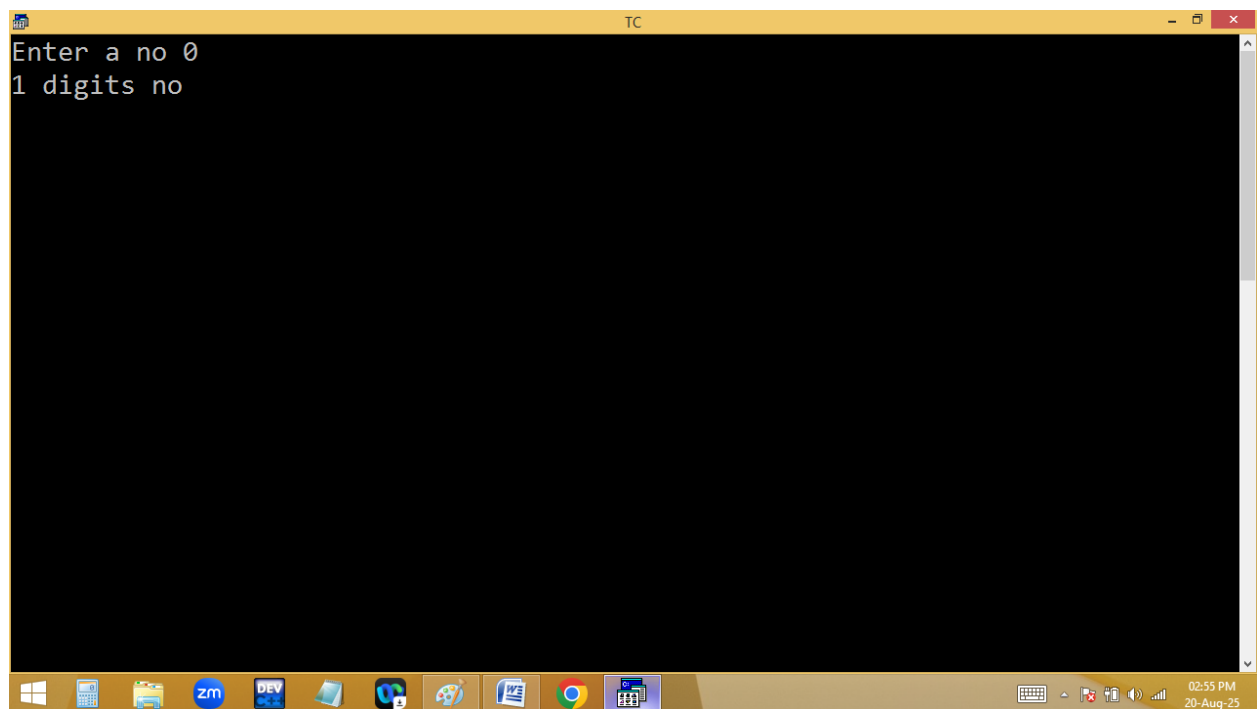
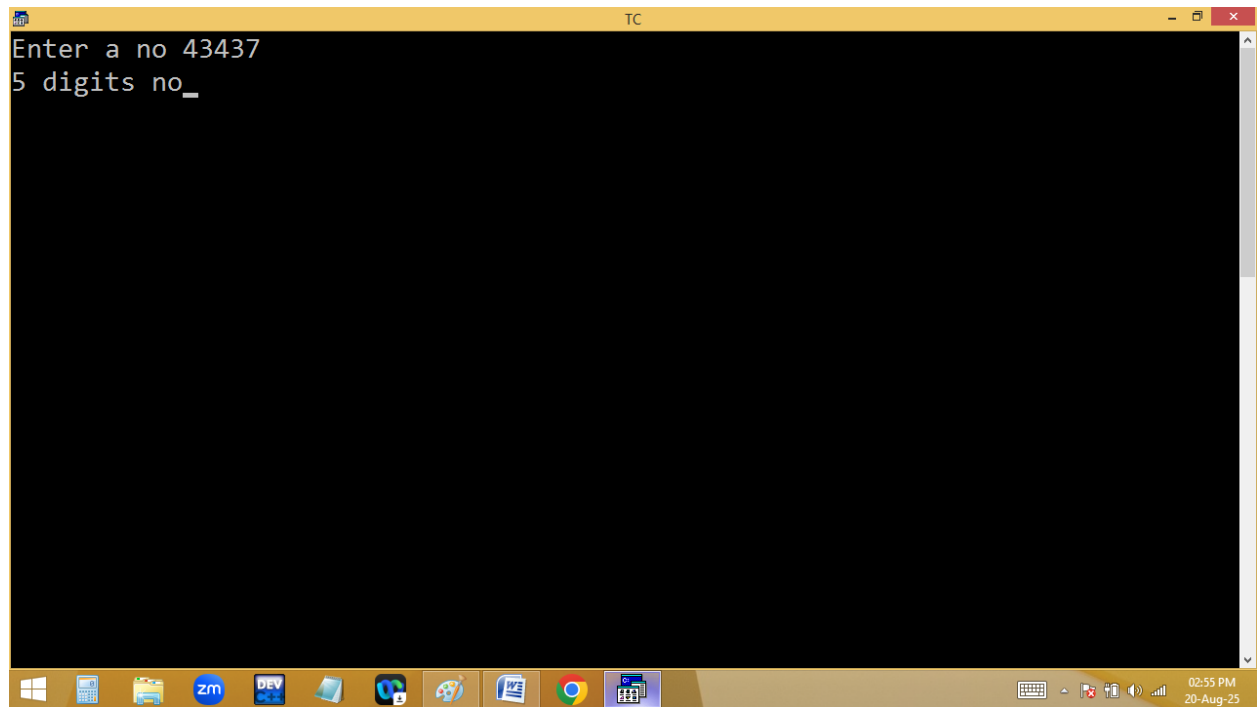
The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 10, Col 14, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code is written in a blue-themed editor. The code defines a function to count the number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

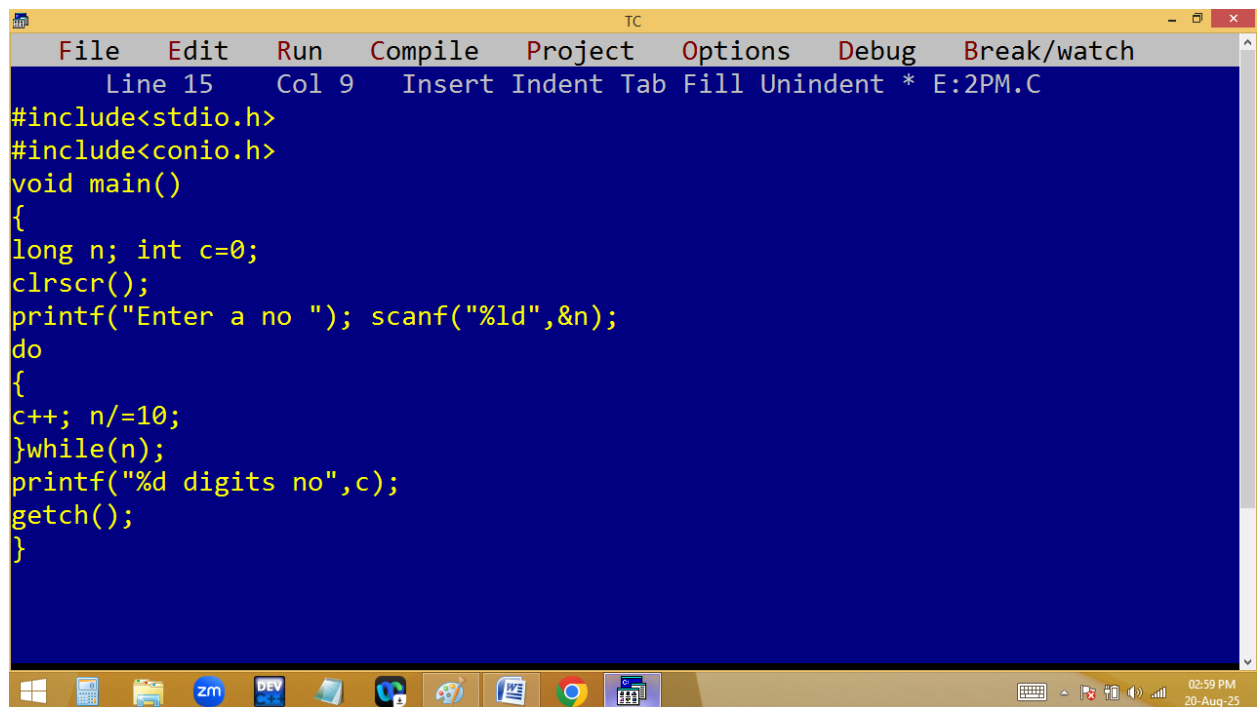
```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int c=0;
    clrscr();
    printf("Enter a no "); scanf("%ld",&n);
    do
    {
        c++; n/=10; _
    }while(n!=0);
    printf("%d digits no",c);
    getch();
}
```



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
```

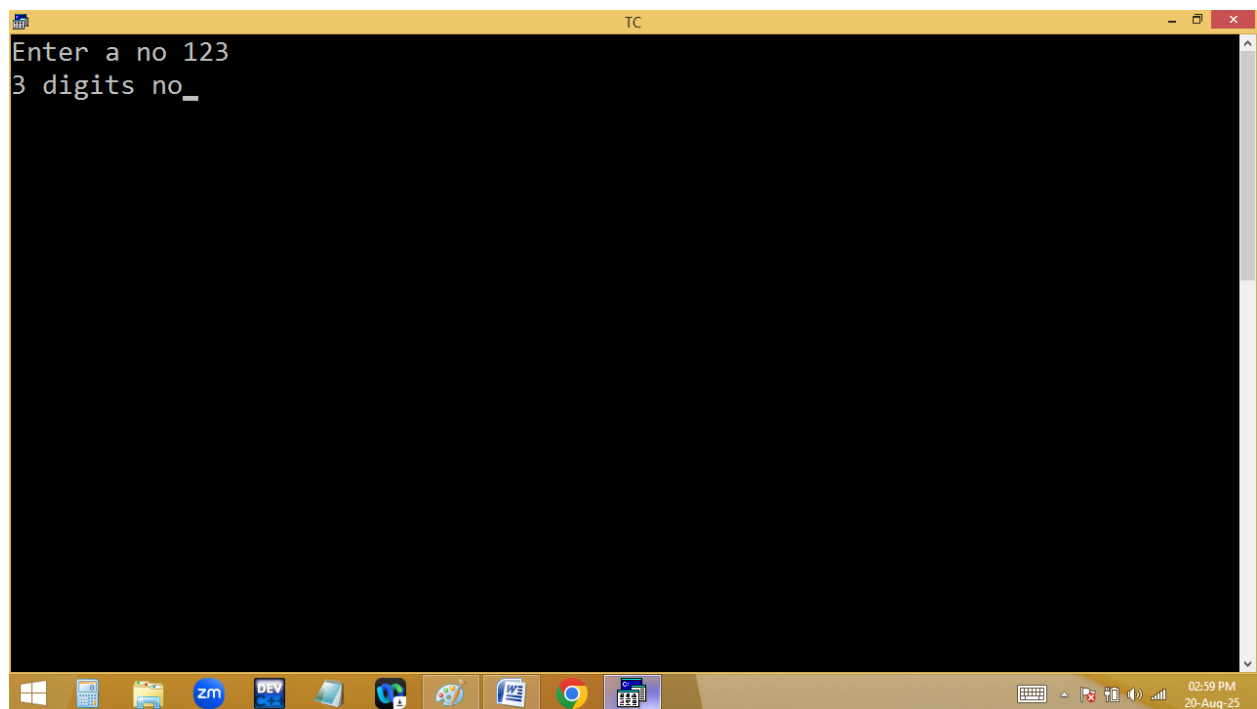




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 15, Col 9, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code in the editor is as follows:

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

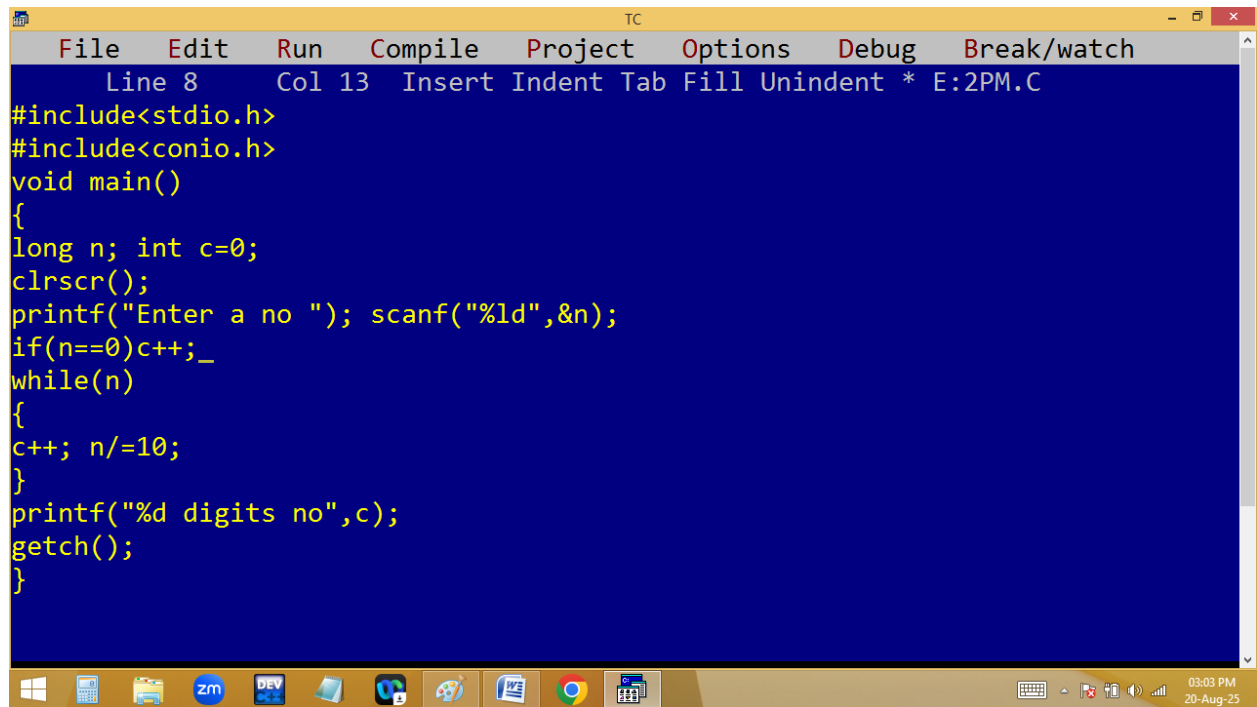
The Windows taskbar at the bottom shows the Start button and several application icons, including a calculator, a file explorer, and a web browser. The system clock in the bottom right corner indicates the time is 02:59 PM on 20-Aug-25.



The screenshot shows the Turbo C++ (TC) IDE after the program has been executed. The output window displays the following text:

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

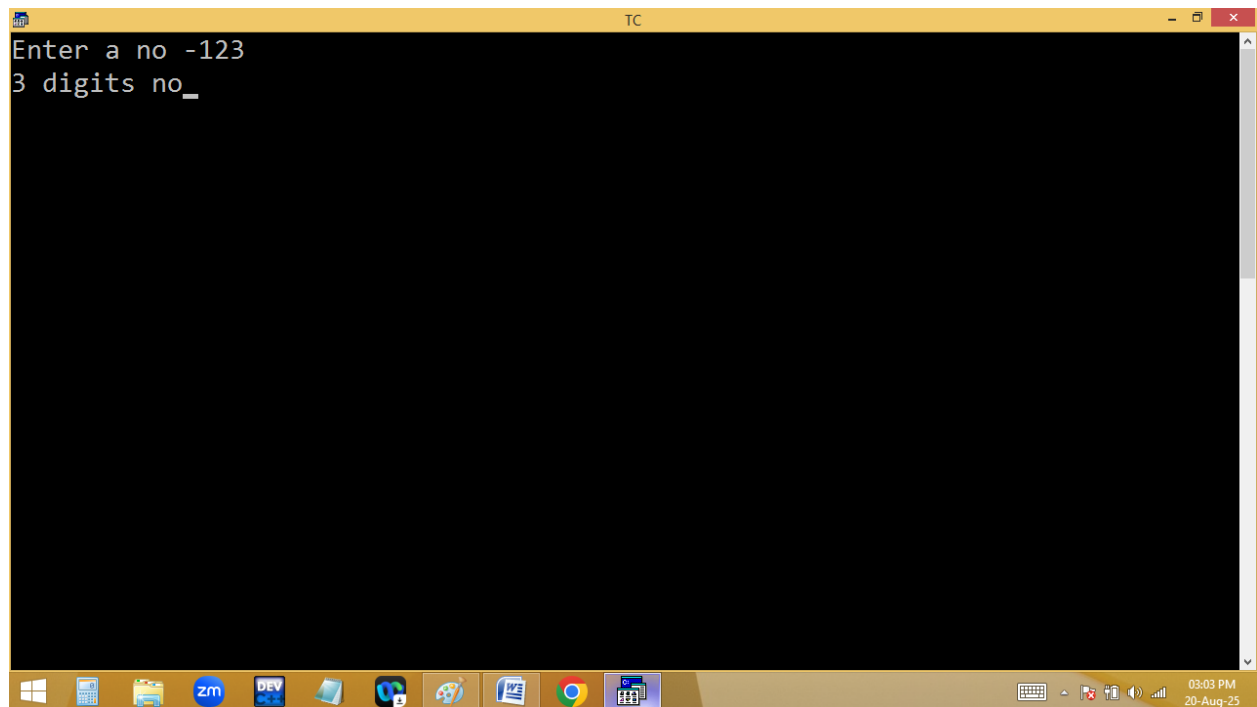
The Windows taskbar at the bottom is identical to the first screenshot, showing the Start button, application icons, and the system clock (02:59 PM, 20-Aug-25).



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. The status bar at the top indicates 'Line 8 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C'. The main editing area has a blue background and contains the following C code:

```
#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();
}
```

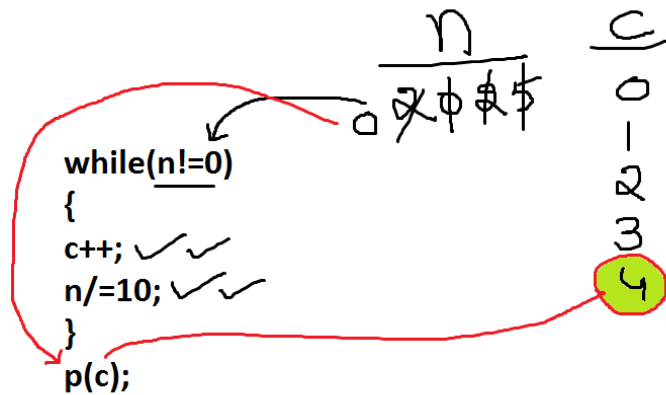
The Windows taskbar at the bottom shows various icons including the Start button, task manager, and several application icons. The system clock in the bottom right corner displays '03:03 PM' and '20-Aug-25'.



The screenshot shows the same Turbo C++ IDE after execution. The output window displays the following text:

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

The rest of the IDE interface, including the menu bar and taskbar, remains the same as in the first screenshot.



2025 is a 4 digits no

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

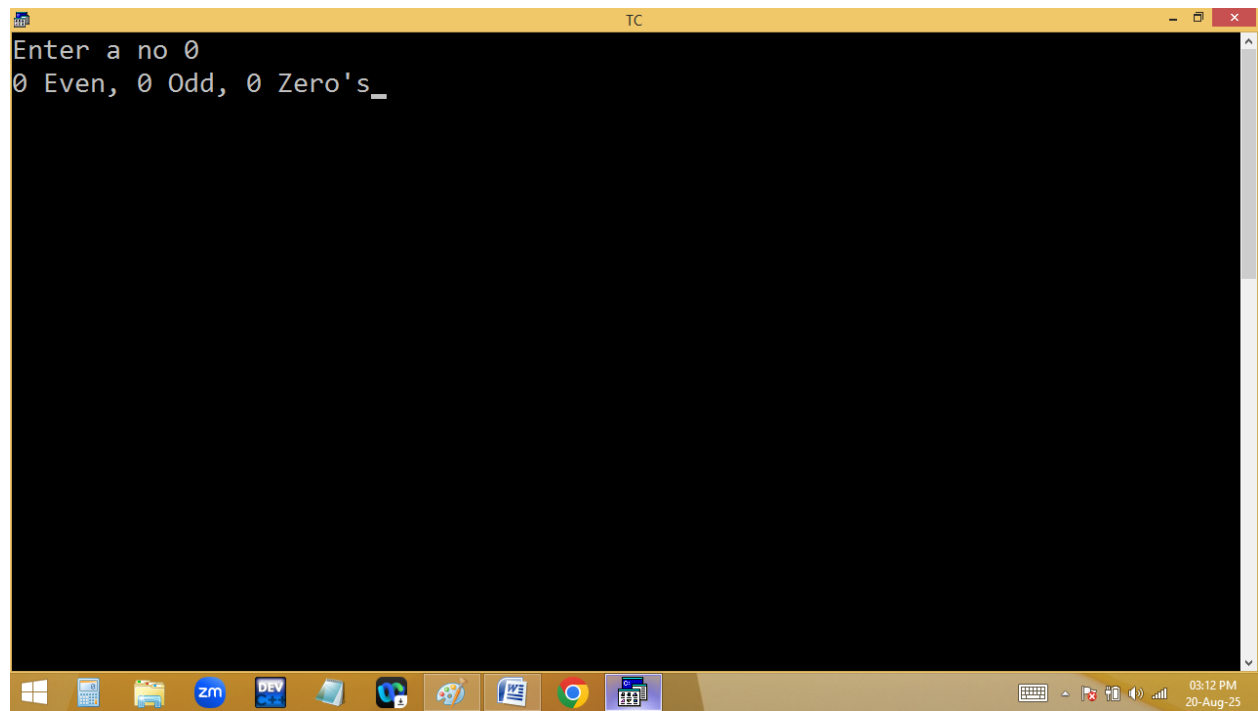
Eg: 1023 → 1 even, 2 odd, 1 zero

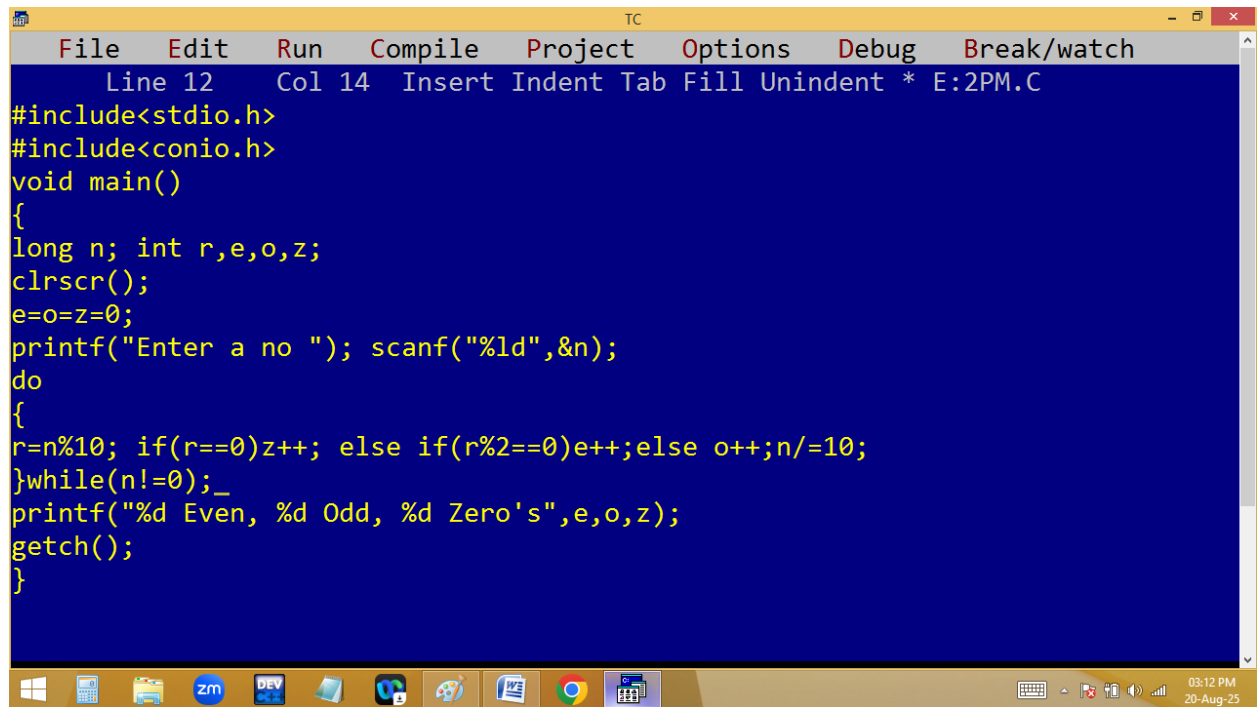
```

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
```

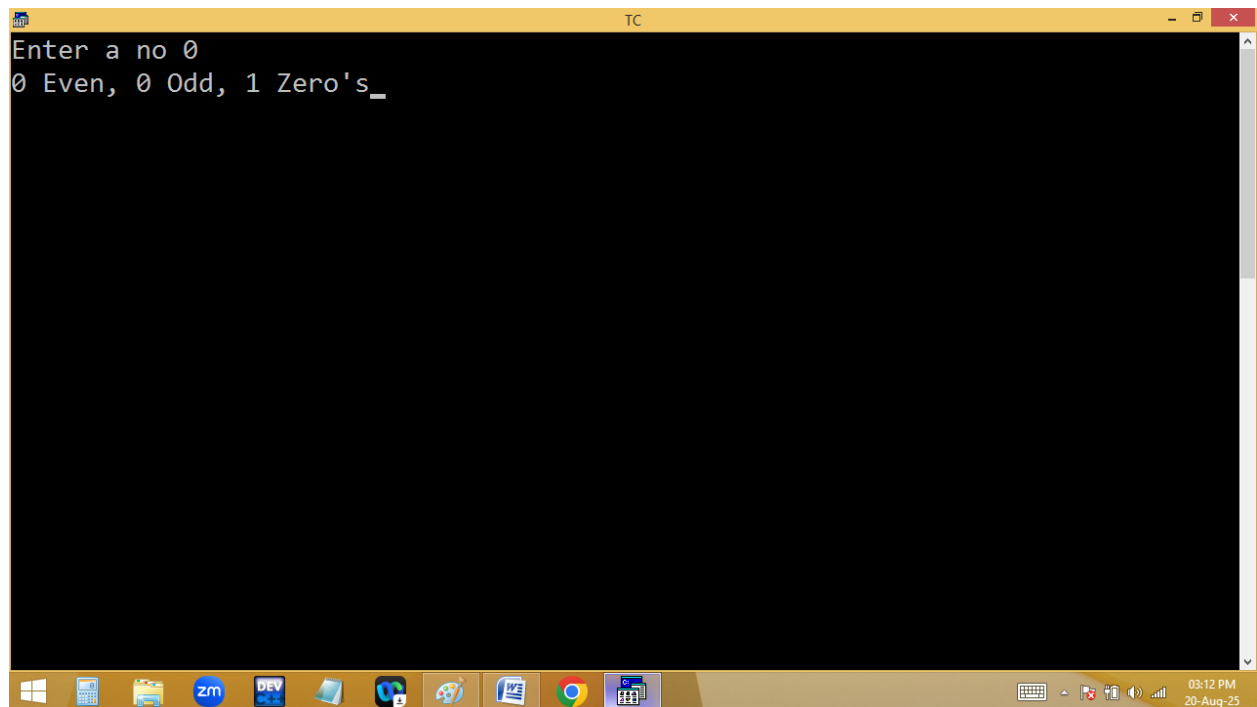




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 12, Col 14, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code in the editor is as follows:

```
#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.

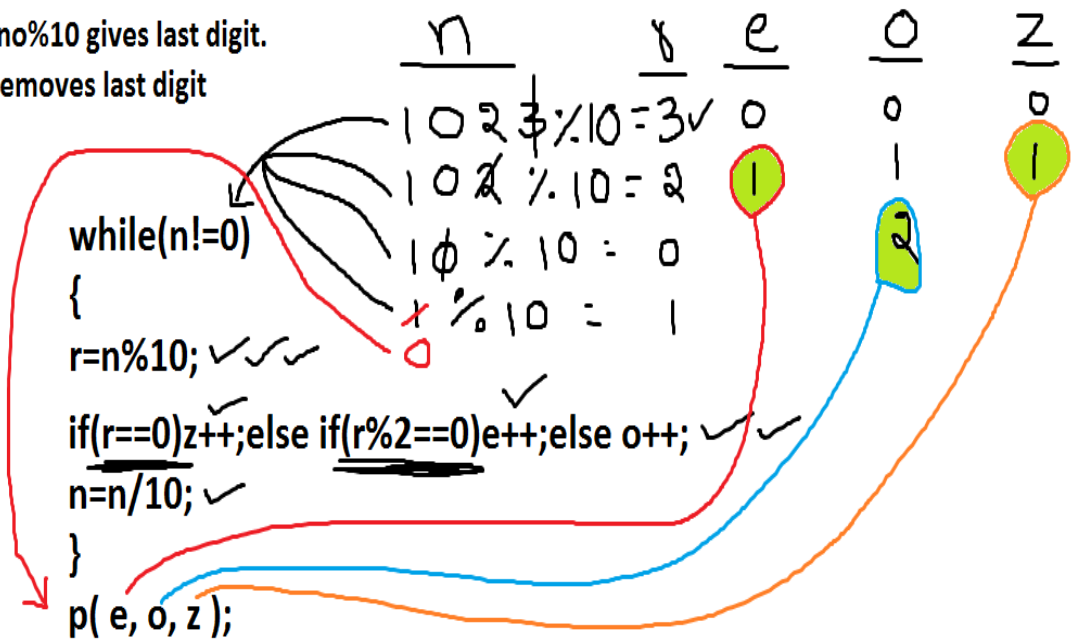


The screenshot shows the Turbo C++ (TC) IDE with the same menu bar and status bar as the first image. The output window displays the result of running the program with the input 0:

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

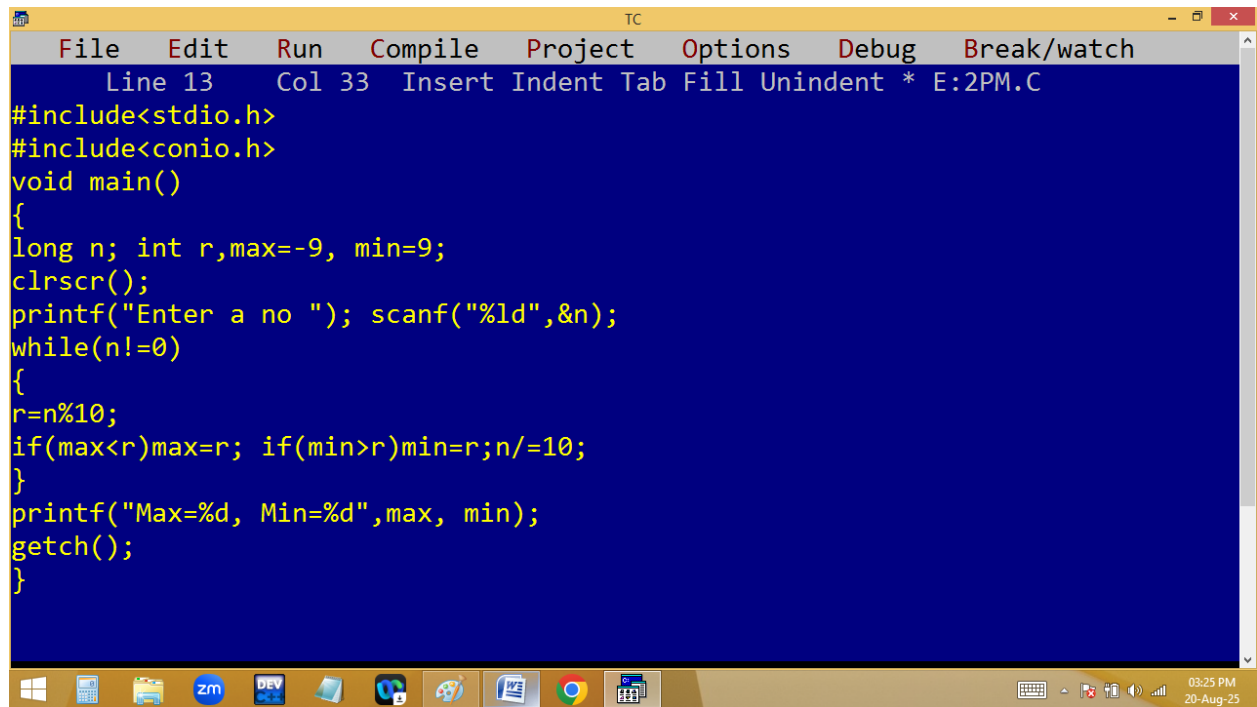
The Windows taskbar at the bottom is identical to the first image, showing the same application icons and system clock (03:12 PM on 20-Aug-25).

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

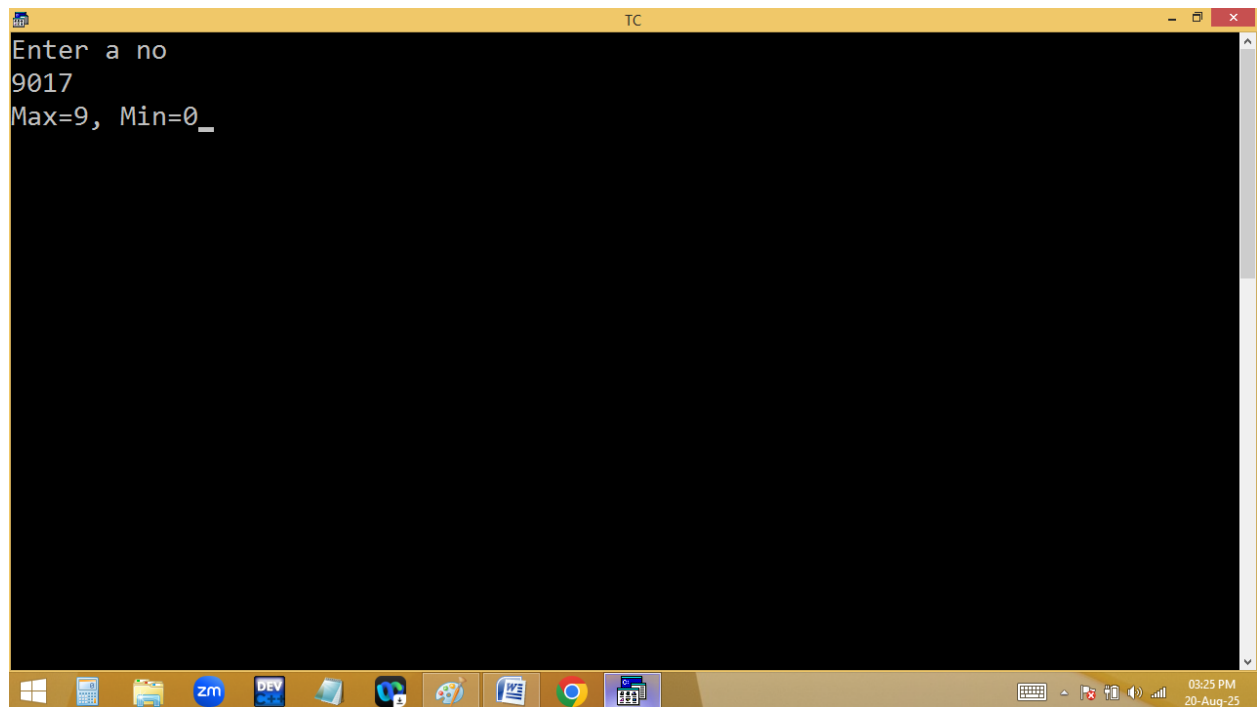


Finding max, min digits in given no?

Eg: 920135 → 9 max, 0 min

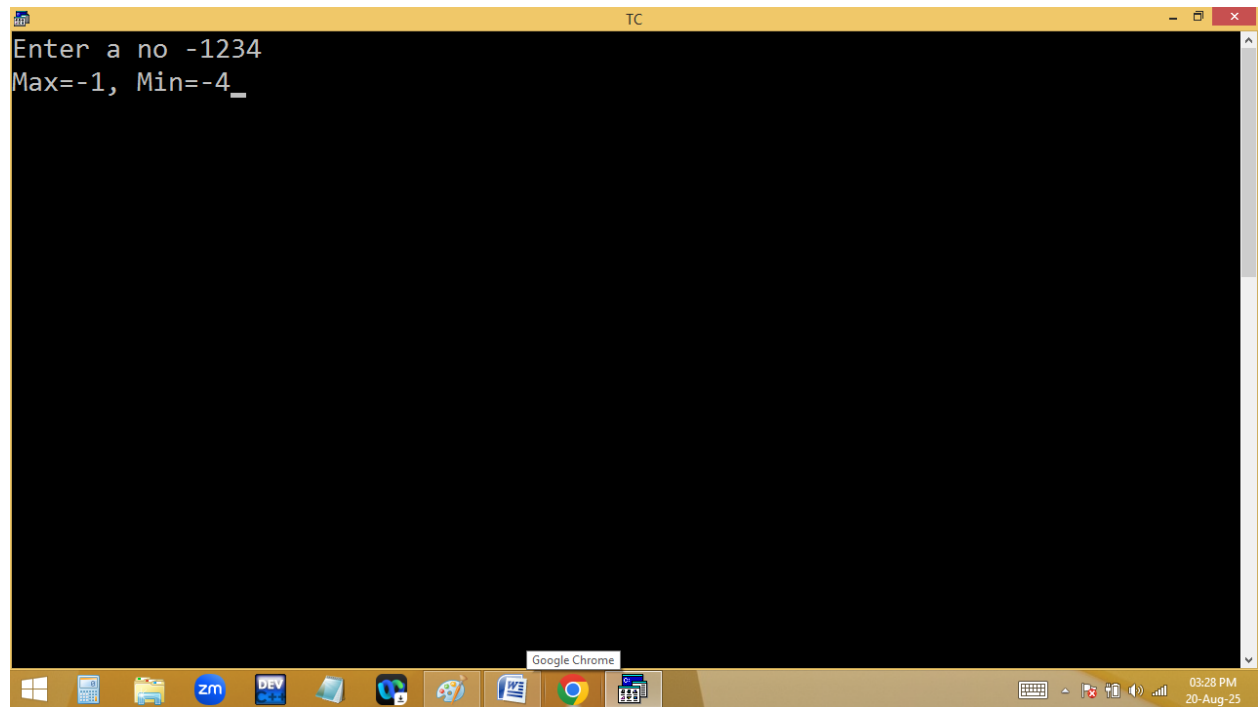


```
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 33 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,max=-9, min=9;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
while(n!=0)
{
r=n%10;
if(max<r)max=r; if(min>r)min=r;n/=10;
}
printf("Max=%d, Min=%d",max, min);
getch();
}
```

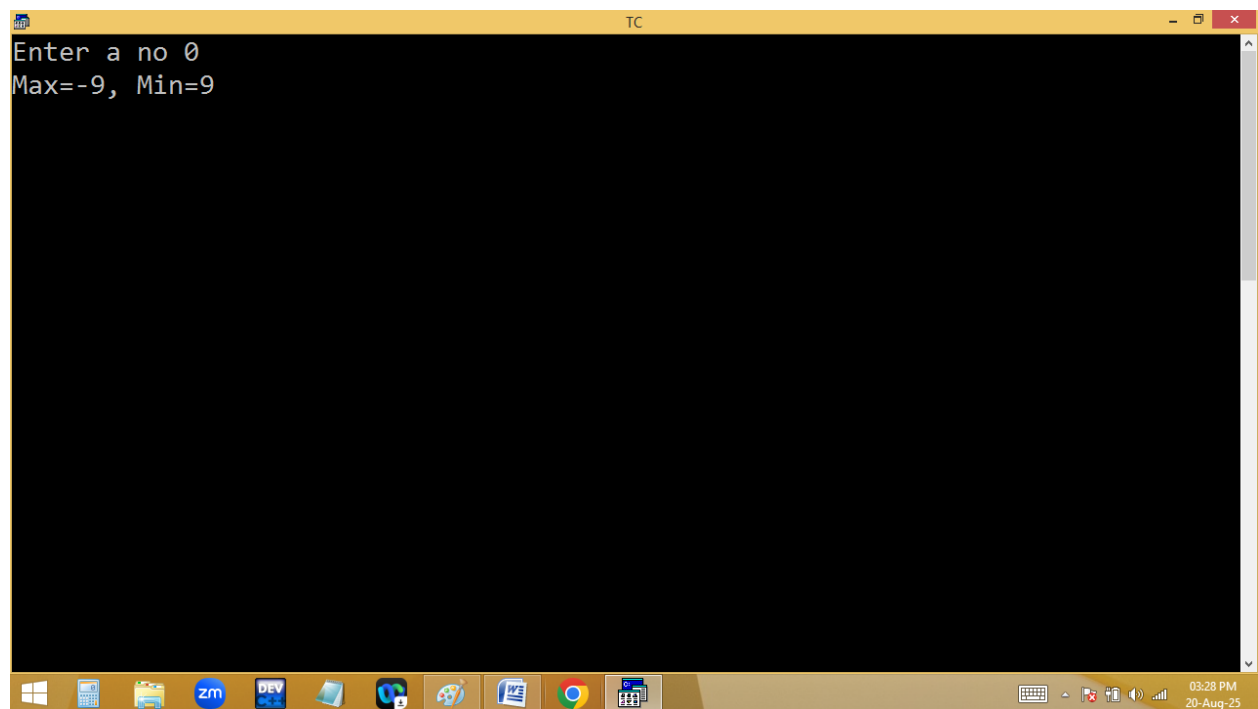


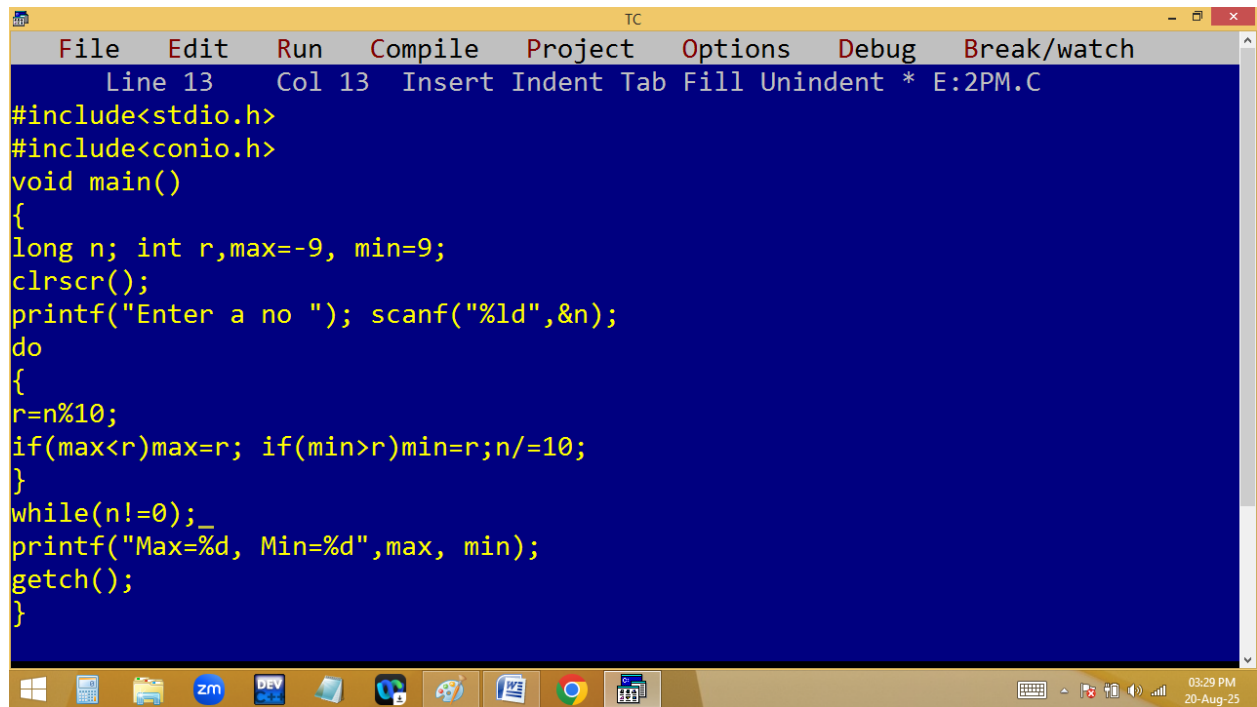
```
Enter a no
9017
Max=9, Min=0_
```

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

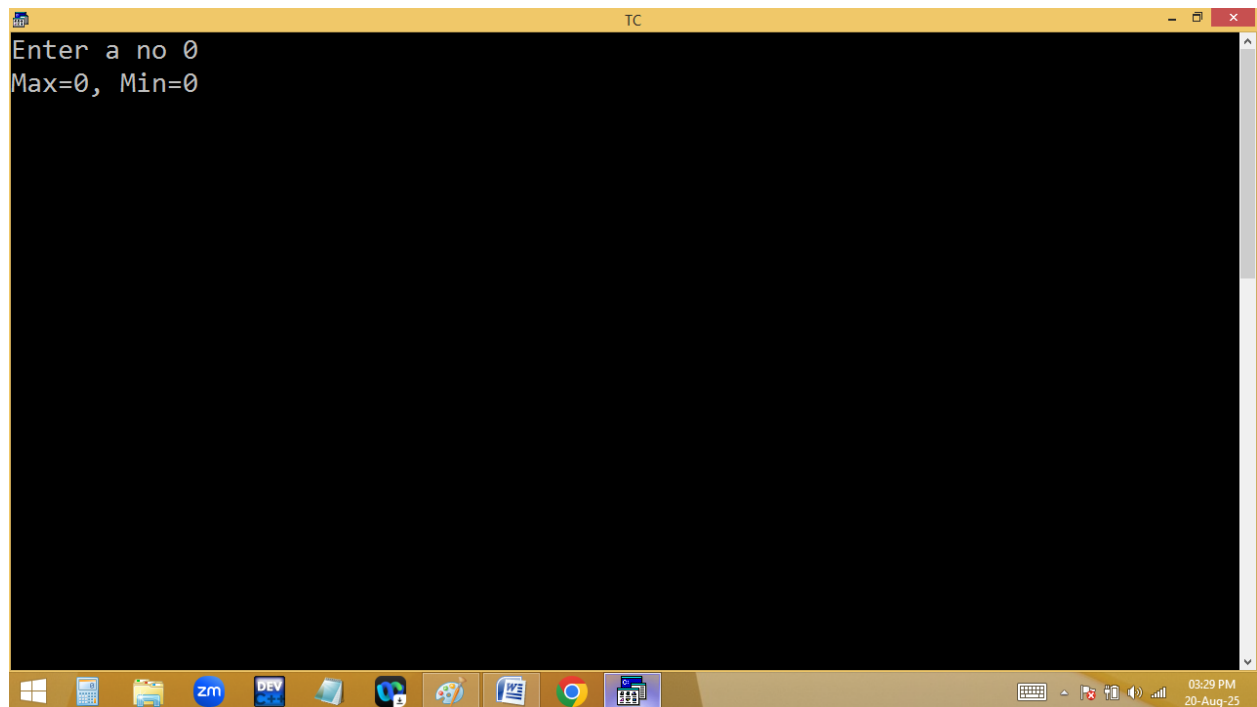


```
TC
Enter a no 0
Max=-9, Min=9
```

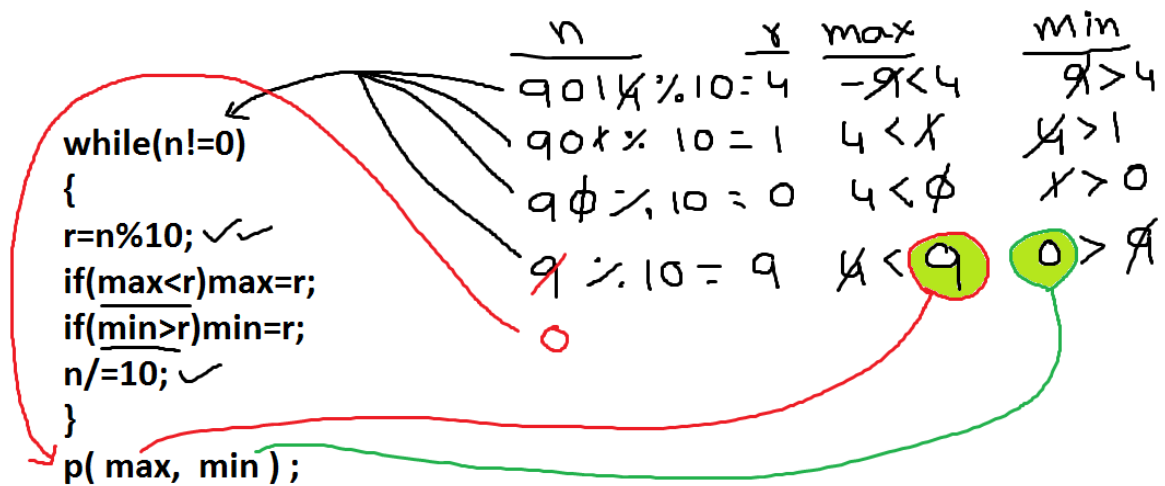




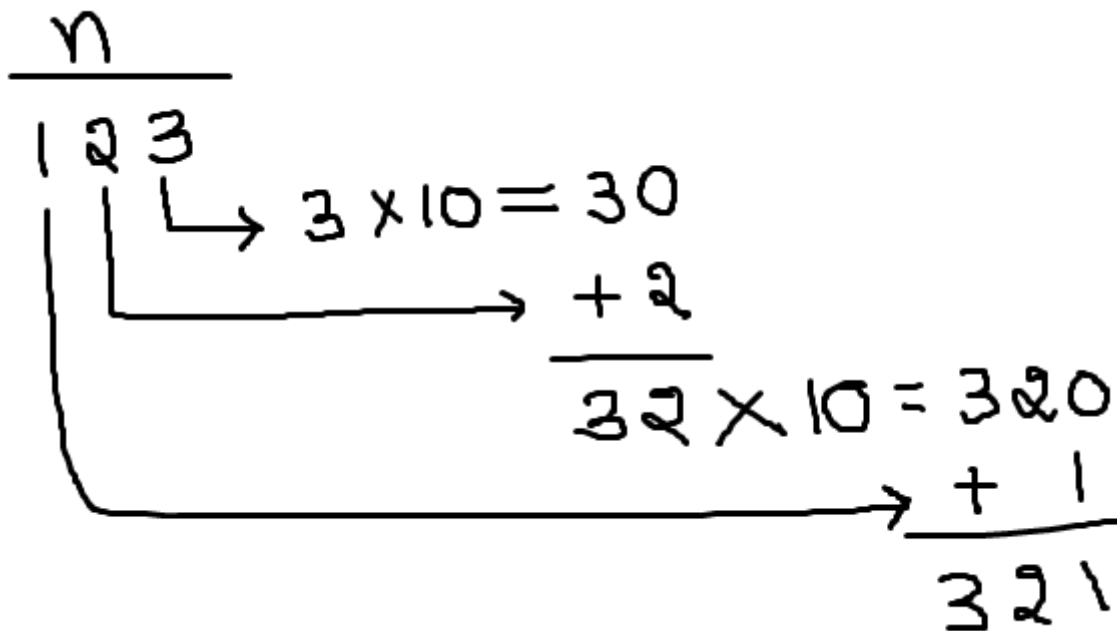
```
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 13 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,max=-9, min=9;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
do
{
r=n%10;
if(max<r)max=r; if(min>r)min=r;n/=10;
}
while(n!=0);_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

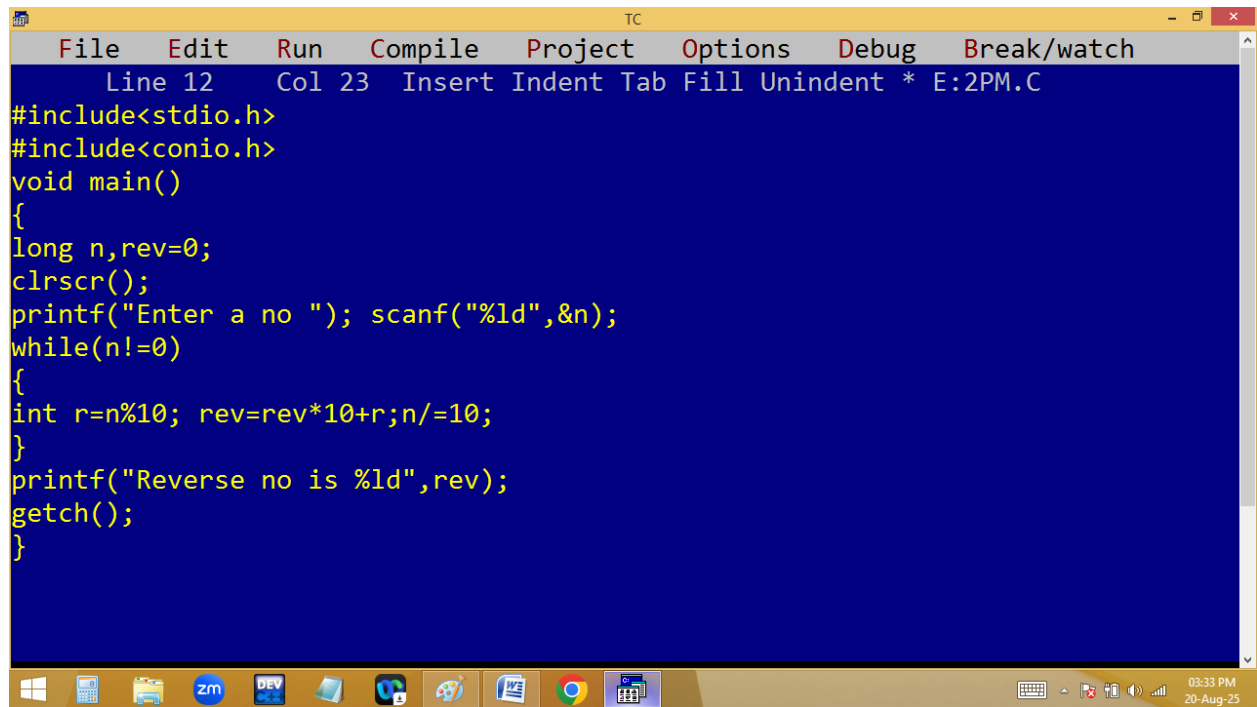


```
Enter a no 0
Max=0, Min=0
```



Reverse no?

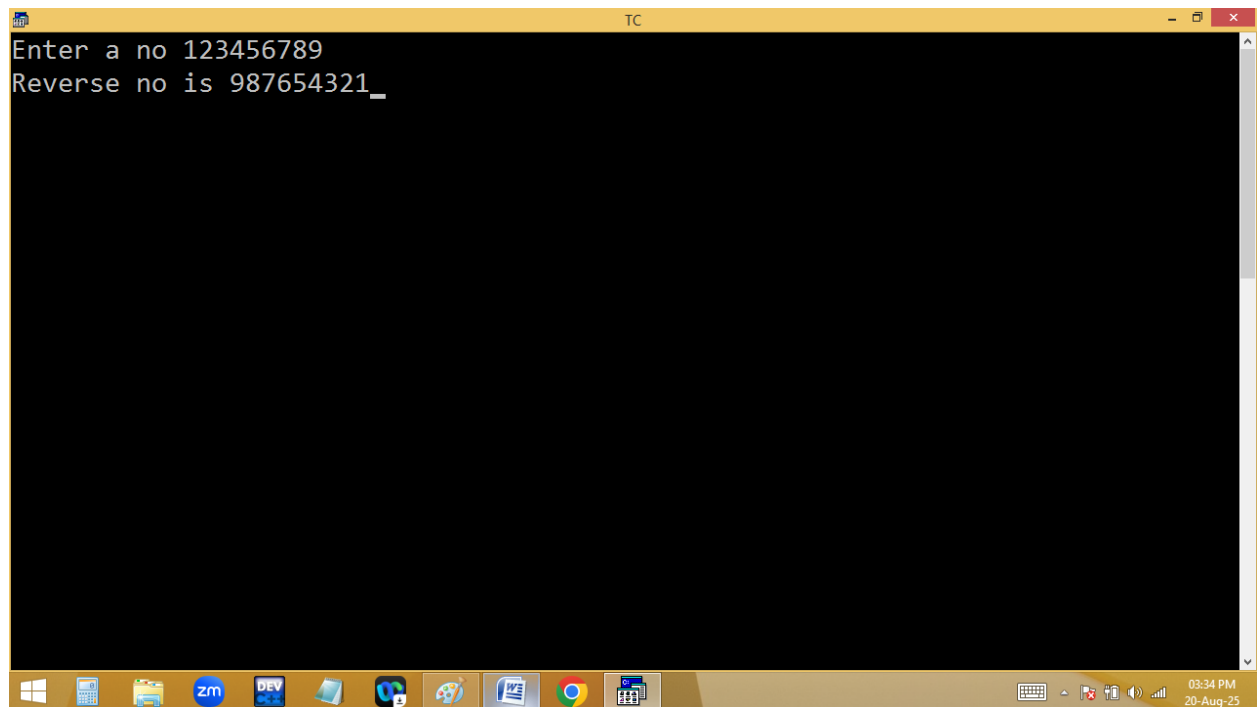




The screenshot shows the Turbo C++ (TC) IDE with a menu bar (File, Edit, Run, Compile, Project, Options, Debug, Break/watch) and a status bar (Line 12, Col 23, Insert, Indent, Tab, Fill, Unindent, * E:2PM.C). The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long n,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 time as 03:33 PM on 20-Aug-25.



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

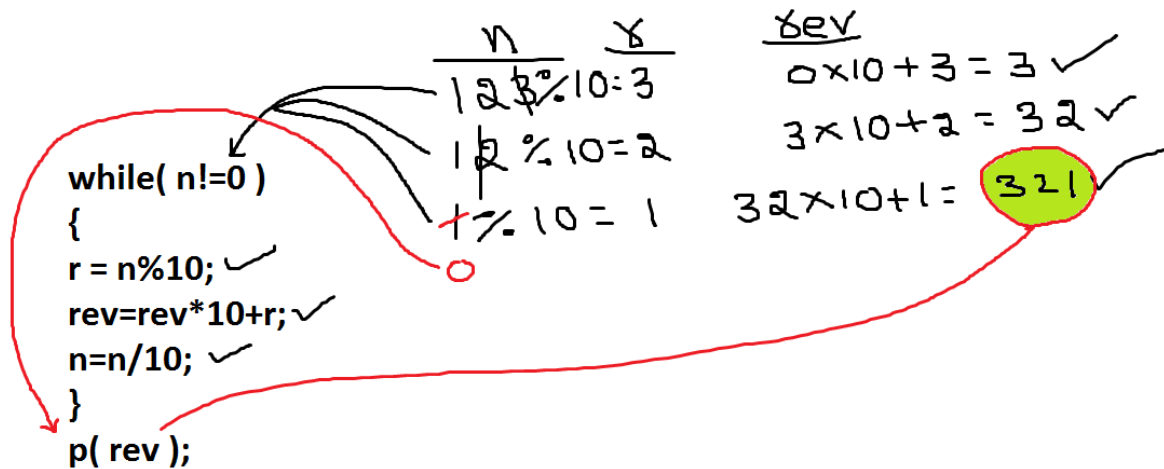
```
Enter a no 123456789
Reverse no is 987654321_
```

The Windows taskbar at the bottom shows the time as 03:34 PM on 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	$\div 10 = 0$	$0 \times 10 + 0 = 0 \checkmark$
	10	$\div 10 = 0$	$0 \times 10 + 0 = 0 \checkmark$
	1	$\div 10 = 1$	$0 \times 10 + 1 = 1 \checkmark$

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

Print 100 as 001?

```

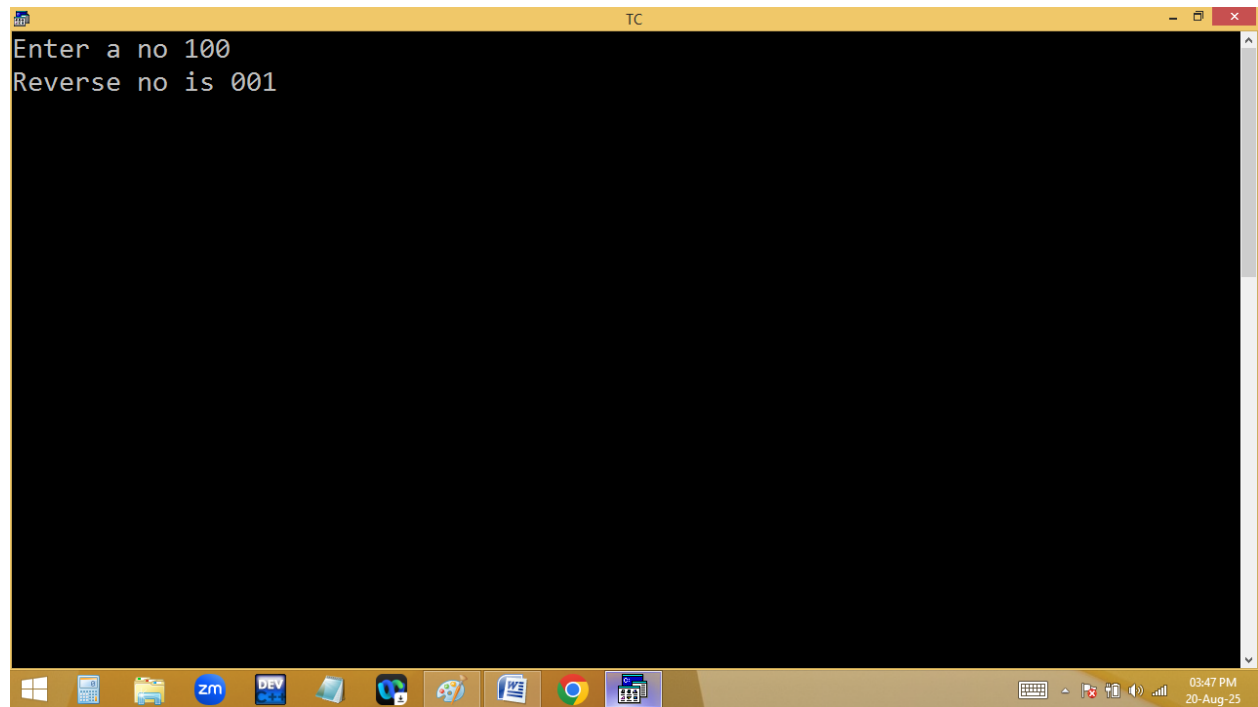
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 25 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n;
clrscr();
printf("Enter a no "); scanf("%ld",&n);
printf("Reverse no is ");
if(n<0)printf("-",n=-n);
do
{
int r=n%10; printf("%d",r);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

```

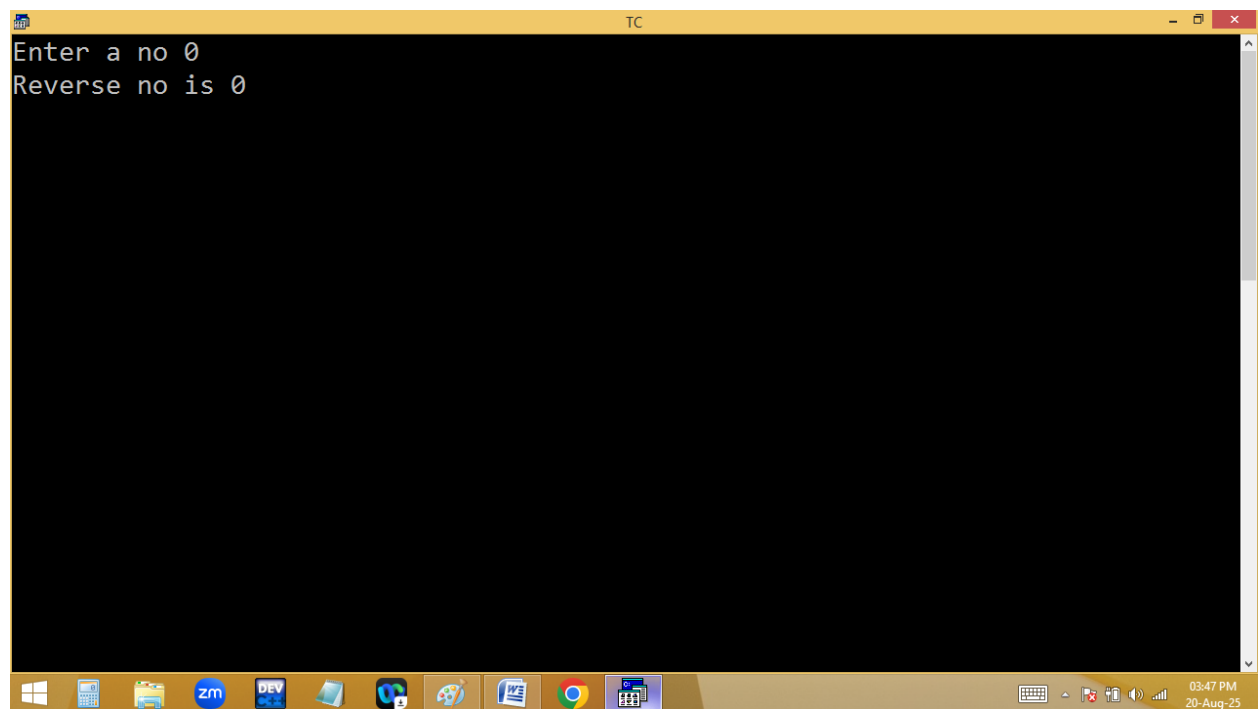
```
TC
Enter a no -123
Reverse no is -321_
```

```
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