

Finding 1..n even, odd numbers sum:

TC

File Edit Run Compile Project Options Debug Break/watch

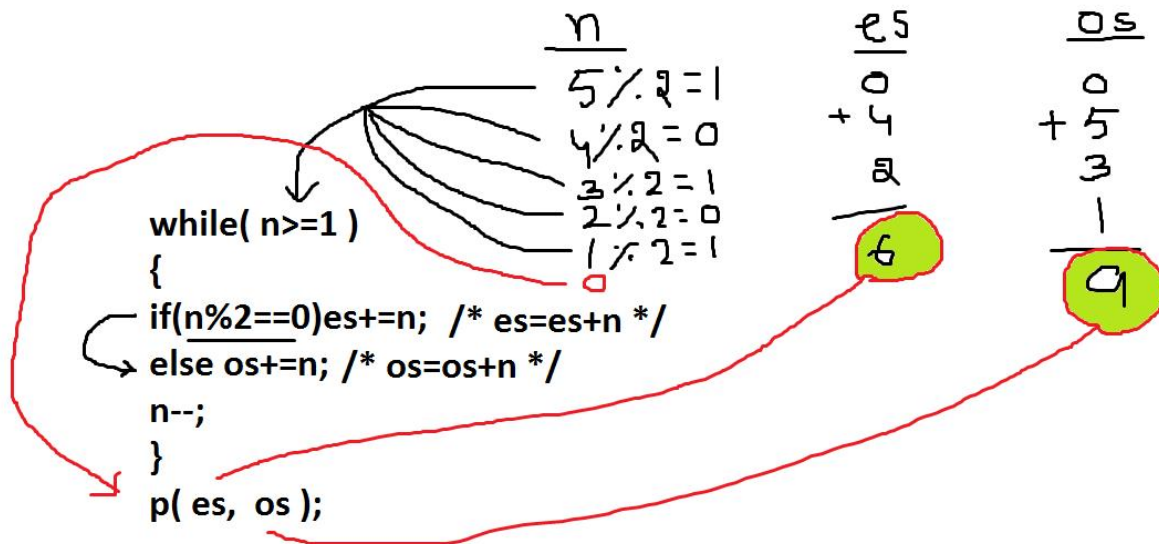
Line 14 Col 41 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,es=0, os=0;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(n>=1)
{
if(n%2==0) es+=n;
else os+=n;
n--;
}
printf("Even sum=%d, Odd sum=%d",es,os);
getch();
}
```

TC

Enter n value 5

Even sum=6, Odd sum=9



Finding factorial of given no.

TC

File Edit Run Compile Project Options Debug Break/watch

Line 14 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n,f=1;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(n>1)
{
f=f*n;
n--;
}
printf("Factorial=%d",f);
getch();
}
```

TC

```
Enter n value 4
Factorial=24_
```

```
TC
Enter n value 7
Factorial=5040_
```

```
TC
Enter n value 8
Factorial=-25216_
```

TC

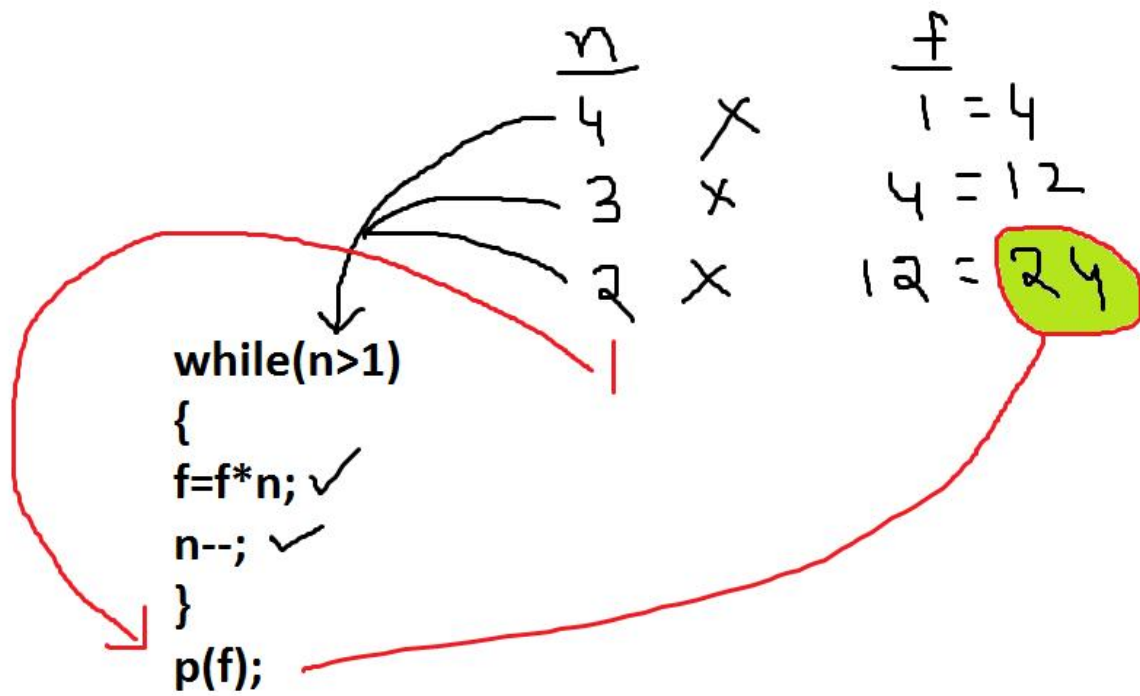
File Edit Run Compile Project Options Debug Break/watch

Line 13 Col 21 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n; long int f=1;
clrscr();
printf("Enter n value "); scanf("%d",&n);
while(n>1)
{
f=f*n;
n--;
}
printf("Factorial=%ld",f);
getch();
}
```

TC

```
Enter n value 8
Factorial=40320_
```



Finding power using user defined program

TC

File Edit Run Compile Project Options Debug Break/watch

Line 13 Col 23 Insert Indent Tab Fill Unindent * E:9AM.C

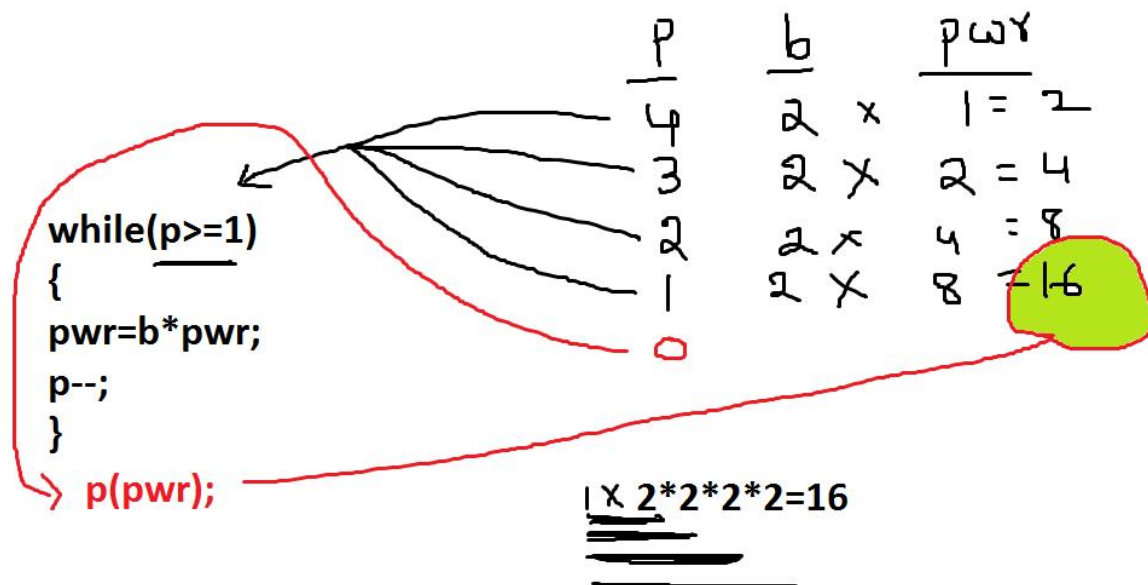
```
#include<stdio.h>
#include<conio.h>
void main()
{
int b,p; long pwr=1;
clrscr();
printf("Enter base, power values "); scanf("%d%d",&b,&p);
while(p>=1)
{
pwr=pwr*b;
p--;
}
printf("Power=%ld",pwr);
getch();
}
```

TC

Enter base, power values 2 4

Power=16_

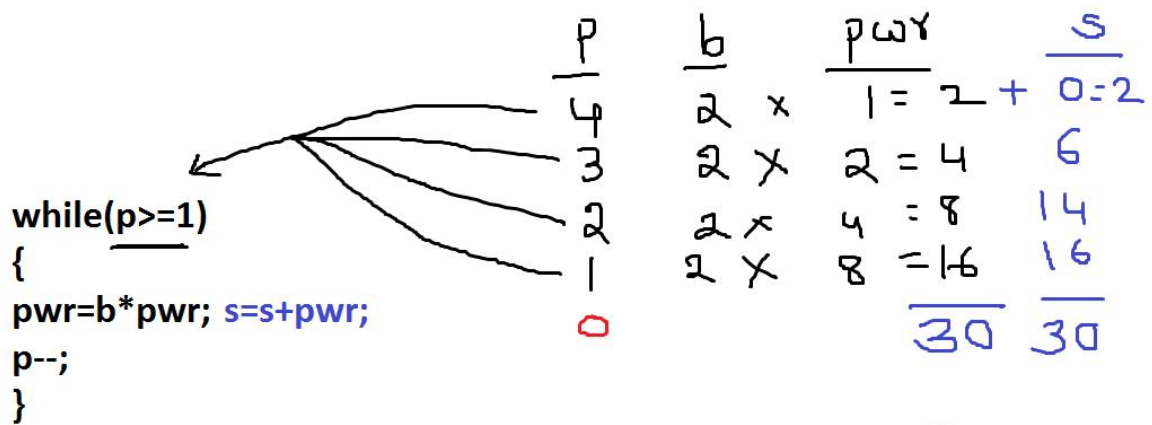

```
TC
Enter base, power values 100 3
Power=1000000_
```



Find powers sum:

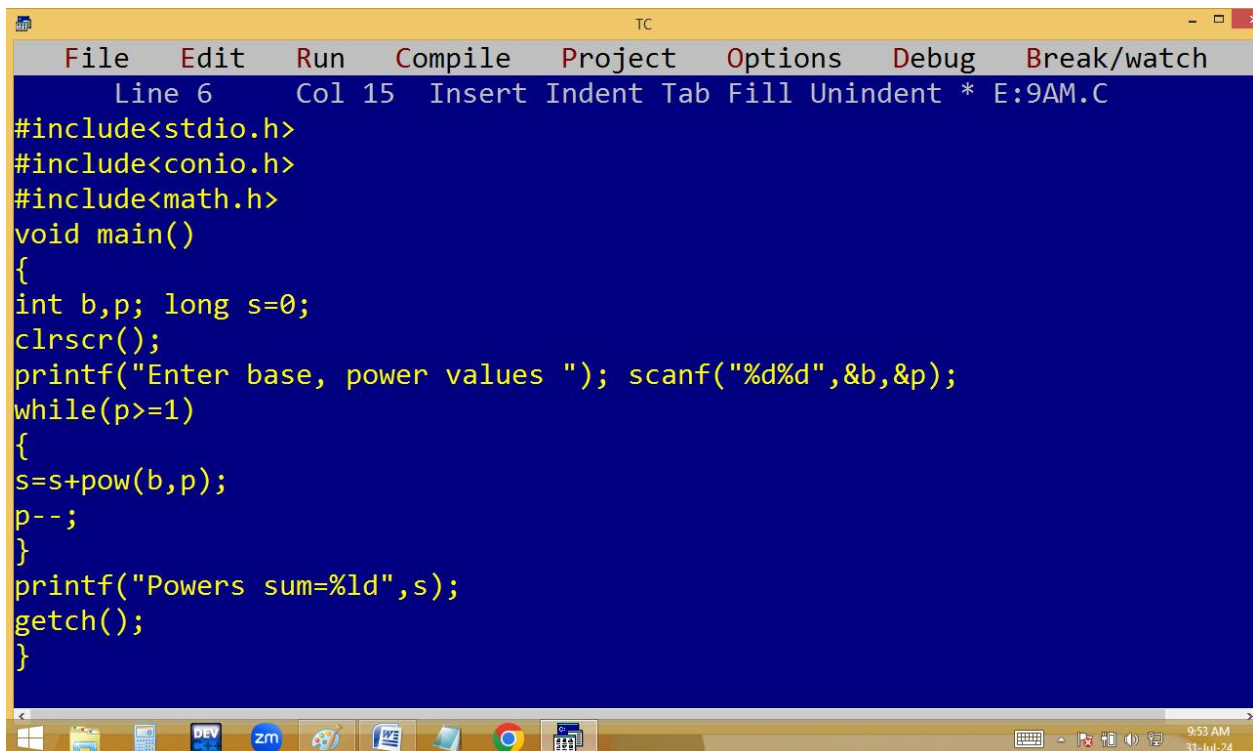
```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 19 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int b,p; long pwr=1,s=0;
clrscr();
printf("Enter base, power values "); scanf("%d%d",&b,&p);
while(p>=1)
{
pwr=pwr*b;s=s+pwr;
p--;
}
printf("Powers sum=%ld",s);
getch();
}
```

```
TC
Enter base, power values 2 4
Powers sum=30_
```



$$2^4 = 0 + 2^1 + 2^2 + 2^3 + 2^4 = 30$$

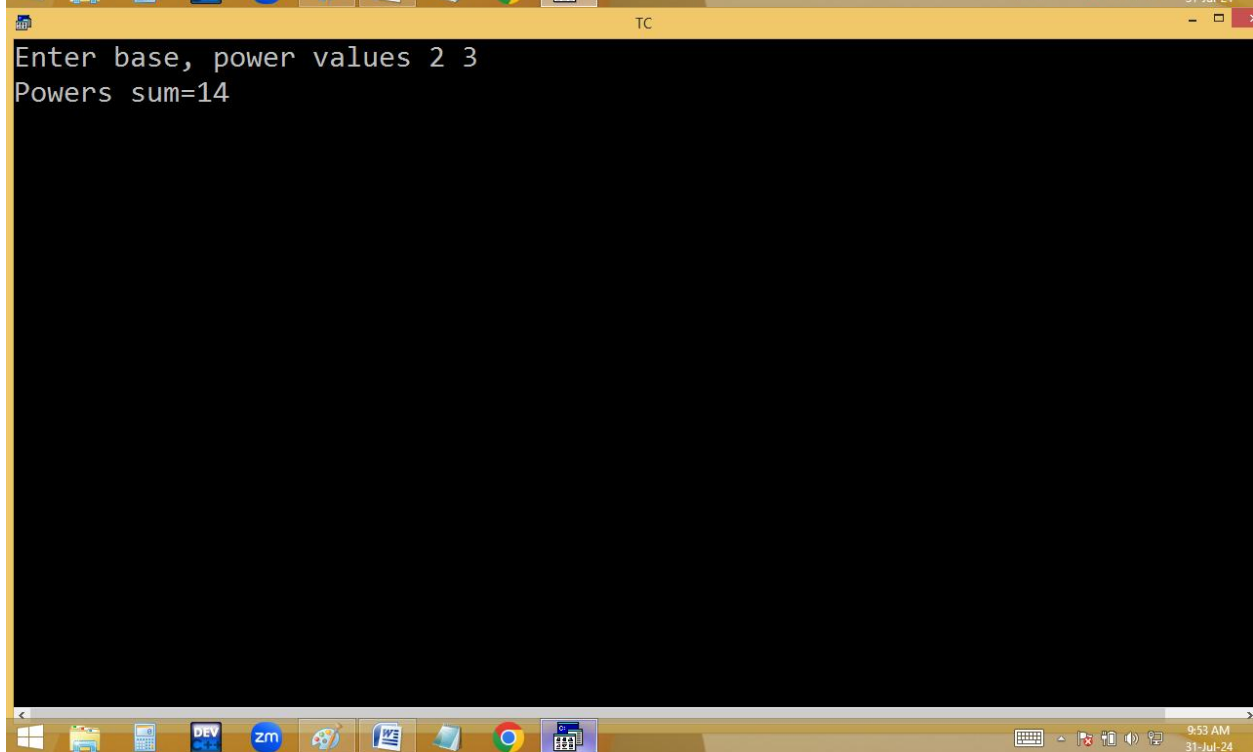
Using predefined function:



The screenshot shows the Turbo C++ (TC) IDE. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 6', 'Col 15', and 'Insert' mode. The code in the editor is as follows:

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
int b,p; long s=0;
clrscr();
printf("Enter base, power values "); scanf("%d%d",&b,&p);
while(p>=1)
{
s=s+pow(b,p);
p--;
}
printf("Powers sum=%ld",s);
getch();
}
```

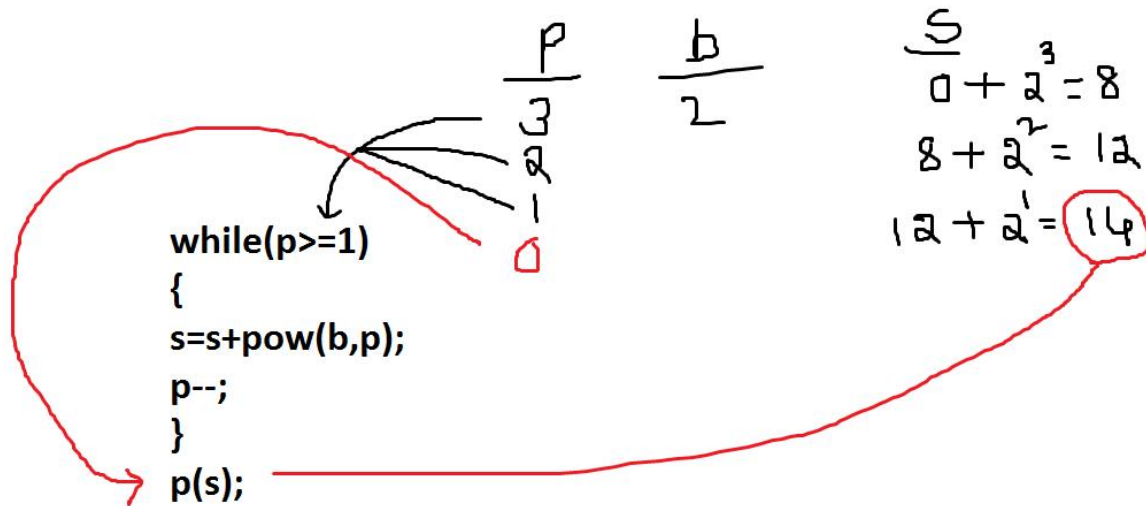
The Windows taskbar at the bottom shows icons for Windows, File Explorer, DEV, zm, a network icon, a folder icon, Google Chrome, and the TC application. The system clock in the bottom right corner shows '9:53 AM' and '31-Jul-24'.



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

```
Enter base, power values 2 3
Powers sum=14
```

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



Finding no of digits in given no:

Eg: 2067 → 4 digit no

TC

File Edit Run Compile Project Options Debug Break/watch

Line 13 Col 27 Insert Indent Tab Fill Unindent * E:9AM.C

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

9:57 AM 31-Jul-24

TC

```
Enter the value 2047
No of digits=4
```

9:57 AM 31-Jul-24

```
TC
Enter the value 9
No of digits=1_
```



```
TC
Enter the value -123567
No of digits=6_
```



TC

File Edit Run Compile Project Options Debug Break/watch

Line 8 Col 8 Insert Indent Tab Fill Unindent * E:9AM.C

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

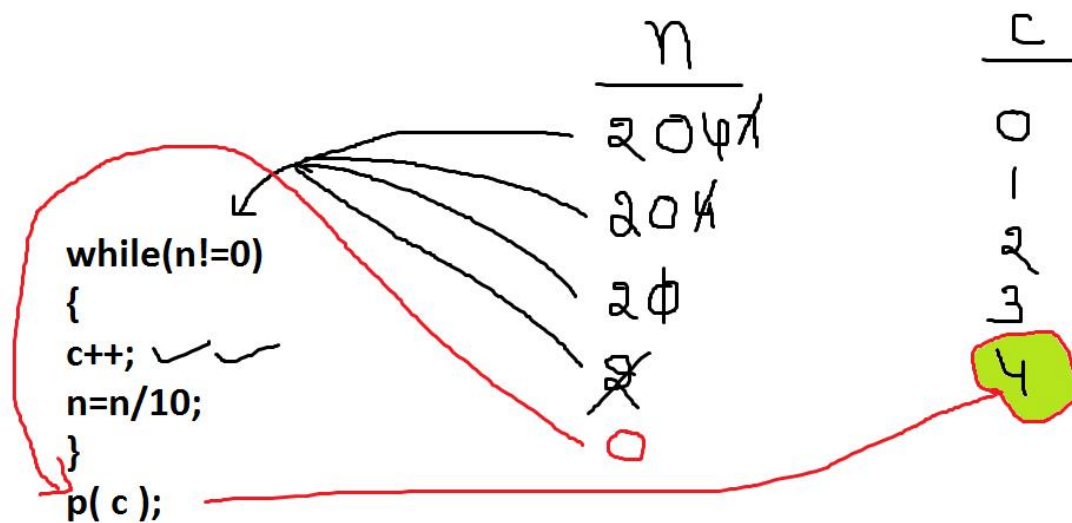
9:59 AM 31-Jul-24

TC

```
Enter the value 5465469
No of digits=7
```

9:59 AM 31-Jul-24

```
TC
Enter the value -34
No of digits=2
```



Note: Any $n/10$ removes the last digit.

$$\frac{n}{10}$$

$$\frac{0}{10} = 0$$

$$\frac{34}{10} = 3$$

$$\frac{4}{10} = 0$$

while (n > 0)

C++

n = n / 10;

$$\frac{0}{10} = 0$$

$$\frac{34}{10} = 3$$

$$\frac{4}{10} = 0$$

```

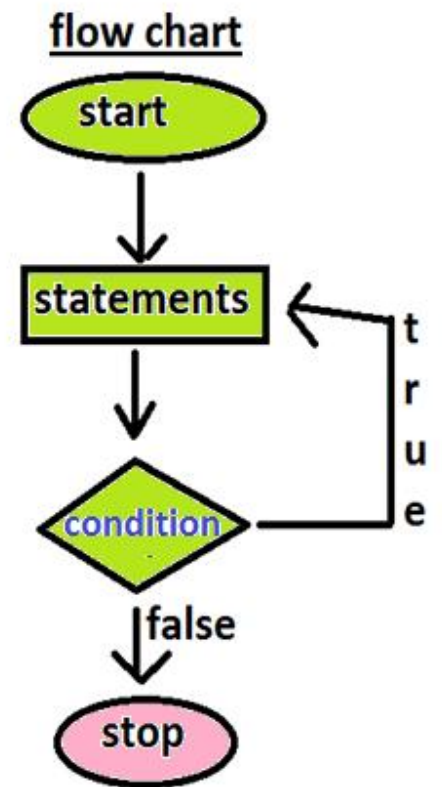
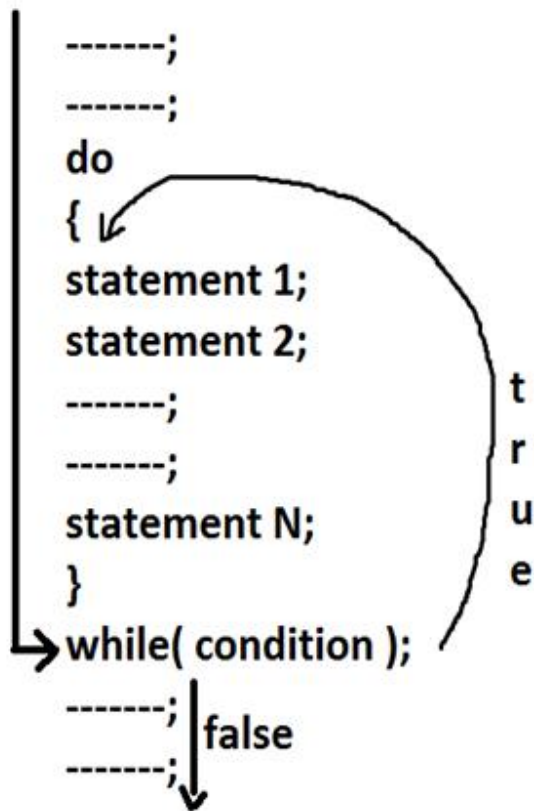
TC
Enter the value 0
No of digits=0

```

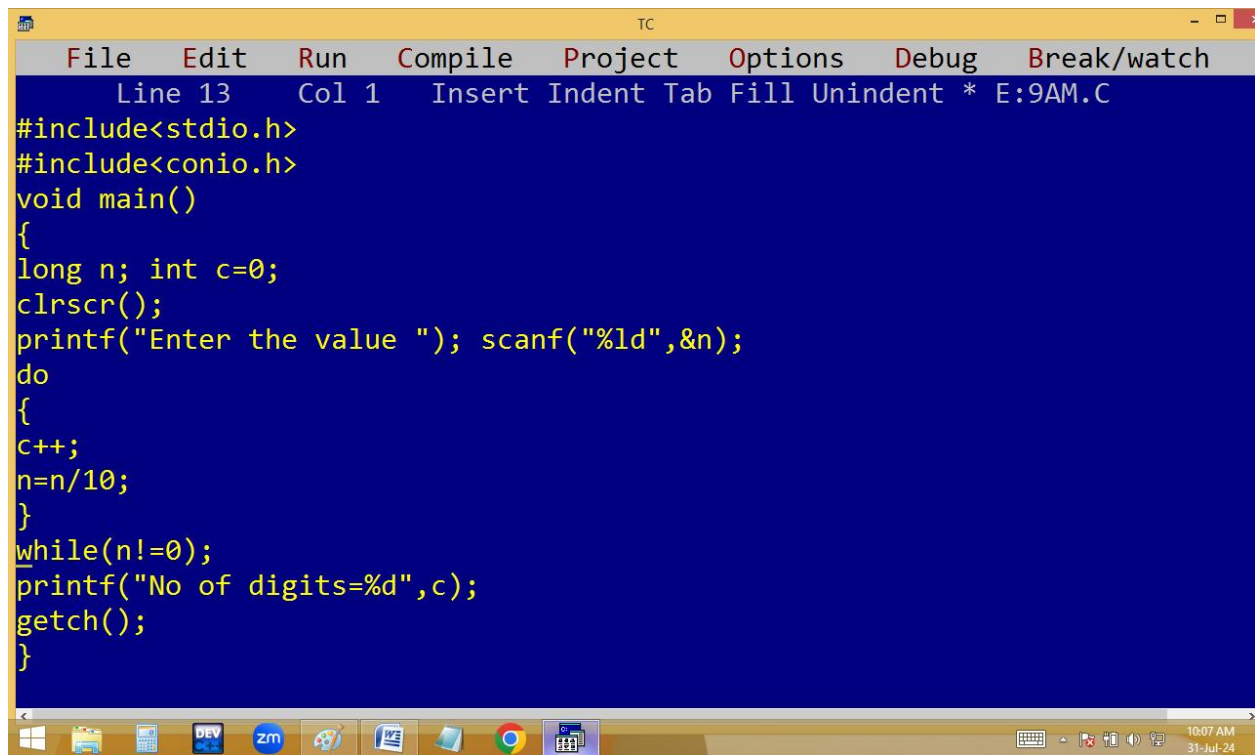
do .. while:

- 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.**



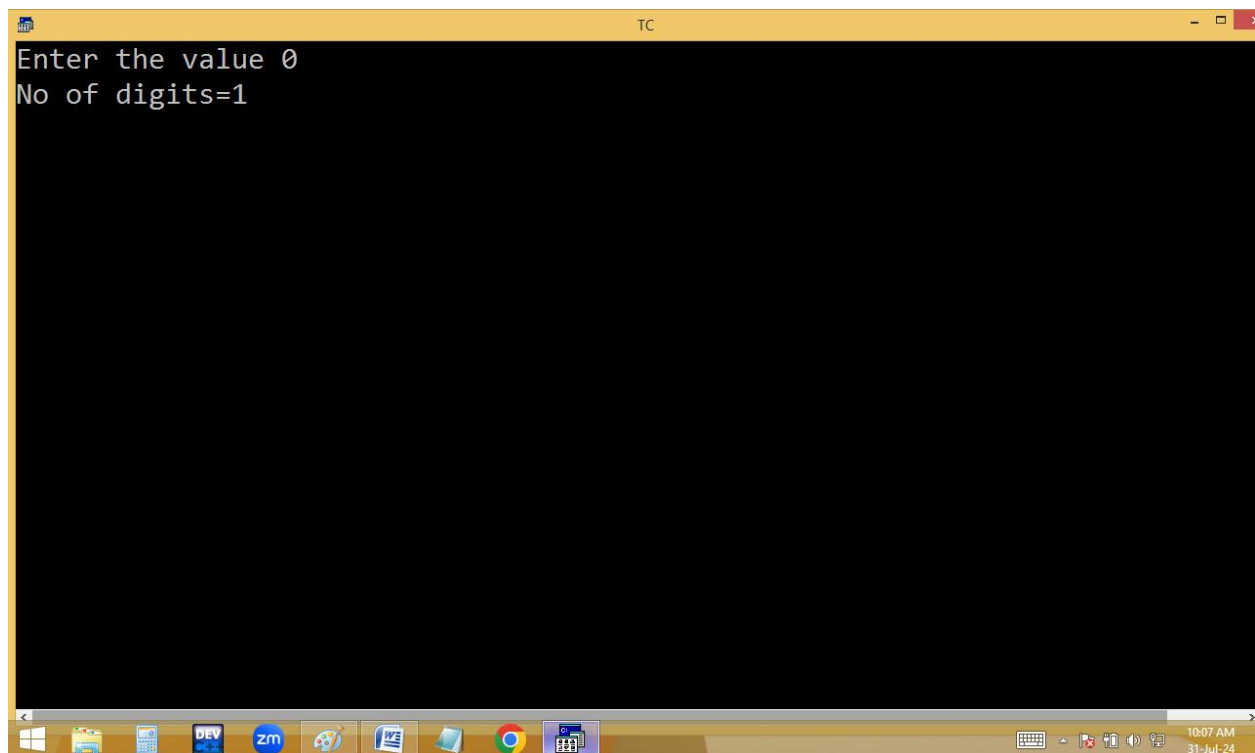
Finding no of digits using do..while:



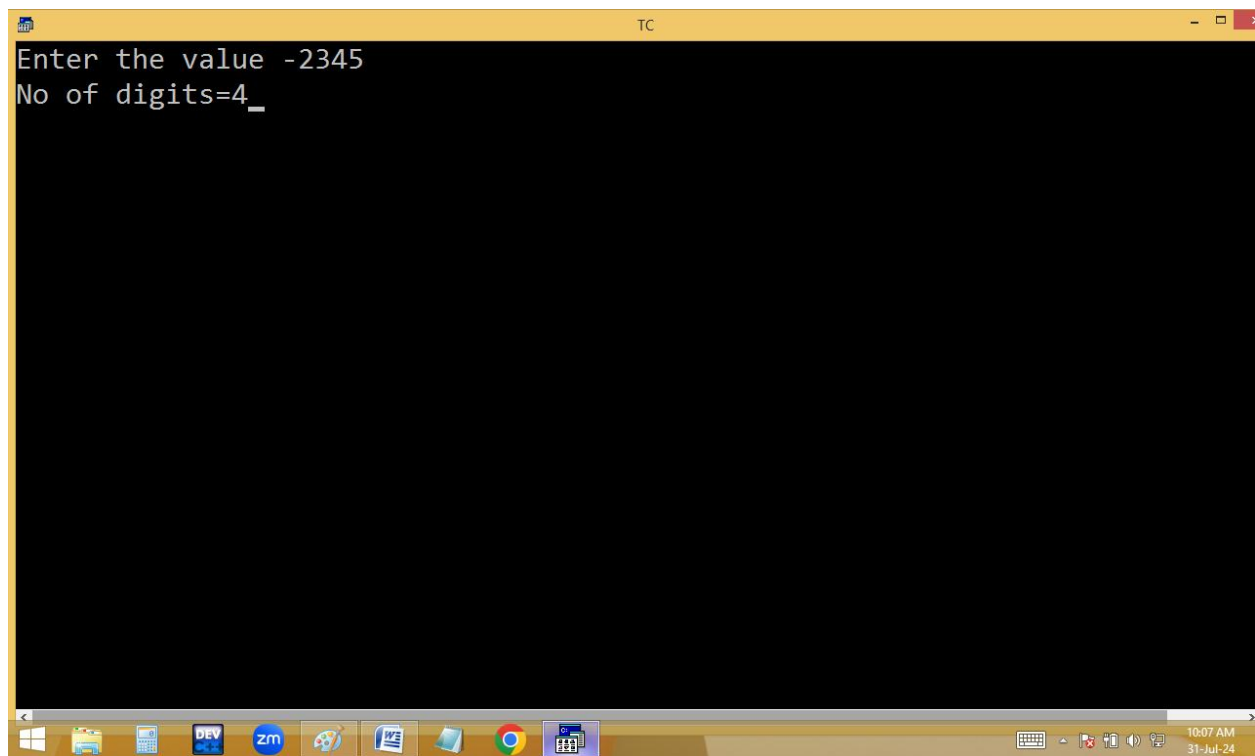
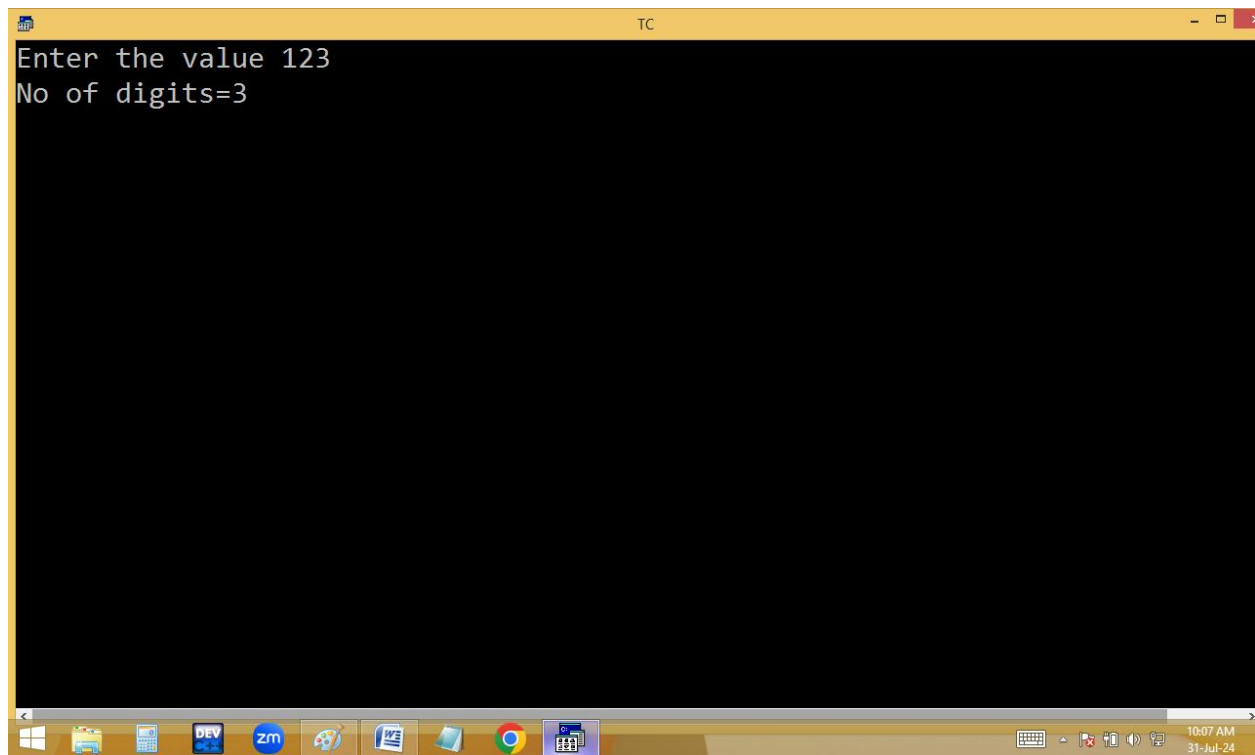
The screenshot shows the Turbo C++ (TC) IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 13 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C'. The code is as follows:

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

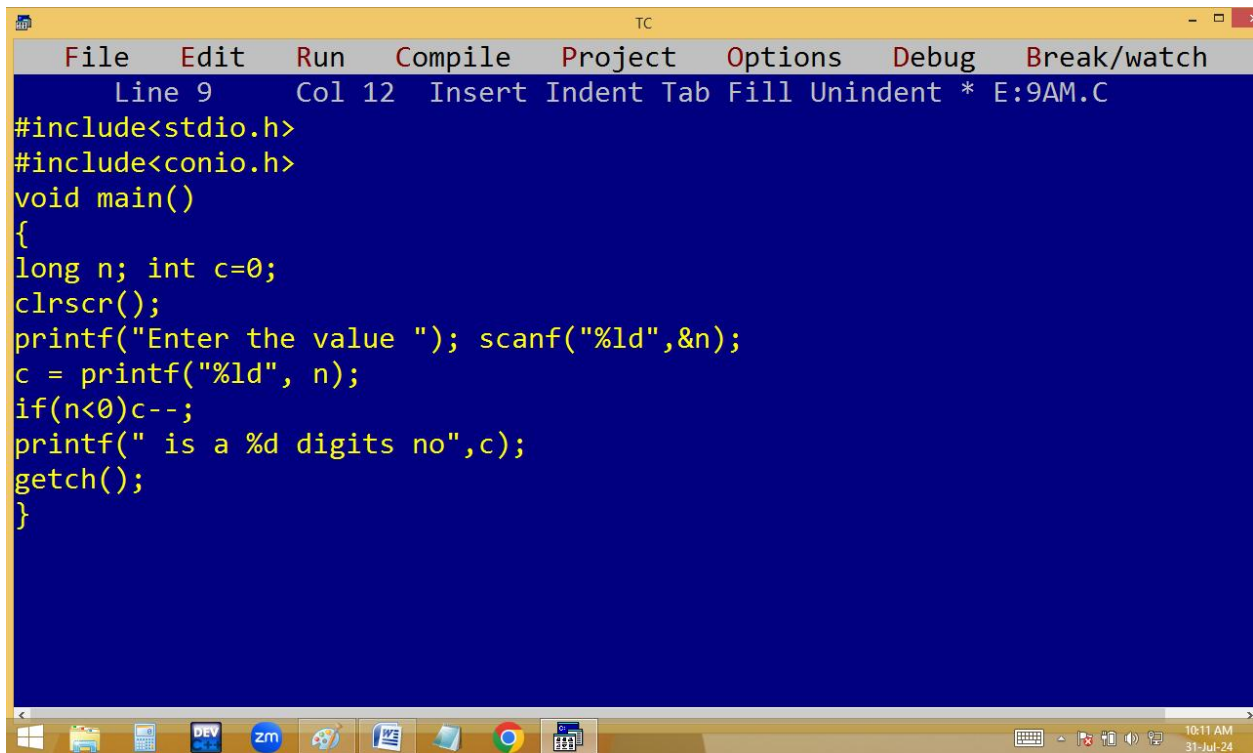
The Windows taskbar at the bottom shows icons for File Explorer, DEV, zm, and other applications, along with the system clock showing 10:07 AM on 31-Jul-24.



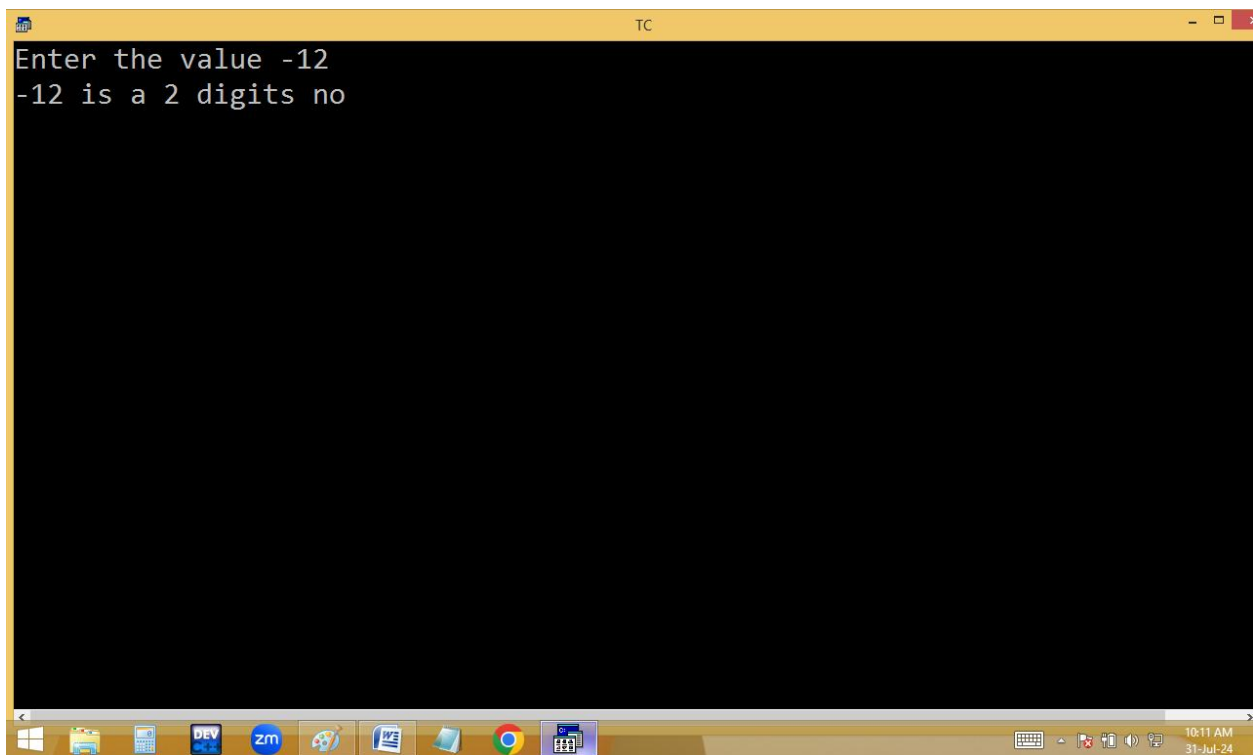
The screenshot shows the Turbo C++ (TC) IDE with a black background, displaying the output of the program. The text 'Enter the value 0' and 'No of digits=1' is visible. The Windows taskbar at the bottom is identical to the first screenshot, showing the same icons and system clock.



Without using loop/goto label:

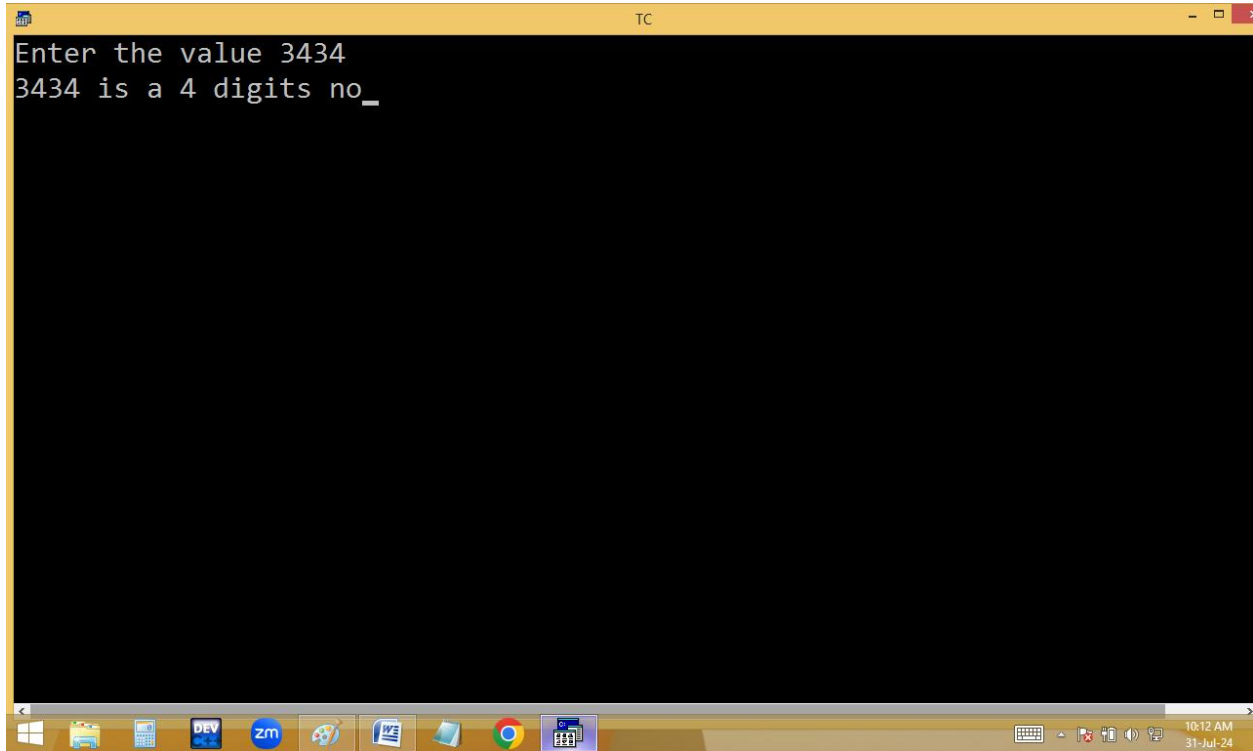


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 12 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int c=0;
clrscr();
printf("Enter the value "); scanf("%ld",&n);
c = printf("%ld", n);
if(n<0)c--;
printf(" is a %d digits no",c);
getch();
}
```

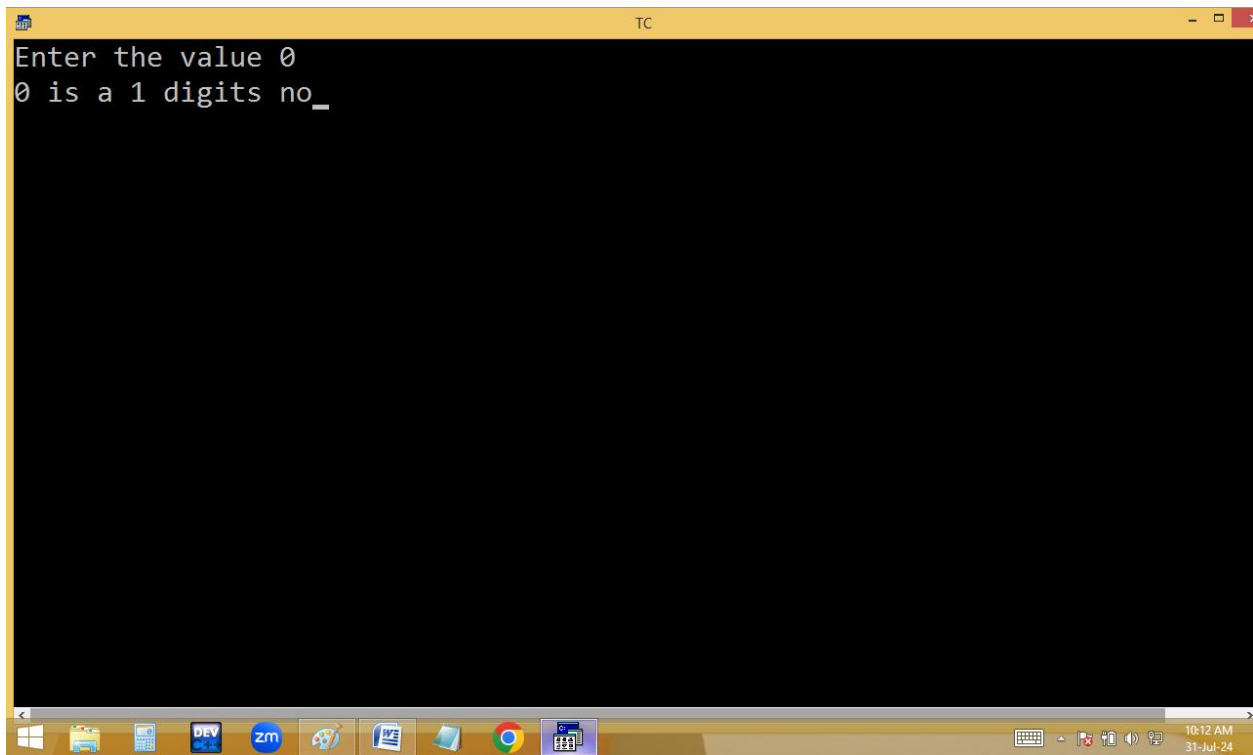


```
TC
Enter the value -12
-12 is a 2 digits no
```

```
TC
Enter the value 3434
3434 is a 4 digits no_
```




```
TC
Enter the value 0
0 is a 1 digits no_
```



```
TC
Enter the value 8
8 is a 1 digits no
```

$$\frac{n}{275}$$

c = p(275);

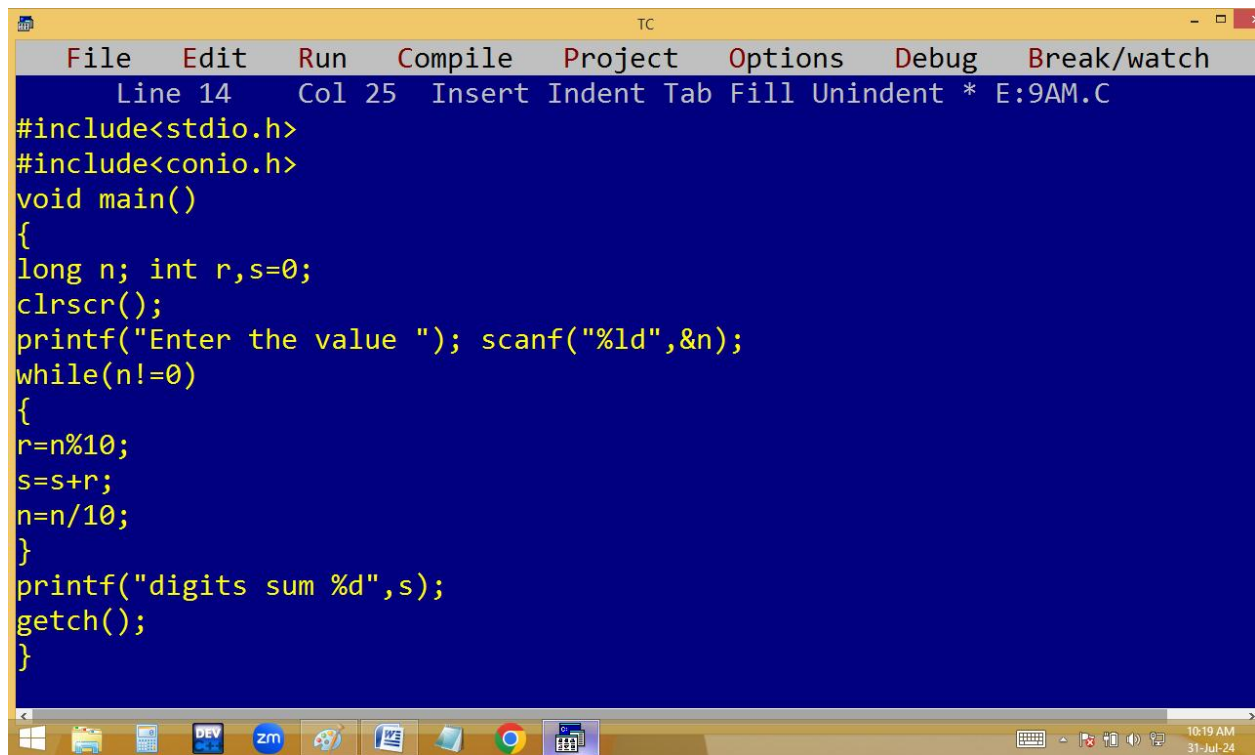


p(" is a %d digits no",c);

275 is a 3 digits no

Finding digits sum:

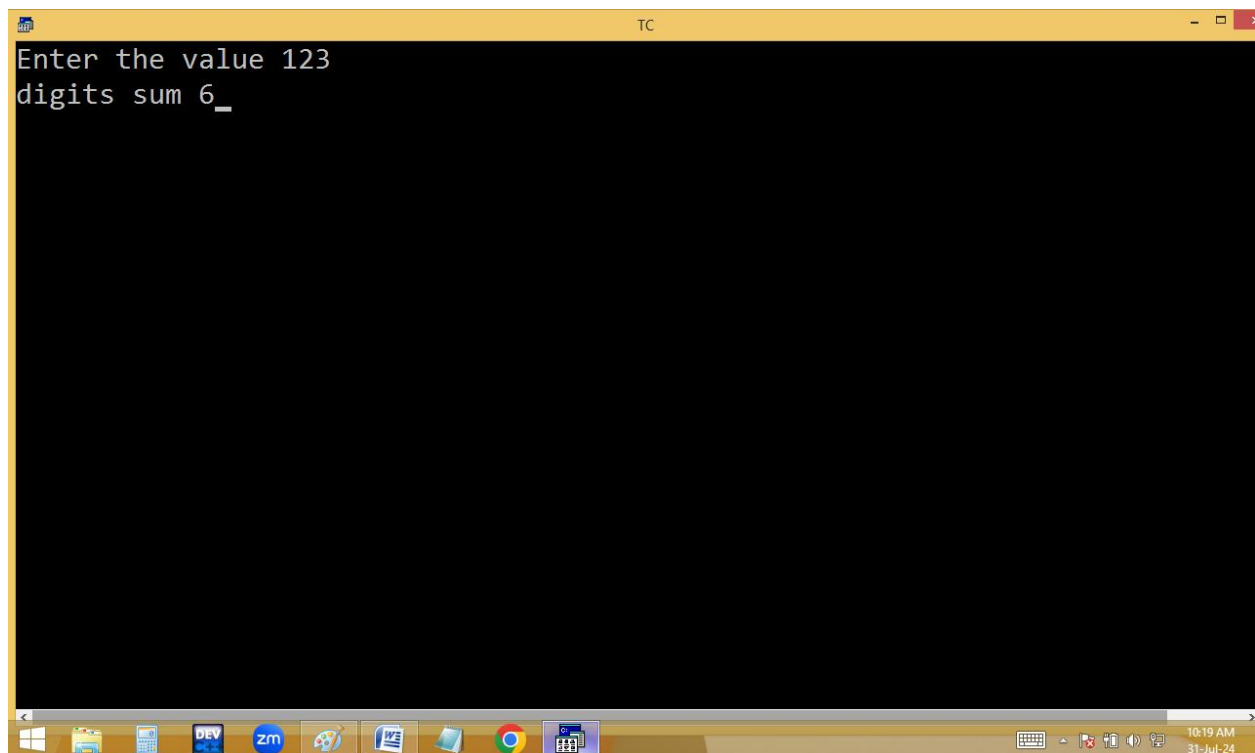
Eg: 123 → 1+2+3=6



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 14, Col 25, Insert, Indent, Tab, Fill, Unindent, *, E:9AM.C). The code is written in a blue editor window:

```
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,s=0;
clrscr();
printf("Enter the value "); scanf("%ld",&n);
while(n!=0)
{
r=n%10;
s=s+r;
n=n/10;
}
printf("digits sum %d",s);
getch();
}
```

The Windows taskbar at the bottom shows icons for File Explorer, DEV, zm, a game controller, a document, Google Chrome, and a calendar. The system clock indicates 10:19 AM on 31-Jul-24.



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

```
Enter the value 123
digits sum 6_
```

The Windows taskbar at the bottom is identical to the first screenshot, showing the same icons and system clock (10:19 AM on 31-Jul-24).

Handwritten calculation for finding the last digit of 123:

$$10 \overline{) 123} \begin{array}{r} 12 \\ \underline{120} \\ 3 \end{array}$$

Annotations: $12 \checkmark$, $3 \checkmark$, $\%$.

Handwritten calculation for finding the first digit of 123:

n	r	s
$123 \% 10 = 3$	$+$	$0 = 3$
$12 \% 10 = 2$	$+$	$3 = 5$
$1 \% 10 = 1$	$+$	$5 = 6$

Handwritten C code snippet:

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

Note: Any $n \% 10$ gives last digit ✓
Any $n / 10$ removes last digit. ✓

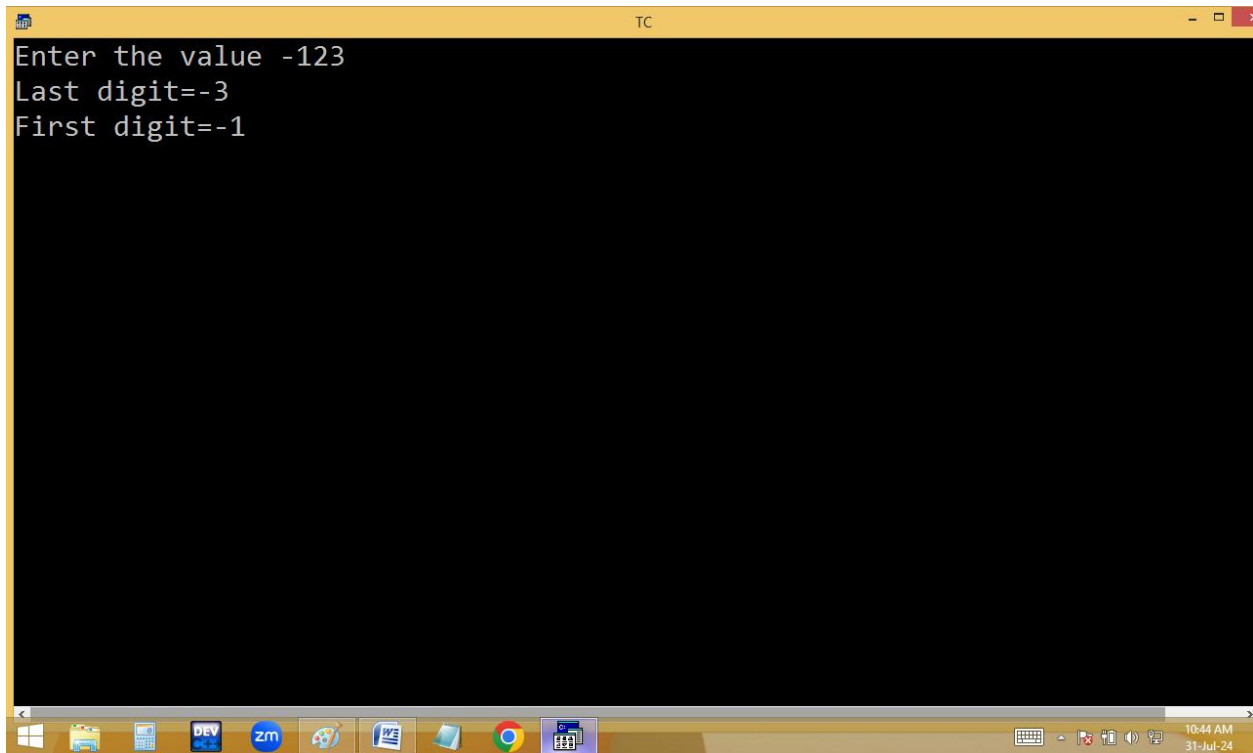
Finding first and last digits of given no

2816 → 6 is last digit, 2 is first digit.

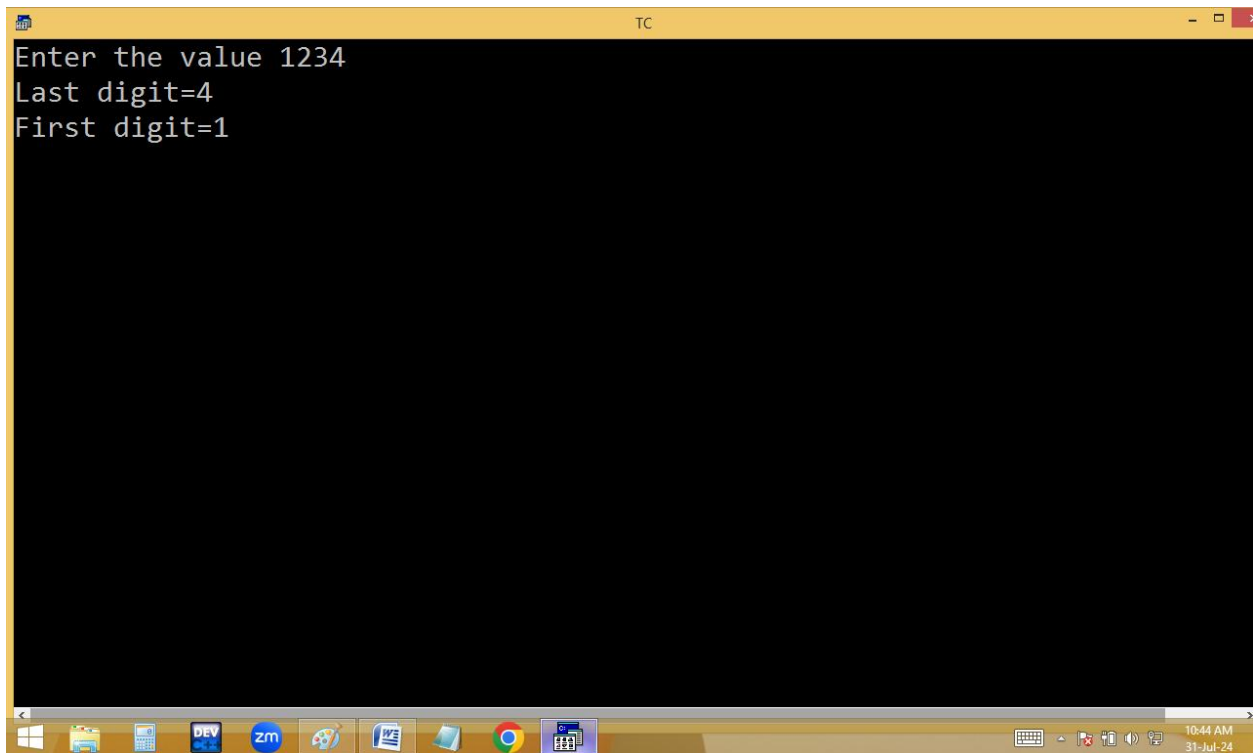
```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 16 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int r,s=0;
    clrscr();
    printf("Enter the value "); scanf("%ld",&n);
    printf("Last digit=%d\n", n%10);
    while(n>9||n<-9)n=n/10;
    printf("First digit=%d",n);
    getch();
}
```

Windows taskbar shows: 10:43 AM, 31-Jul-24

```
TC
Enter the value -123
Last digit=-3
First digit=-1
```



```
TC
Enter the value 1234
Last digit=4
First digit=1
```



```
Enter the value 0
Last digit=0
First digit=0
```

