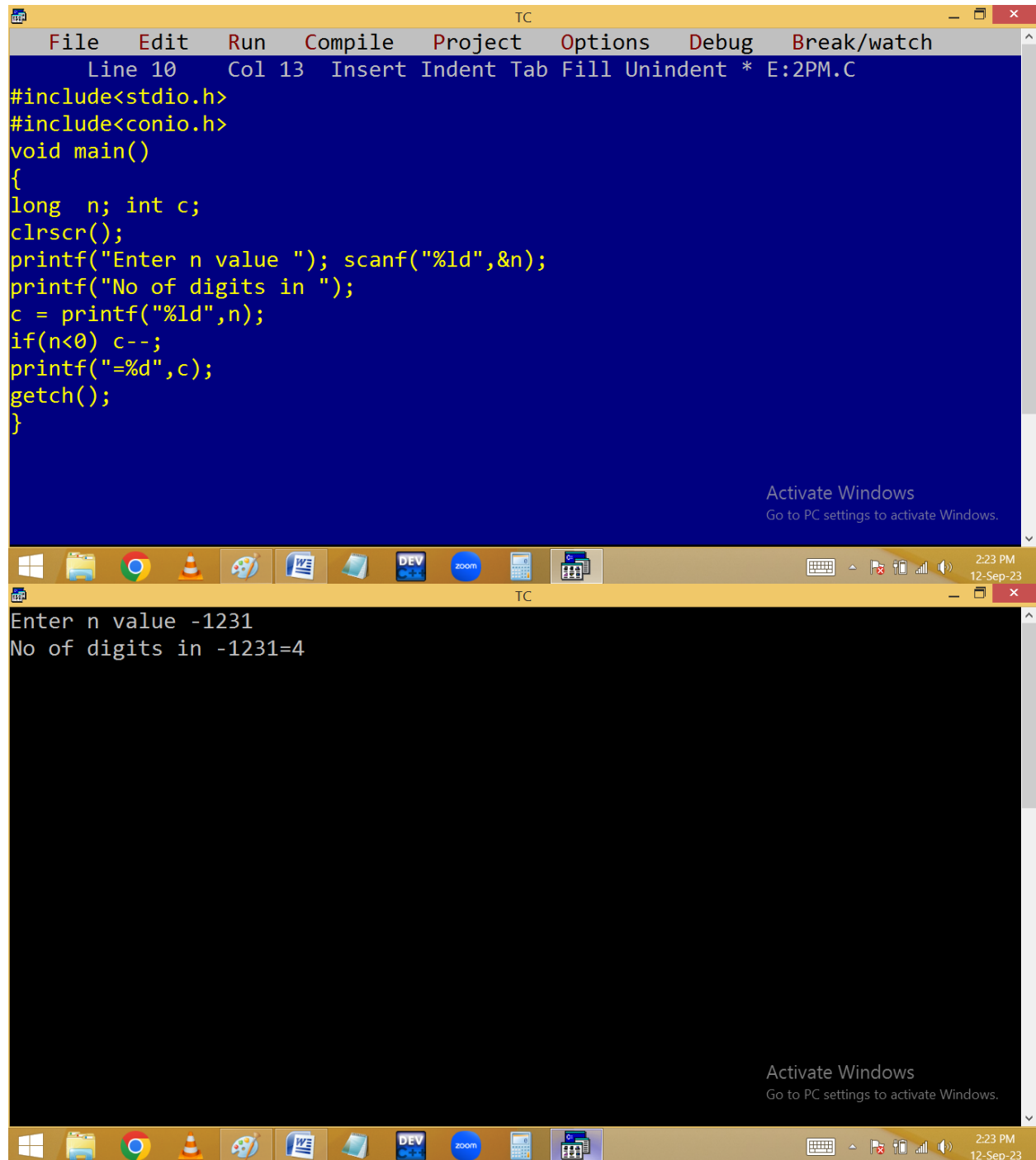


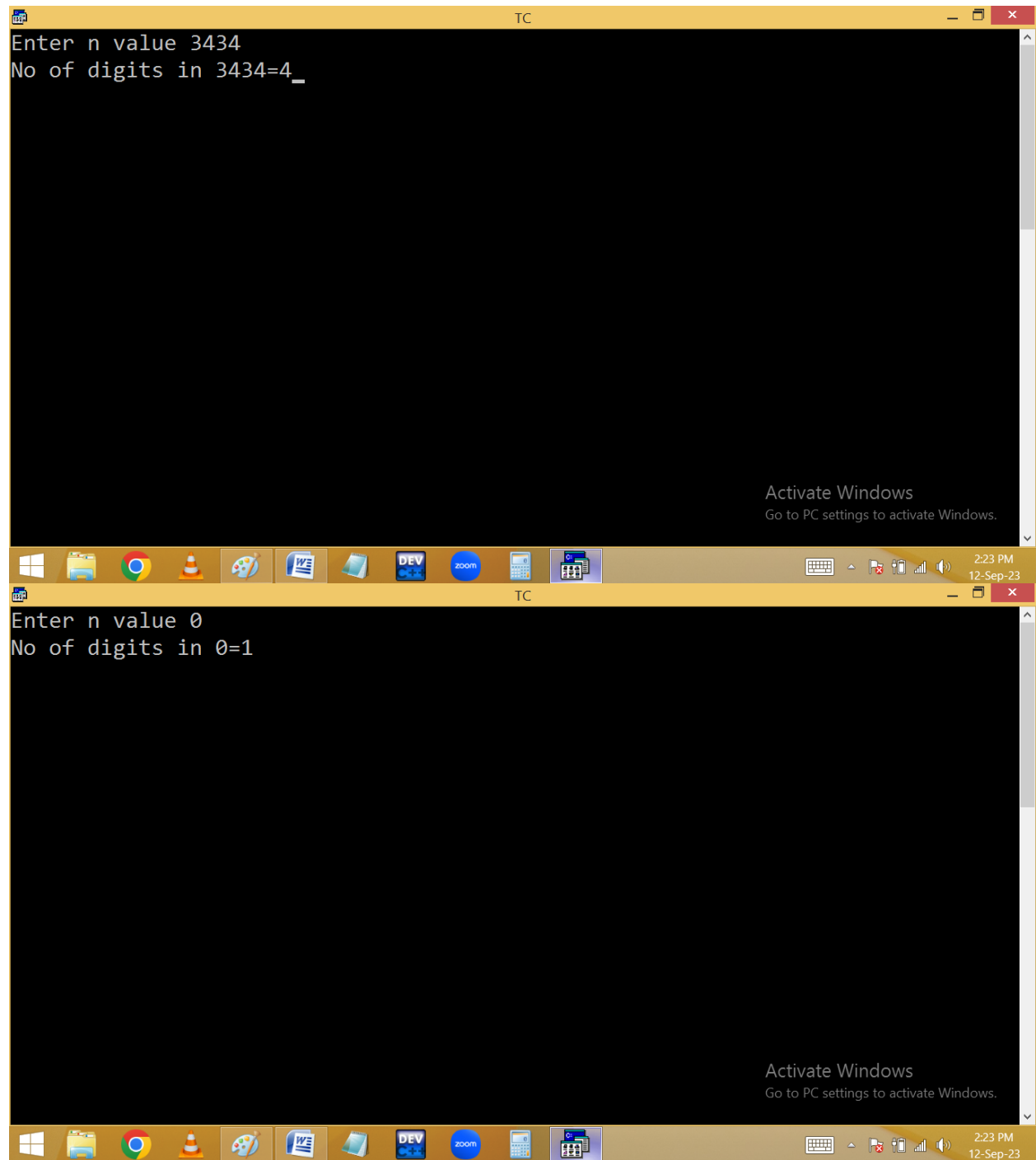
Finding no of digits in given no without using loop:



The screenshot displays the Turbo C++ (TC) IDE interface. The top window shows the source code for a C program designed to count the number of digits in a given integer without using a loop. The code uses the mathematical property that the number of digits in a number n is $\lfloor \log_{10}(|n|) \rfloor + 1$. The program includes `<stdio.h>` and `<conio.h>`, and uses `clrscr()` to clear the screen. It prompts the user to enter a value, reads it into `n`, and then calculates the number of digits using the `printf` function with the `%ld` format specifier. The output shows that for the input `-1231`, the number of digits is `4`.

```
File Edit Run Compile Project Options Debug Break/watch
Line 10 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 n value "); scanf("%ld",&n);
printf("No of digits in ");
c = printf("%ld",n);
if(n<0) c--;
printf("=%d",c);
getch();
}
```

Enter n value -1231
No of digits in -1231=4



```

p("No of digits in ");
c = p("%d", n);
    102
    3
p("=%d", c);

```

No of digits in 102 = 3

Eg:

Finding the no of even, odd, zero digits in given no.

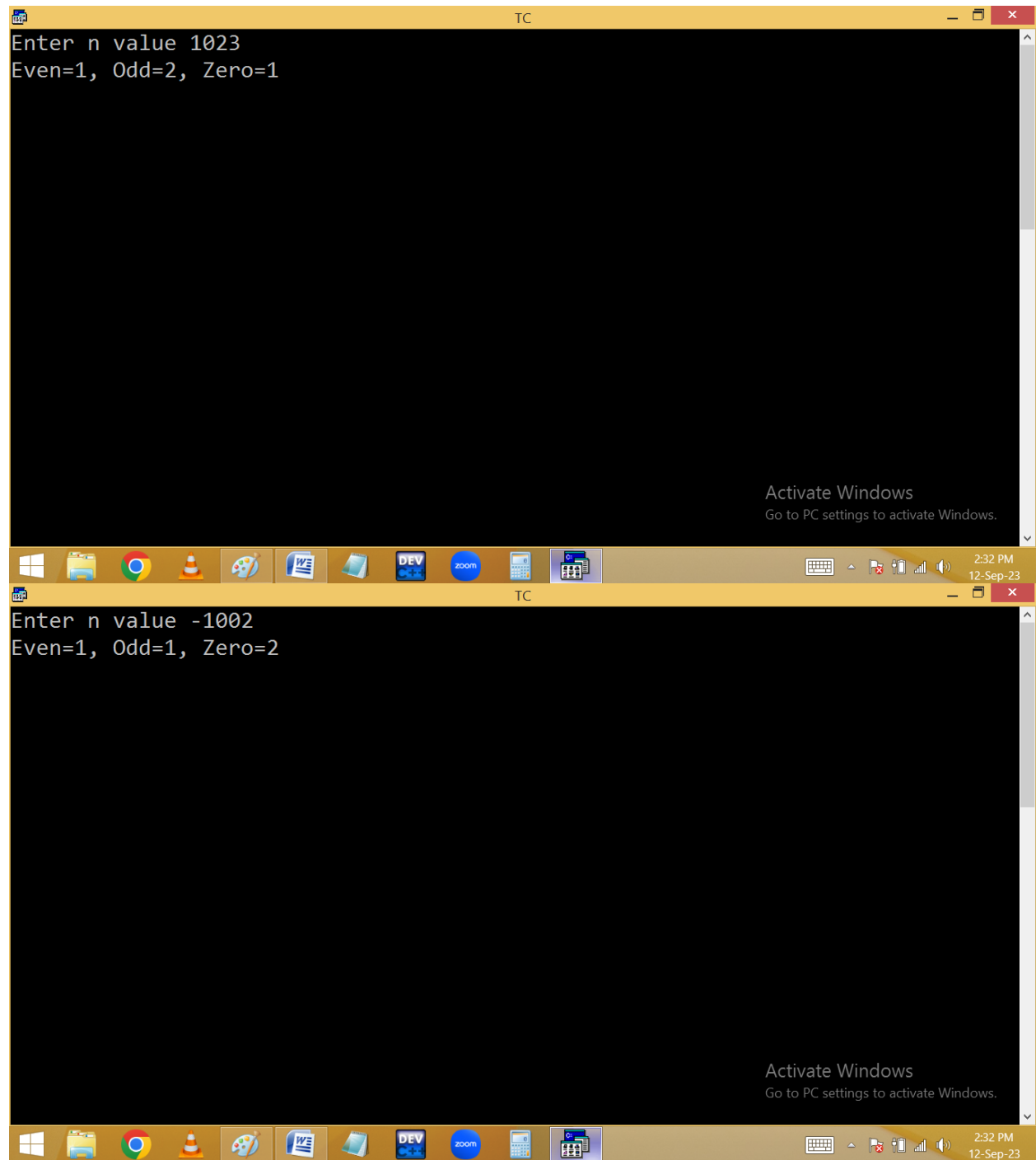
Eg: 1023 → 1 even, 2 odd, 1 zero

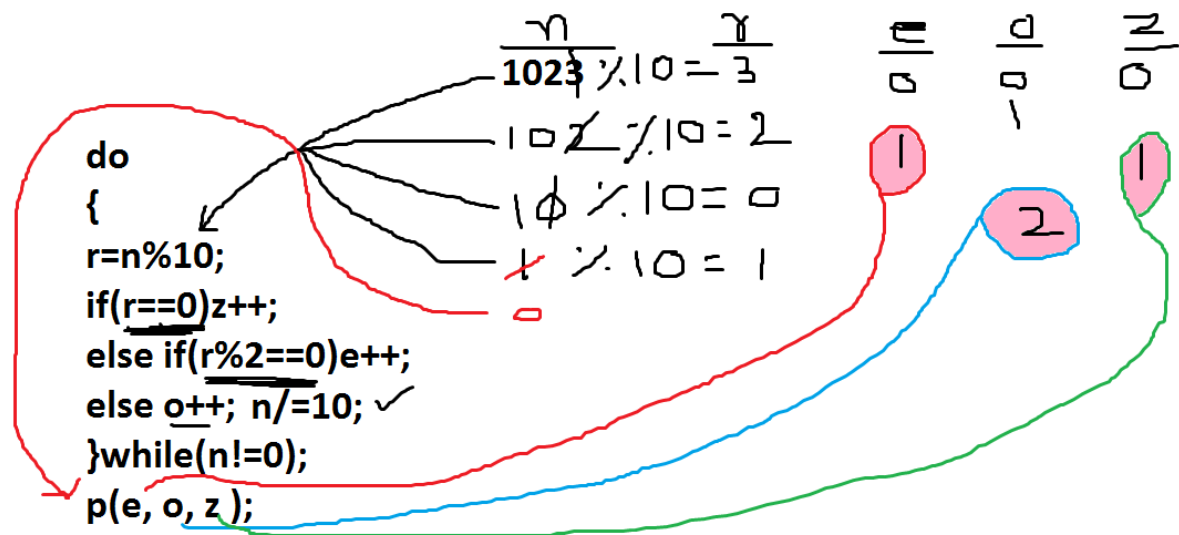
```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int r,e,o,z;
clrscr();
printf("Enter n value "); scanf("%ld",&n);
e=o=z=0;
do
{
r=n%10;
if(r==0)z++; else if(r%2==0)e++; else o++;
n/=10;
}while(n!=0);
printf("Even=%d, Odd=%d, Zero=%d",e,o,z);
getch();
}
/*Note: Any no%10 gives last digit. Any no/10 removes last digit.*/
```

Enter n value 0
Even=0, Odd=0, Zero=1_

Activate Windows
Go to PC settings to activate Windows.

2:32 PM
12-Sep-23



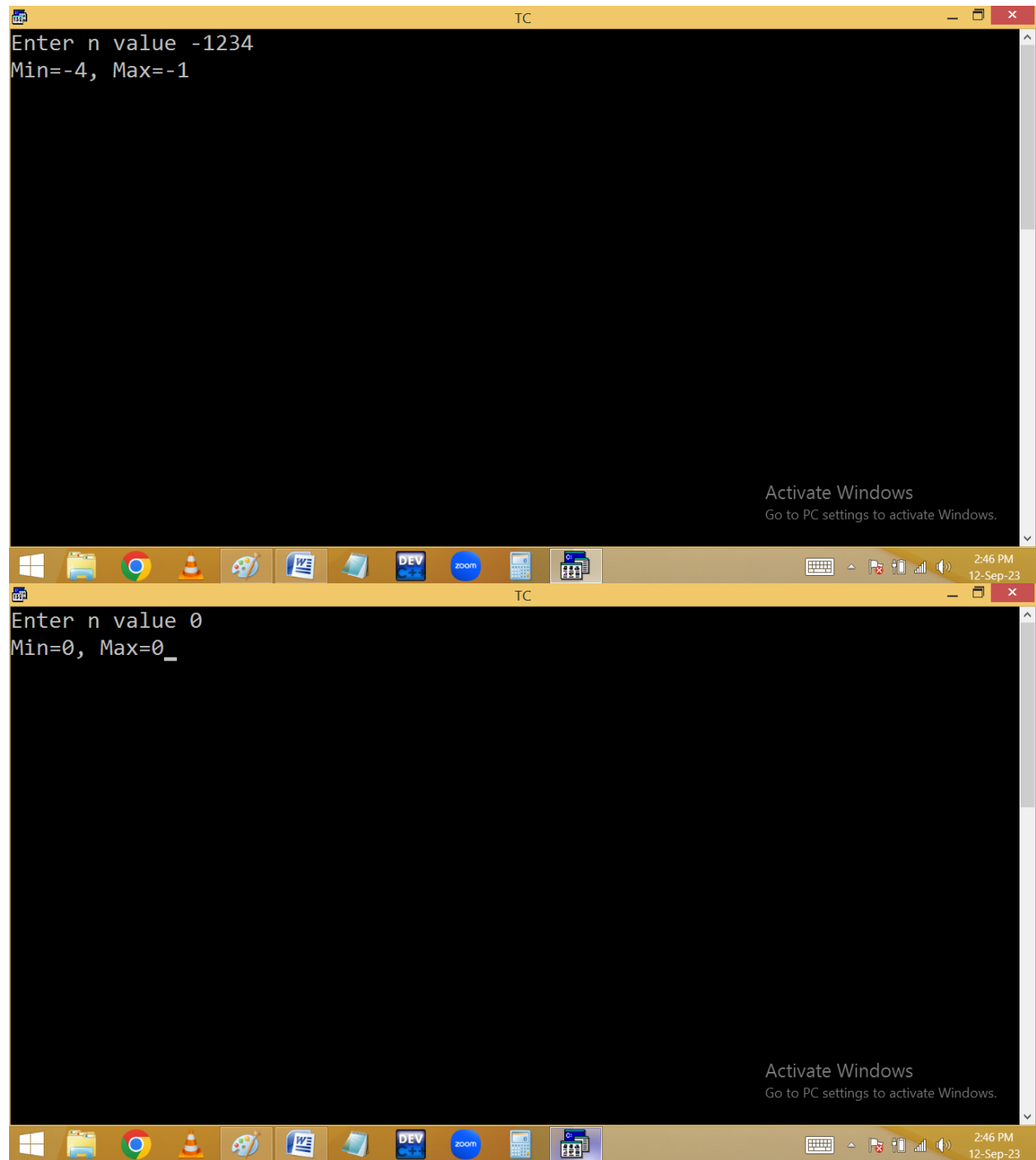


Finding max, min digits of given no.

9123 → max=9, min=1

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 17 Col 1 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n; int max=-9, min=9, r;
clrscr();
printf("Enter n value "); scanf("%ld",&n);
do
{
r=n%10;
if(min>r)min=r; if(max<r)max=r;
n/=10;
}while(n!=0);
printf("Min=%d, Max=%d",min, max);
getch();
}
```

Enter n value 108935
Min=0, Max=9



	n	r	max	min
	9123			
	9 123 % 10 = 3		9 < 3	9 > 3
do				
{				
r = n % 10;	912	% 10 = 2	3 < 2	3 > 2
if (min > r) min = r;	91	% 10 = 1	3 < 1	2 > 1
if (max < r) max = r;	9	% 10 = 9	3 < 9	1 > 3
n /= 10; ✓				
} while (n != 0);				
p(max, min);				

Printing 1st and last digits of given no.

1234 → 1st digit 1, last digit 4

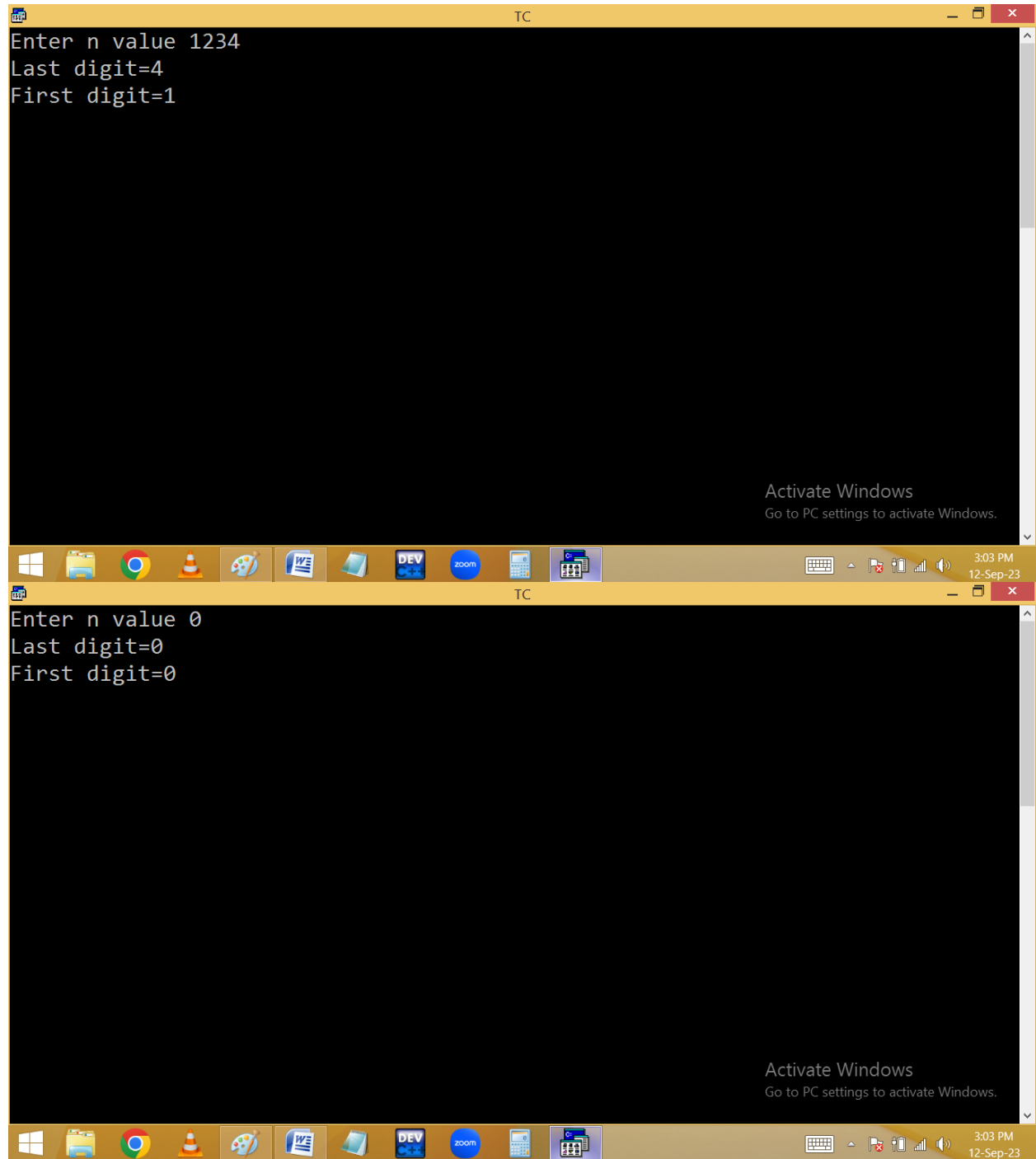
The image shows two windows of the Turbo C++ (TC) IDE. The top window displays the source code for a C program named E:2PM.C. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 18 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long n;
    clrscr();
    printf("Enter n value "); scanf("%ld",&n);
    printf("Last digit=%d\n",n%10);
    while(n>9||n<-9)n/=10;
    printf("First digit=%d",n);
    getch();
}
```

The bottom window shows the program's execution output. It prompts the user to enter a value, and the user has entered -1234. The program then outputs the last digit as -4 and the first digit as -1.

```
Enter n value -1234
Last digit=-4
First digit=-1
```

Both windows feature a taskbar at the bottom with various application icons and a system tray on the right showing the time as 3:01 PM on 12-Sep-23. A watermark for 'Activate Windows' is visible in the bottom right corner of each window.



$$\frac{n}{1234} \div 10 = 4$$

```
p("Last digit=%d\n",n%10); 4 ←
```

while(n>9) n/=10;

```
p("1st digit=%d",n);
```

The diagram illustrates the process of extracting the last digit of a number n. At the top, the number 1234 is shown with vertical red lines under each digit. A horizontal line is drawn above the last digit, 4, with the letter 'n' above it. To the right of the number, the expression $\div 10 = 4$ is written. A black arrow points from the '4' in this expression to the '4' in the printf statement `p("Last digit=%d\n",n%10); 4 ←`. A red arrow points from the '4' in the printf statement to the condition `n>9` in the while loop `while(n>9) n/=10;`.

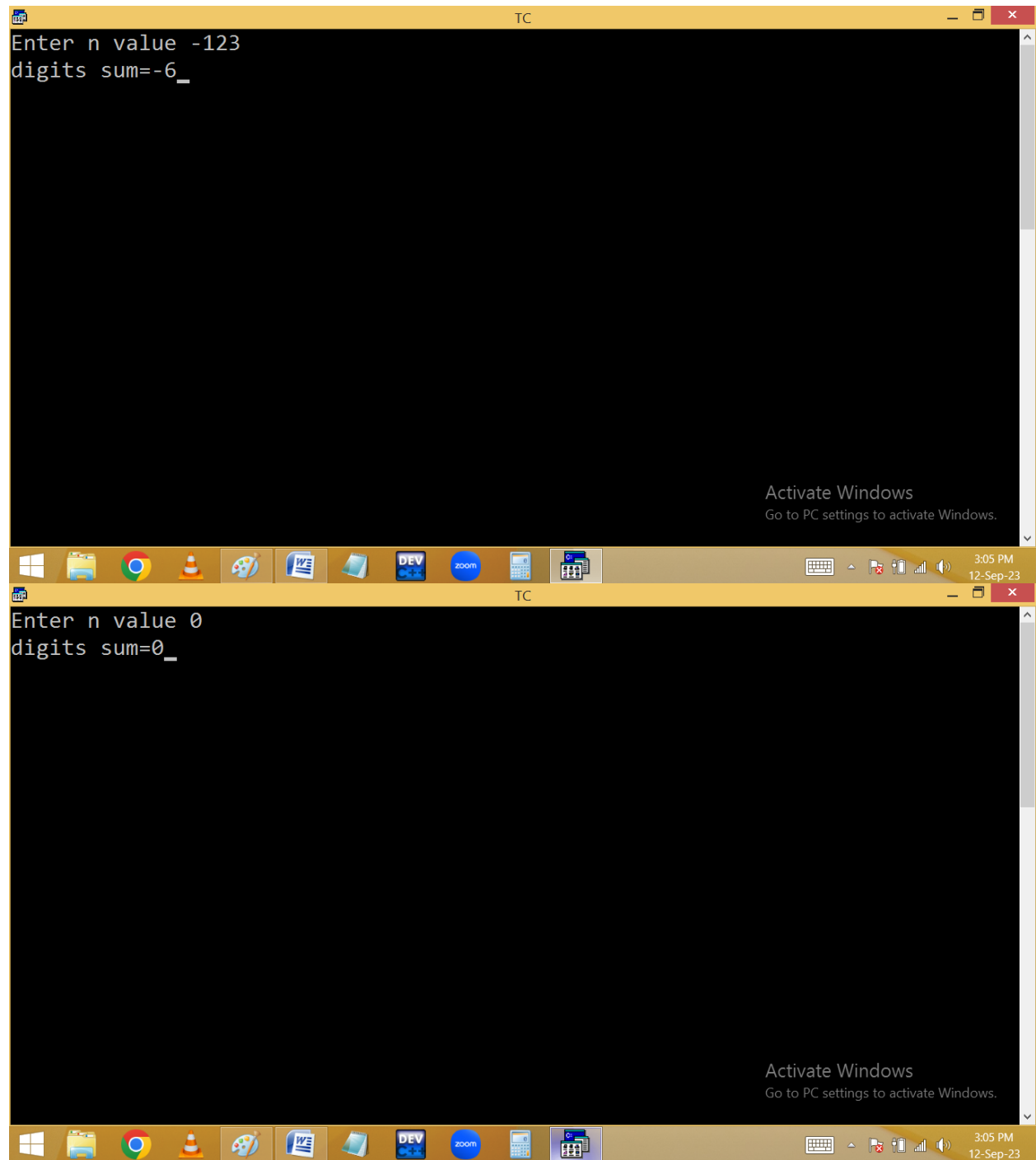
Eg. finding digits sum.

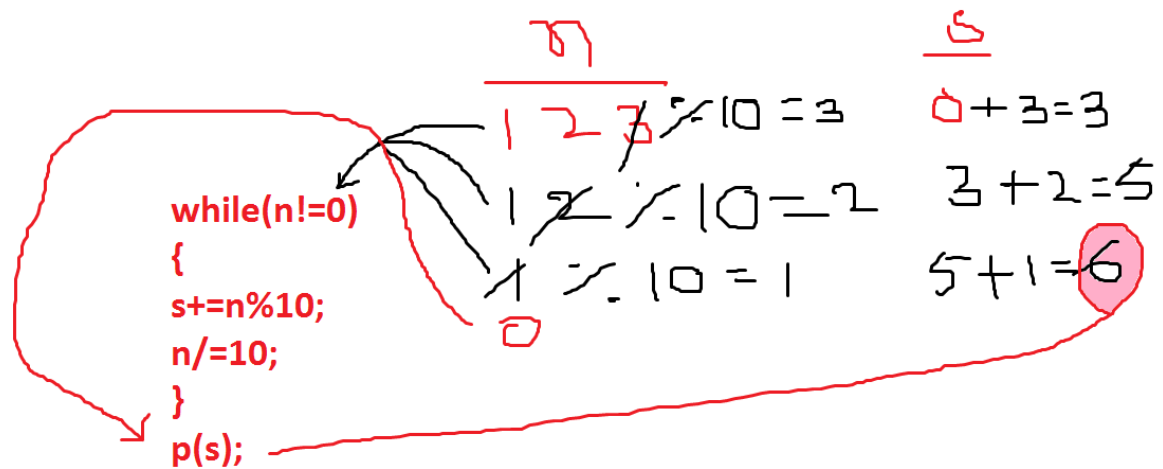
Eg: 123 → 1+2+3=6

The image shows two windows of the Turbo C++ (TC) IDE. The top window is the source code editor for a file named 'E:2PM.C'. It contains a C program that calculates the sum of the digits of a number 'n'. The code is as follows:

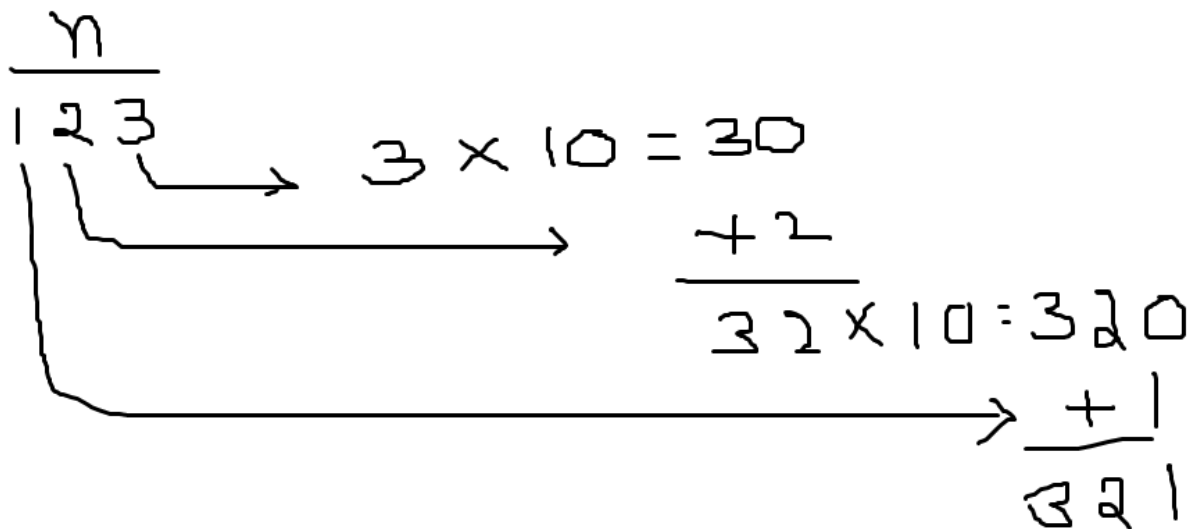
```
Line 9 Col 25 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    long n; int s=0;
    clrscr();
    printf("Enter n value "); scanf("%ld",&n);
    while(n!=0){s+=n%10; n/=10;}
    printf("digits sum=%d",s);
    getch();
}
```

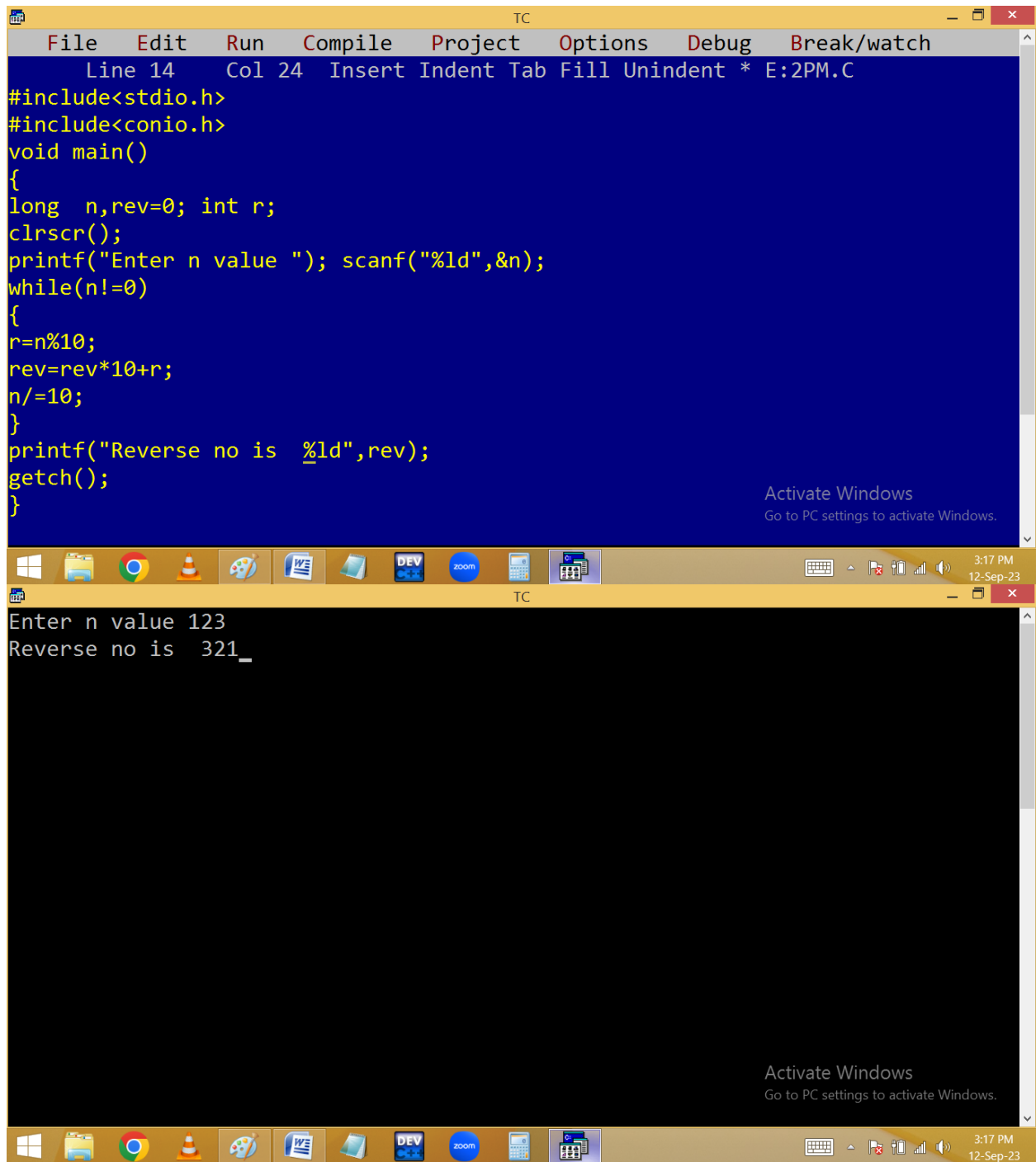
The bottom window is the output console, which shows the execution of the program. It displays the prompt 'Enter n value' followed by the user input '123', and then the output 'digits sum=6'. Both windows have a taskbar at the bottom with various application icons and a system clock showing 3:04 PM and 3:05 PM on 12-Sep-23.





Reverse no:





```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 14 Col 24 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long n,rev=0; int r;
clrscr();
printf("Enter n value "); scanf("%ld",&n);
while(n!=0)
{
r=n%10;
rev=rev*10+r;
n/=10;
}
printf("Reverse no is %ld",rev);
getch();
}
```

Enter n value 123
Reverse no is 321_

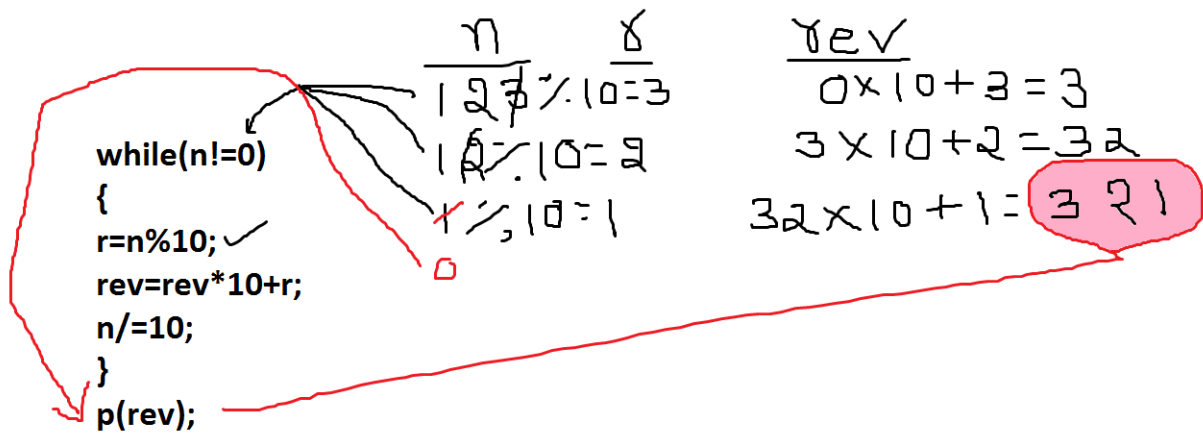
Activate Windows
Go to PC settings to activate Windows.


```
TC
Enter n value -123
Reverse no is  -321_

Activate Windows
Go to PC settings to activate Windows.
```

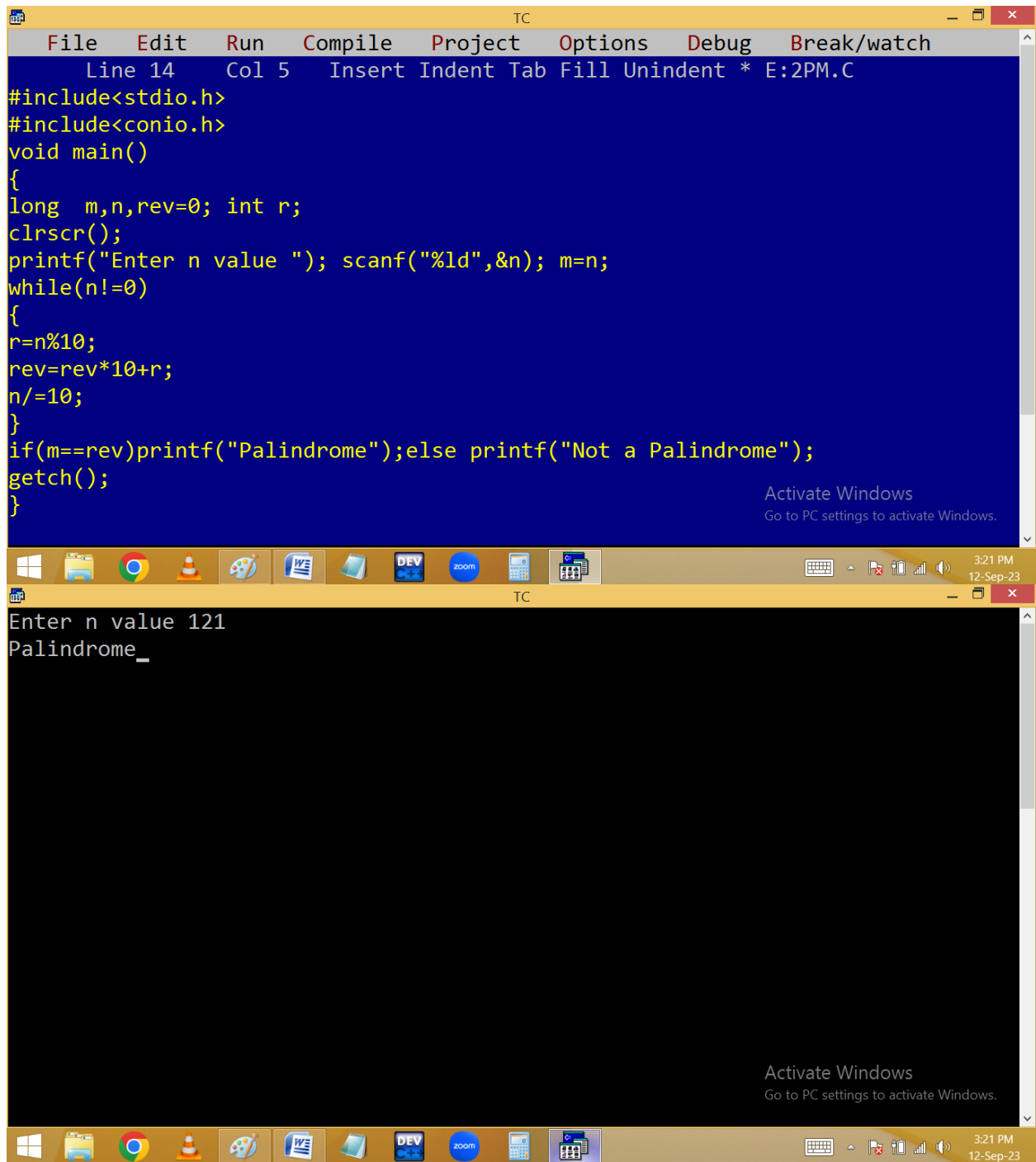
```
TC
Enter n value 0
Reverse no is  0_

Activate Windows
Go to PC settings to activate Windows.
```



Finding palindrome or not.

121 reverse is 121

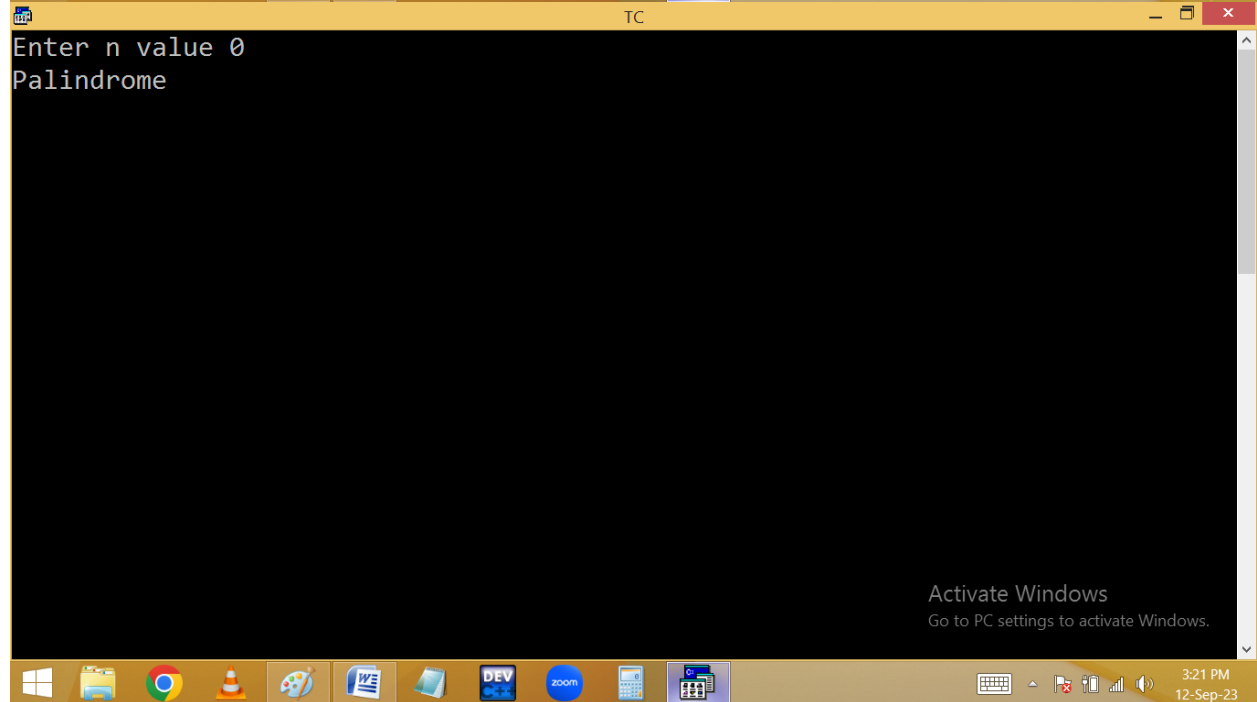
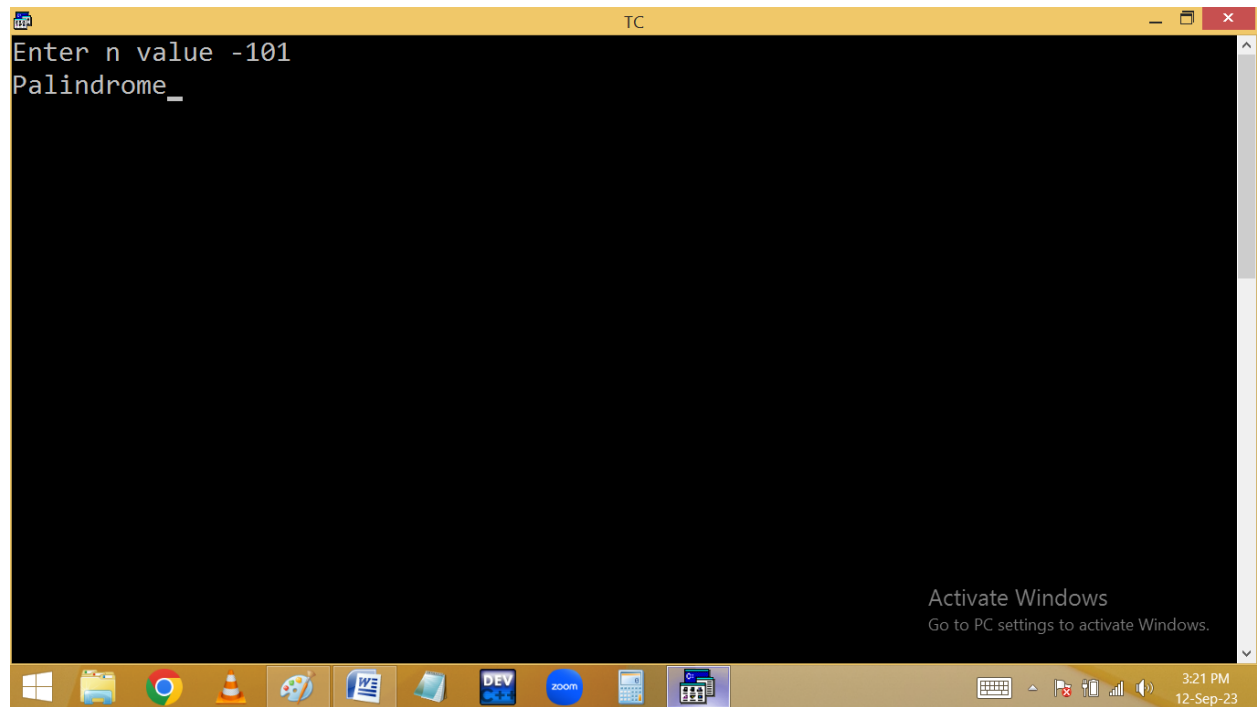


The image shows two windows of the Turbo C++ (TC) IDE. The top window displays the source code for a C program named E:2PM.C. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 14 Col 5 Insert Indent Tab Fill Unindent * E:2PM.C
#include<stdio.h>
#include<conio.h>
void main()
{
long m,n,rev=0; int r;
clrscr();
printf("Enter n value "); scanf("%ld",&n); m=n;
while(n!=0)
{
r=n%10;
rev=rev*10+r;
n/=10;
}
if(m==rev)printf("Palindrome");else printf("Not a Palindrome");
getch();
}
```

The bottom window shows the program's execution. It prompts "Enter n value" and the user has entered "121". The output is "Palindrome_".

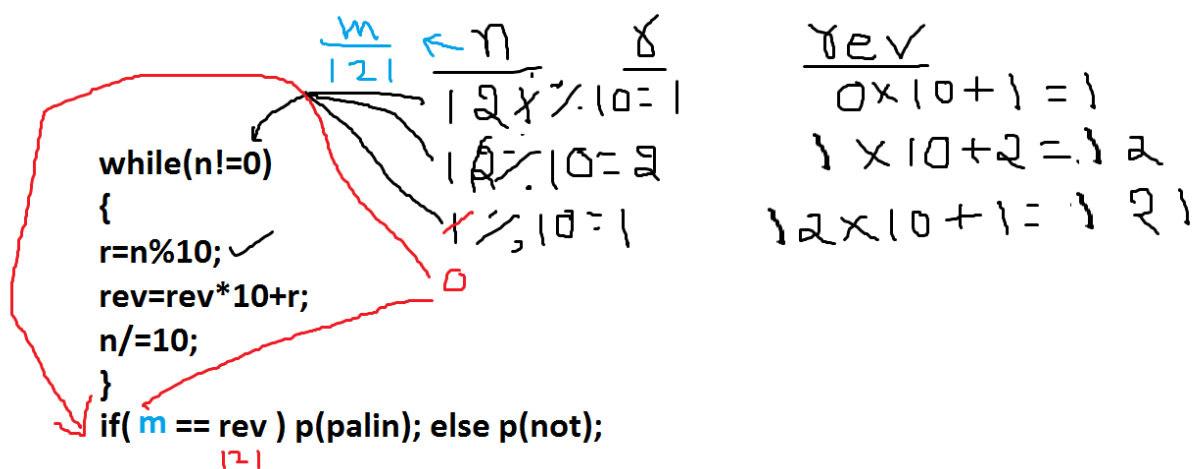
Both windows have a taskbar at the bottom with icons for Windows, File Explorer, Chrome, VLC, Paint, Word, Excel, DEV, Zoom, and a calendar. The system clock in the bottom right corner shows 3:21 PM on 12-Sep-23. An "Activate Windows" watermark is visible in the bottom right of both windows.



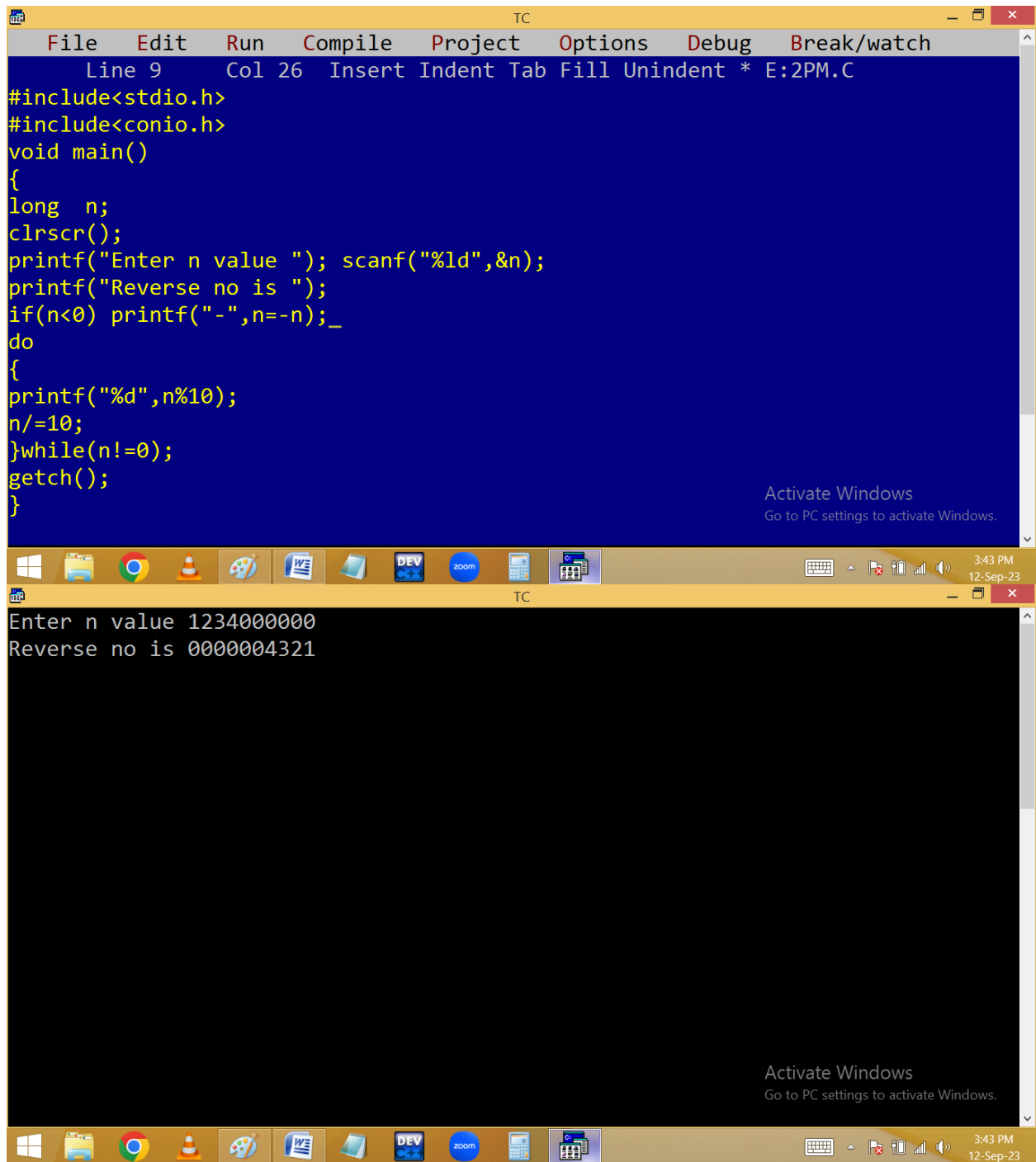
```
TC
Enter n value 123
Not a Palindrome_

Activate Windows
Go to PC settings to activate Windows.

3:21 PM
12-Sep-23
```



Printing 100 as 001:

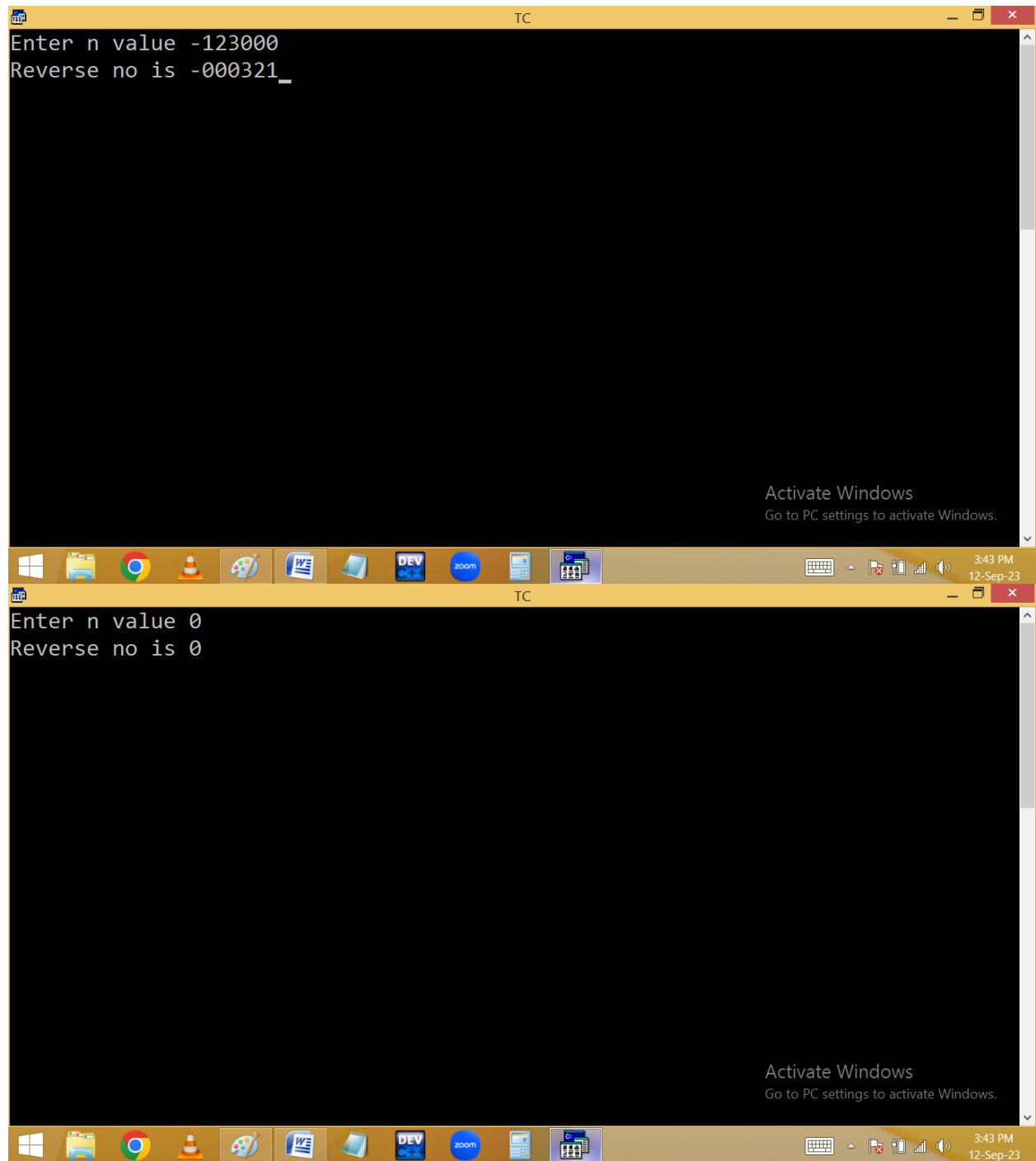


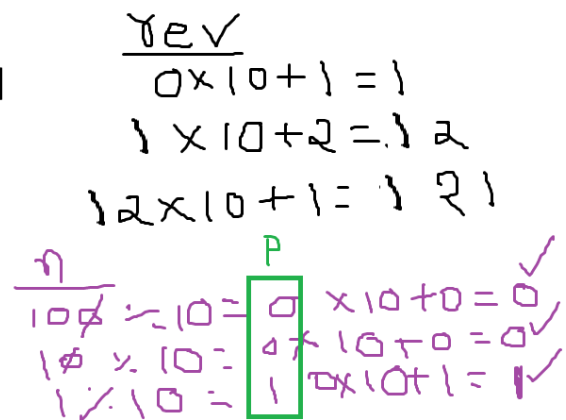
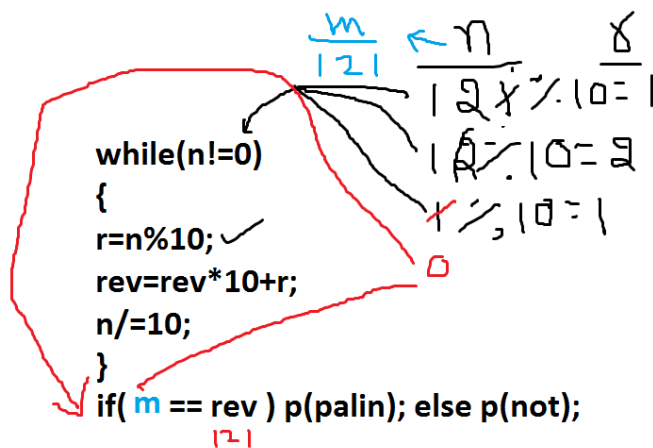
The image shows two windows from the Turbo C++ (TC) IDE. The top window is the source code editor for a file named E:2PM.C. It contains a C program designed to reverse a number. The code includes standard headers, declares a long integer, and uses a while loop to extract digits from the input number and print them in reverse order. The bottom window is a command prompt where the program has been executed. It shows the user entering the number 1234000000 and the program outputting the reversed number 0000004321. Both windows have a taskbar at the bottom with various application icons and a system tray showing the time as 3:43 PM on 12-Sep-23.

```
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 26 Insert Indent Tab Fill Unindent * E:2PM.C

#include<stdio.h>
#include<conio.h>
void main()
{
long n;
clrscr();
printf("Enter n value "); scanf("%ld",&n);
printf("Reverse no is ");
if(n<0) printf("-",n=-n);_
do
{
printf("%d",n%10);
n/=10;
}while(n!=0);
getch();
}
```

Enter n value 1234000000
Reverse no is 0000004321





Home work:

102 → One Zero Two

Armstrong no.

9 is a 1 digit no → $9^1 = 9$

153 is 3 digit no → $1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153$

1634 is 4 digit no → $1^4 + 6^4 + 3^4 + 4^4 = 1634$

