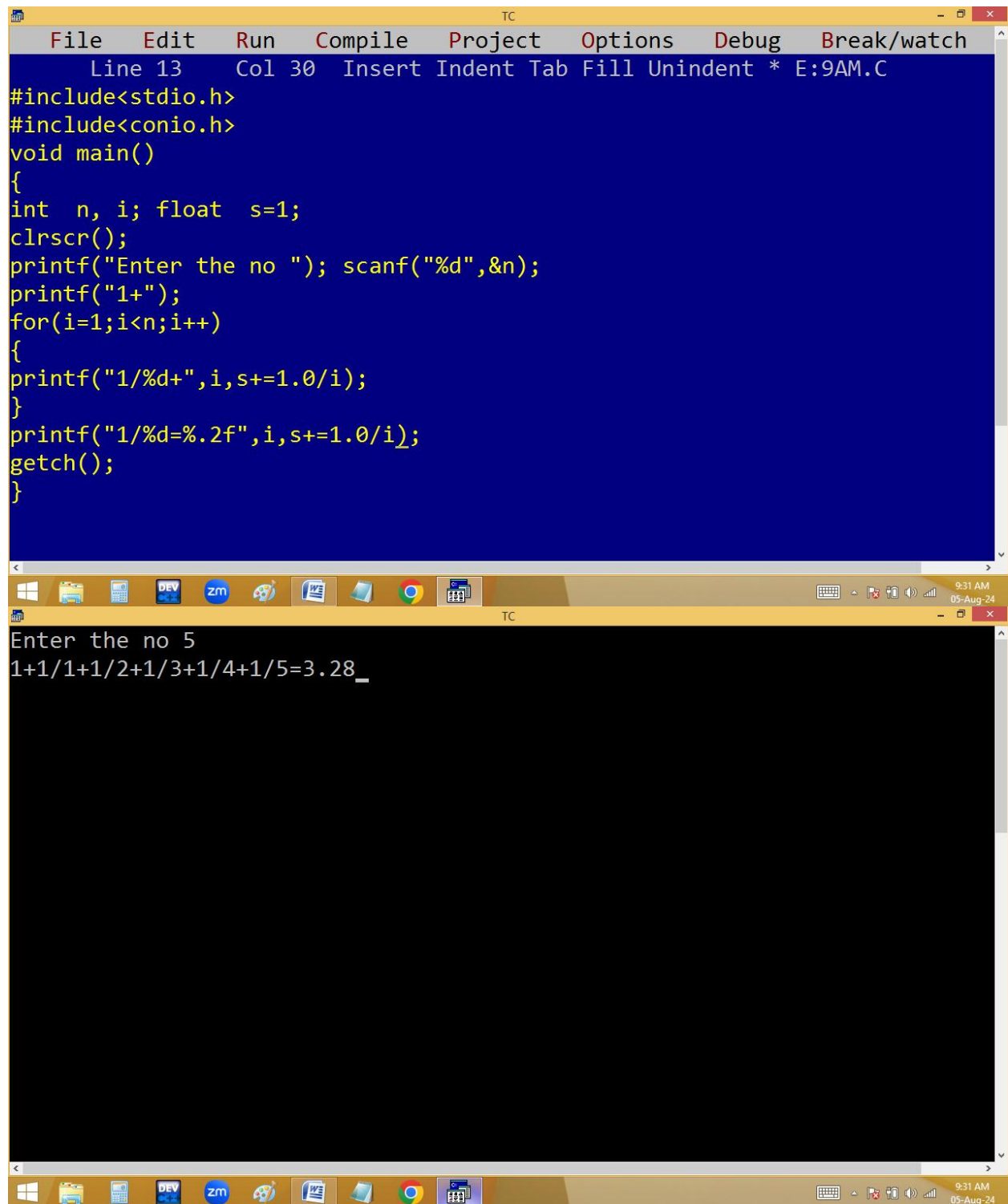


Harmonic series without using \b:

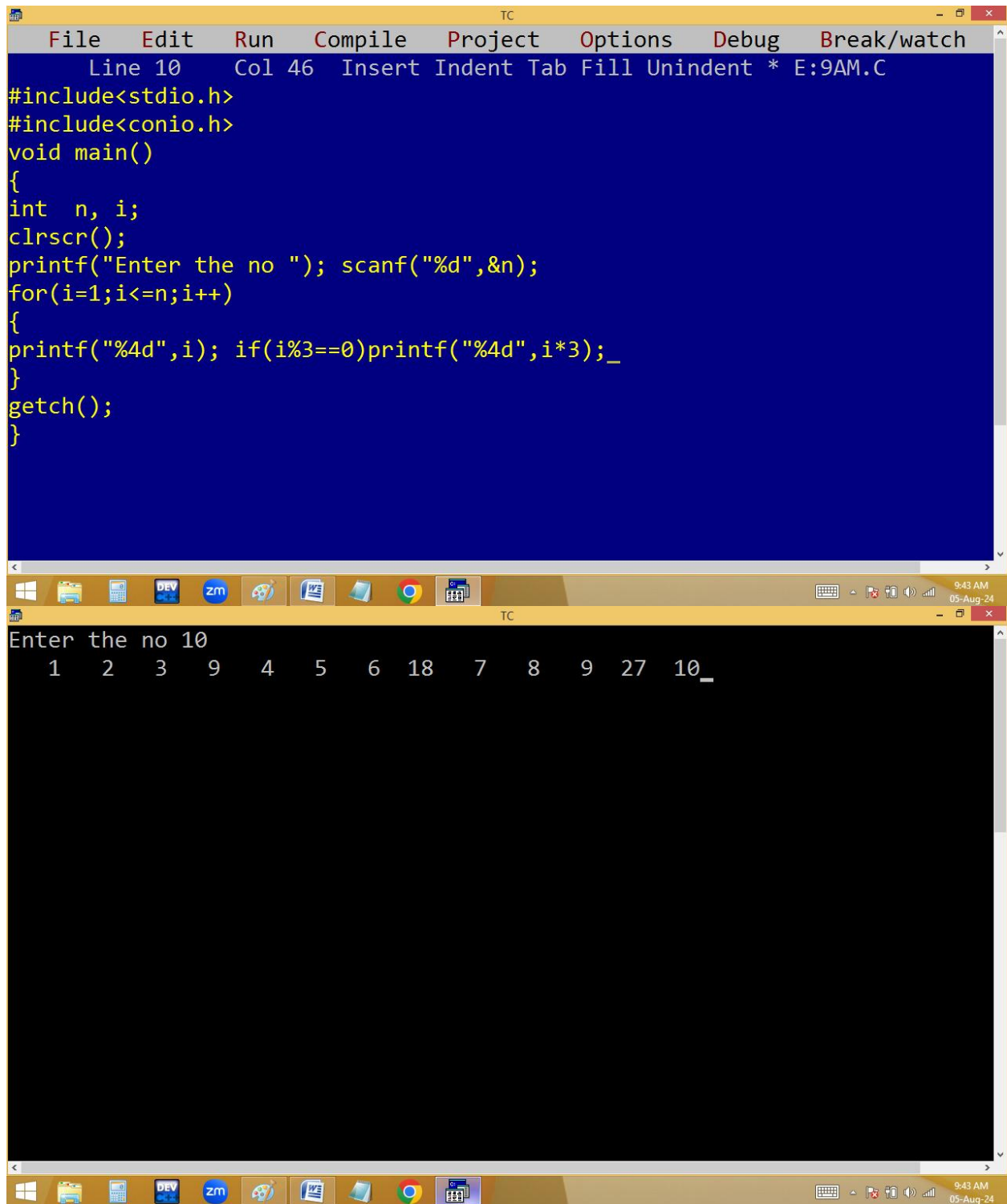


```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 13 Col 30 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, i; float s=1;
clrscr();
printf("Enter the no "); scanf("%d",&n);
printf("1+");
for(i=1;i<n;i++)
{
printf("1/%d+",i,s+=1.0/i);
}
printf("1/%d=%.2f",i,s+=1.0/i);
getch();
}
```

Enter the no 5
1+1/1+1/2+1/3+1/4+1/5=3.28_

Printing below series:

n=10 → 1 2 3 9 4 5 6 18 7 8 9 27 10



The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program with the following code:

```
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 46 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, i;
clrscr();
printf("Enter the no "); scanf("%d",&n);
for(i=1;i<=n;i++)
{
printf("%4d",i); if(i%3==0)printf("%4d",i*3);_
}
getch();
}
```

The bottom window shows the program's execution. It prompts "Enter the no 10" and displays the output: "1 2 3 9 4 5 6 18 7 8 9 27 10_". The output is formatted with spaces between numbers, and multiples of 3 are followed by their product with 3. The program ends with a cursor after the last number.

```

for(i=1;i<=10;i++)
{
    p(i); if(i%3==0)p(i*3);
}

```

$\frac{n}{5}$ $\frac{i}{1}$
 2
 3 % 3 = 0 $\rightarrow 3 \times 3 = 9$
 4
 6 % 3 = 0 $\rightarrow 6 \times 3 = 18$
 9 % 3 = 0 $\rightarrow 9 \times 3 = 27$
 ✓✓✓✓✓
 1 2 3 9 4 5 6 18 7 8 9 27 10

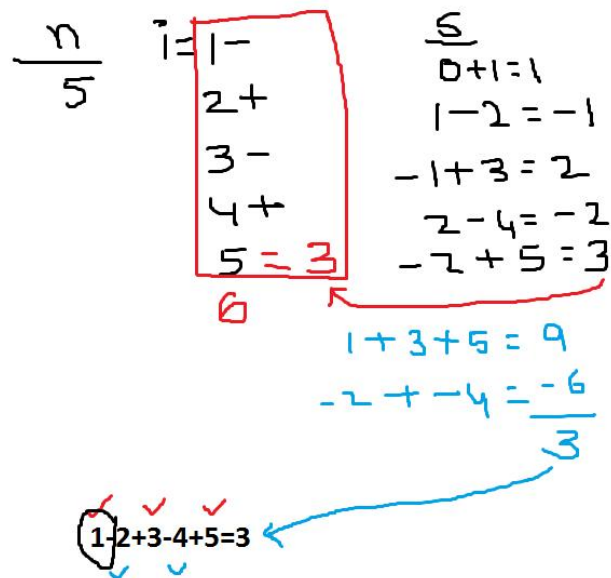
```

TC
File Edit Run Compile Project Options Debug Break/watch
Line 12 Col 11 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int n, i, s=0;
    clrscr();
    printf("Enter the no "); scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        if(i%2==0)printf("%d+",i,s=s-i); else printf("%d-",i,s=s+i);
    }
    printf("\b= %d",s);
    getch();
}

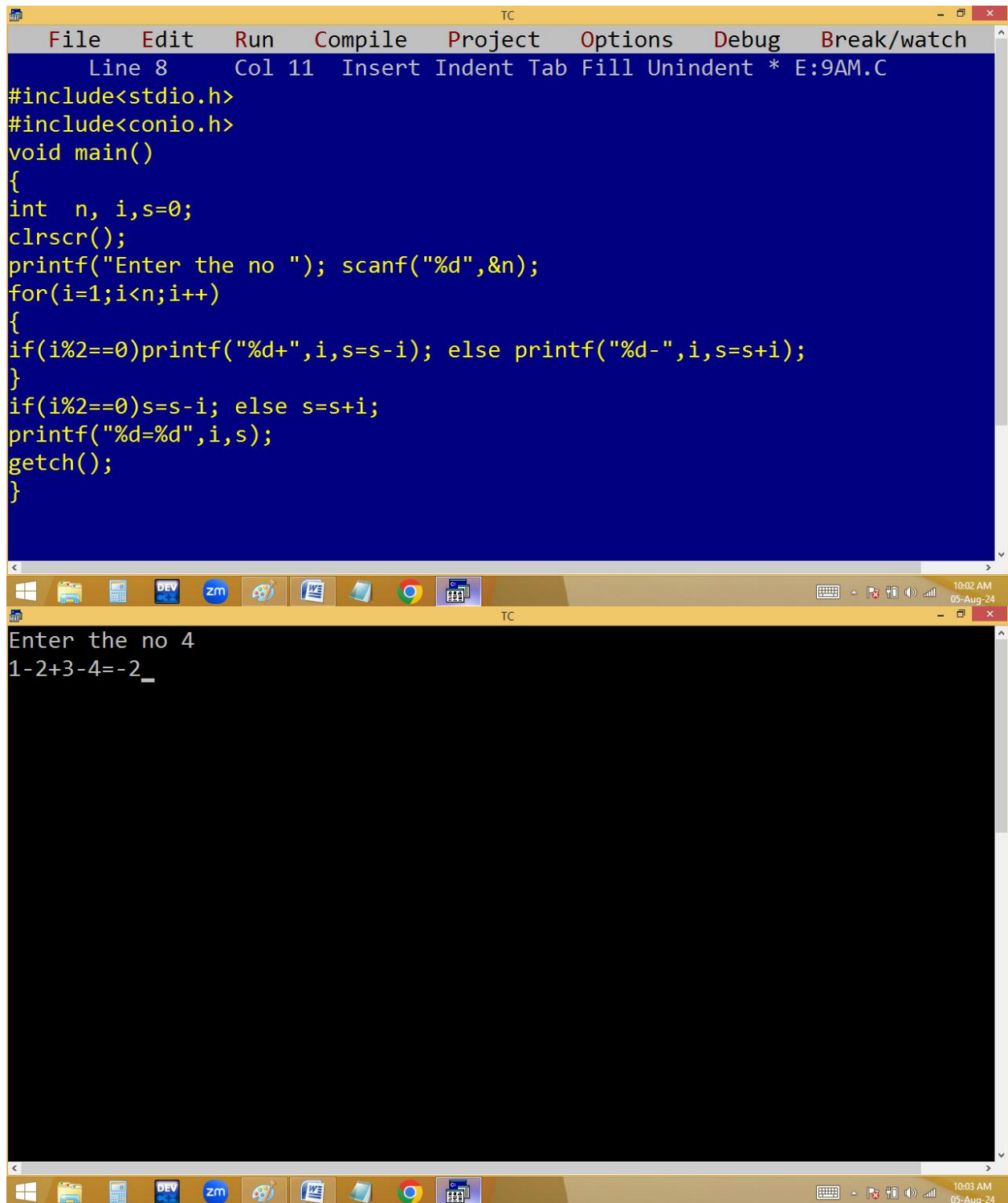
```

```
TC
Enter the no 5
1-2+3-4+5=3_
```

```
for(i=1;i<=5;i++)
{
    if(i%2==0)p("%d+",i,s=s-i);
    else p("%d-",i,s=s+i);
}
p("\b=%d",s);
```



Without \b:



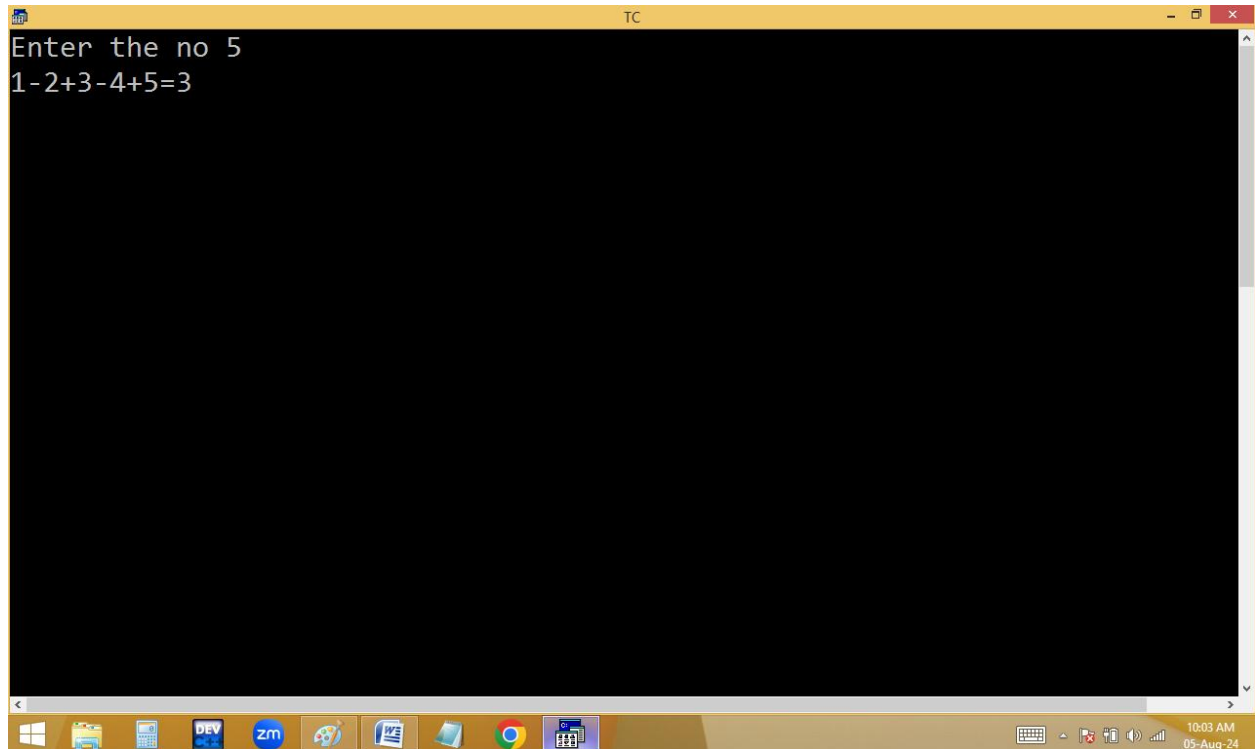
The image shows a screenshot of the Turbo C++ (TC) IDE. The top window is the code editor, which has a blue background and displays the following C program:

```
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 11 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, i,s=0;
clrscr();
printf("Enter the no "); scanf("%d",&n);
for(i=1;i<n;i++)
{
if(i%2==0)printf("%d+",i,s=s-i); else printf("%d-",i,s=s+i);
}
if(i%2==0)s=s-i; else s=s+i;
printf("%d=%d",i,s);
getch();
}
```

The bottom window is the output console, which has a black background. It shows the program's execution:

```
Enter the no 4
1-2+3-4=-2_
```

The Windows taskbar is visible at the bottom of the screen, showing the time as 10:02 AM and 10:03 AM on 05-Aug-24.



```
for(i=1; i< 5; i++)  
{  
    if(i%2==0)p("%d+", i, s=s-i);  
    else p("%d-", i, s=s+i);  
}  
  
if(i%2==0)p("%d=%d", i, s-i);  
else p("%d=%d", i, s+i);
```

$$\frac{n}{5}$$

1-
2+
3-
4+
5=3

6

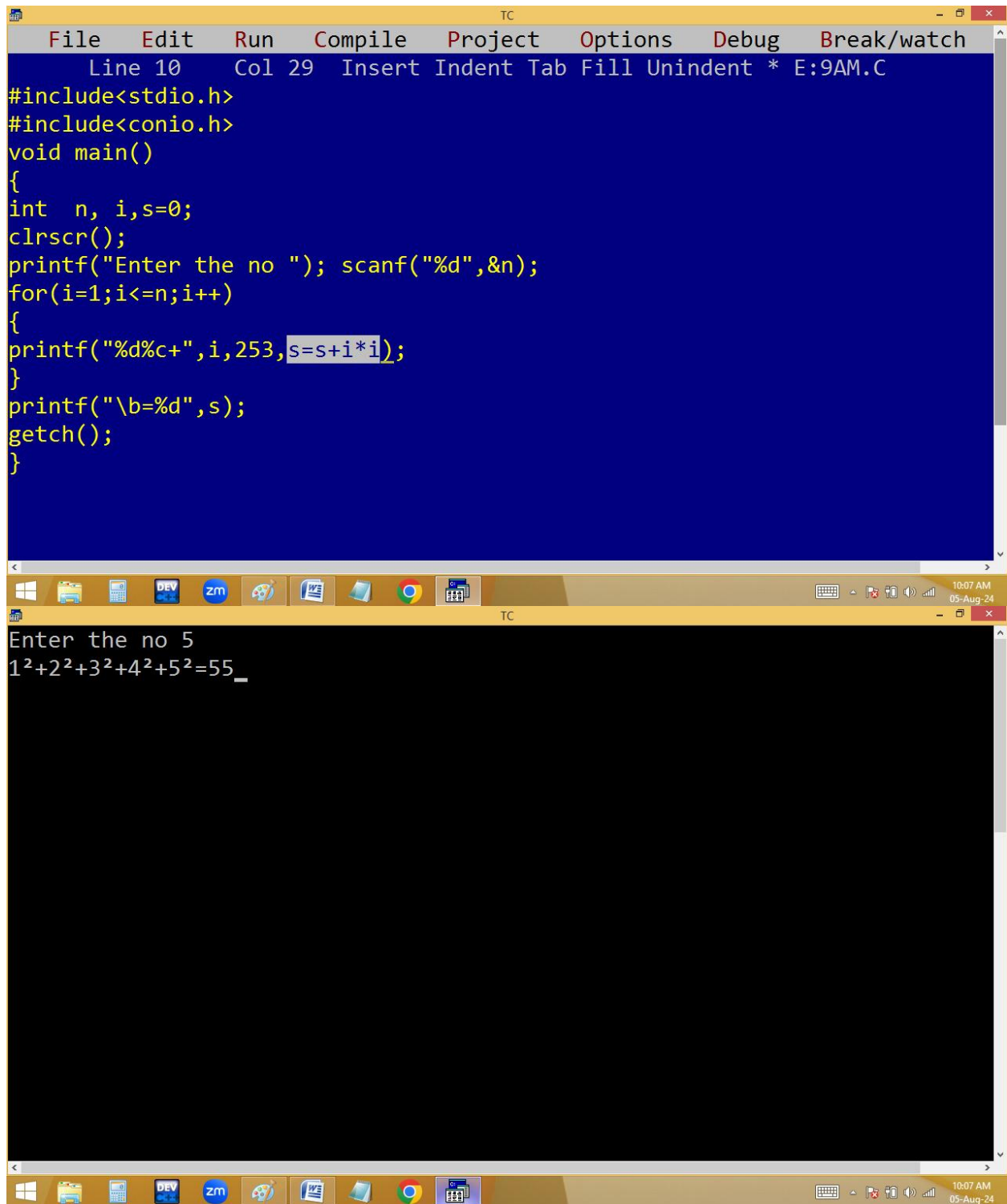
$$\begin{array}{r} S \\ 0+1=1 \\ 1-2=-1 \\ -1+3=2 \\ 2-4=-2 \\ -2+5=3 \end{array}$$

$$\begin{array}{r} 1+3+5=9 \\ -2+-4=-6 \\ \hline 3 \end{array}$$

1-2+3-4+5=3

Print below series:

$$n=5 \Rightarrow 1^2 + 2^2 + 3^2 + 4^2 + 5^2 = 1 + 4 + 9 + 16 + 25 = 55$$



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 29 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, i,s=0;
clrscr();
printf("Enter the no "); scanf("%d",&n);
for(i=1;i<=n;i++)
{
printf("%d%c+",i,253,s=s+i*i);
}
printf("\b=%d",s);
getch();
}
```

Enter the no 5
1²+2²+3²+4²+5²=55_

$$\frac{i}{1}$$

$$\frac{n}{5}$$

$$\frac{s}{0}$$

$$0 + 1 \times 1 = 1$$

$$1 + 2 \times 2 = 5$$

$$5 + 3 \times 3 = 14$$

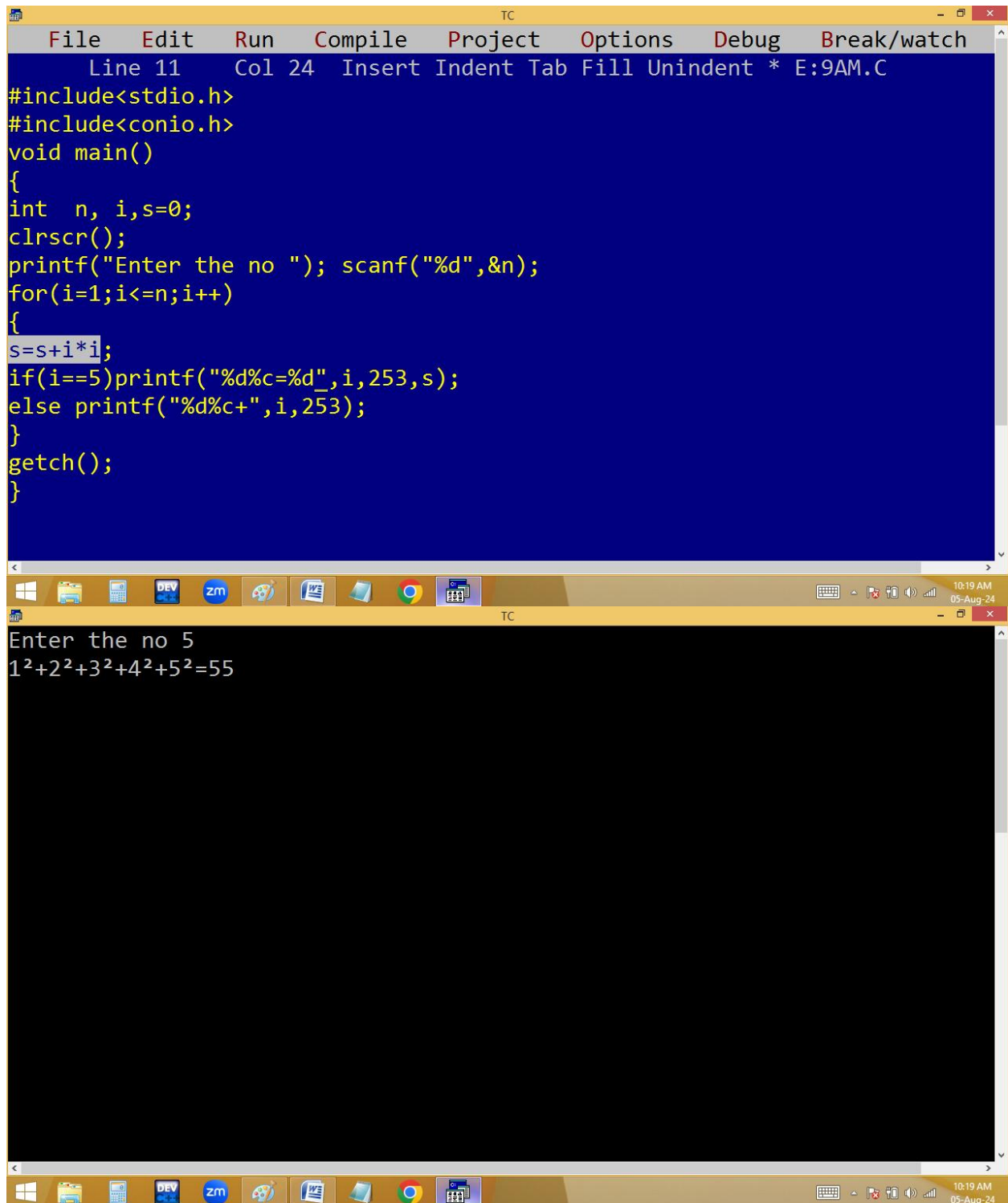
$$14 + 4 \times 4 = 30$$

$$30 + 5 \times 5 = 55$$

```
for(i=1; i<=5;i++)
{
    p("%d%c+", i, 253, s=s+i*i);
}
```

```
p("\b=%d",s);
```

Without using \b:



```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 11 Col 24 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n, i,s=0;
clrscr();
printf("Enter the no "); scanf("%d",&n);
for(i=1;i<=n;i++)
{
s=s+i*i;
if(i==5)printf("%d%c=%d",i,253,s);
else printf("%d%c+",i,253);
}
getch();
}
```

Enter the no 5
1²+2²+3²+4²+5²=55

	i	n	s
	✓ 1	5	$0 + 1 \times 1 = 1$
for(i=1; i<=5; i++)	✓ 2		$1 + 2 \times 2 = 5$
{ s=s+i*i ; ✓	✓ 3		$5 + 3 \times 3 = 14$
if(i==n) p("%d %c =%d", i, 253, s);	✓ 4		$14 + 4 \times 4 = 30$
else p("%d%c+", i, 253);	5		$30 + 5 \times 5 = 55$
}			

$1^2 + 2^2 + 3^2 + 4^2 + 5^2 = 55$

ASCII Table:

```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
int i;
clrscr();
for(i=0;i<256;i++)printf("%d=%c\t",i,i);
getch();
}
```

0= 1= 2= 3= 4= 5= 6= 7= 8

10=

14= 15= 16= 17= 18= 19= 20= 21=

22= 23= 24= 25= 26= 27= 28= 29= 30=

31= 32= 33= 34= 35= 36= 37= 38= 39= 4

41= 42= 43= 44= 45= 46= 47= 48= 49= 5

51= 52= 53= 54= 55= 56= 57= 58= 59= 6

61= 62= 63= 64= 65= 66= 67= 68= 69= 7

71= 72= 73= 74= 75= 76= 77= 78= 79= 8

81= 82= 83= 84= 85= 86= 87= 88= 89= 9

91= 92= 93= 94= 95= 96= 97= 98= 99= 1

101= 102= 103= 104= 105= 106= 107= 108= 109= 1

111= 112= 113= 114= 115= 116= 117= 118= 119= 1

121= 122= 123= 124= 125= 126= 127= 128= 129=

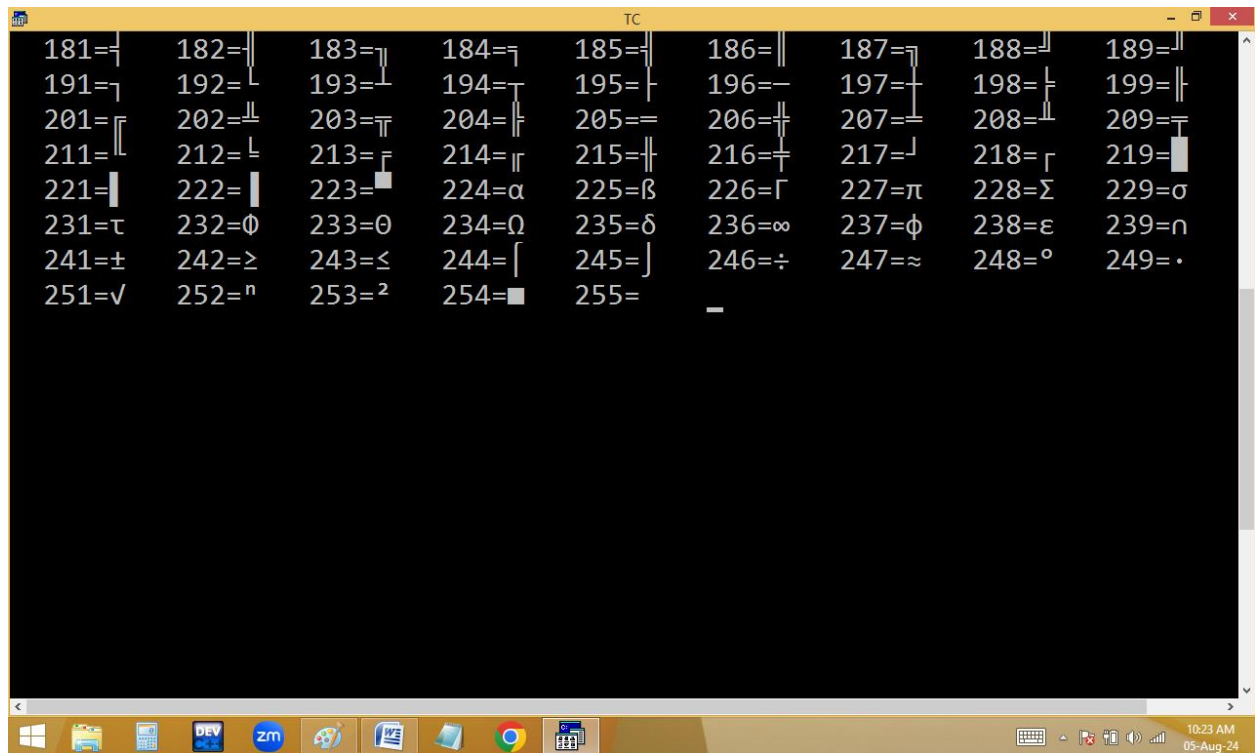
131= 132= 133= 134= 135= 136= 137= 138= 139=

141= 142= 143= 144= 145= 146= 147= 148= 149=

151= 152= 153= 154= 155= 156= 157= 158= 159=

161= 162= 163= 164= 165= 166= 167= 168= 169=

171= 172= 173= 174= 175= 176= 177= 178= 179=



Finding gcd / hcf:

4 divisible with 1, **2**, 4

6 divisible with 1, **2**, 3, 6

2 is gcd / hcf of 4 and 6

The image shows a screenshot of the Turbo C++ (TC) IDE. The top window displays a C program for finding the Greatest Common Divisor (GCD) of two numbers. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 9 Col 20 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,i,gcd;
clrscr();
printf("Enter a, b values "); scanf("%d %d",&a, &b);
for(i=1;i<=a && i<=b;i++)if(a%i==0 && b%i==0)gcd=i;
printf("gcd=%d",gcd);
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: gcd=2.

```
Enter a, b values 4 6
gcd=2
```

The Windows taskbar at the bottom shows the time as 10:31 AM on 05-Aug-24.

```
TC
Enter a, b values 10 15
gcd=5_
```

$1 \leq 4$ $1 \leq 6$ ✓
for($i=1$; $i \leq a$ && $i \leq b$; $i++$)
{
 if($a \% i == 0$ && $b \% i == 0$) gcd= i ;
}

→ p(gcd);

a	i	&&	b	i	gcd
4	1	$= 0$ ✓	6	1	$= 0$ ✓
4	2	$= 0$	6	2	$= 0$
4	3	$= 1$			
4	4	$= 0$	6	4	$= 2$
<u>$5 \leq 4$</u>					

(Note: In the original image, the value 2 in the gcd column is circled in green, and a red arrow points from it to the p(gcd); statement in the code block.)

Finding lcm of given two numbers:

1. Using gcd:

$$4 \quad \times \quad 6 = 24 / \underset{\substack{\uparrow \\ \text{gcd}}}{2} = 12 \text{ LCM}$$

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 using the Greatest Common Divisor (GCD) method. The code is as follows:

```
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 21 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,i,gcd;
    clrscr();
    printf("Enter a, b values "); scanf("%d %d",&a, &b);
    for(i=1;i<=a && i<=b;i++)if(a%i==0 && b%i==0)gcd=i;
    printf("Lcm=%d",a*b/gcd);
    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_
```

2. 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 standard input/output and console I/O, defines a main function, declares variables for a, b, and max, and uses a while loop to find the LCM by incrementing max until it is divisible by both a and b. The bottom screenshot shows the program's execution. It prompts the user to enter values for a and b, with '4' and '6' entered. The output shows 'Lcm=12_'. The Windows taskbar at the bottom of both screenshots indicates the time is 10:41 AM on 05-Aug-24.

```
File Edit Run Compile Project Options Debug Break/watch
Line 10 Col 1 Insert Indent Tab Fill Unindent * E:9AM.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(max)
{ 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 10 15
Lcm=30
```

<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	

LCM

