

102 ➔ One Zero Two

```
#include<stdio.h>
```

```
#include<conio.h>
```

```
void main()
```

```
{
```

```
long m,n,rev=0; int r;
```

```
clrscr();
```

```
printf("Enter n value "); scanf("%ld",&n);
```

```
if(n<0)printf("-",n=-n); m=n;
```

```
do{r=n%10;rev=rev*10+r;n=n/10;}while(n!=0);/*rev no*/
```

```
do
```

```
{
```

```
switch(rev%10)
```

```
{
```

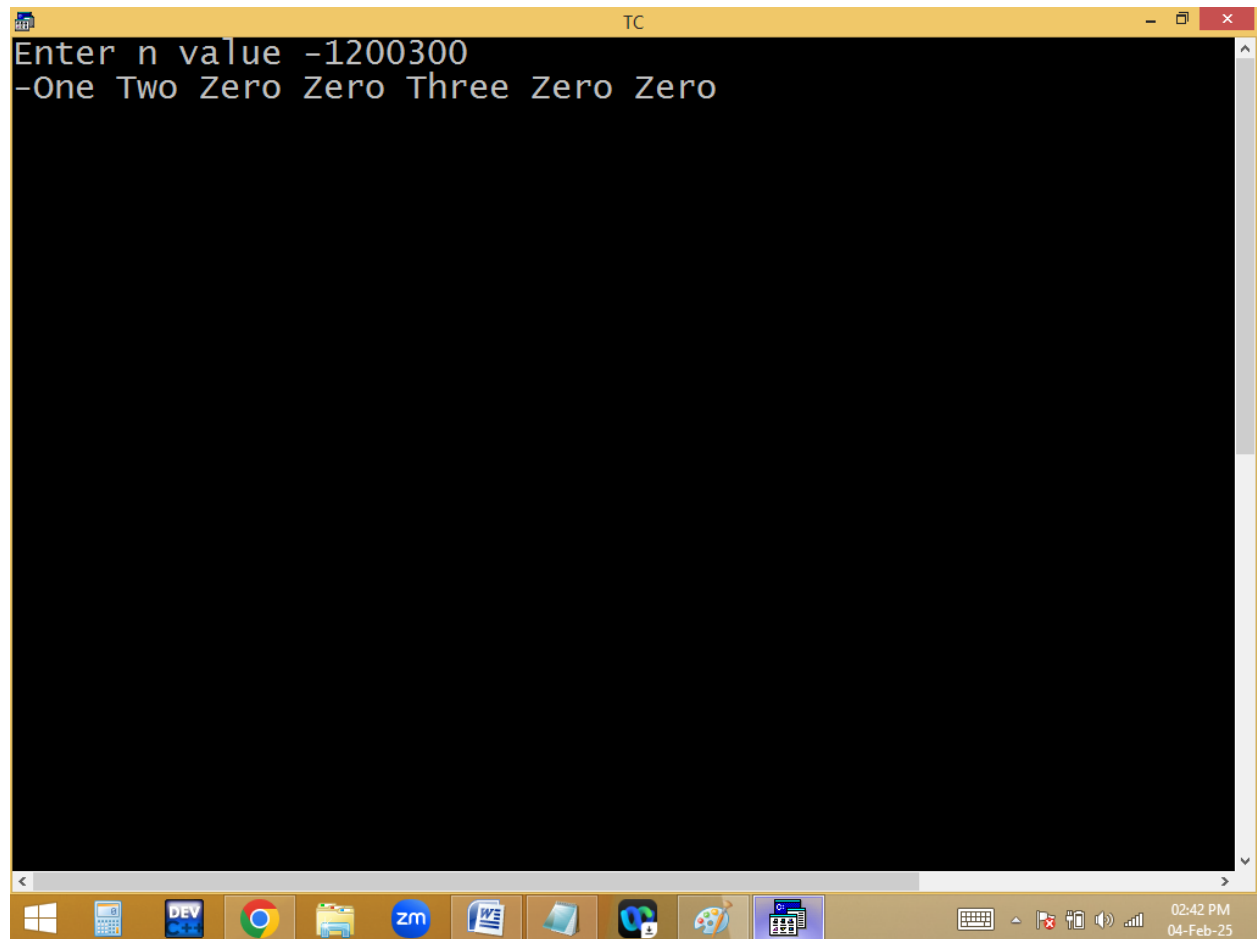
```
case 0: printf("Zero");break;
```

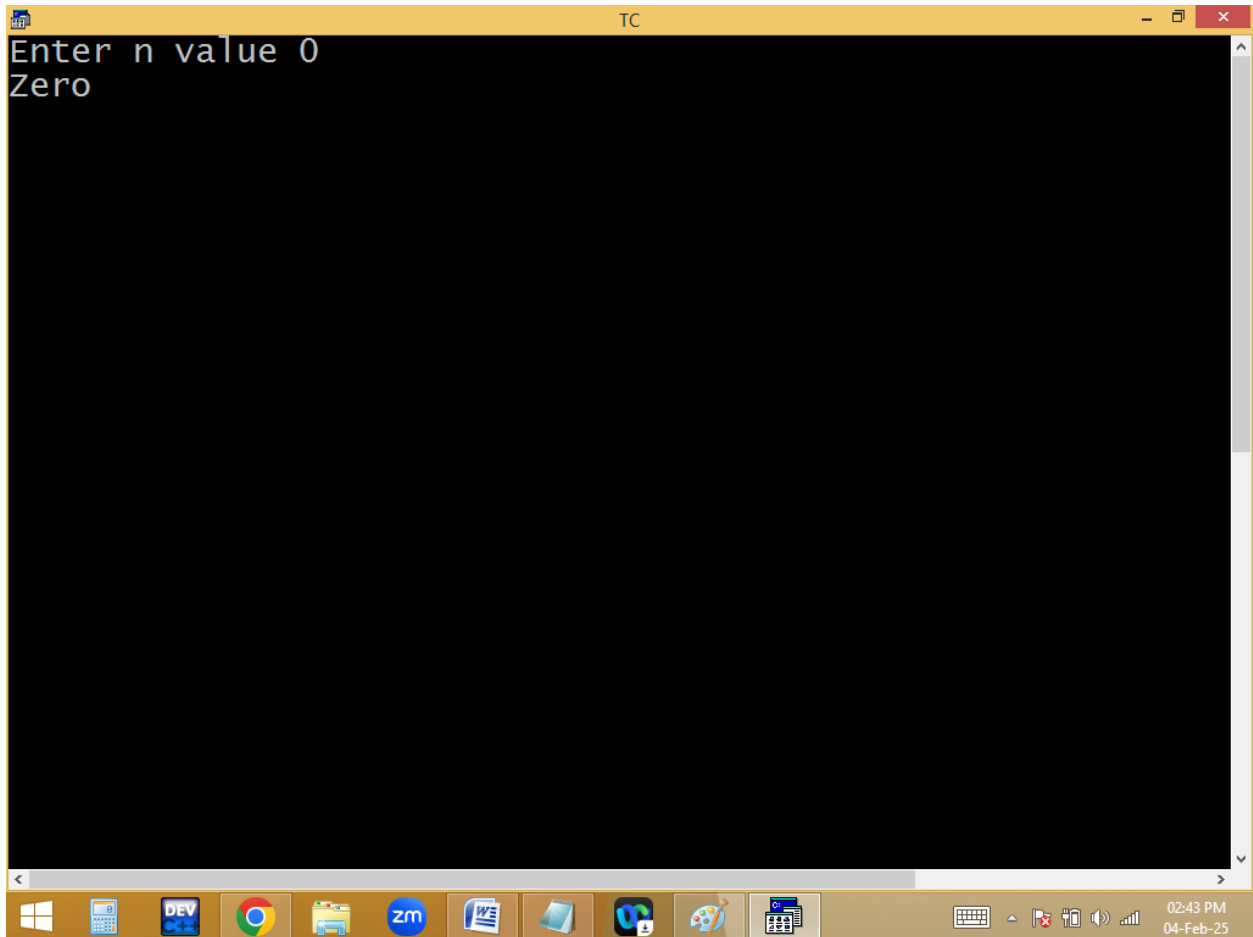
```
case 1: printf("One");break;
```

```
case 2: printf("Two");break;
```

```
case 3: printf("Three");break;
```

```
case 4: printf("Four");break;
case 5: printf("Five");break;
case 6: printf("Six");break;
case 7: printf("Seven");break;
case 8: printf("Eight");break;
case 9: printf("Nine");break;
}
printf(" "); rev=rev/10;
}while(rev!=0);
while(m%10==0&&m!=0)printf("Zero ",m/=10);
getch();
}
```





$$\begin{array}{r} n \rightarrow rev \\ 102 \quad 201 \% 10 = 1 \text{ One} \\ 201 \% 10 = 0 \text{ Zero} \\ 20 \% 10 = 2 \text{ Two} \end{array}$$

```

do
{
  switch( rev%10 )
  {
    case 0: p(zero);break; ✓
    case 1: p(one);b; ✓
    case 2: p(two);b; ✓
    case 9: p(nine);
  }
  rev=rev/10; ✓✓
  p(" ");
}while(rev!=0);

```

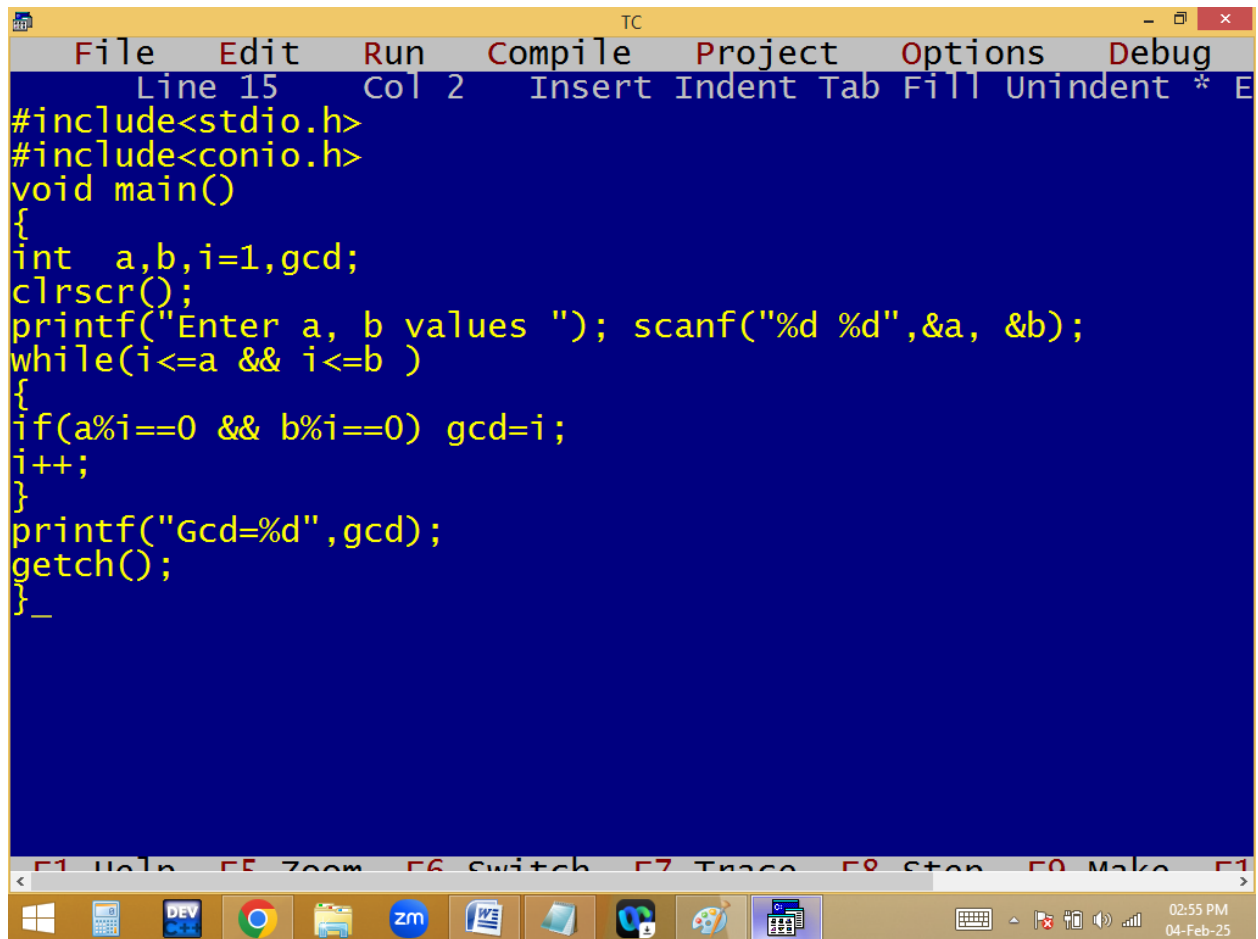
$$\begin{array}{r} m \\ 100 \% 10 = 0 \\ \text{while( } \underline{m \% 10 == 0} \text{ \&\& } \underline{m != 0} \text{ ) p( "Zero", } \underline{m = m / 10} \text{);}$$

$$\begin{array}{r} n \rightarrow rev \\ 100 \quad 1 - \text{ One Zero Zero} \end{array}$$

**Finding gcd / hcf of given two no's:**

**4 factors 1 2 4**

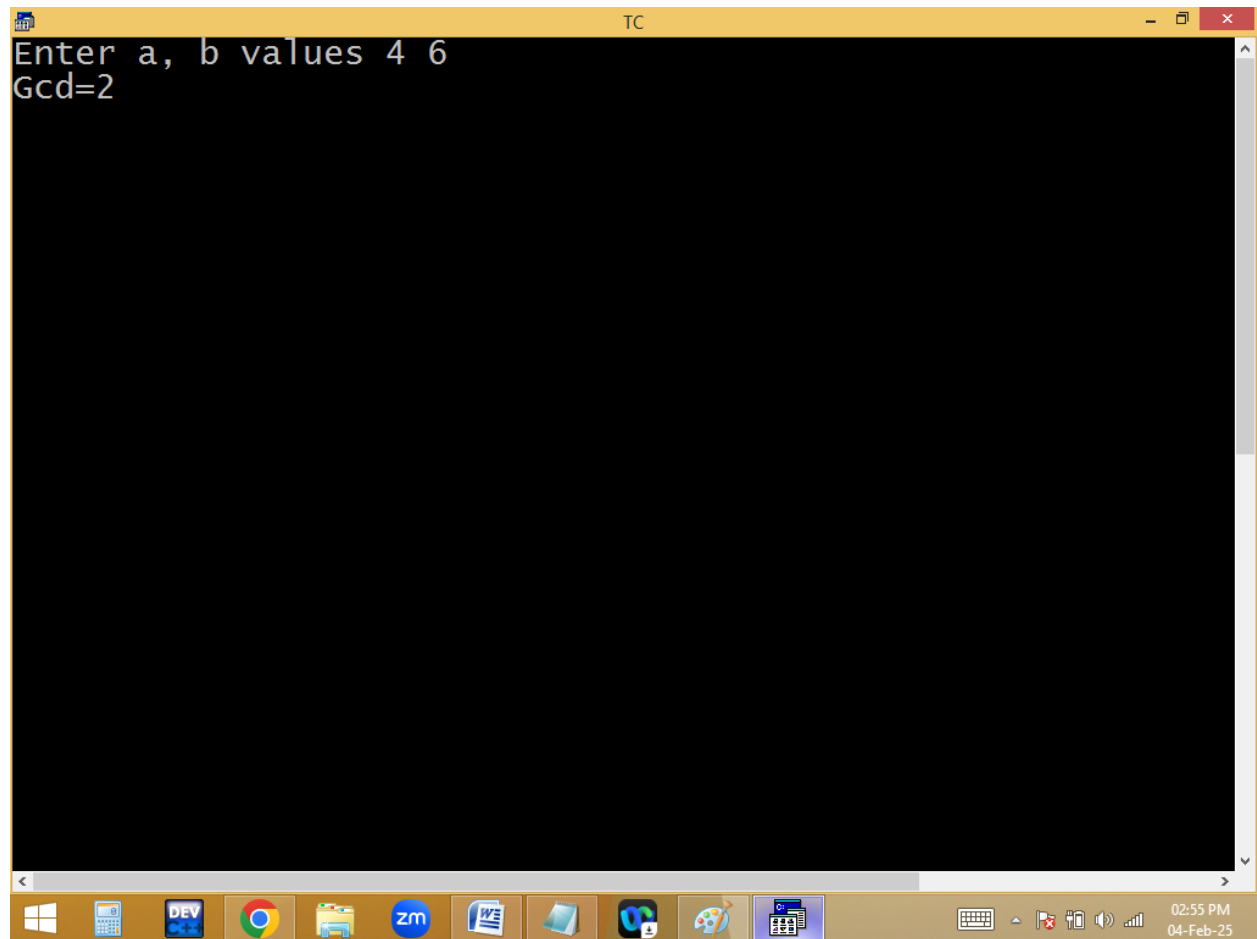
**6 factors 1 2 3 6**

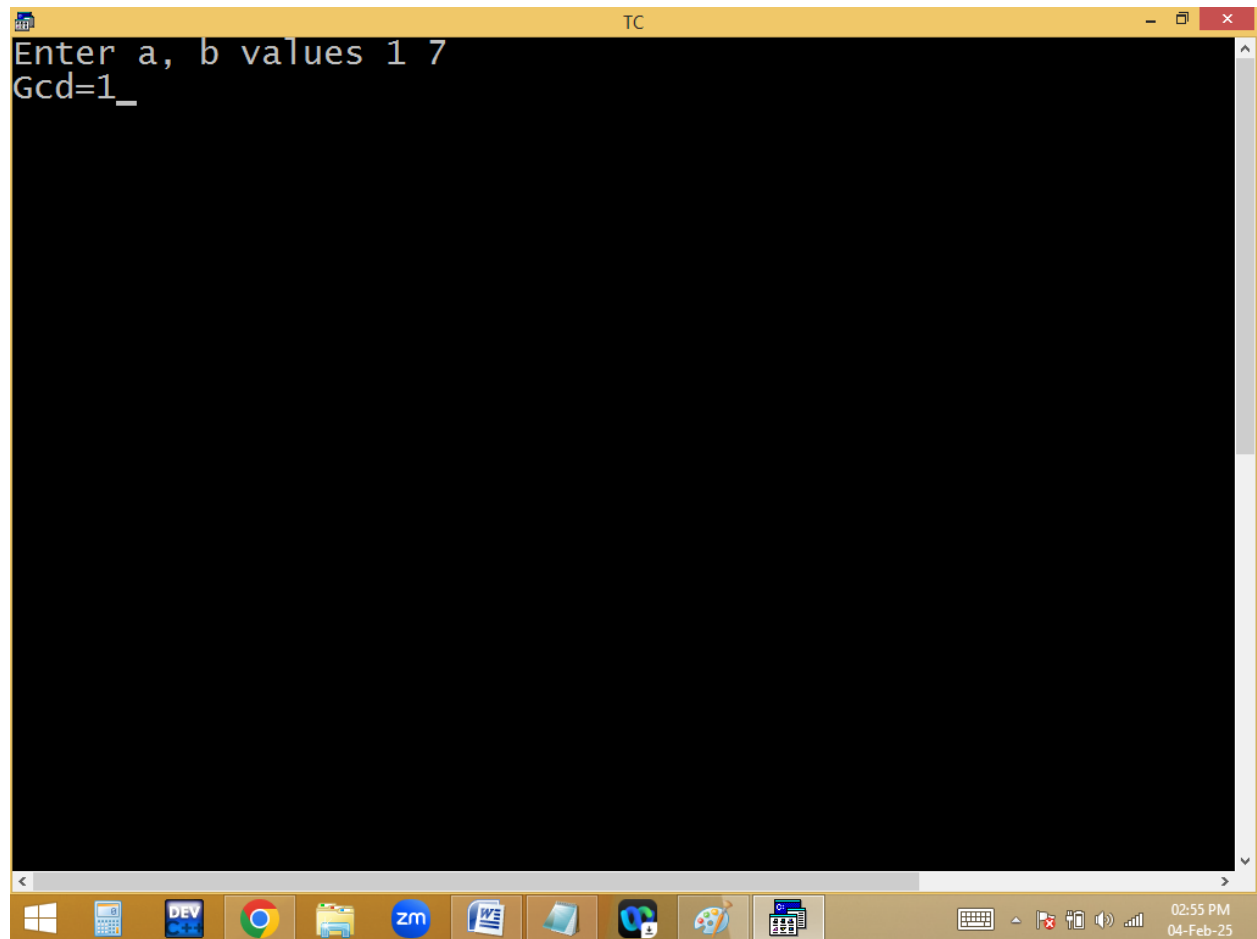


The image shows a screenshot of the Turbo C++ (TC) IDE. The window title is "TC". The menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", and "Debug". The status bar at the top indicates "Line 15", "Col 2", and lists keyboard shortcuts: "Insert", "Indent", "Tab", "Fill", "Unindent", "\*", and "E". The main editing area has a blue background and contains the following C code:

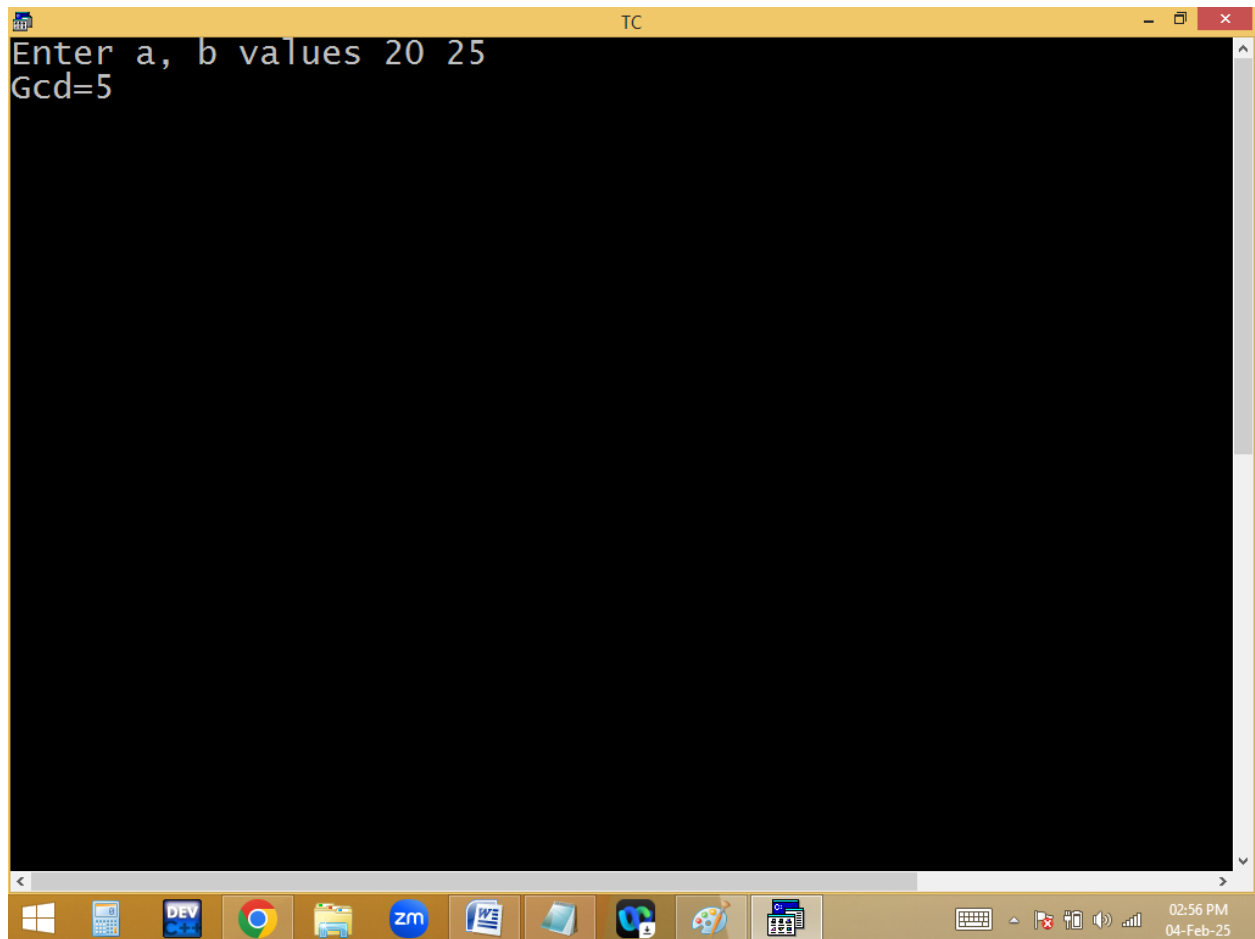
```
#include<stdio.h>
#include<conio.h>
void main()
{
int  a,b,i=1,gcd;
clrscr();
printf("Enter a, b values "); scanf("%d %d",&a, &b);
while(i<=a && i<=b )
{
if(a%i==0 && b%i==0) gcd=i;
i++;
}
printf("Gcd=%d",gcd);
getch();
}_
```

At the bottom of the IDE, there is a toolbar with function key shortcuts: F1 Help, F5 Zoom, F6 Switch, F7 Trace, F8 Stop, F9 Make, and F10. Below the IDE window is the Windows taskbar, which includes icons for the Start button, Task View, File Explorer, Microsoft Edge, Zoom, Word, and several other applications. The system tray on the right shows the time as 02:55 PM and the date as 04-Feb-25.









Handwritten notes illustrating the GCD calculation for a=20 and b=25:

**Initial values:**  
 $5 \leq 4$   
 $1 \leq 4 \leq 6$

**while loop logic:**  

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

**Iteration steps:**

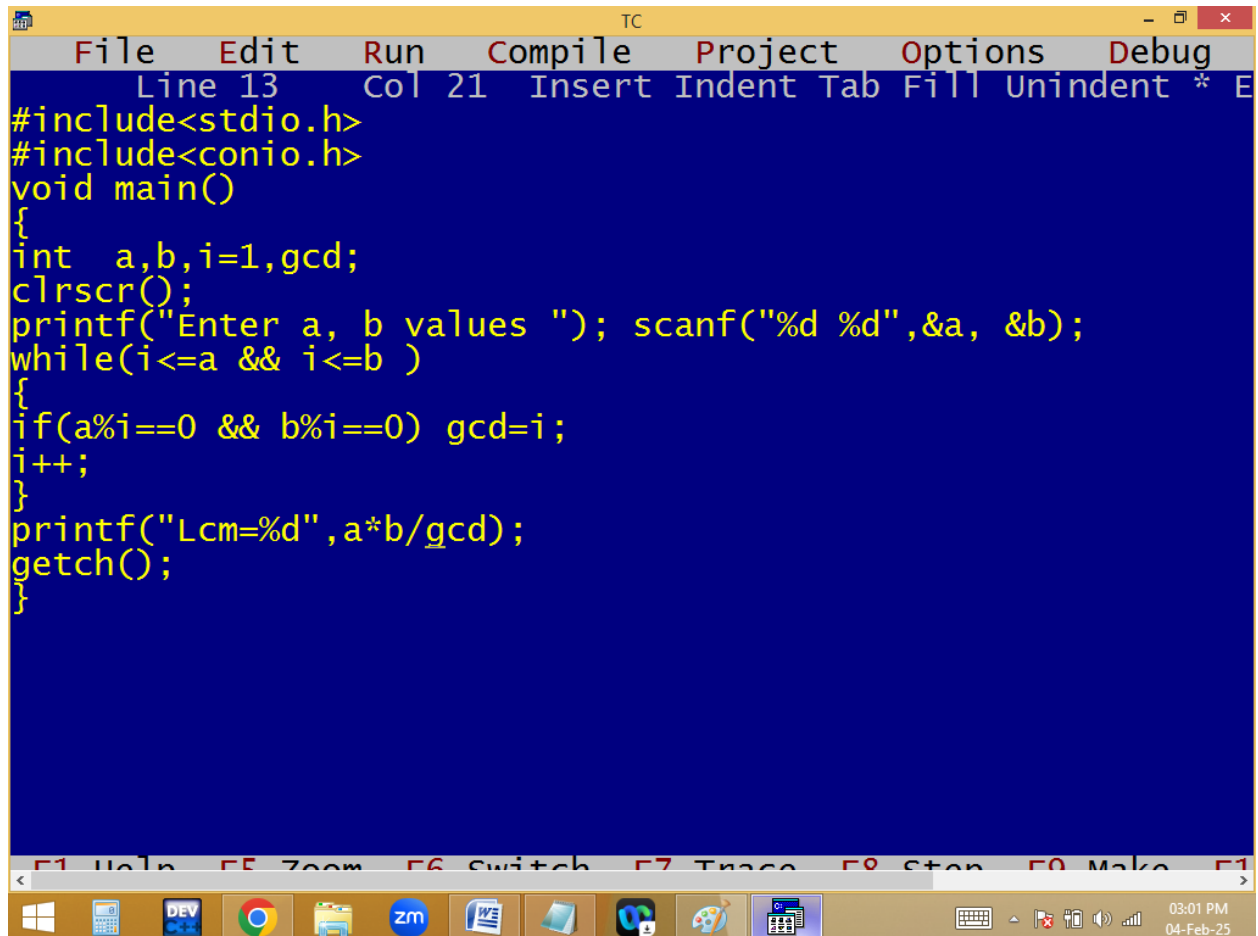
a	i	b	i	gcd
4	1	6	1	1
4	2	6	2	2
4	3			
4	4	6	4	2

**Final result:**  
 $5 \leq 4$  (Red arrow points to the final gcd value 2 in the table above)

**Output:**  
 $p(gcd);$  (Green arrow points from the output statement to the final gcd value 2 in the table above)

## Finding lcm of given two no's:

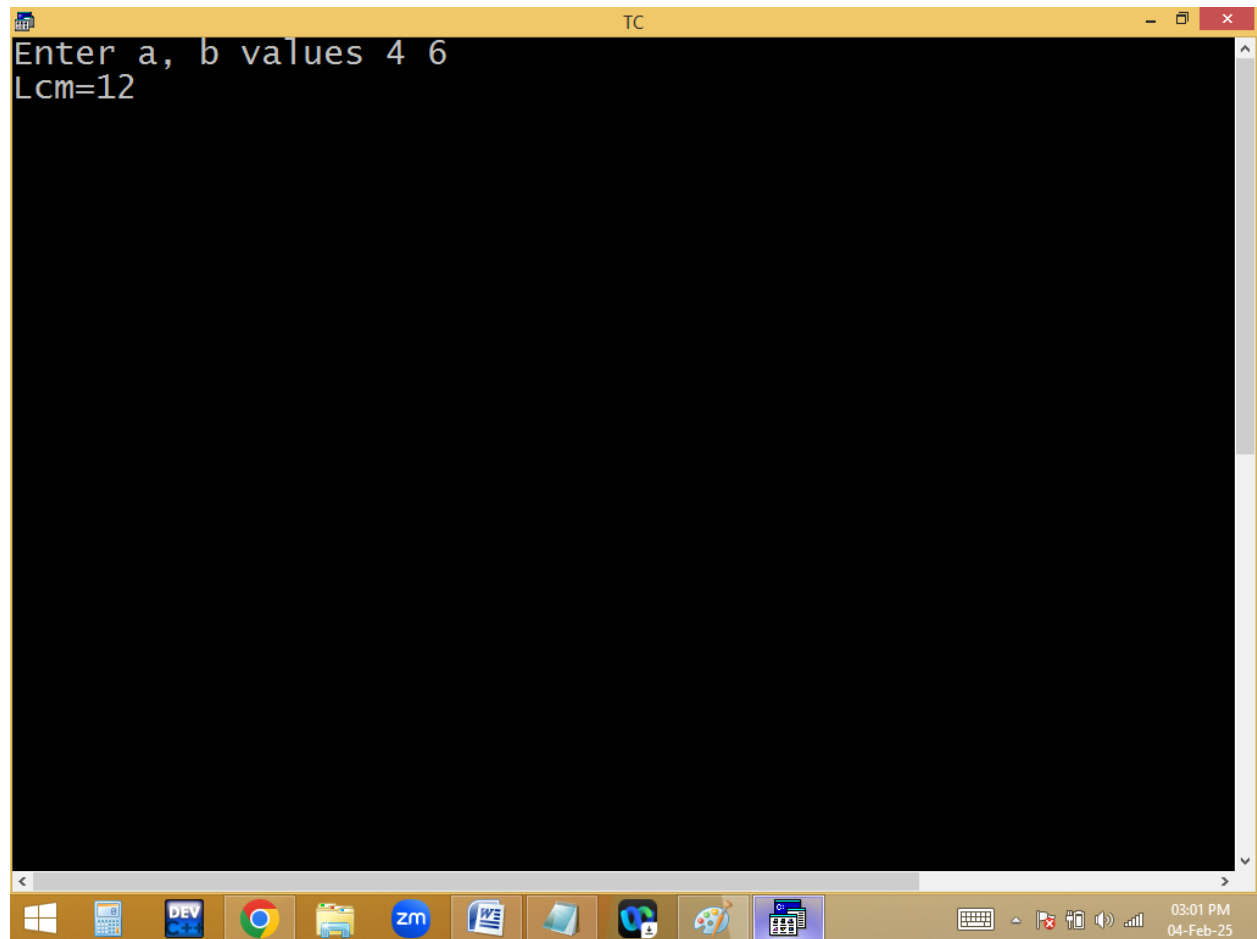
### Using gcd:

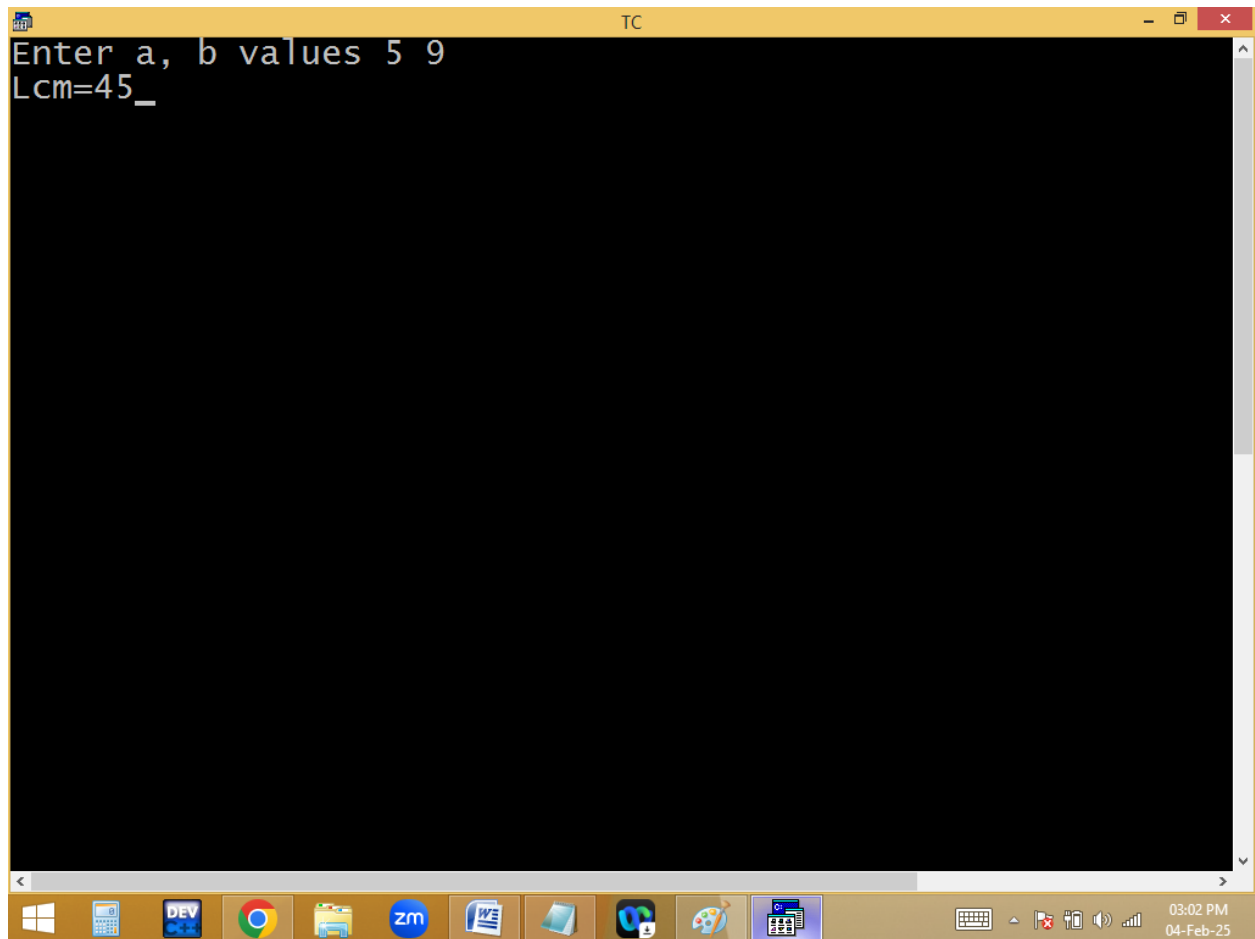


```
TC
File Edit Run Compile Project Options Debug
Line 13 Col 21 Insert Indent Tab Fill Unindent * E
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,i=1,gcd;
clrscr();
printf("Enter a, b values "); scanf("%d %d",&a, &b);
while(i<=a && i<=b )
{
if(a%i==0 && b%i==0) gcd=i;
i++;
}
printf("Lcm=%d",a*b/gcd);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

The screenshot shows a Turbo C++ IDE window titled 'TC'. The menu bar includes File, Edit, Run, Compile, Project, Options, and Debug. The status bar at the top indicates 'Line 13 Col 21 Insert Indent Tab Fill Unindent \* E'. The code is written in C and calculates the LCM of two numbers 'a' and 'b' by finding their GCD. The code includes headers for stdio.h and conio.h, uses clrscr() to clear the screen, and uses scanf to take input. A while loop finds the GCD by checking common divisors from 1 to the minimum of a and b. Finally, printf prints the LCM as a\*b/gcd, and getch() is used to pause the program.

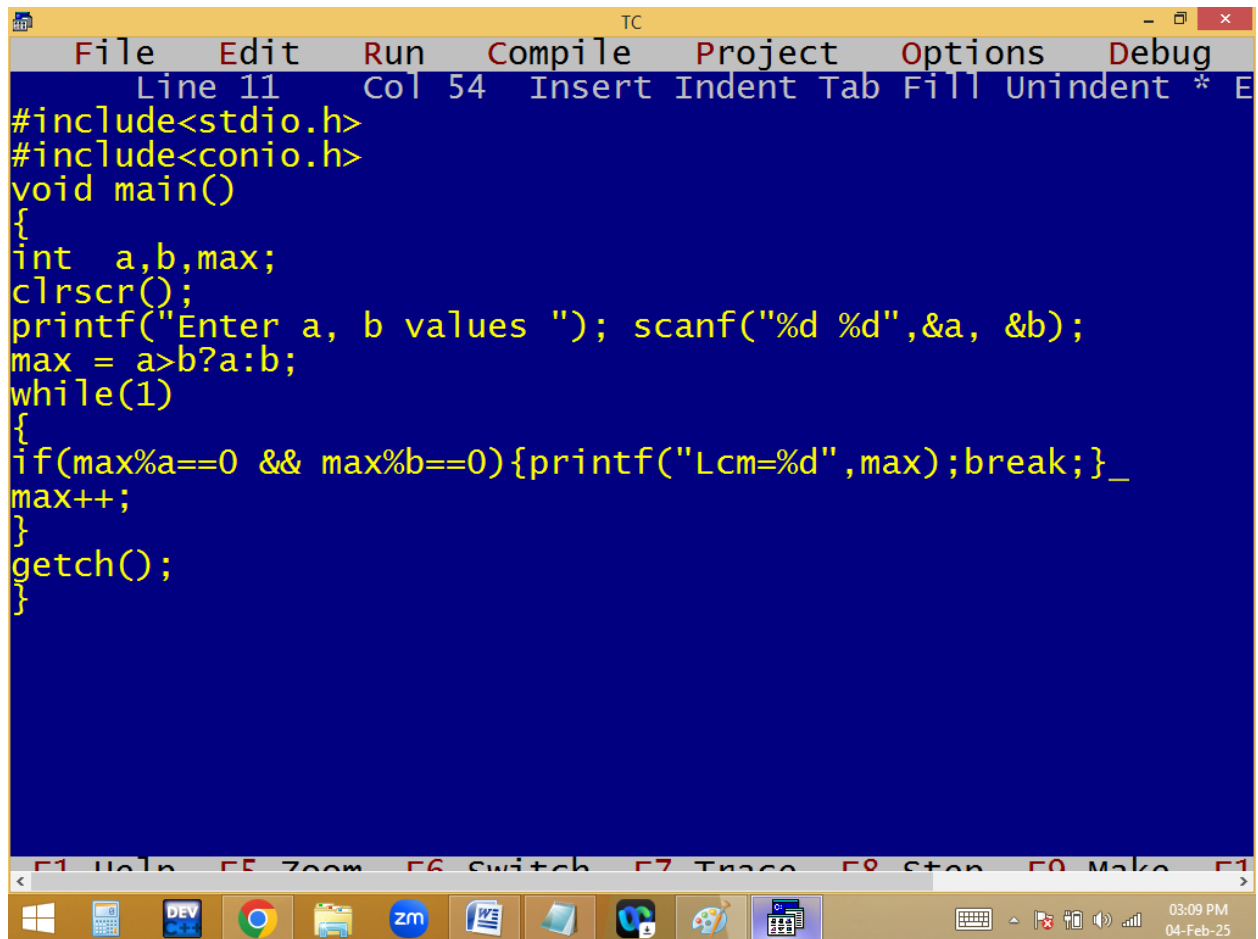
At the bottom, the Windows taskbar is visible with icons for Windows, DEV, Chrome, File Explorer, Zoom, Word, and other applications. The system clock shows 03:01 PM on 04-Feb-25.





```
TC
Enter a, b values 5 9
Lcm=45_
```

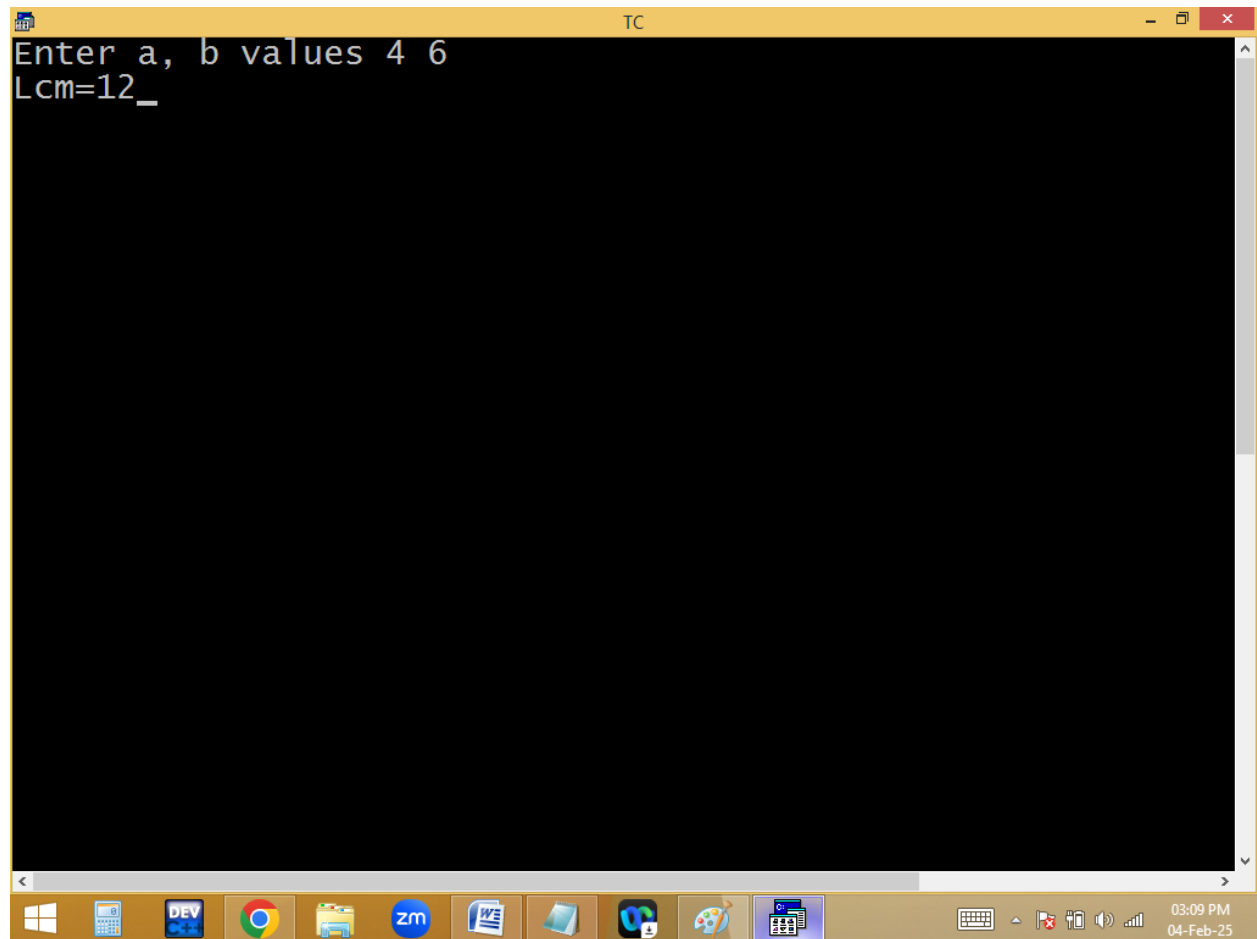
**Method2:**



The image shows a screenshot of the Turbo C++ (TC) IDE. The window title is "TC". The menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", and "Debug". Below the menu bar, the status bar shows "Line 11", "Col 54", and a list of editing options: "Insert", "Indent", "Tab", "Fill", "Unindent", and a cursor icon. The main editing area has a dark blue background with yellow text. The code is as follows:

```
#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();
}
```

At the bottom of the window, there is a toolbar with icons for various functions and a status bar. The status bar on the right shows the time "03:09 PM" and the date "04-Feb-25".



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

`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

**for loop:**

**for loop:**

**It is an entry control loop.**

**for is a keyword.**

**It is also used to repeat a program several times based on a condition.**

**When compared with while and do while, for loop is looking to be smart. In for it is compulsory to maintain two semicolons.**

**For works without condition also and default condition is always 1 i.e. true.**

**Generally for loop is having 3 expressions.**

- 1. Initialization**
- 2. Test condition / expression**
- 3. Increment/decrement / updation**

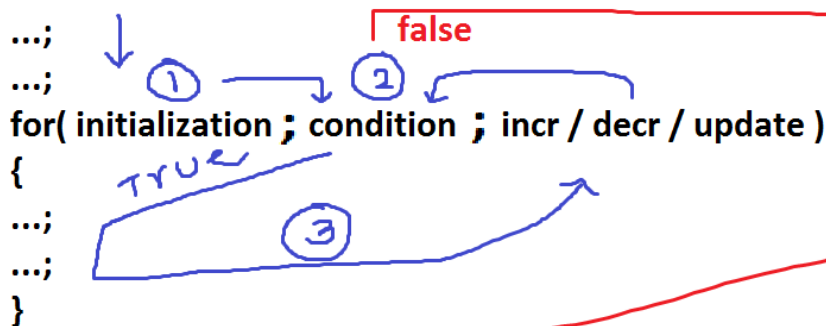


**At first entry of for loop the initialization part is executed and later the test condition is checked. If the condition is true then the for block statements are executed. After completion of the block, the increment or decrement part is executed. Later once again the test condition is evaluated. If it is true then once again for block statements are executed. Like this the process is continued until the condition becomes false. Here the initialization part is executed only once, at the time of loop beginning.**

**It is mandatory to maintain 2 semicolon ( ; ) in a for loop.**

If the for loop is having more than three expressions, it is mandatory to separate the expressions with , separator.

If the for loop is having less than three expressions, then leave the expressions with empty semicolon.



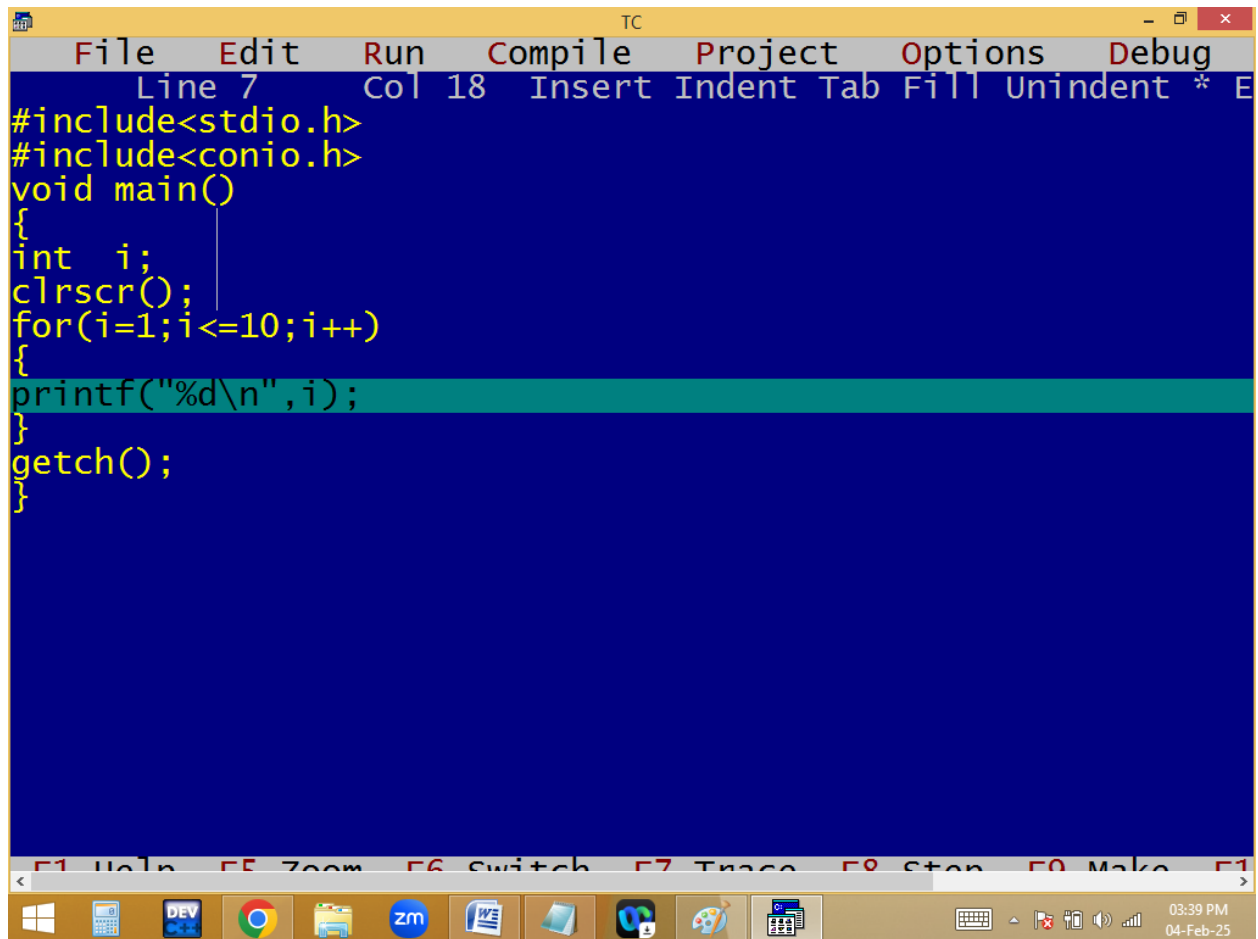
```
for(exp ; exp ; exp )  
{  
}
```

```
for(exp, exp ; exp ; exp,exp)  
{  
}
```

```
for( ; exp ; )  
{  
}
```

```
for( ; ; )  
{  
}
```

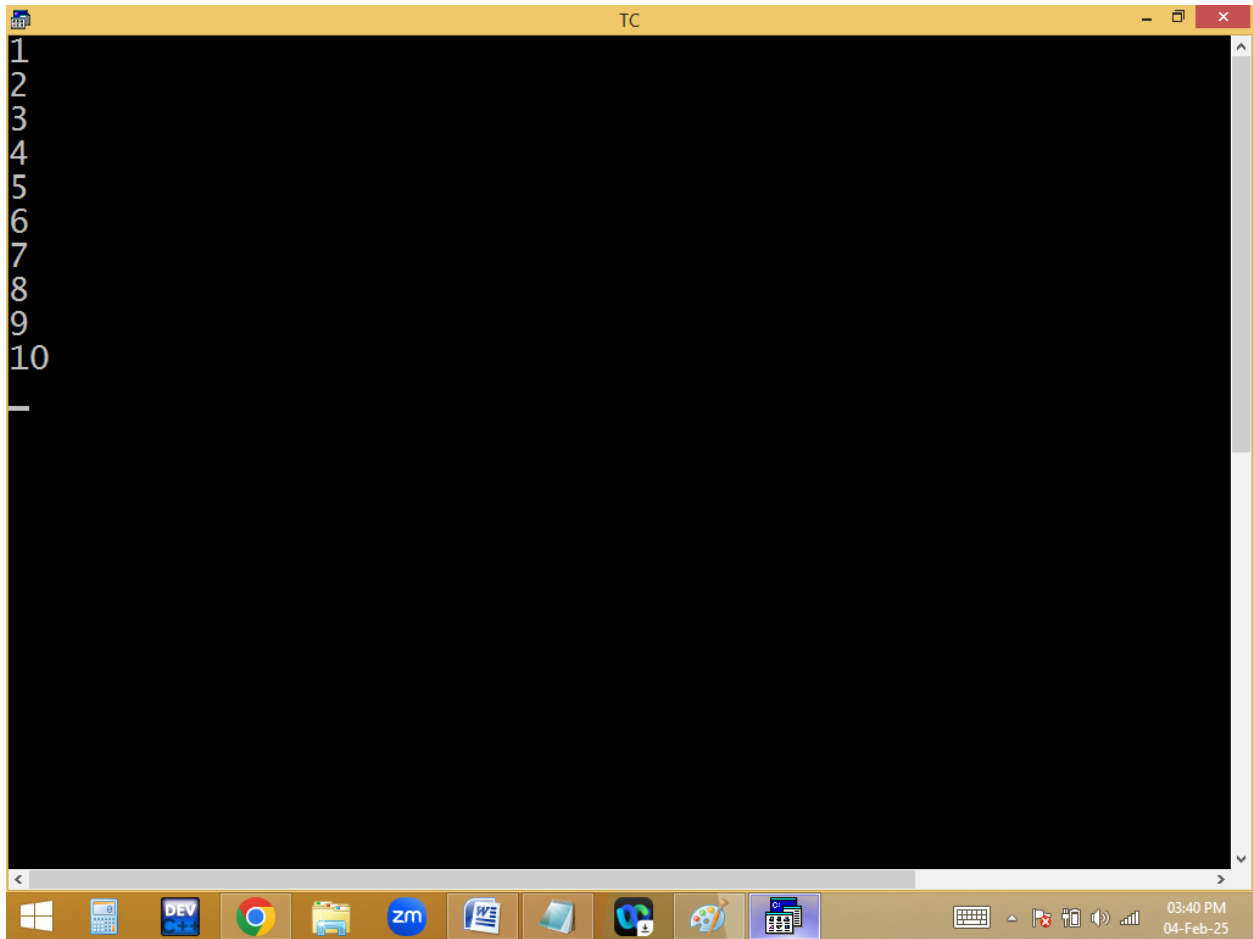
**Printing 1..10 no's with for:**



The image shows a screenshot of the Turbo C++ (TC) IDE. The window title is "TC". The menu bar includes "File", "Edit", "Run", "Compile", "Project", "Options", and "Debug". The status bar at the top indicates "Line 7", "Col 18", and lists keyboard shortcuts: "Insert", "Indent", "Tab", "Fill", "Unindent", "\*", and "E". The code editor has a dark blue background with yellow text. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i;
    clrscr();
    for(i=1;i<=10;i++)
    {
        printf("%d\n",i);
    }
    getch();
}
```

The line containing `printf("%d\n",i);` is highlighted with a teal background. The bottom status bar shows function key shortcuts: "F1 Help", "F5 Zoom", "F6 Switch", "F7 Trace", "F8 Stop", "F9 Make", and "F10". The Windows taskbar at the bottom includes icons for the Start menu, Task View, File Explorer, Google Chrome, Zoom, Word, and other applications. The system clock in the bottom right corner shows "03:39 PM" and "04-Feb-25".



**Printing given table:**

**Example 9<sup>th</sup> table**

$$9*1=9$$

$$9*2=18$$

$$9*3=27$$

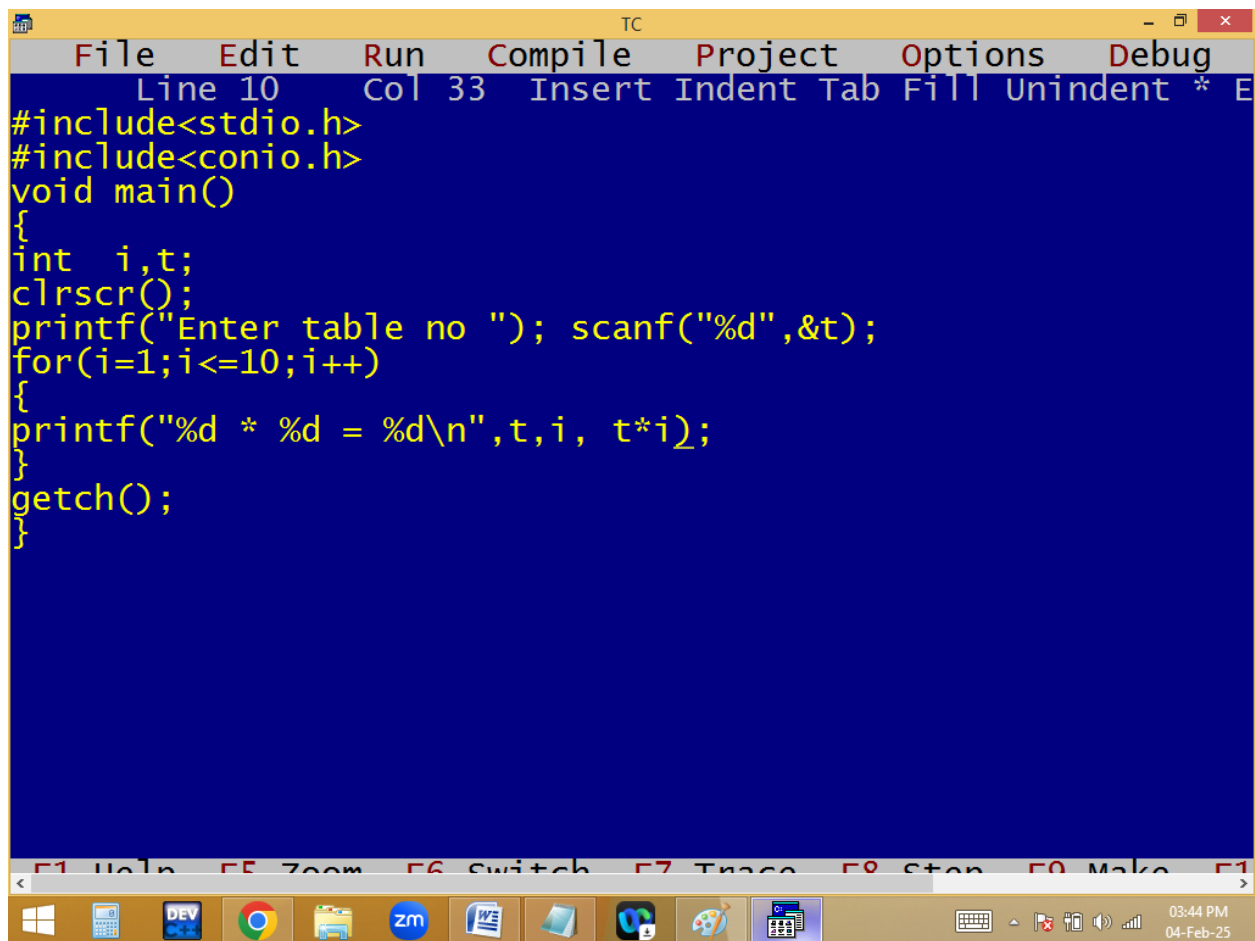
$$9*4=36$$

9\*5=45

..

..

9\*10=90




The screenshot shows a Turbo C++ (TC) IDE window. The menu bar includes File, Edit, Run, Compile, Project, Options, and Debug. The status bar at the top indicates 'Line 10 Col 33'. The code in the editor is as follows:

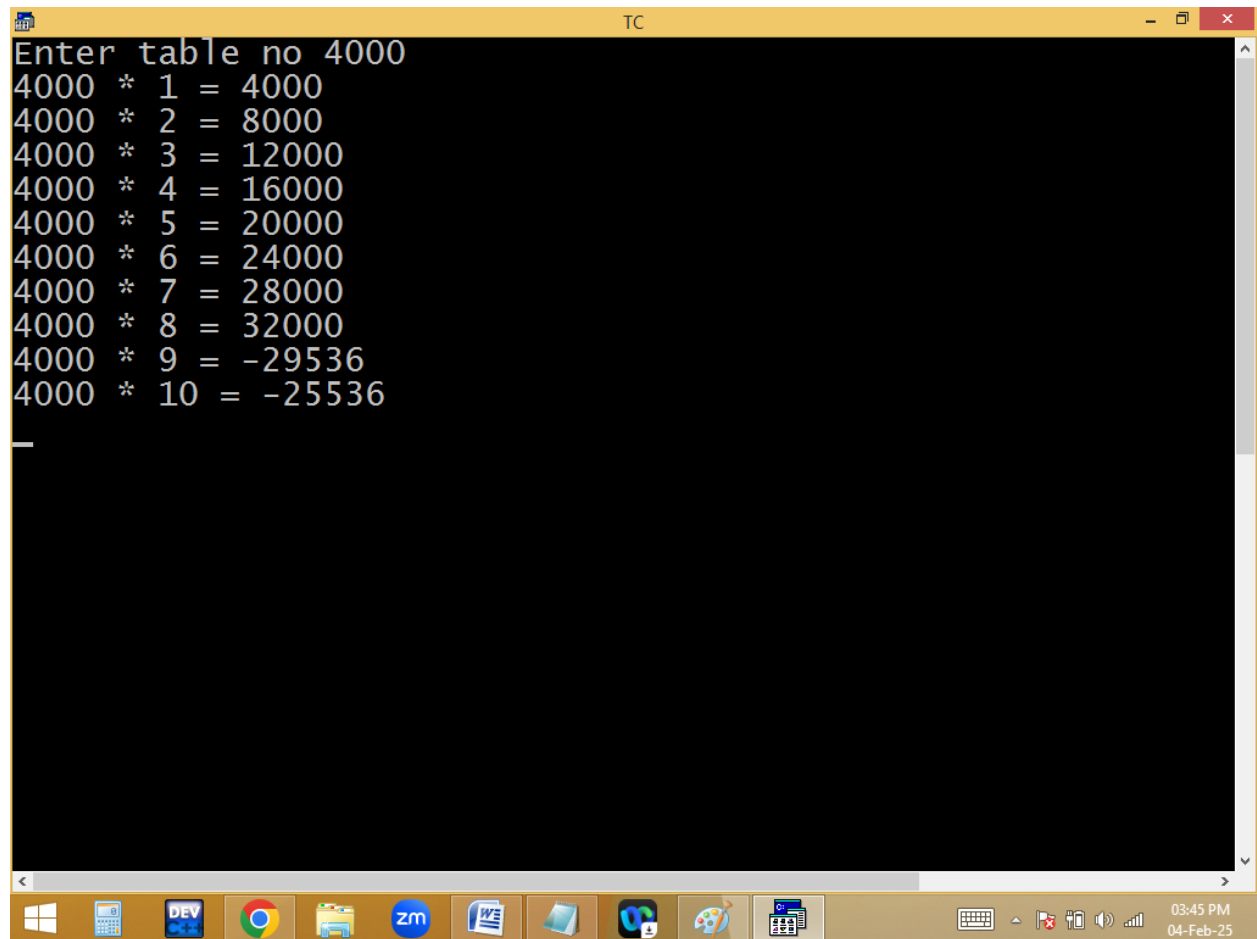
```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,t;
    clrscr();
    printf("Enter table no "); scanf("%d",&t);
    for(i=1;i<=10;i++)
    {
        printf("%d * %d = %d\n",t,i, t*i);
    }
    getch();
}
```

Below the code editor, there is a toolbar with function keys: F1 Help, F5 Zoom, F6 Switch, F7 Trace, F8 Stop, F9 Make, and F10. The Windows taskbar at the bottom shows various application icons and the system clock indicating 03:44 PM on 04-Feb-25.

```
TC
Enter table no 9
9 * 1 = 9
9 * 2 = 18
9 * 3 = 27
9 * 4 = 36
9 * 5 = 45
9 * 6 = 54
9 * 7 = 63
9 * 8 = 72
9 * 9 = 81
9 * 10 = 90
```



```
TC
Enter table no 4000
4000 * 1 = 4000
4000 * 2 = 8000
4000 * 3 = 12000
4000 * 4 = 16000
4000 * 5 = 20000
4000 * 6 = 24000
4000 * 7 = 28000
4000 * 8 = 32000
4000 * 9 = -29536
4000 * 10 = -25536
```

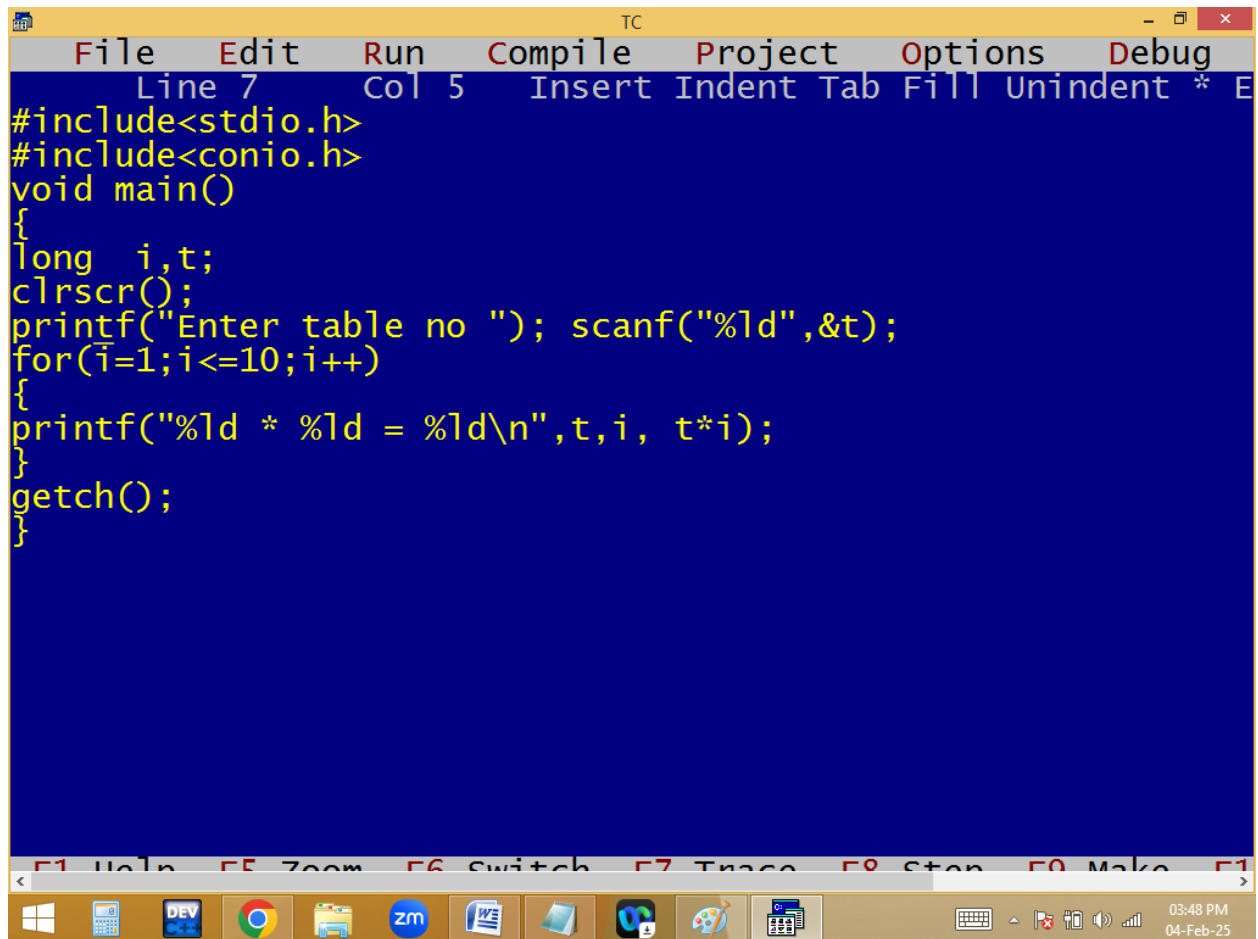


The screenshot shows a Windows desktop environment. A terminal window titled "TC" is open, displaying the following text:

```
Enter table no 4000
4000 * 1 = 4000
4000 * 2 = 8000
4000 * 3 = 12000
4000 * 4 = 16000
4000 * 5 = 20000
4000 * 6 = 24000
4000 * 7 = 28000
4000 * 8 = 32000
4000 * 9 = -29536
4000 * 10 = -25536
```

The Windows taskbar is visible at the bottom, showing icons for the Start menu, Task View, and several applications including a calculator, a development environment (DEV), Google Chrome, a file explorer, Zoom (zm), a document editor (WE), and a presentation application. The system tray on the right shows the time as 03:45 PM and the date as 04-Feb-25.



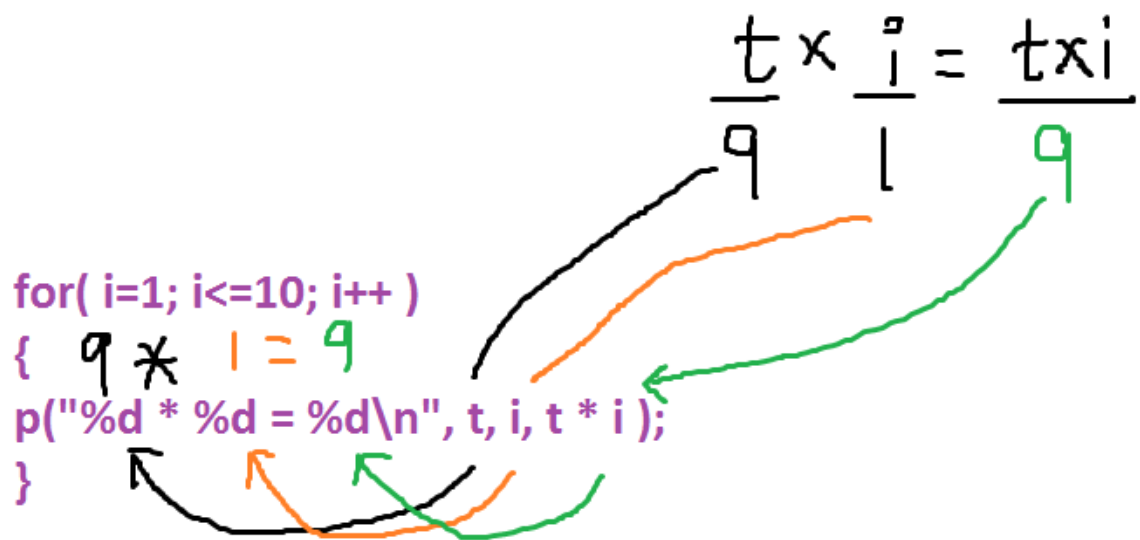


The image shows a screenshot of a Turbo C++ (TC) IDE window. The window has a yellow title bar with the text "TC" and standard window controls. Below the title bar is a menu bar with the following options: File, Edit, Run, Compile, Project, Options, and Debug. A status bar at the top of the editor area shows "Line 7" and "Col 5". The editor area has a dark blue background with yellow text. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    long i,t;
    clrscr();
    printf("Enter table no "); scanf("%ld",&t);
    for(i=1;i<=10;i++)
    {
        printf("%ld * %ld = %ld\n",t,i, t*i);
    }
    getch();
}
```

Below the editor area, there is a toolbar with icons for various functions, and a status bar at the bottom showing the time "03:48 PM" and the date "04-Feb-25".

```
TC
Enter table no 100000
100000 * 1 = 100000
100000 * 2 = 200000
100000 * 3 = 300000
100000 * 4 = 400000
100000 * 5 = 500000
100000 * 6 = 600000
100000 * 7 = 700000
100000 * 8 = 800000
100000 * 9 = 900000
100000 * 10 = 1000000
```



## Finding Armstrong no

1 is a single digit no  $\rightarrow 1^1=1$

2 is a single digit no  $\rightarrow 2^1=2$

9 is a single digit no  $\rightarrow 9^1=9$

153 is a three digit no  $\rightarrow 1^3+5^3+3^3=1+125+27=153$

370, 371, 407, 1634, 8208,...

$$1634 + 1^4 + 6^4 + 3^4 + 4^4 = 1634$$

