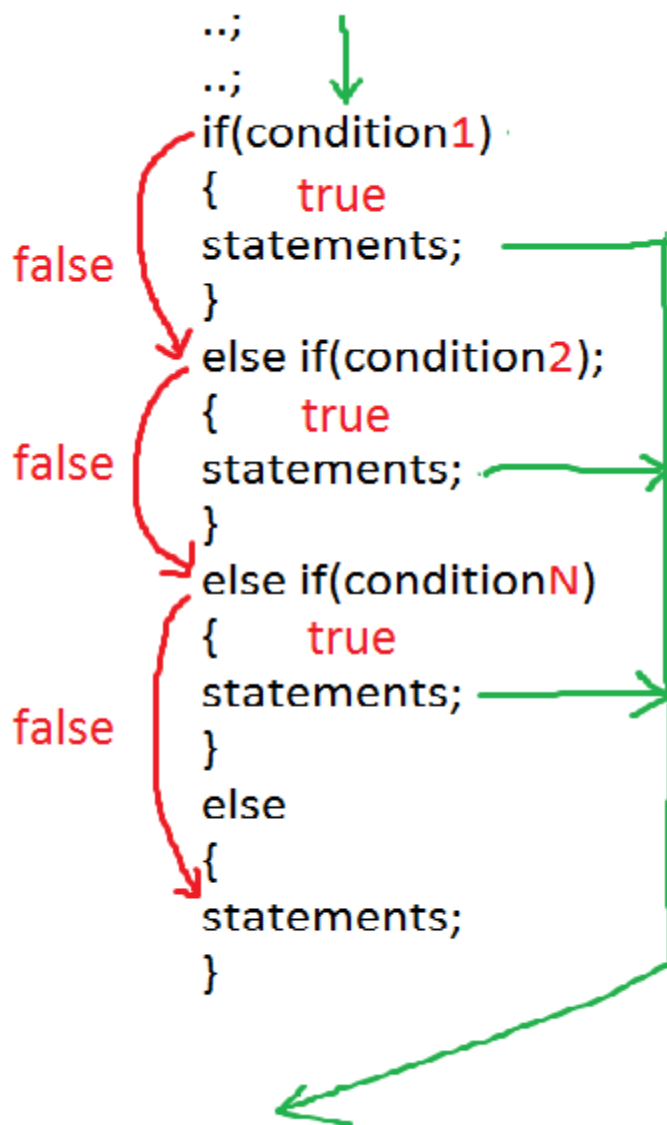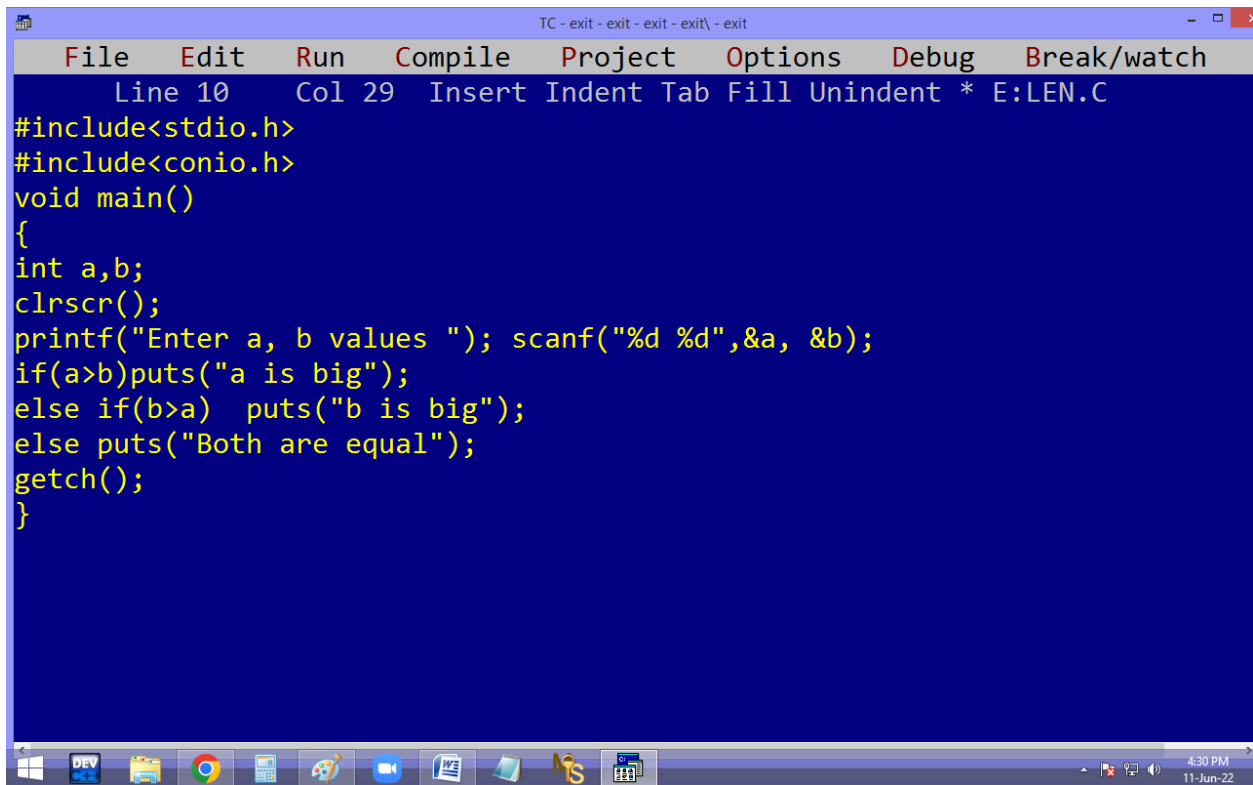# if...else if / ladder if

When the program contain 3 or more options and user have to select 1 then go for if else if ladder. In if..else if the conditions are tested from top to bottom one by one like the ladder steps and any one condition is true then statements in that if block are executed and program execution jumped to outside the if series. If no condition true then statements in else are executed. Here else is optional.
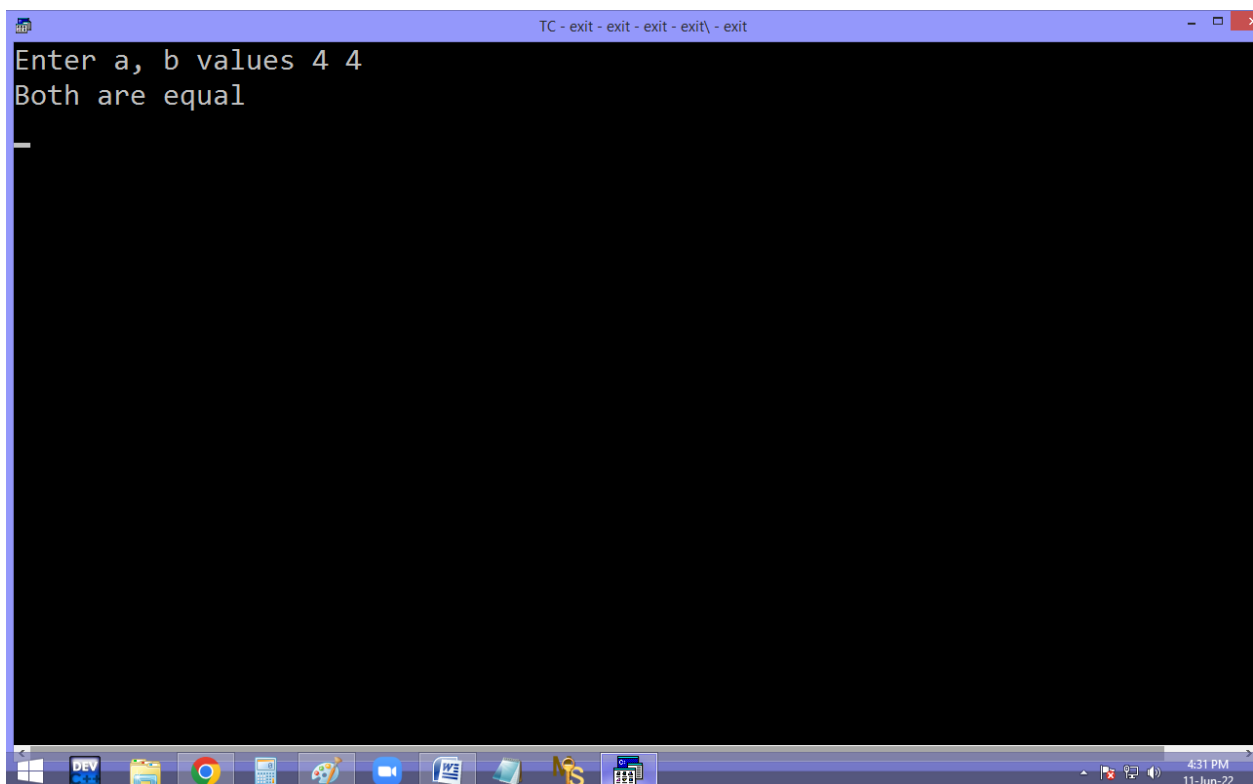
```
..;
..;
if(condition1)
{       true
statements;
}
else if(condition2);
{       true
statements;
}
else if(conditionN)
{       true
statements;
}
else
{
statements;
}
```

false

false

false

Eg. Finding max in 2 numbers.

```
TC - exit - exit - exit - exit\ - exit

   File    Edit    Run    Compile    Project    Options    Debug    Break/watch
        Line 10    Col 29   Insert Indent Tab Fill Unindent * E:LEN.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b;
clrscr();
printf("Enter a, b values "); scanf("%d %d",&a, &b);
if(a>b)puts("a is big");
else if(b>a)  puts("b is big");
else puts("Both are equal");
getch();
}
```
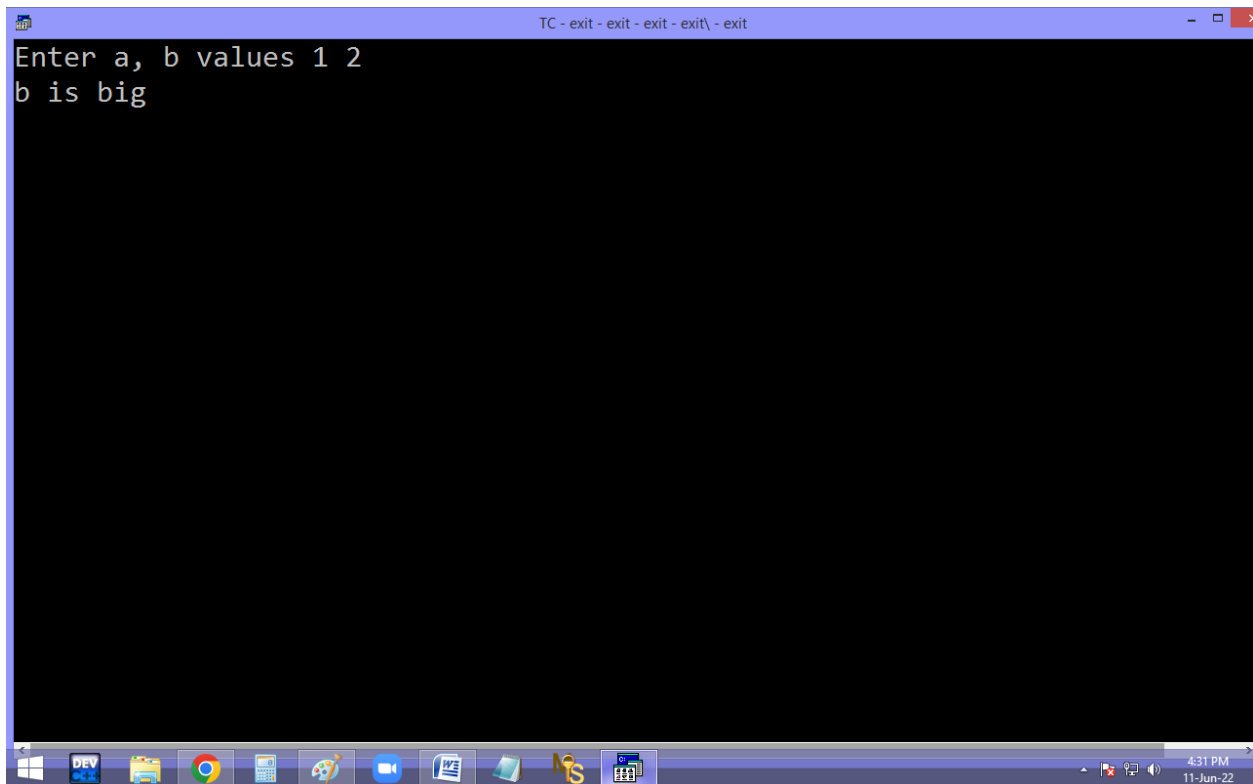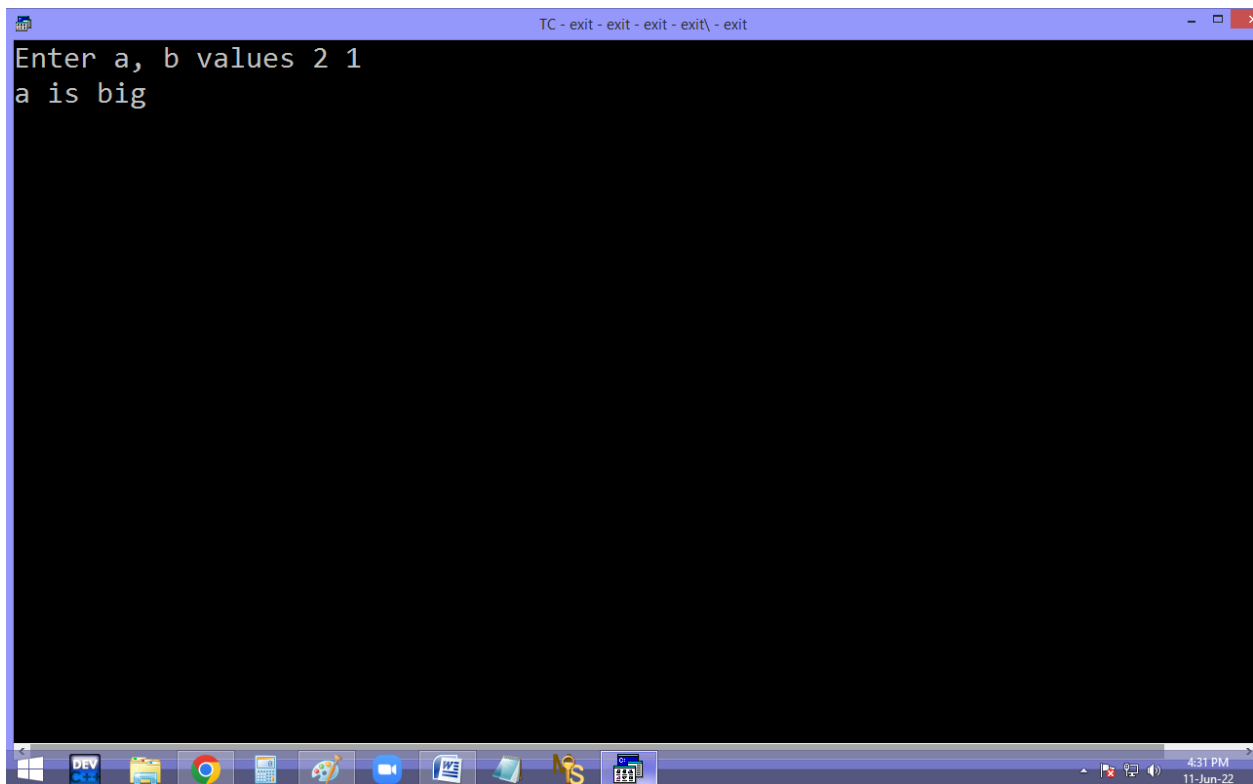
```
TC - exit - exit - exit - exit\ - exit
Enter a, b values 4 4
Both are equal
_
```

```
Enter a, b values 1 2
b is big
```

```
Enter a, b values 2 1
a is big
```

Finding big in 3 numbers.

```
                        TC - exit - exit - exit - exit\ - exit          _ □ ✕
    File     Edit     Run     Compile    Project    Options    Debug    Break/watch
         Line 12      Col 44   Insert Indent Tab Fill Unindent * E:LEN.C
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("Enter a, b, c values "); scanf("%d %d %d",&a, &b, &c);
if(a==b&& b==c)puts("all are equal");
else if(a>b && a>c)  puts("a is big");
else if(a==b && a>c) puts("a & b are big");
else if(b==c && b>a) puts("b & c are big");
else if(a==c && a>b) puts("a & c are big");
else if(b>c) puts("b is big");
else puts("c is big");
getch();
}
```
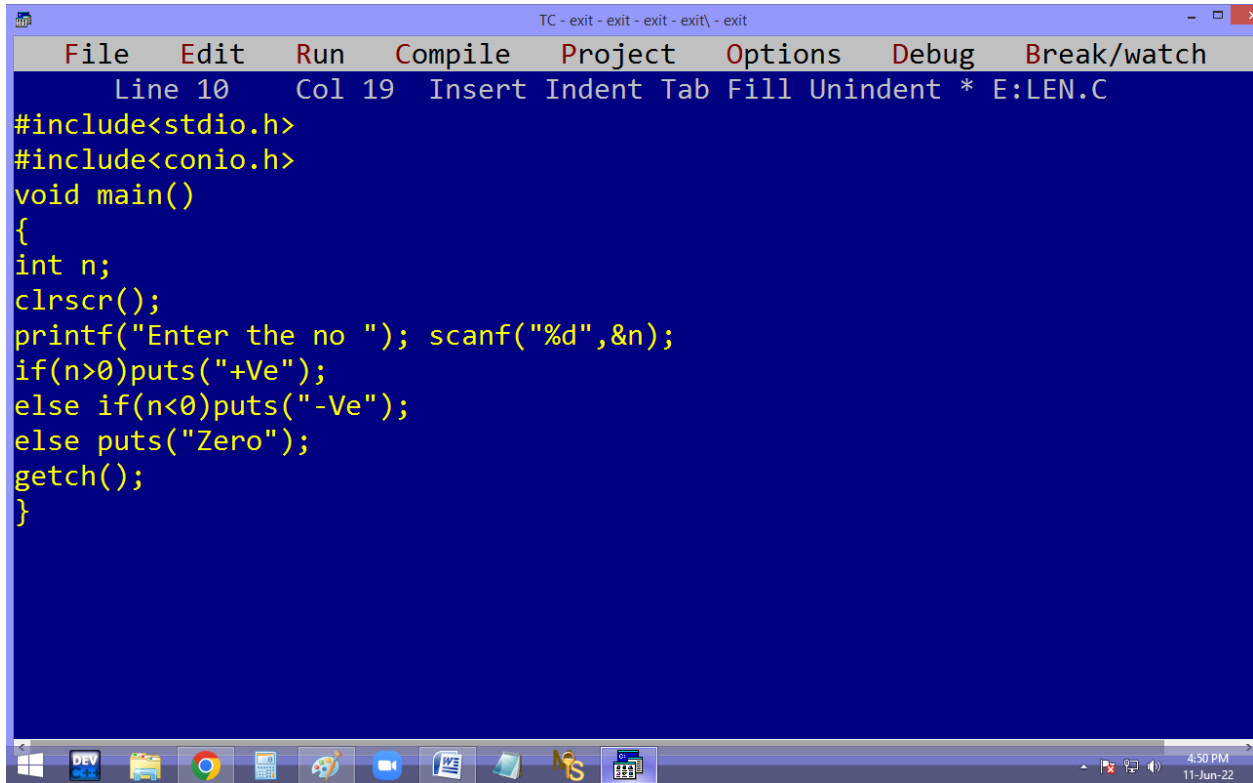
```
                        TC - exit - exit - exit - exit\ - exit          _ □ ✕
Enter a, b, c values 2 1 2
a & c are big
_
```
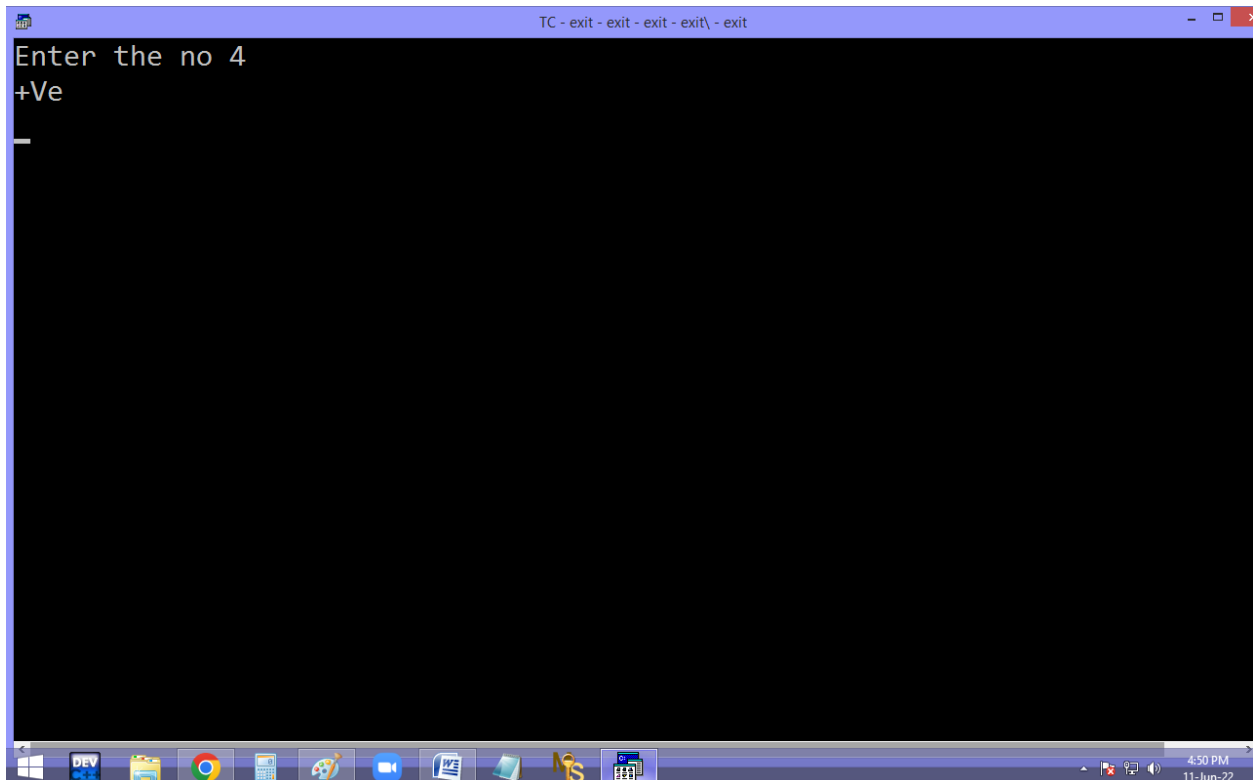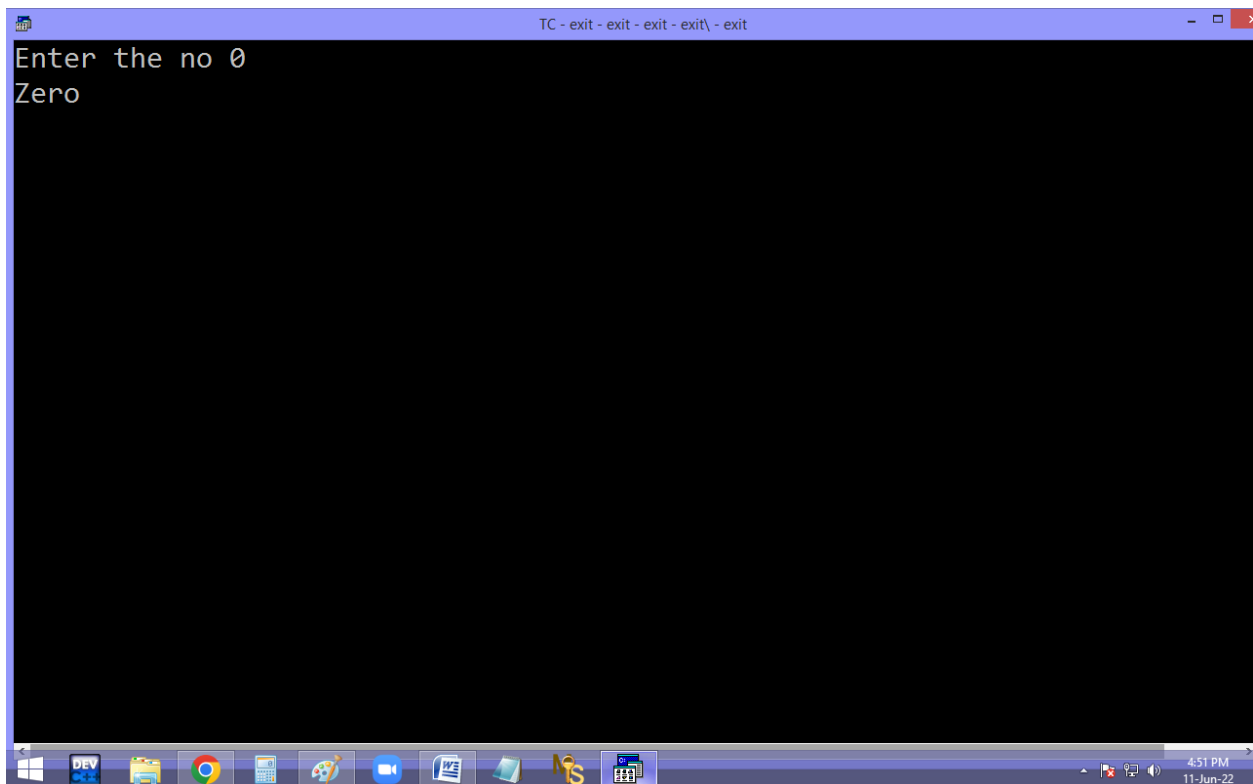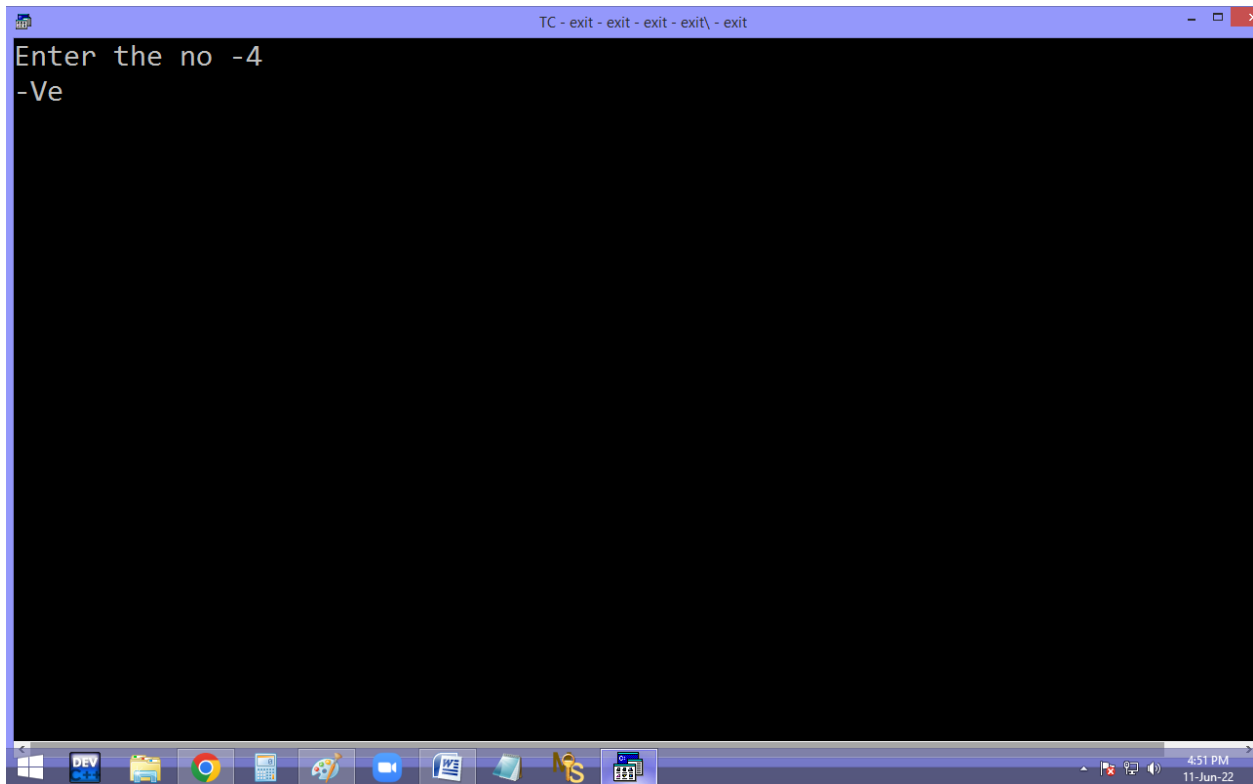
```
Enter a, b, c values 3 3 3
all are equal
```

```
Enter a, b, c values 5  2 4
a is big
```

Eg. finding +Ve / -Ve / Zero.

```
File     Edit     Run     Compile     Project     Options     Debug     Break/watch
         Line 10      Col 19   Insert  Indent Tab Fill Unindent * E:LEN.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter the no "); scanf("%d",&n);
if(n>0)puts("+Ve");
else if(n<0)puts("-Ve");
else puts("Zero");
getch();
}
```

```
Enter the no 4
+Ve
_
```

```
Enter the no -4
-Ve
```

```
Enter the no 0
Zero
```
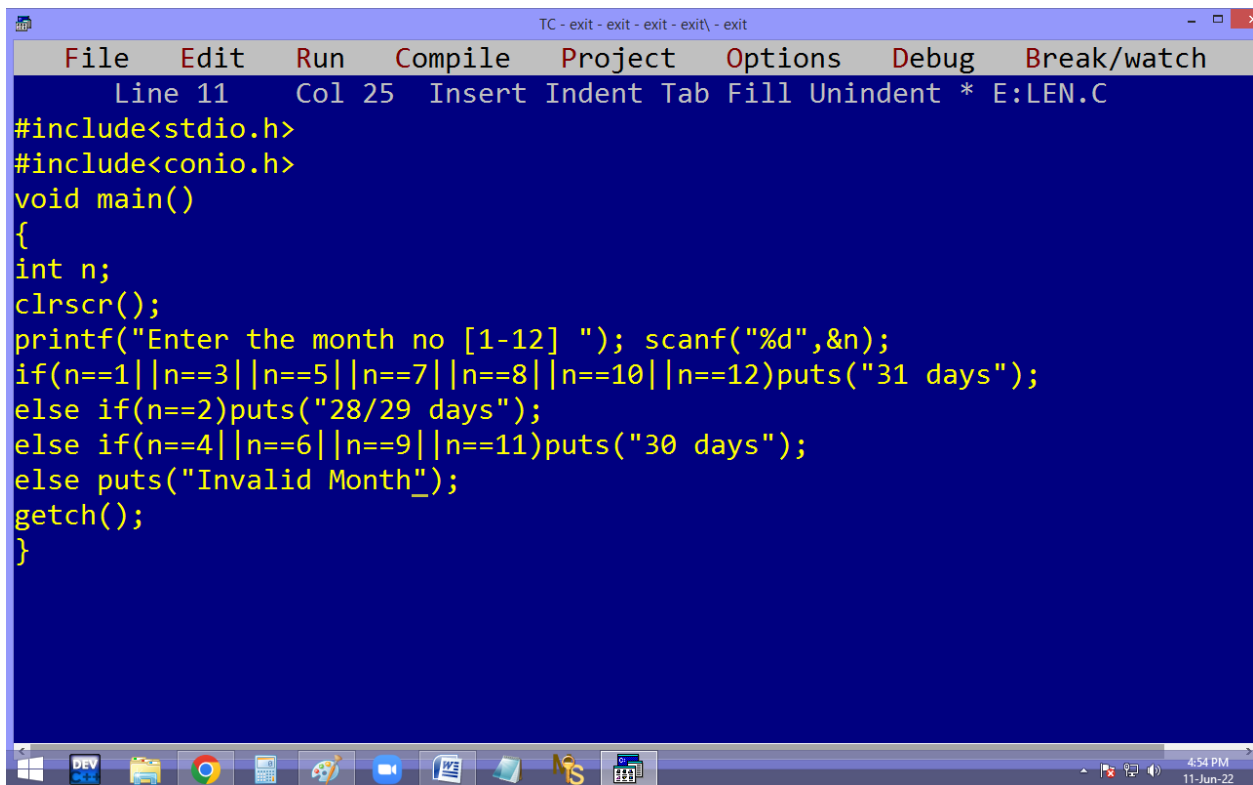
Eg. read month no and find the no of days in that month.

1,3,5,7,8,10,12 – 31 days
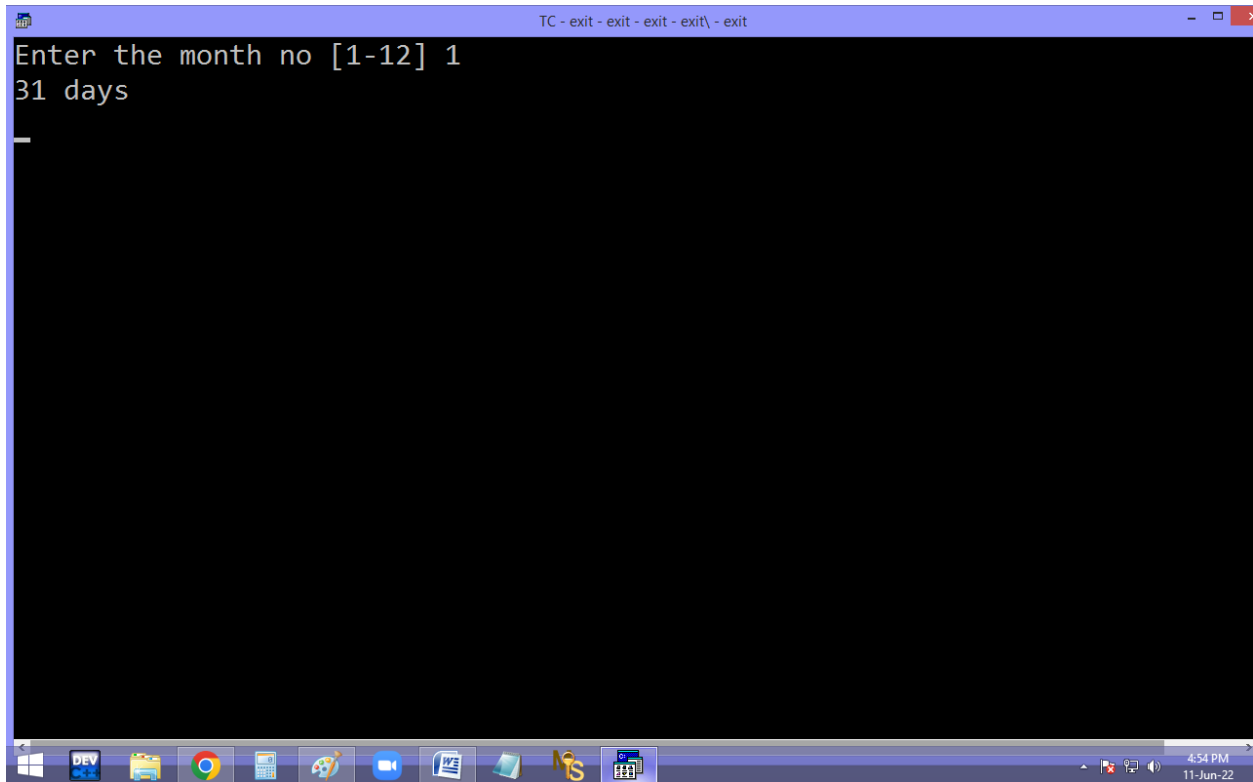
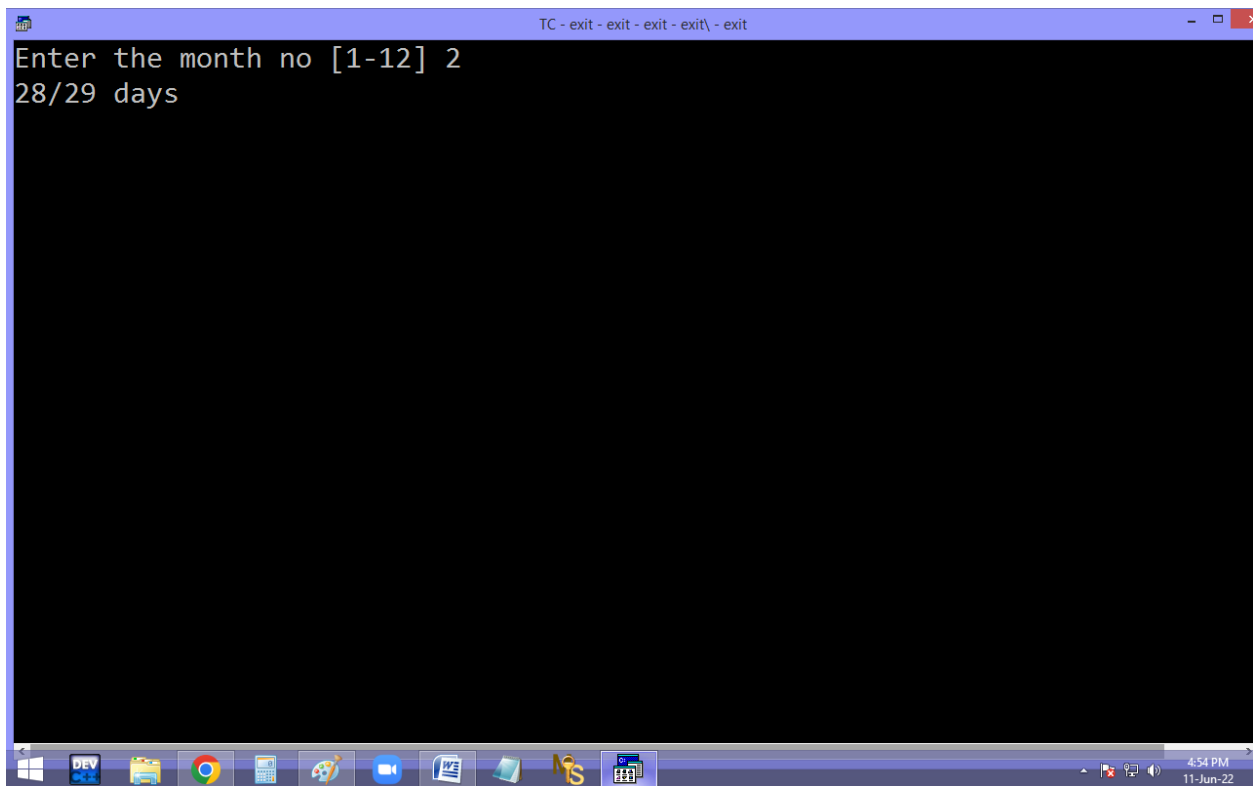**4,6,9,11 – 30 days**
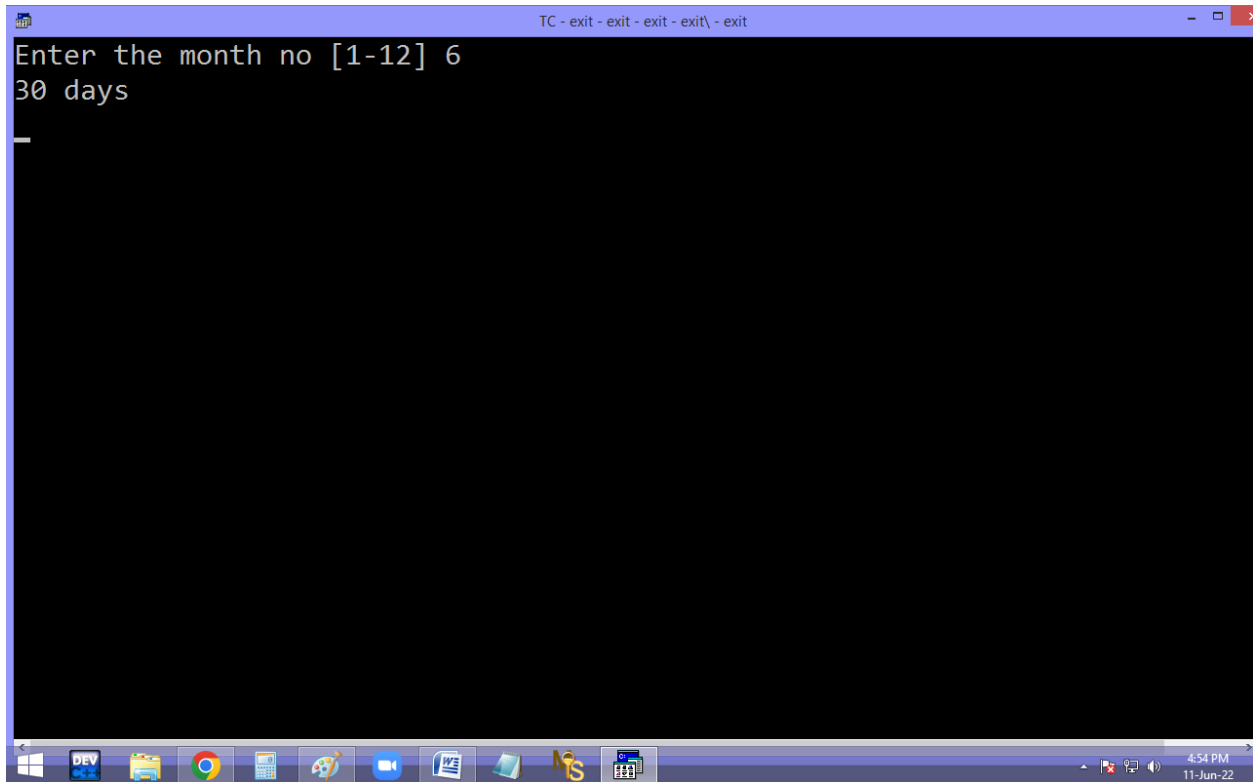
2 – 28/29 days

Others - invalid
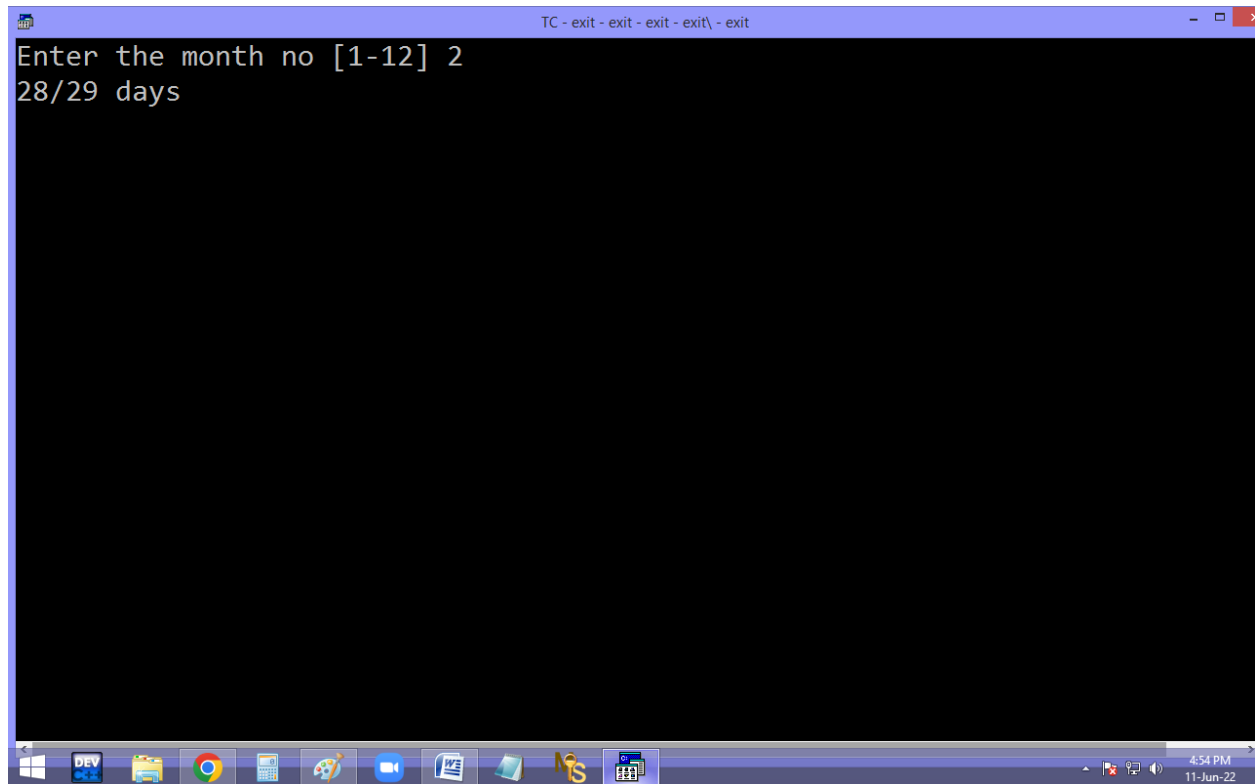
```
File    Edit    Run    Compile    Project    Options    Debug    Break/watch
        Line 11    Col 25    Insert Indent Tab Fill Unindent * E:LEN.C
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter the month no [1-12] "); scanf("%d",&n);
if(n==1||n==3||n==5||n==7||n==8||n==10||n==12)puts("31 days");
else if(n==2)puts("28/29 days");
else if(n==4||n==6||n==9||n==11)puts("30 days");
else puts("Invalid Month");
getch();
}
```

```
TC - exit - exit - exit - exit\ - exit

Enter the month no [1-12] 1
31 days

_
```

```
TC - exit - exit - exit - exit\ - exit

Enter the month no [1-12] 12
31 days
```

```
Enter the month no [1-12] 6
30 days
```

```
Enter the month no [1-12] 2
28/29 days
```

```
Enter the month no [1-12] 2
28/29 days
```

Eg. Finding lower / upper / special char / space / digit.

File   Edit   Run   Compile   Project   Options   Debug   Break/watch
        Line 14   Col 2   Insert Indent Tab Fill Unindent * E:LEN.C

```c
#include<stdio.h>
#include<conio.h>
void main()
{
char ch;
clrscr();
printf("Enter the character "); scanf("%c",&ch);
if(ch>='a'&&ch<='z')puts("Lower case char");
else if(ch>='A'&&ch<='Z')puts("Upper case char");
else if(ch>='0'&&ch<='9')puts("Digit");
else if(ch==' ')puts("Space");
else puts("Special char");
getch();
}
```
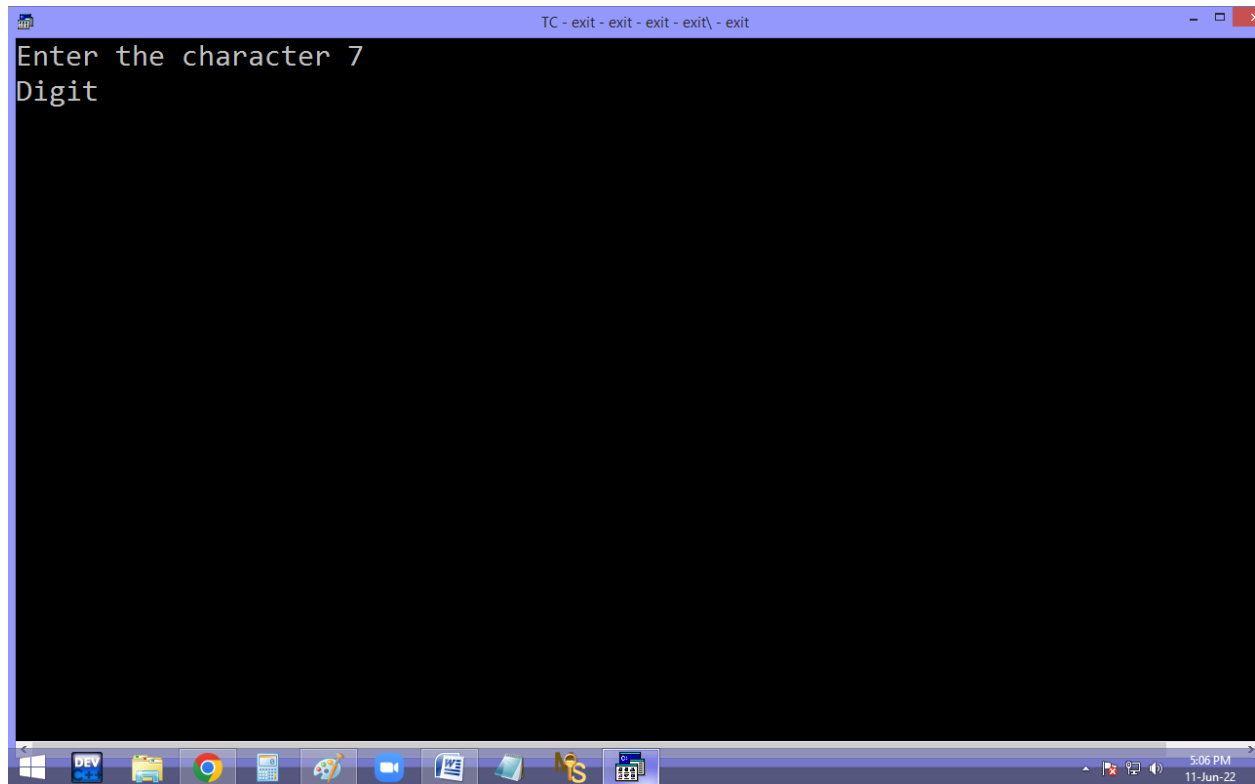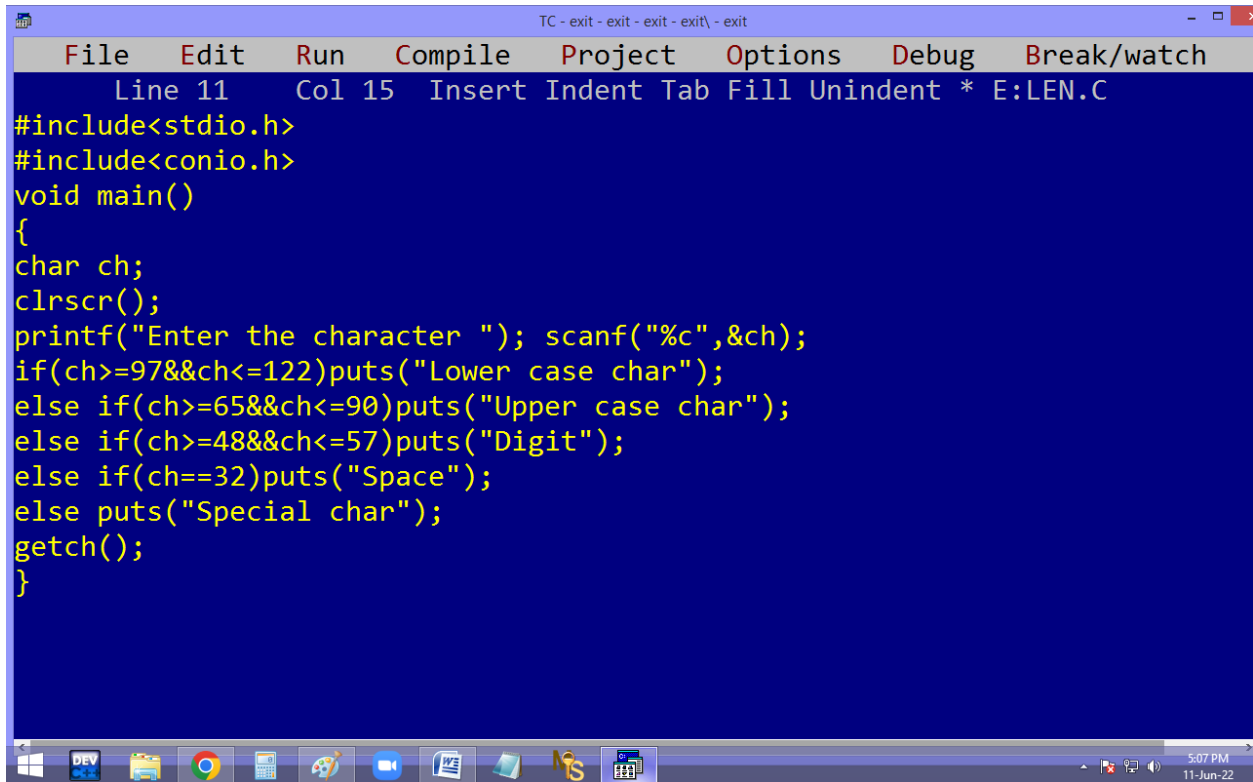
```
Enter the character aB*7
Lower case char
```

```
TC - exit - exit - exit - exit\ - exit
Enter the character 7
Digit
```
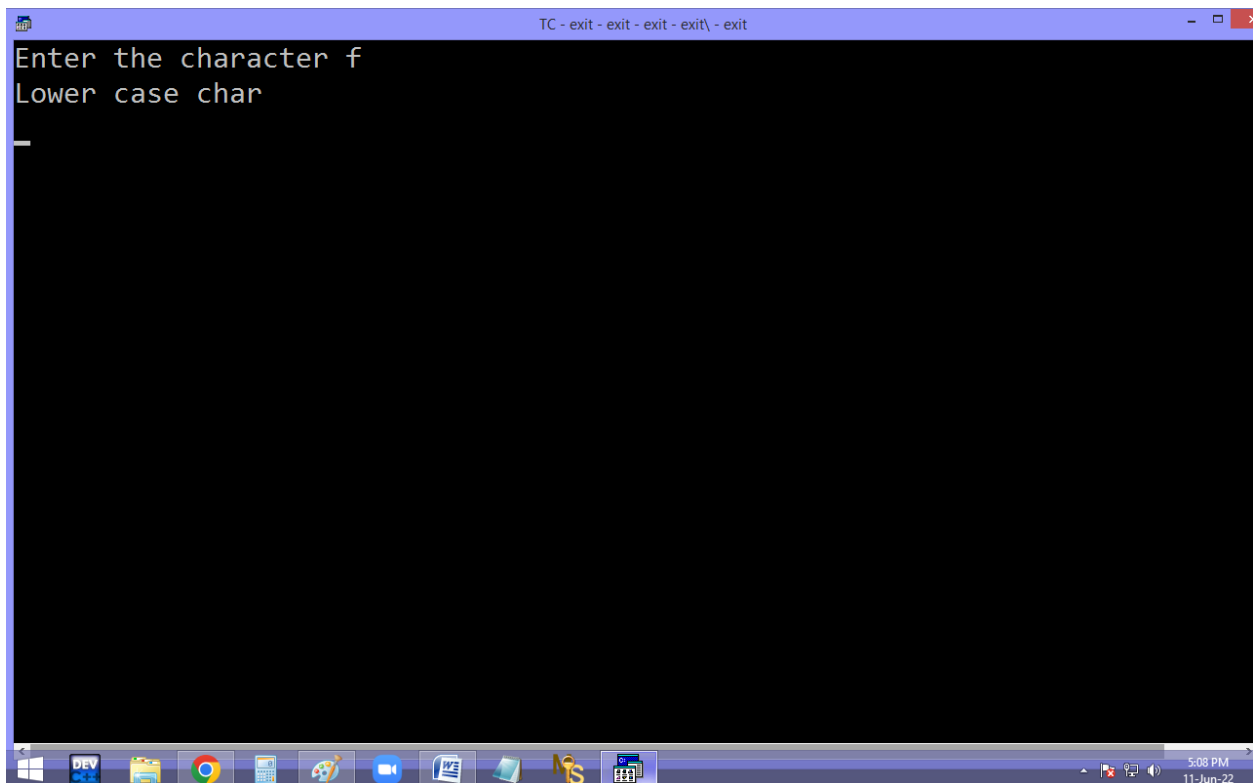
Using ascii values:

File   Edit   Run   Compile   Project   Options   Debug   Break/watch

Line 11   Col 15   Insert Indent Tab Fill Unindent * E:LEN.C

```c
#include<stdio.h>
#include<conio.h>
void main()
{
char ch;
clrscr();
printf("Enter the character "); scanf("%c",&ch);
if(ch>=97&&ch<=122)puts("Lower case char");
else if(ch>=65&&ch<=90)puts("Upper case char");
else if(ch>=48&&ch<=57)puts("Digit");
else if(ch==32)puts("Space");
else puts("Special char");
getch();
}
```

5:07 PM
11-Jun-22
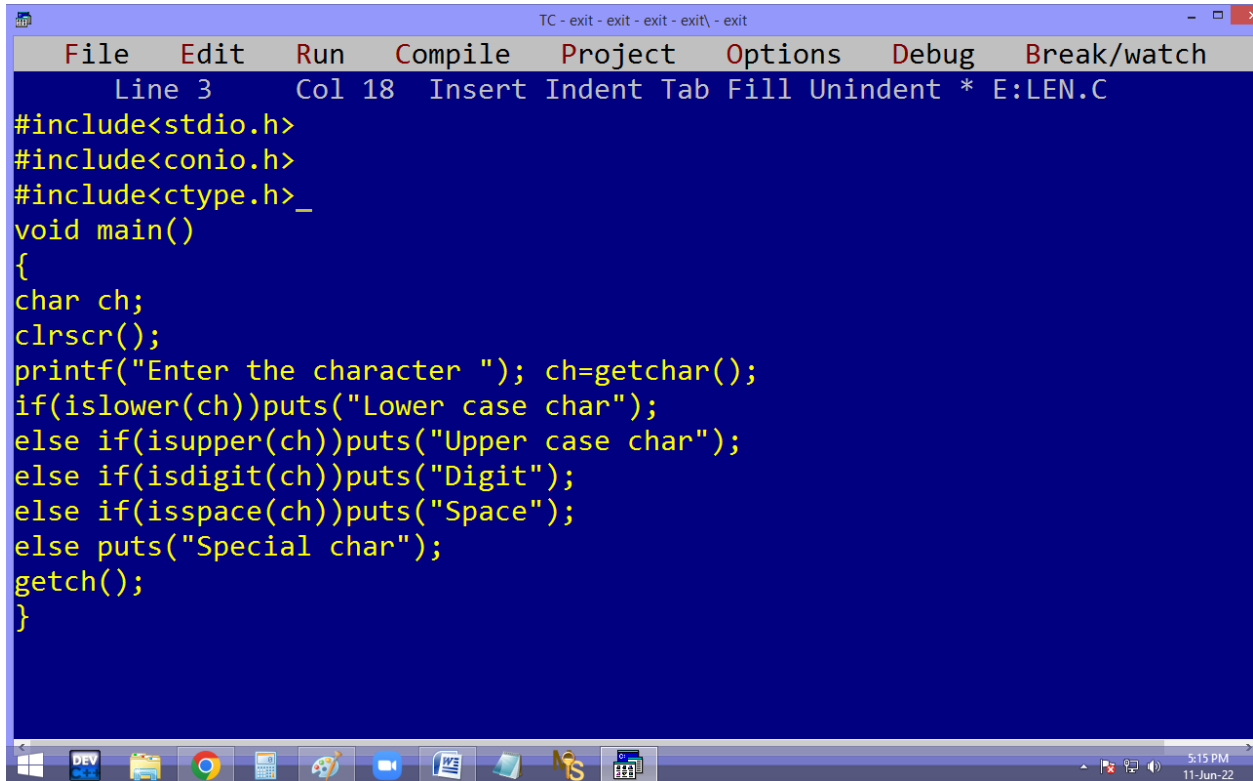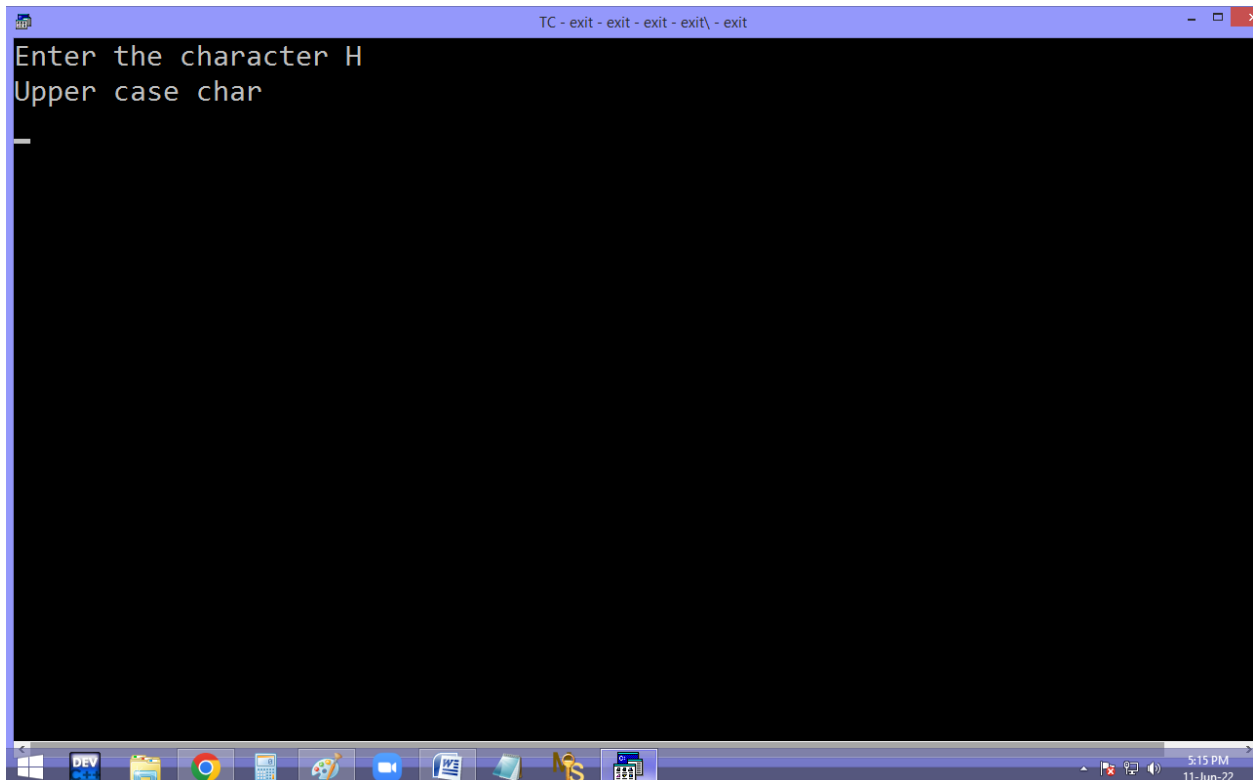
```
Enter the character f
Lower case char
```

5:08 PM
11-Jun-22

Using predefined functions:

```c
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter the character "); ch=getchar();
if(islower(ch))puts("Lower case char");
else if(isupper(ch))puts("Upper case char");
else if(isdigit(ch))puts("Digit");
else if(isspace(ch))puts("Space");
else puts("Special char");
getch();
}
```
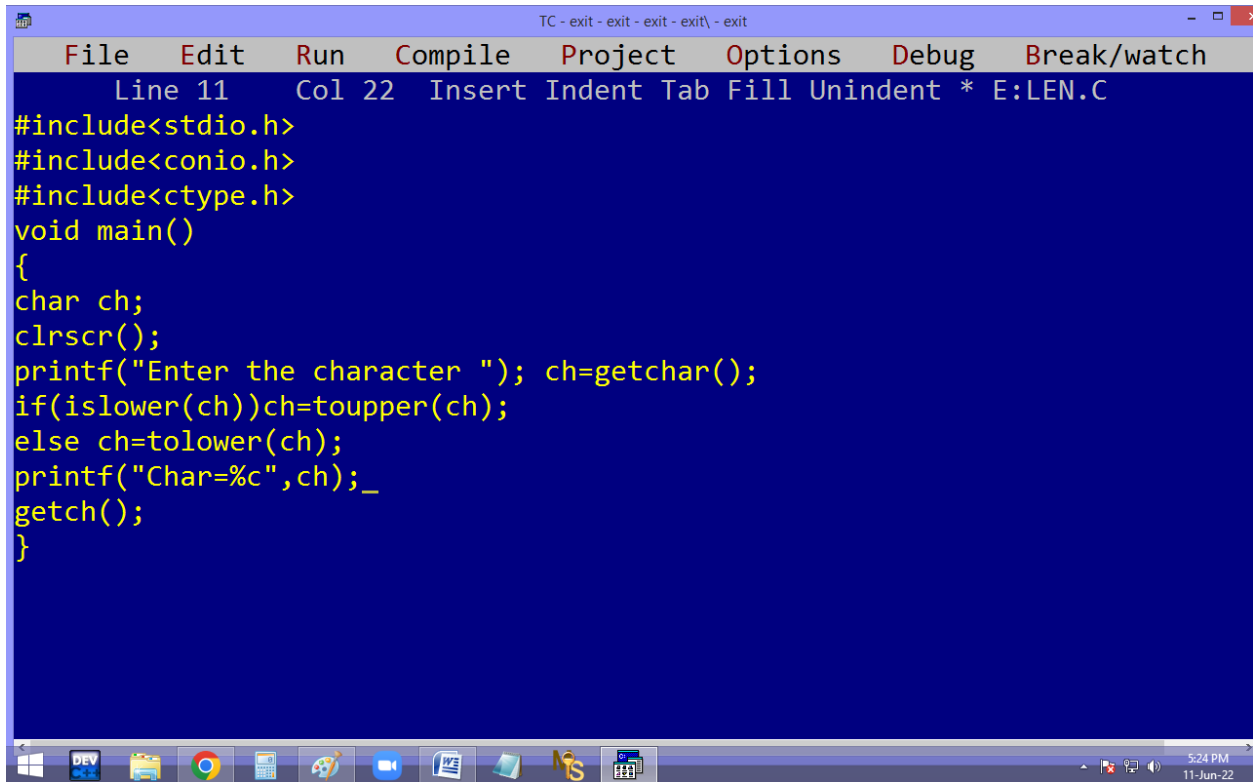
```
Enter the character H
Upper case char
```

```
Enter the character 8
Digit
```
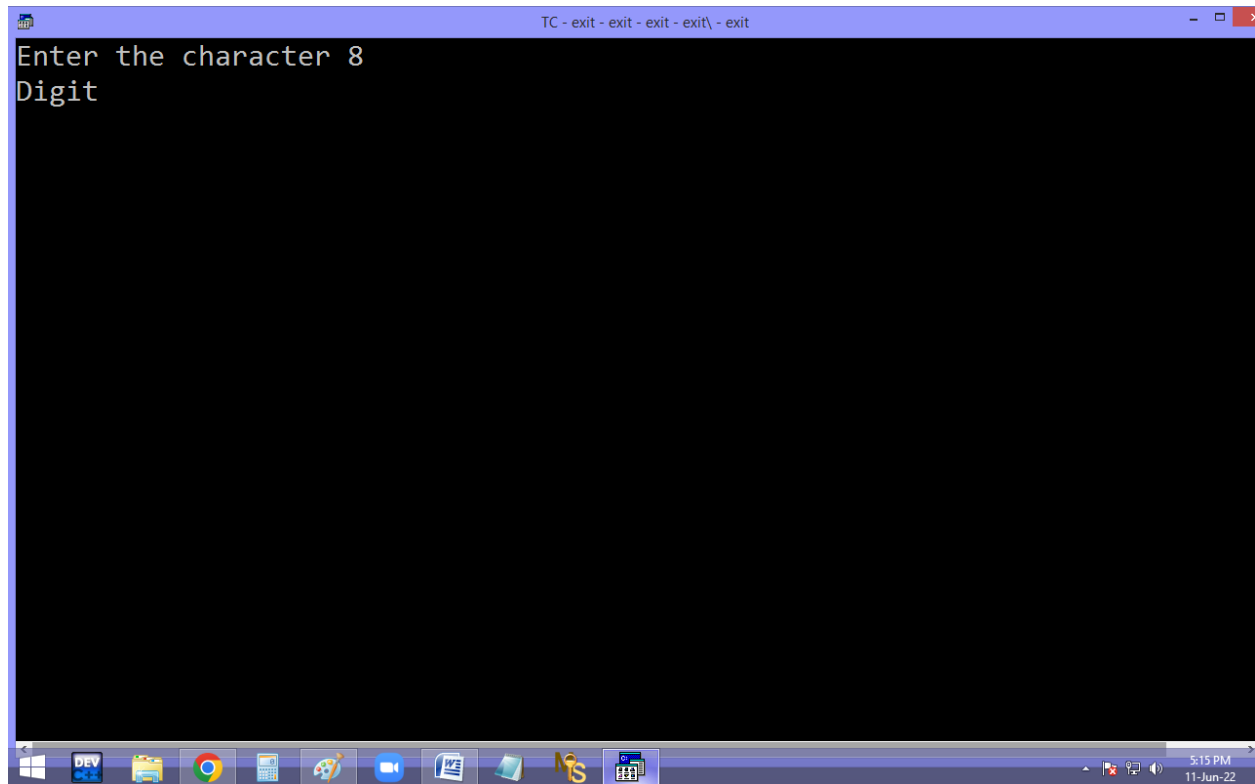
Eg. lower to upper / upper to lower conversion:
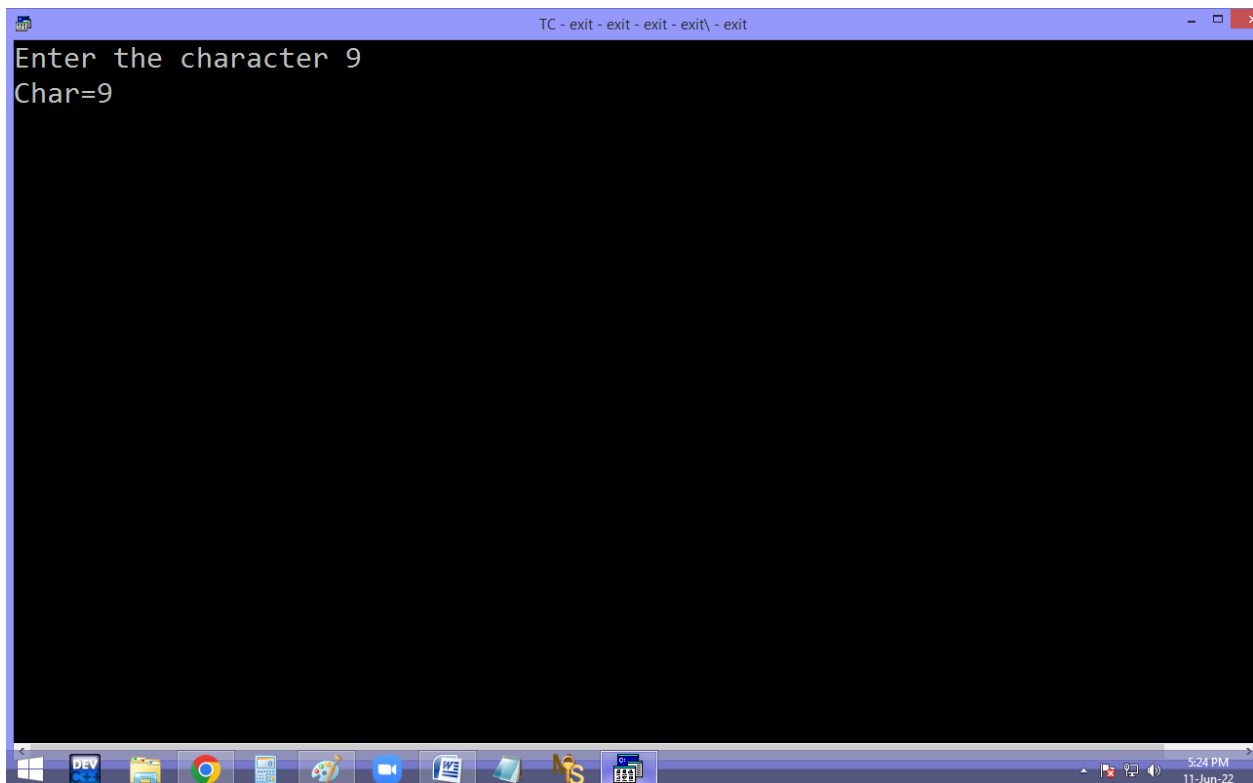
[using predefined functions]

File   Edit   Run   Compile   Project   Options   Debug   Break/watch

Line 11   Col 22   Insert Indent Tab Fill Unindent * E:LEN.C

```c
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter the character "); ch=getchar();
if(islower(ch))ch=toupper(ch);
else ch=tolower(ch);
printf("Char=%c",ch);_
getch();
}
```
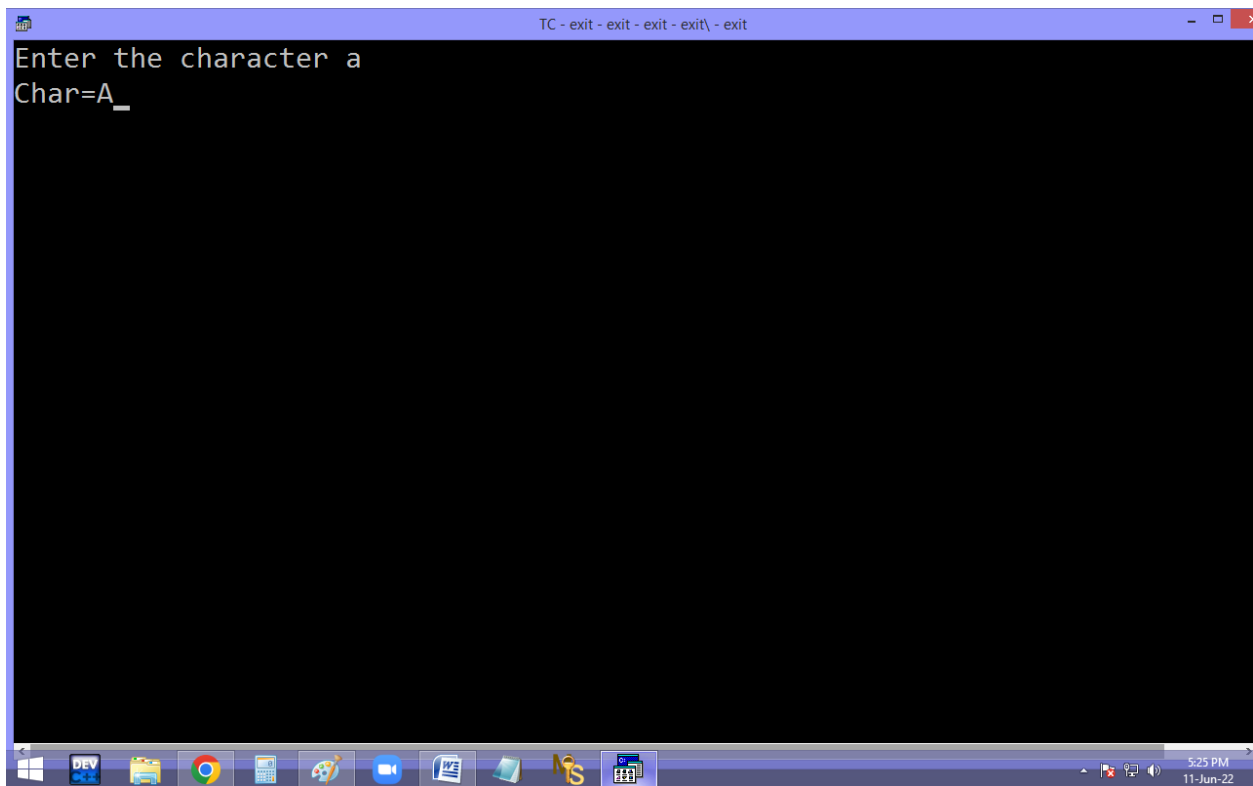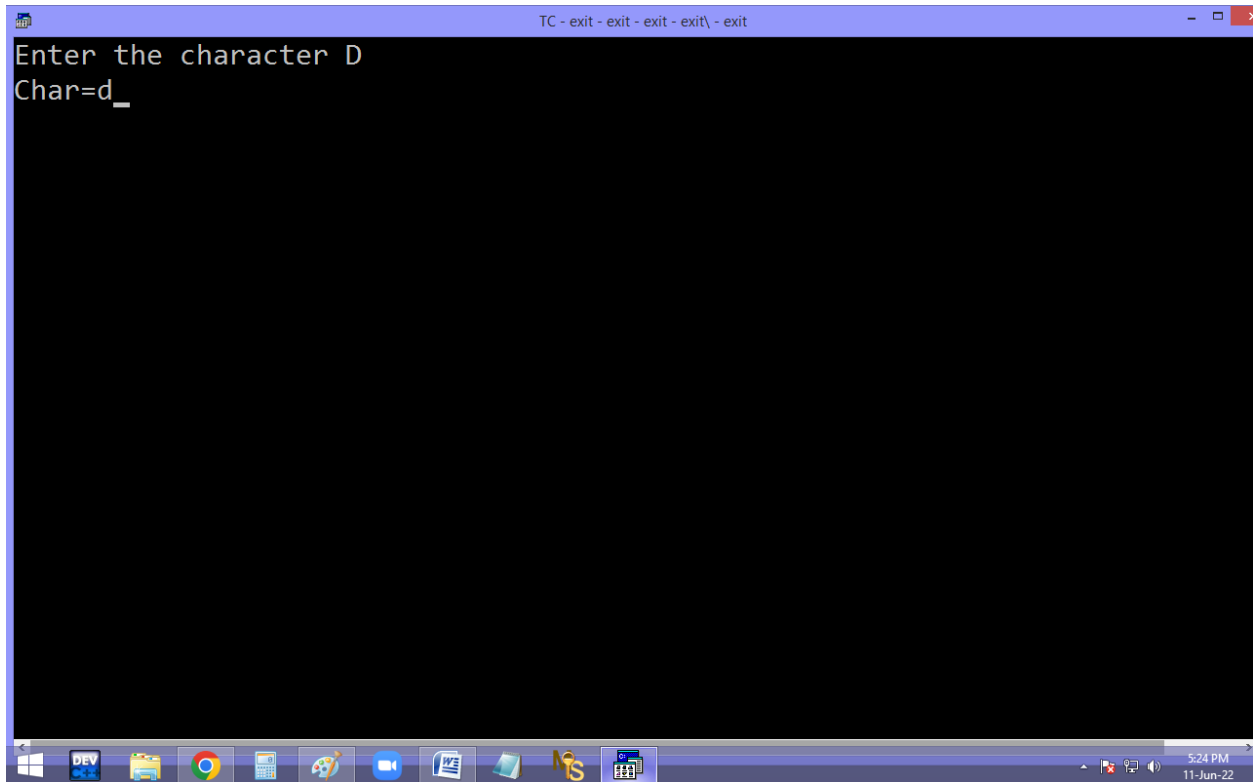
```
Enter the character 9
Char=9
```
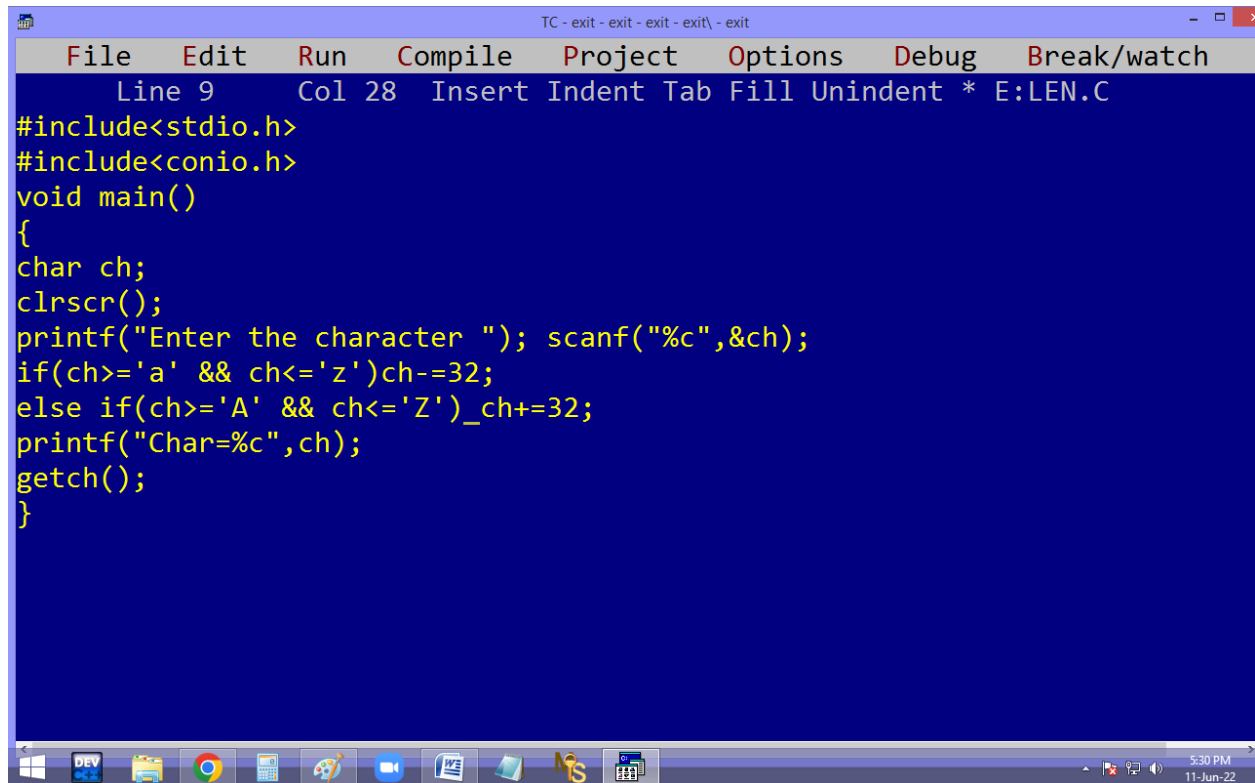
Enter the character D
Char=d_

Enter the character a
Char=A_
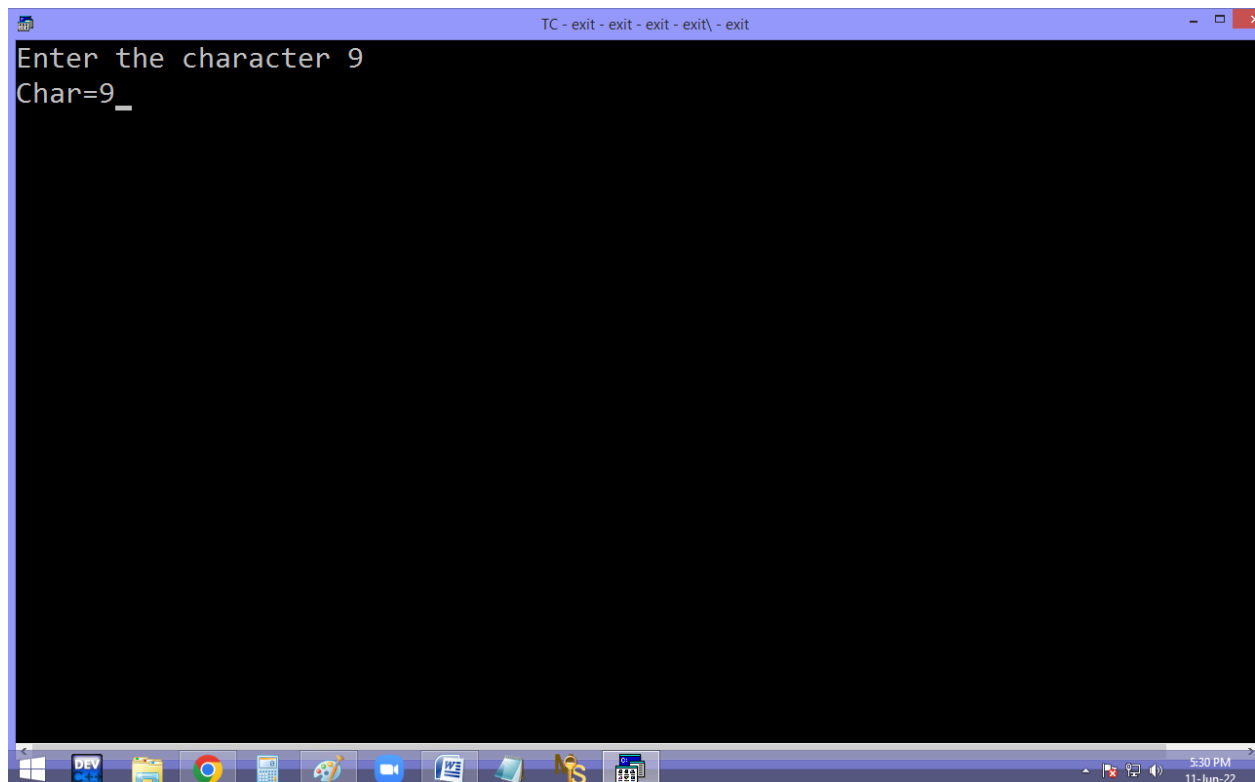
Using user defined program:

```
                              TC - exit - exit - exit - exit\ - exit
   File     Edit     Run    Compile    Project    Options    Debug    Break/watch
       Line 9        Col 28   Insert Indent Tab Fill Unindent * E:LEN.C
#include<stdio.h>
#include<conio.h>
void main()
{
char ch;
clrscr();
printf("Enter the character "); scanf("%c",&ch);
if(ch>='a' && ch<='z')ch-=32;
else if(ch>='A' && ch<='Z')_ch+=32;
printf("Char=%c",ch);
getch();
}
```
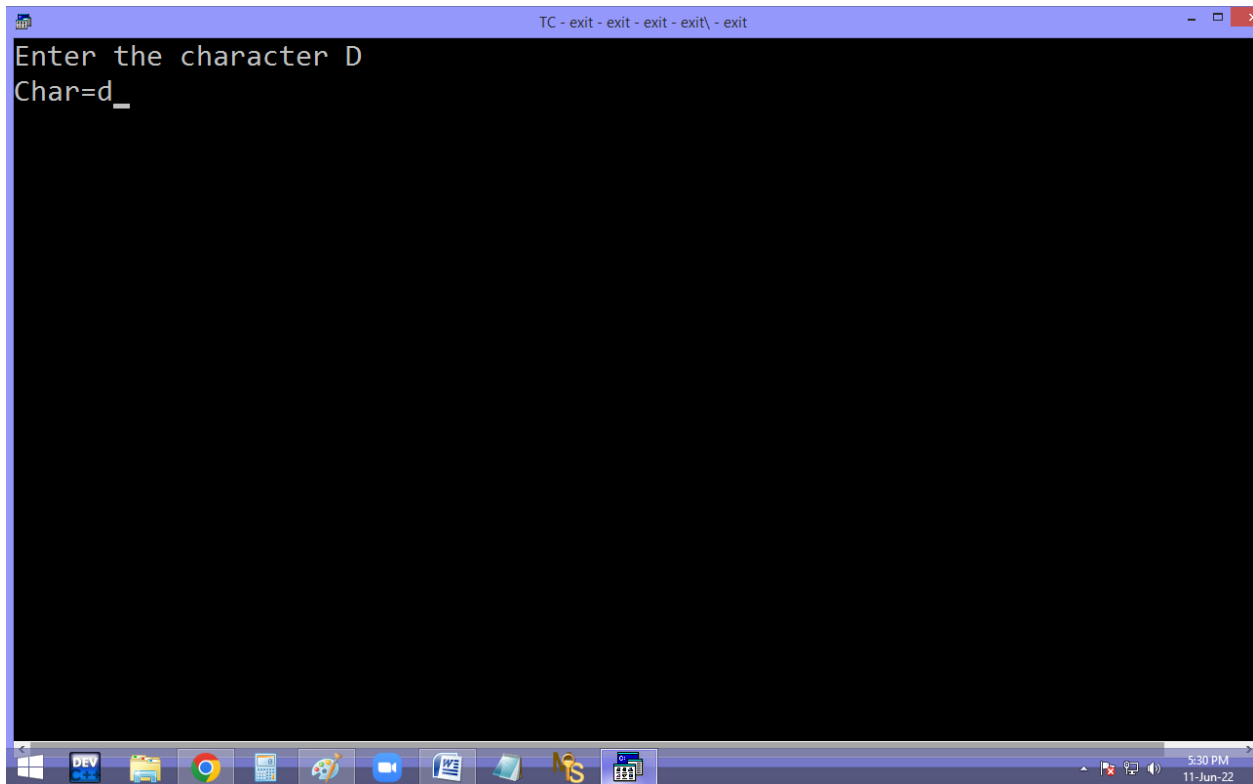
```
                              TC - exit - exit - exit - exit\ - exit
Enter the character 9
Char=9_
```

```
Enter the character D
Char=d
```

```
Enter the character n
Char=N
```

$$a = 97$$
$$-32$$
$$\overline{65} = A$$
$$+32$$
$$\overline{a = 97}$$
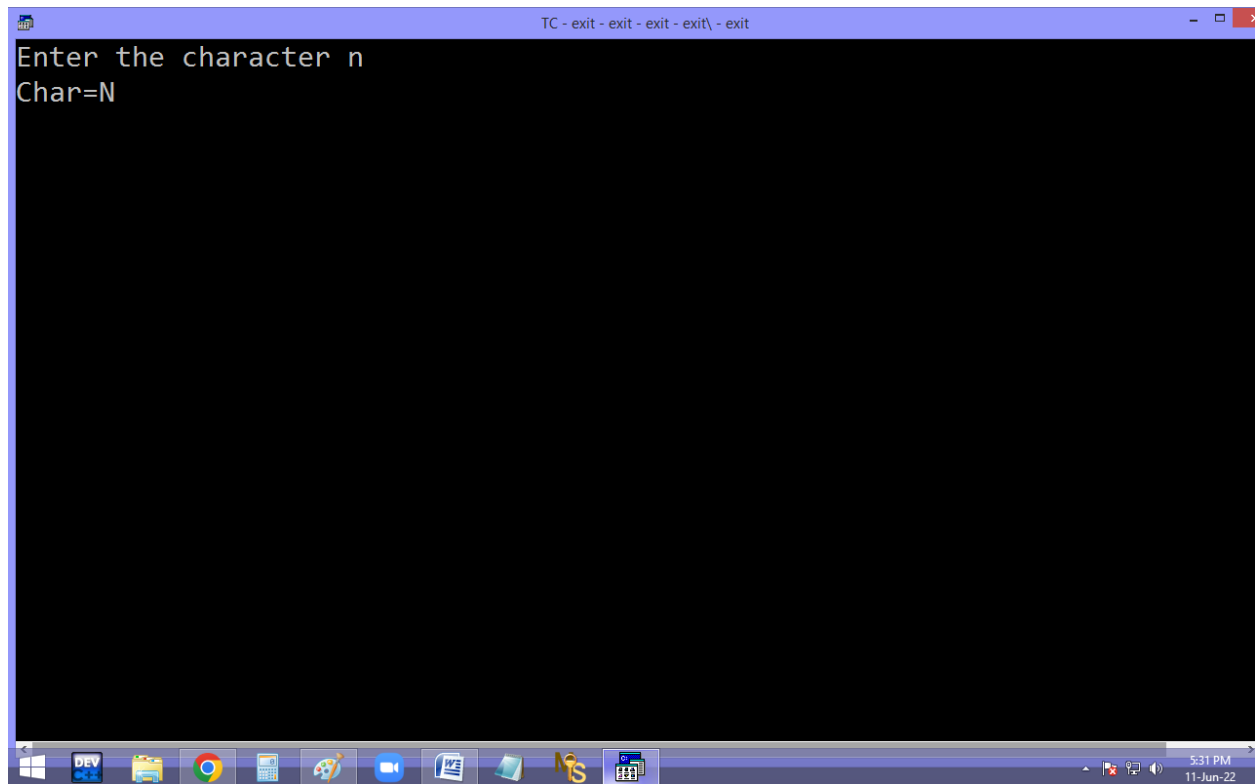
Nested if: If within another if is called nested if.

..;

outerif(condition)

{

....;

....;

innerif(condition)

{

.....;

.....;

}

....;

....;

}

..;

..;

false

false

True

True