

A screenshot of a Windows desktop environment. In the center is a terminal window titled "TC" with a dark blue background. The window has a menu bar at the top with options: File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. Below the menu bar, it shows "Line 7 Col 12 Insert Indent Tab Fill Unindent * E:9AM.C". The code in the editor is:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
if(5 && 5 == 5 ) puts("Equal");else puts("Not Equal");
if((5 && 5) == 5 ) puts("Equal");else puts("Not Equal");
getch();
}
```

The terminal window displays the output of the program:

```
Equal
Not Equal
```

The desktop taskbar at the bottom shows several pinned icons, including Windows, File Explorer, Task View, DEV, zm, Google Chrome, Microsoft Edge, Paint, and FileZilla. The system tray in the bottom right corner shows the date and time as "9:20 AM 01-Nov-24".

I E
I && E
if(5 && 5) == 5) p("Equal"); else p("Not Equal");
I && J
I == 5

The screenshot shows a Windows desktop environment with a terminal window open in the foreground. The terminal window has a dark blue background and displays the output of a C program. The program code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a=32767;
clrscr();
if(a+3>32767) puts("True");else puts("False");
if(sizeof(50000)==sizeof(float)) puts("True");else printf("False");
if(sizeof(1.2)>=sizeof(float)) puts("True");else printf("False");
getch();
}
```

The terminal window also shows the system menu bar at the top with options like File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. Below the menu bar, it displays "Line 7 Col 38 Insert Indent Tab Fill Unindent * E:9AM.C". The bottom of the terminal window shows the Windows taskbar with various icons and the system tray.

The terminal output is:

```
False
True
True
True
```

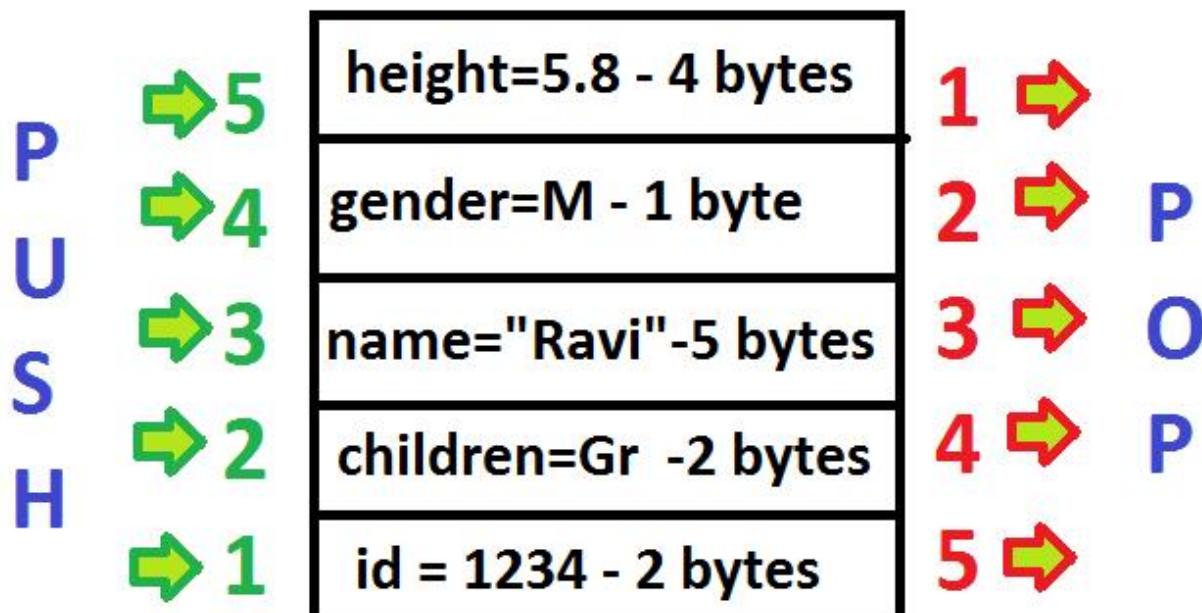
Variable memory allocation:

Int id=1234, children;

Char name[]="Ravi", gender='F';

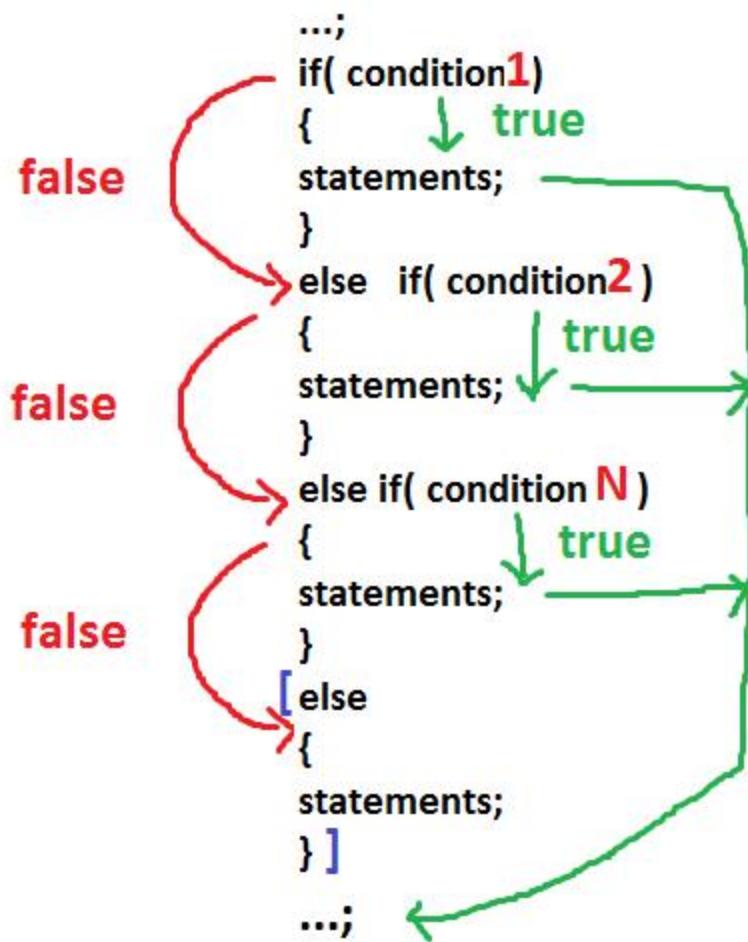
Float height=5.8;

stack area



LIFO-LAST IN FIRST OUT
FILO-FIRST IN LAST OUT

If..else if / ladder if:



Finding max in 2 no's:

The screenshot shows the Turbo C IDE interface. The code editor window at the top contains the following C program:

```
#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 puts("b is big");
if(a>b) printf("%d is big\n",a);
else printf("%d is big\n",b);
if(a>b)puts("a is big");
else if(b>a)puts("b is big");
else puts("Both are equal");
getch();
}
```

The terminal window below displays the program's output after running it. The user enters the values 3 and 3. The program then prints three lines: "b is big", "3 is big", and "Both are equal".

```
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM
< > TC 9:51 AM 01-Nov-24
Windows Start File Explorer Task View ZM Google Paint Notepad Wordpad Word Icons TC
Enter a, b values 3 3
b is big
3 is big
Both are equal
```

```
TC
Enter a, b values 7 2
a is big
7 is big
a is big

TC
Enter a, b values 6 9
b is big
9 is big
b is big
```

Finding max in 3 no's:

The screenshot shows a Windows desktop environment with a terminal window open in the foreground. The terminal window has a yellow header bar with the text "TC" at the top right. Below the header is a menu bar with options: File, Edit, Run, Compile, Project, Options, Debug, Break/watch. The status bar at the bottom of the terminal window displays "Line 11 Col 20 Insert Indent Tab Fill Unindent * E:9AM.C". The main body of the terminal window contains the following C code:

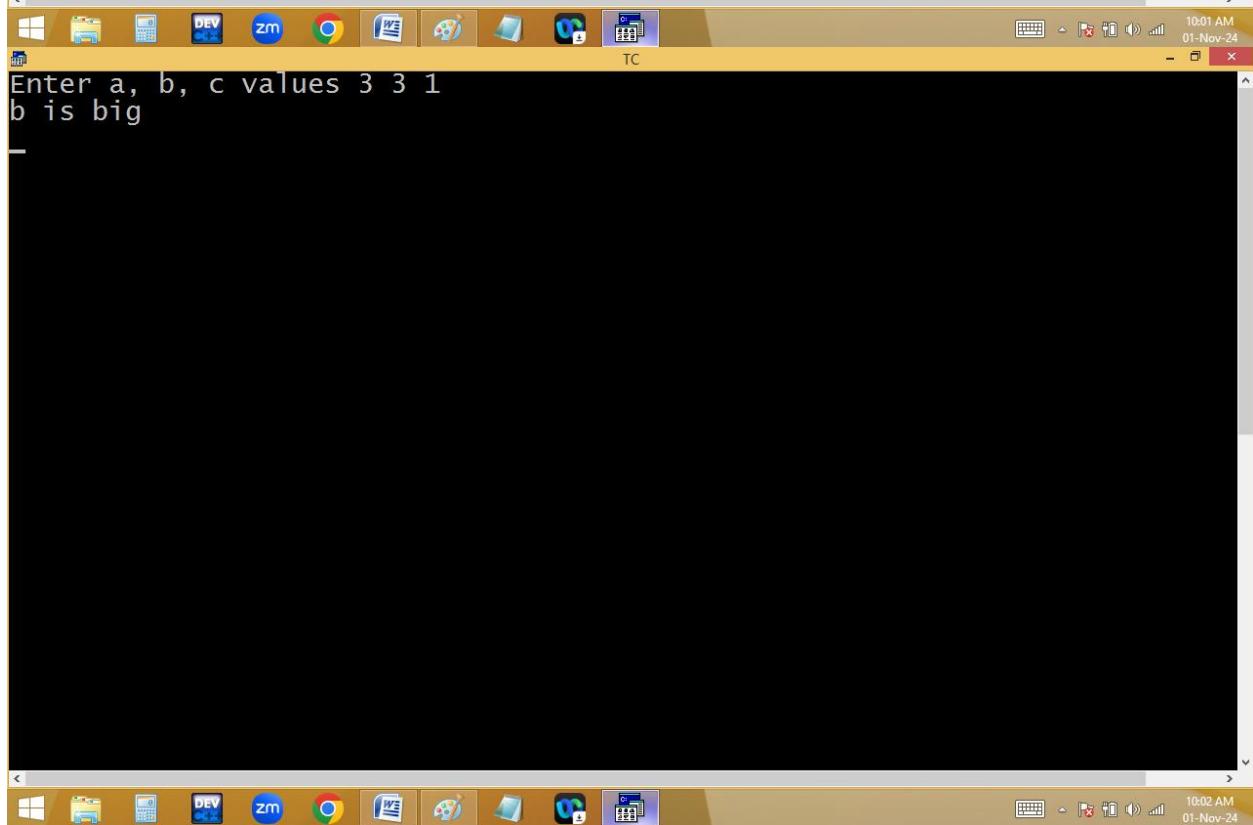
```
#include<stdio.h>
#include<conio.h>
void main()
{
int a,b,c;
clrscr();
printf("Enter a, b, c values ");
scanf("%d %d %d",&a,&b,&c);
if(a==b && a==c) puts("All are equal");
else if(a>b && a>c)puts("a is big");
else if(b>c)puts("b is big");
else puts("c is big");
getch();
}
```

Below the terminal window, the Windows taskbar is visible, showing various pinned icons like File Explorer, Edge, and Control Panel. The system tray shows the date and time as "01-Nov-24" and "10:00 AM".

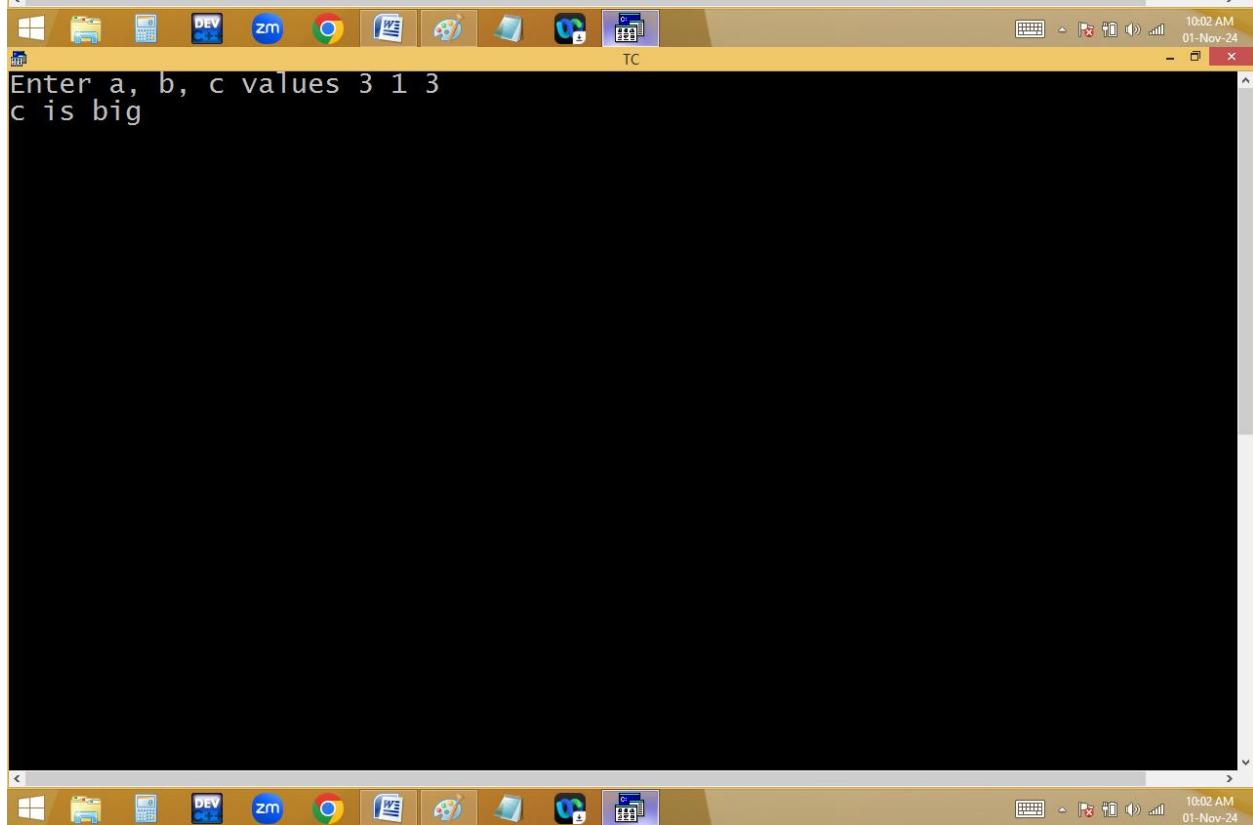
```
TC
Enter a, b, c values 3 2 1
a is big

Enter a, b, c values 1 3 2
b is big
```

```
TC
Enter a, b, c values 2 2 2
All are equal
-
-
-
Enter a, b, c values 3 3 1
b is big
-
-
-
```

The image shows a Windows desktop environment with three separate windows stacked vertically. Each window has a yellow title bar with the text 'TC' and standard window controls (minimize, maximize, close). The first window contains the text 'Enter a, b, c values 2 2 2' followed by 'All are equal'. The second window contains 'Enter a, b, c values 3 3 1' followed by 'b is big'. The third window is mostly blank. Below these windows is a Windows taskbar with a yellow background. It features several pinned icons: File Explorer, File History, Task View, Control Panel, ZM, Google Chrome, Microsoft Edge, Paint, Snipping Tool, and File Explorer again. On the right side of the taskbar, there is a keyboard icon, a battery icon, a signal strength icon, and the date and time '10:01 AM 01-Nov-24'.

```
TC
Enter a, b, c values 3 4 4
c is big
-
-
-
Enter a, b, c values 3 1 3
c is big
```

The image shows a Windows desktop environment with three identical windows stacked vertically. Each window has a yellow title bar with the text 'TC'. The windows contain the same text: 'Enter a, b, c values 3 4 4' and 'c is big' on the top window, and 'Enter a, b, c values 3 1 3' and 'c is big' on the bottom two windows. Below the windows is a standard Windows taskbar with several icons: Start, File Explorer, Task View, Control Panel, File History, DEV, zm, Google Chrome, FileZilla, Paint, Snipping Tool, and File Explorer again. The taskbar also displays the date and time as '10:02 AM 01-Nov-24'.

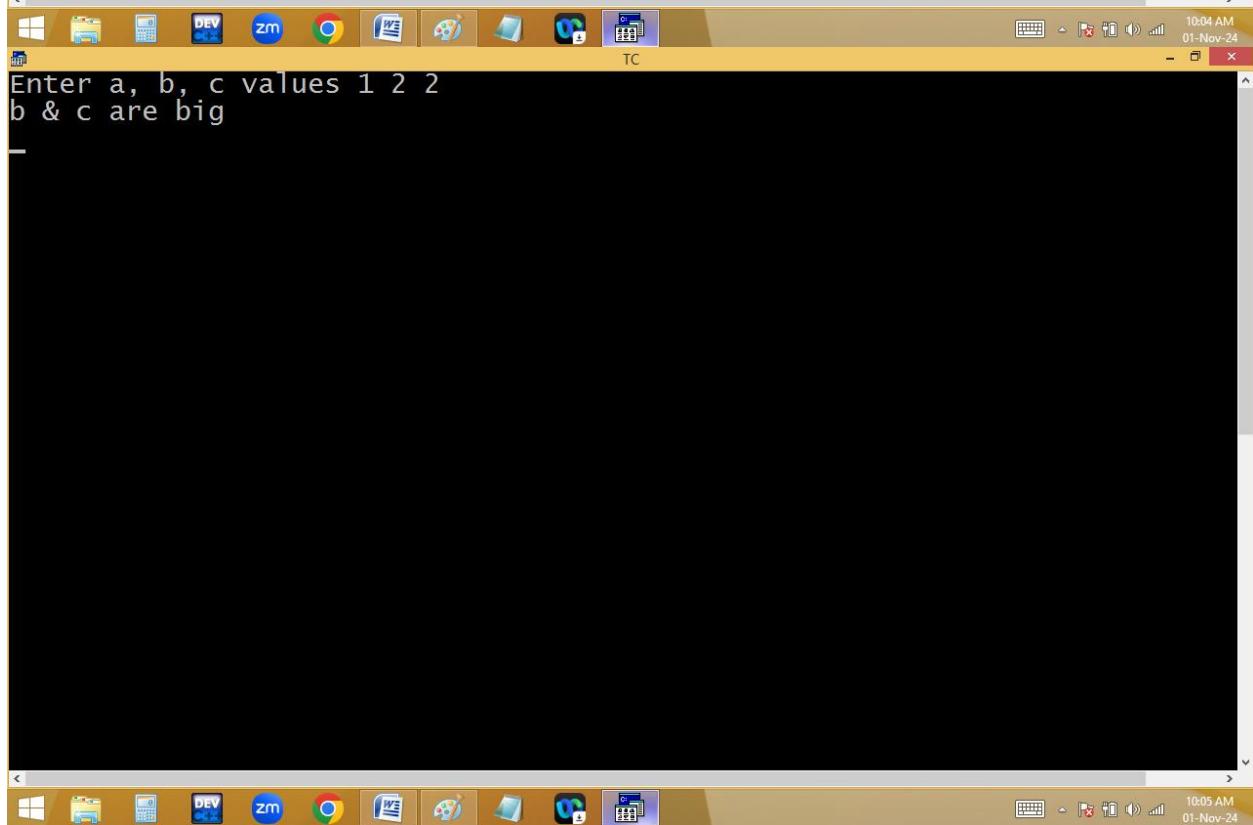
The screenshot shows the Turbo C++ IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top right indicates Line 12, Col 21, Insert, Indent, Tab, Fill, Unindent, * E:9AM.C. The code in the editor is:

```
#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 && a==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();
}
```

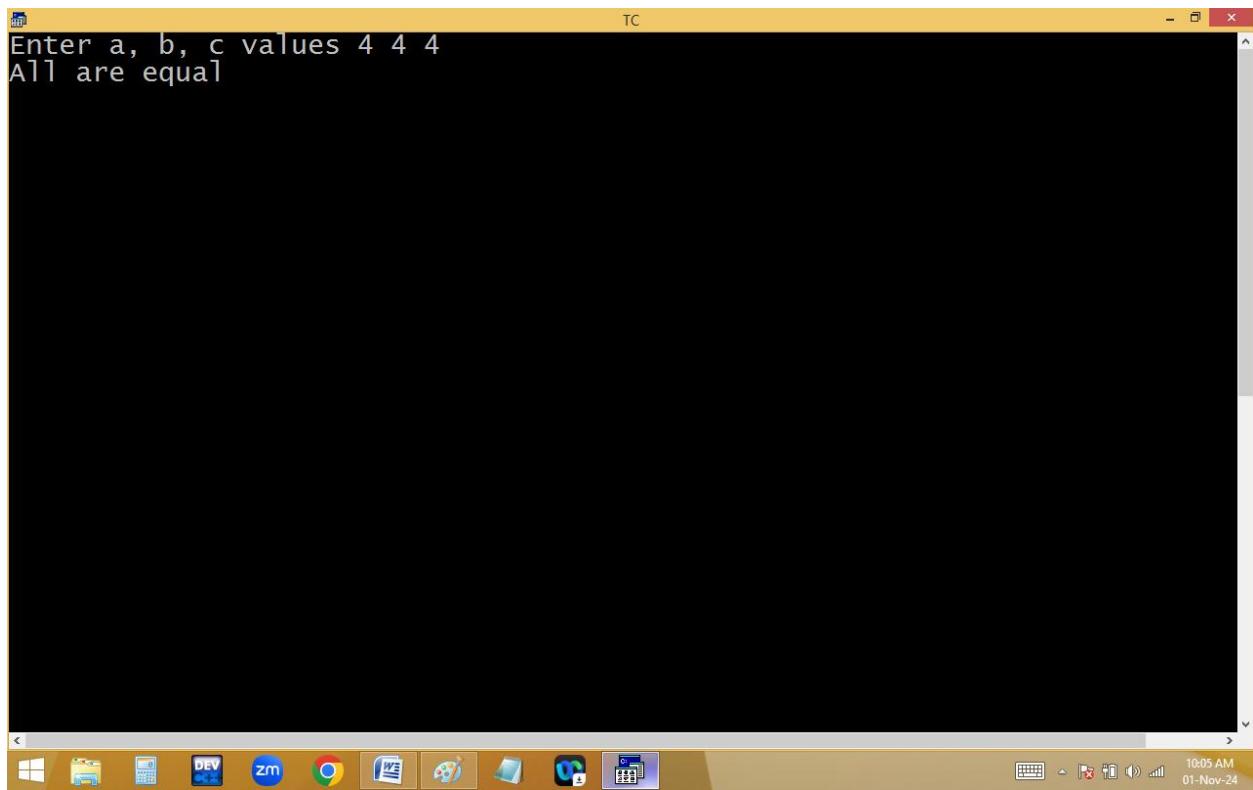
The status bar at the bottom right shows the date and time: 10:04 AM 01-Nov-24.

```
TC
Enter a, b, c values 3 1 3
a & c are big

Enter a, b, c values 1 2 2
b & c are big
```

The image shows a Windows desktop environment with three separate windows stacked vertically. Each window has a yellow title bar with the text 'TC' and a red close button. The first window contains the text 'Enter a, b, c values 3 1 3' and 'a & c are big'. The second window contains the text 'Enter a, b, c values 1 2 2' and 'b & c are big'. The third window is partially visible at the bottom. The Windows taskbar is visible at the bottom of each window, featuring various icons for common applications like File Explorer, Task View, and Control Panel. The system tray on the right side of the taskbar shows the date and time as '01-Nov-24' and the time as '10:04 AM' for the top window, '10:05 AM' for the middle window, and '10:05 AM' for the bottom window.

```
TC
Enter a, b, c values 4 4 4
All are equal
```



The screenshot shows a Windows operating system interface. At the top is a title bar with the letters "TC". Below it is a black command-line window containing the text "Enter a, b, c values 4 4 4" on the first line and "All are equal" on the second line. The window has standard window controls (minimize, maximize, close) in the top right corner. At the bottom of the screen is a taskbar with a row of icons representing various applications. To the right of the taskbar, the date and time are displayed as "10:05 AM 01-Nov-24".

The image shows a Windows operating system desktop. At the top, there is a standard window title bar with the letters 'TC' in the center. Below the title bar is a large black rectangular area representing a terminal window. Inside this window, the text 'Enter a, b, c values 1 2 3' is displayed in white, followed by 'c is big' in white. The bottom portion of the screen is a yellow taskbar containing various icons for common applications like File Explorer, Control Panel, and several network or communication tools. On the far right of the taskbar, the date and time are shown as '10:05 AM 01-Nov-24'. A vertical scroll bar is visible on the right edge of the terminal window. The overall appearance is that of an older Windows version, possibly XP or Vista.

Finding +Ve / -Ve/ 0:

The screenshot shows a Windows desktop environment with a terminal window open in the foreground. The terminal window is titled 'TC' and displays a C program being run. The code checks if a user input is positive, negative, or zero. The terminal output shows the program's execution and its result for an input of 4.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter n value "); scanf("%d",&n);
if(n>0)puts("+Ve");
else if(n<0) puts("-Ve");
else puts("Zero");
getch();
}
```

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

Enter n value 4
+Ve

```
TC
Enter n value -7
-Ve

Enter n value 0
Zero
```

The image shows a Windows operating system desktop with three separate command-line windows (CMD) open vertically. The top window has a yellow title bar labeled 'TC' and displays the text 'Enter n value -7' followed by '-Ve'. The middle window has a blue title bar labeled 'TC' and displays the text 'Enter n value 0' followed by 'Zero'. The bottom window has a red title bar labeled 'TC' and displays the text 'Enter n value 0'. The desktop background is black. At the bottom of the screen is a taskbar with several pinned icons, including File Explorer, Task View, Edge browser, and others. The system tray shows the date and time as 10:17 AM on 01-Nov-24.

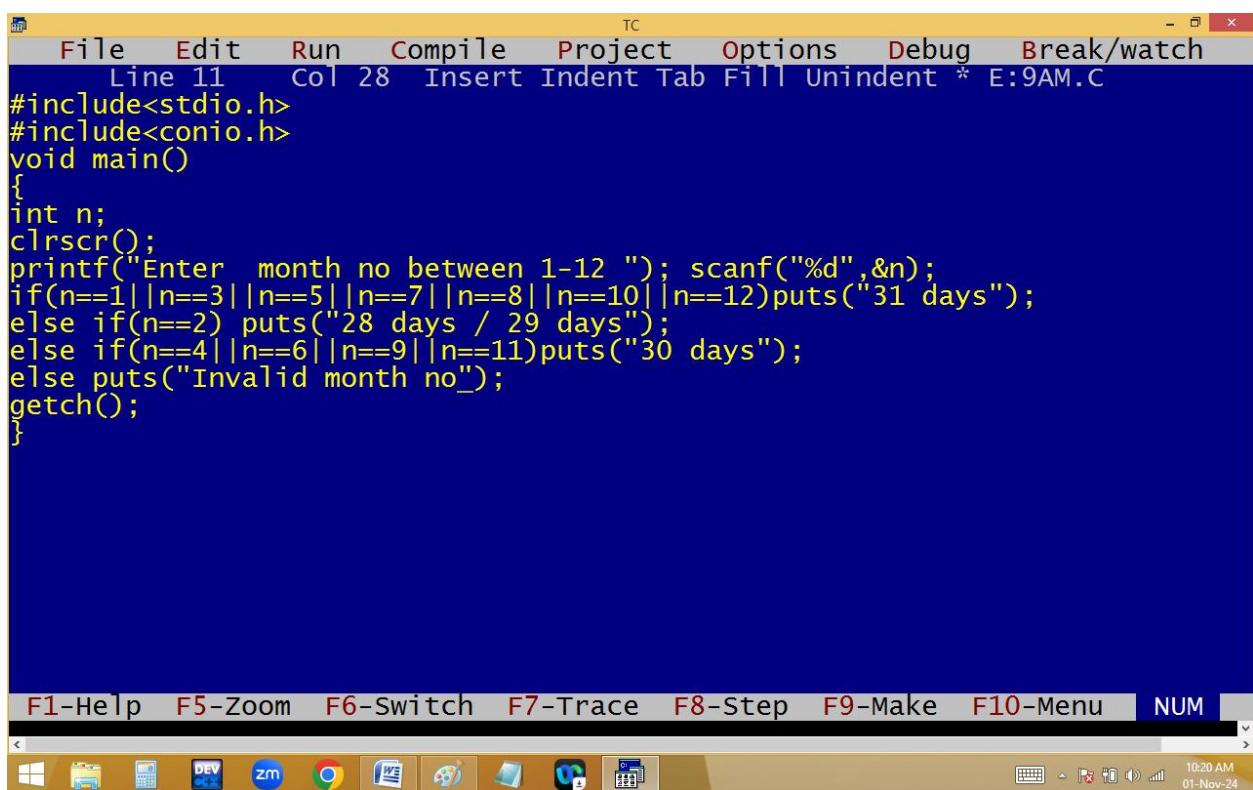
Finding no of days in given month:

1,3,5,7,8,10,12 – 31 days

2 – 28/29 days

4,6,9,11 – 30 days

Others – invalid

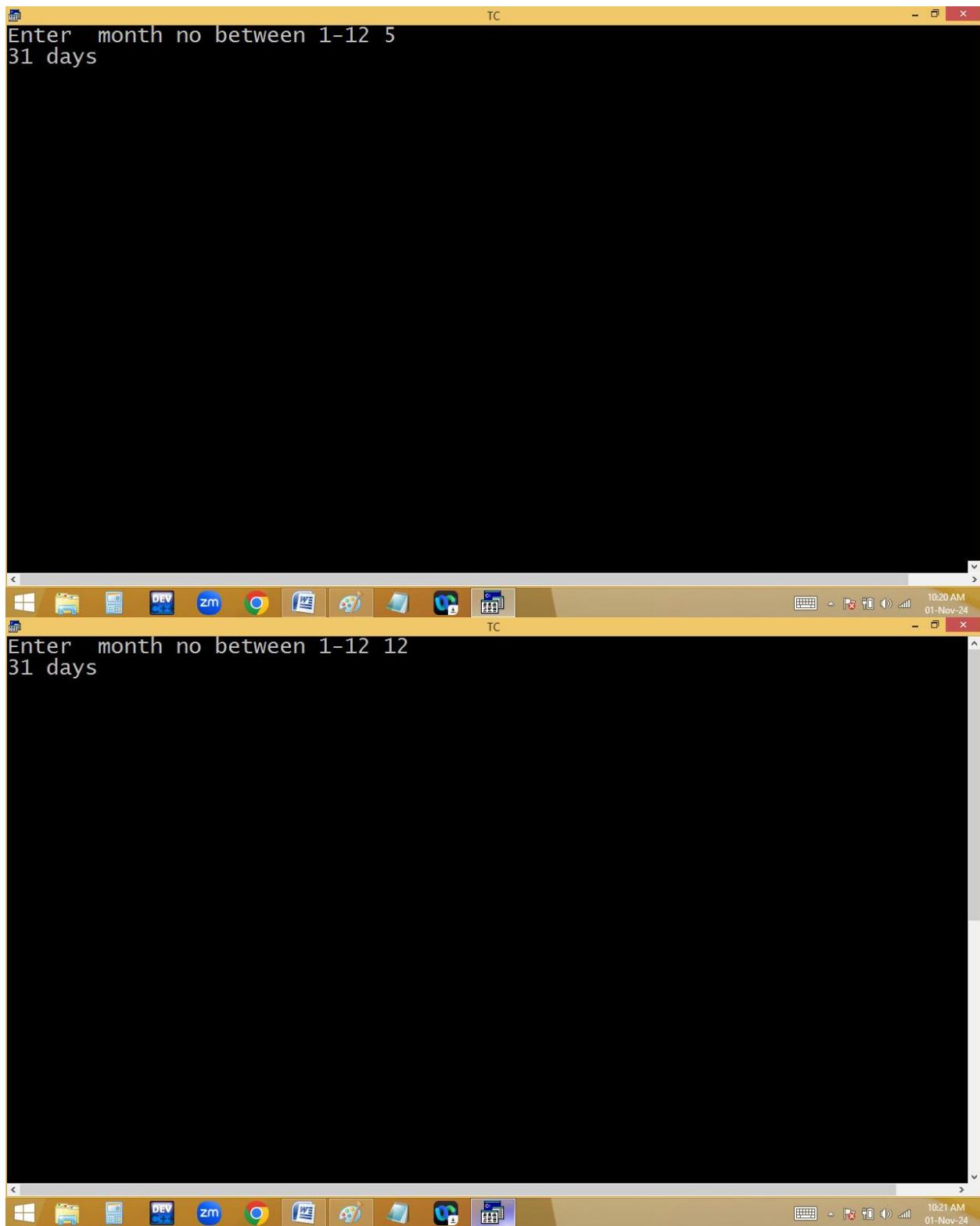


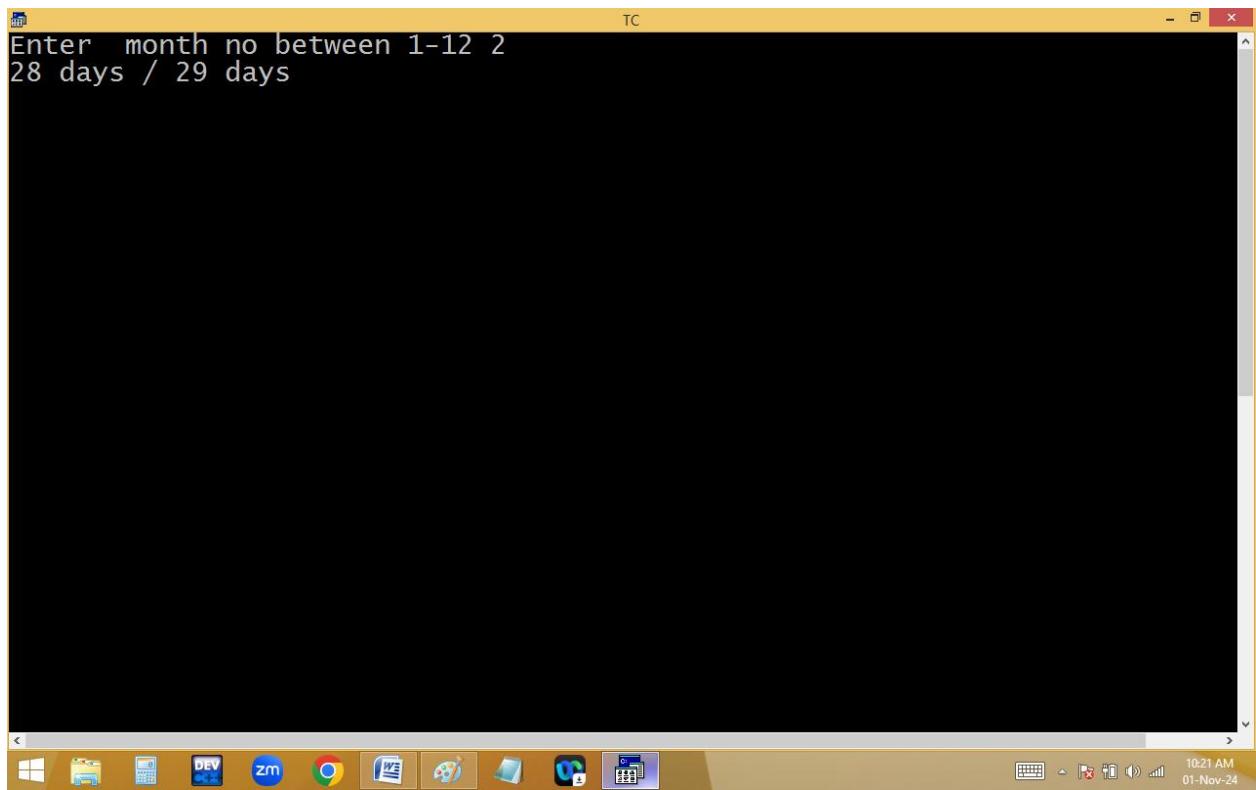
The screenshot shows a Microsoft Visual Studio Code window with the following details:

- Title Bar:** TC
- Menu Bar:** File Edit Run Compile Project Options Debug Break/watch
- Status Bar:** Line 11 Col 28 Insert Indent Tab Fill Unindent * E:9AM.C
- Code Area:** C code that prompts the user for a month number (n) and prints the number of days based on the value of n.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int n;
clrscr();
printf("Enter month no between 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 days / 29 days");
else if(n==4||n==6||n==9||n==11)puts("30 days");
else puts("Invalid month no");
getch();
}
```

- Bottom Bar:** F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu | NUM
- Taskbar:** Shows icons for various applications including Windows Start, File Explorer, Task View, Developer Command Prompt, Zoom, Google Chrome, FileZilla, Paint, and others.
- System Tray:** Shows the date and time (10:20 AM 01-Nov-24).





```
TC
Enter month no between 1-12 15
Invalid month no

-

```



```
TC
Enter month no between 1-12 11
30 days

-

```



```
TC

```

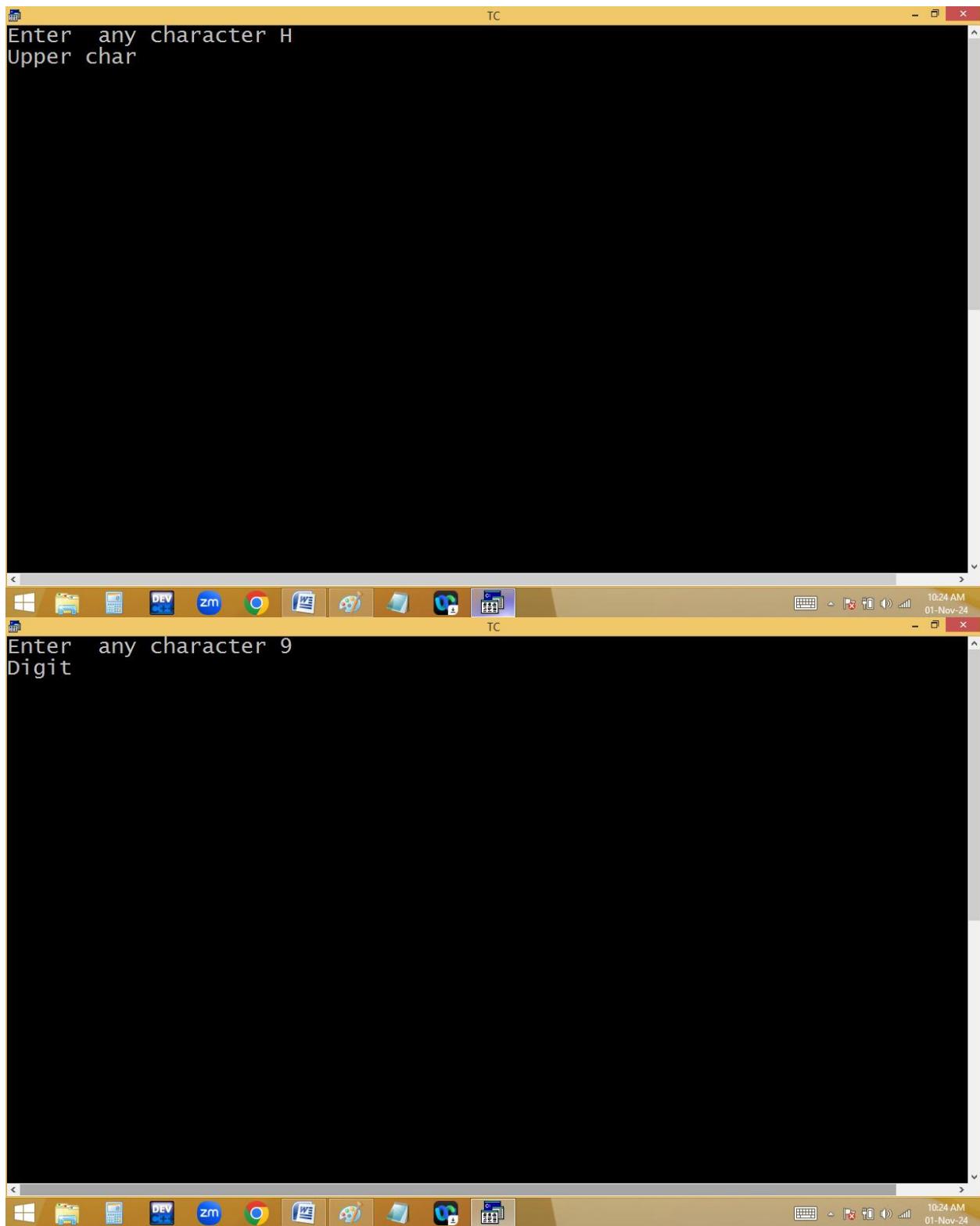
Finding lower / upper / digit / space / special char:

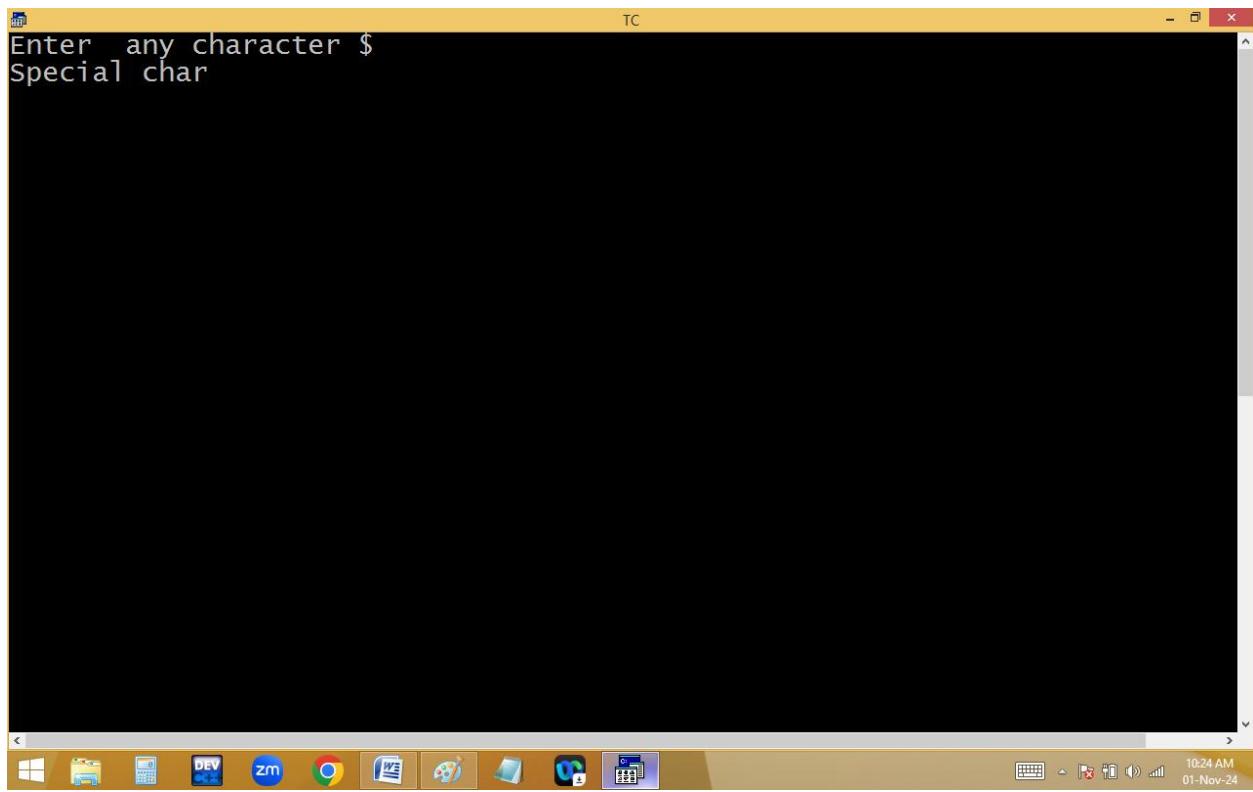
The screenshot shows a Windows desktop environment with a terminal window open in the foreground. The terminal window has a dark blue background and displays a C program being run. The program prompts the user to enter a character, checks if it's lowercase, uppercase, a digit, or a space, and then prints the result. The terminal window includes standard Windows-style scroll bars on the right side.

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

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

Enter any character g
Lower char





```
TC
Enter any character
Space

Enter any character Aa5 *
Upper char
```

The image shows three screenshots of a Windows desktop environment. Each screenshot displays a terminal window titled 'TC' with a black background and white text. In the first screenshot, the terminal prompts 'Enter any character' followed by 'Space'. In the second screenshot, it shows 'Enter any character Aa5 *' followed by 'Upper char'. The desktop taskbar at the bottom of each screenshot shows various icons for applications like File Explorer, Task View, and system utilities. The system tray in the bottom right corner of each screenshot displays the date and time as '10:24 AM 01-Nov-24'.

Using ascii values:

The screenshot shows a Windows desktop with two windows open. The top window is a terminal or code editor titled "TC". It has a menu bar with File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom shows "Line 11 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C". The code inside the window is:

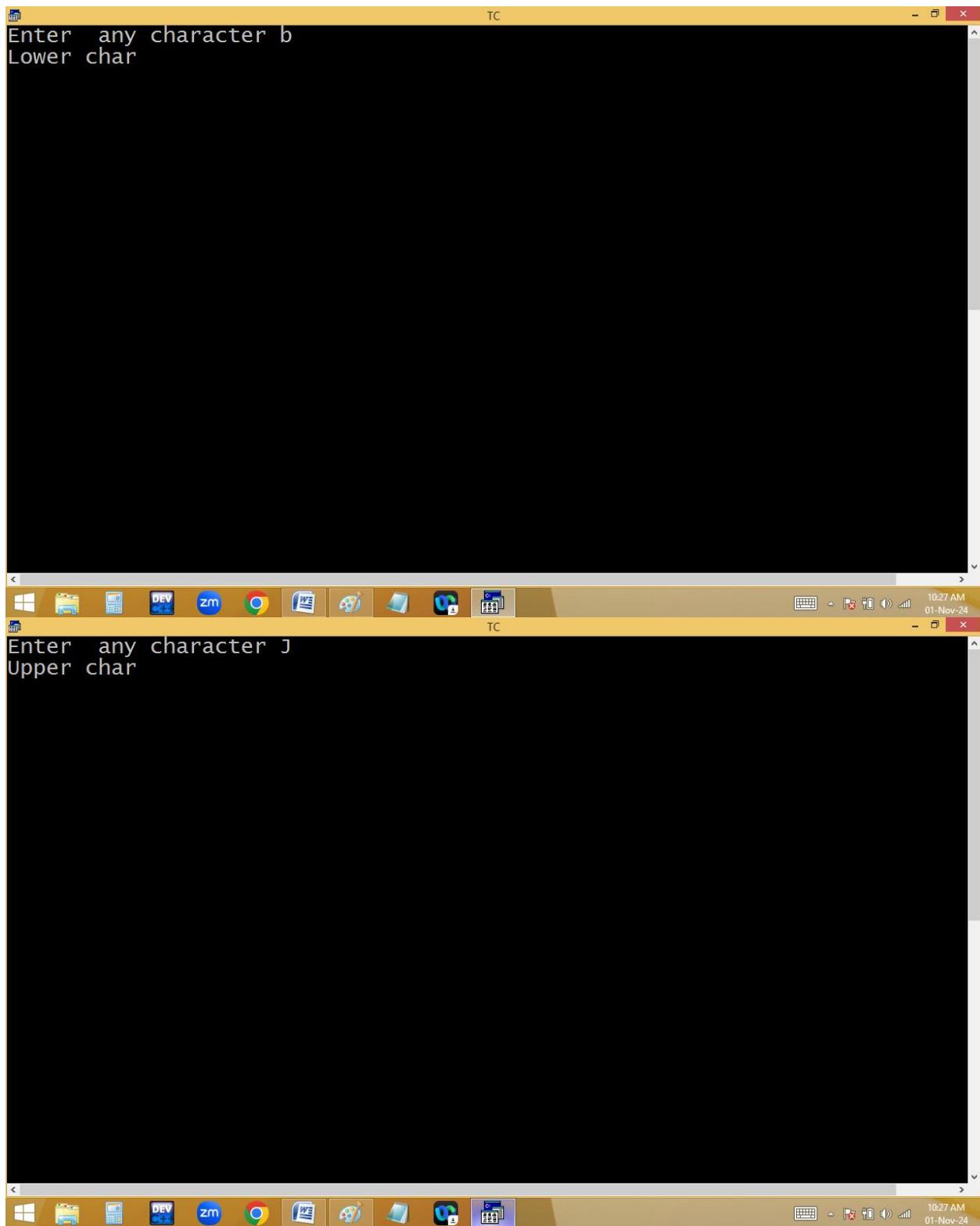
```
#include<stdio.h>
#include<conio.h>
void main()
{
char ch;
clrscr();
printf("Enter any character "); scanf("%c",&ch);
if(ch>=97 && ch<=122)puts("Lower char");
else if(ch>=65 && ch<=90) puts("Upper char");
else if(ch>=48 && ch<=57)puts("Digit");
else if(ch==32)puts("Space");
else puts("Special char");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

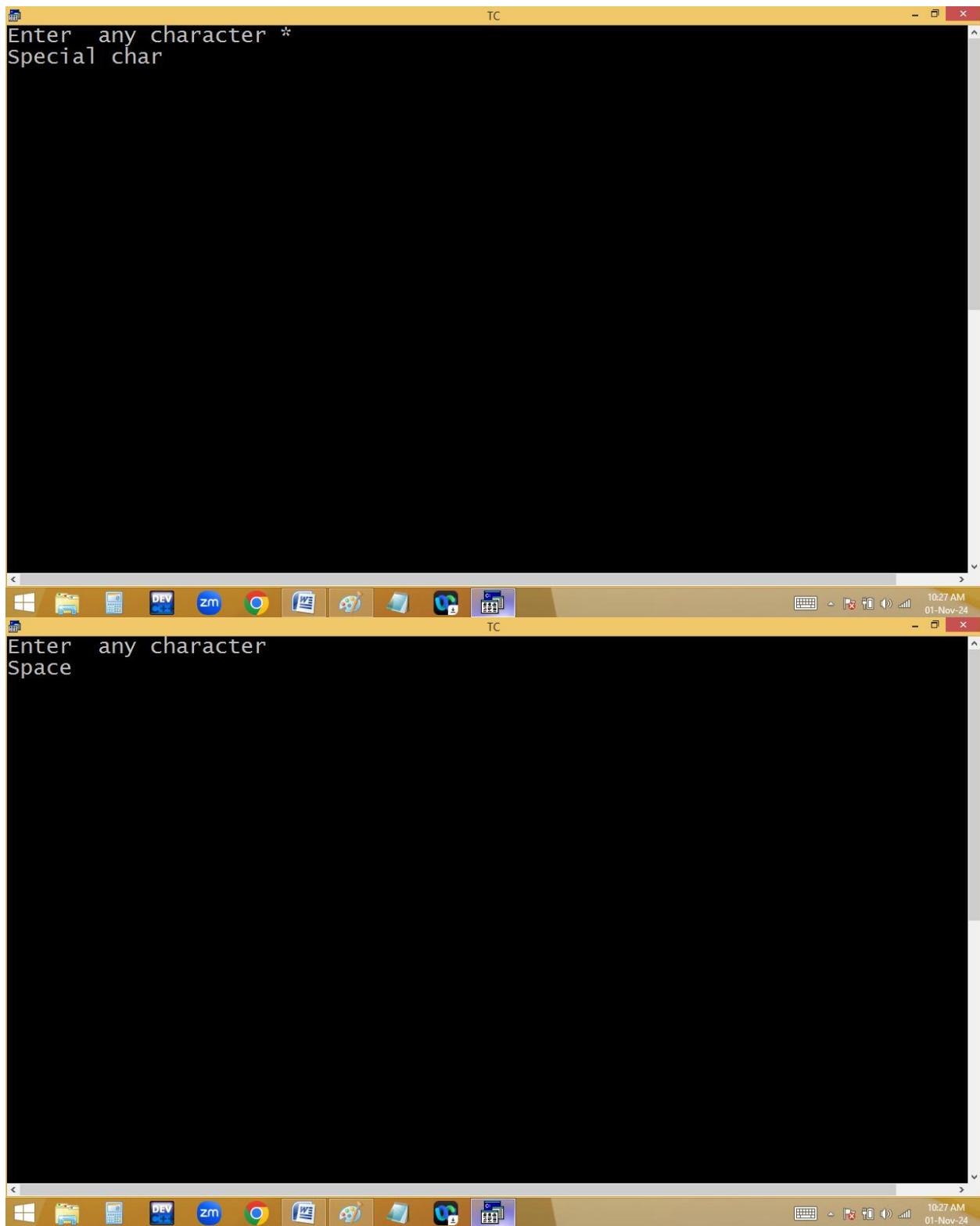
The bottom window is a command prompt window titled "TC". It displays the output of the program: "Enter any character 9" followed by "Digit".

The screenshot shows a Windows desktop with two windows open. The top window is a terminal or code editor titled "TC". It has a menu bar with File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom shows "Line 11 Col 15 Insert Indent Tab Fill Unindent * E:9AM.C". The code inside the window is:

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

The bottom window is a command prompt window titled "TC". It displays the output of the program: "Enter any character 9" followed by "Digit".





Using predefined functions:

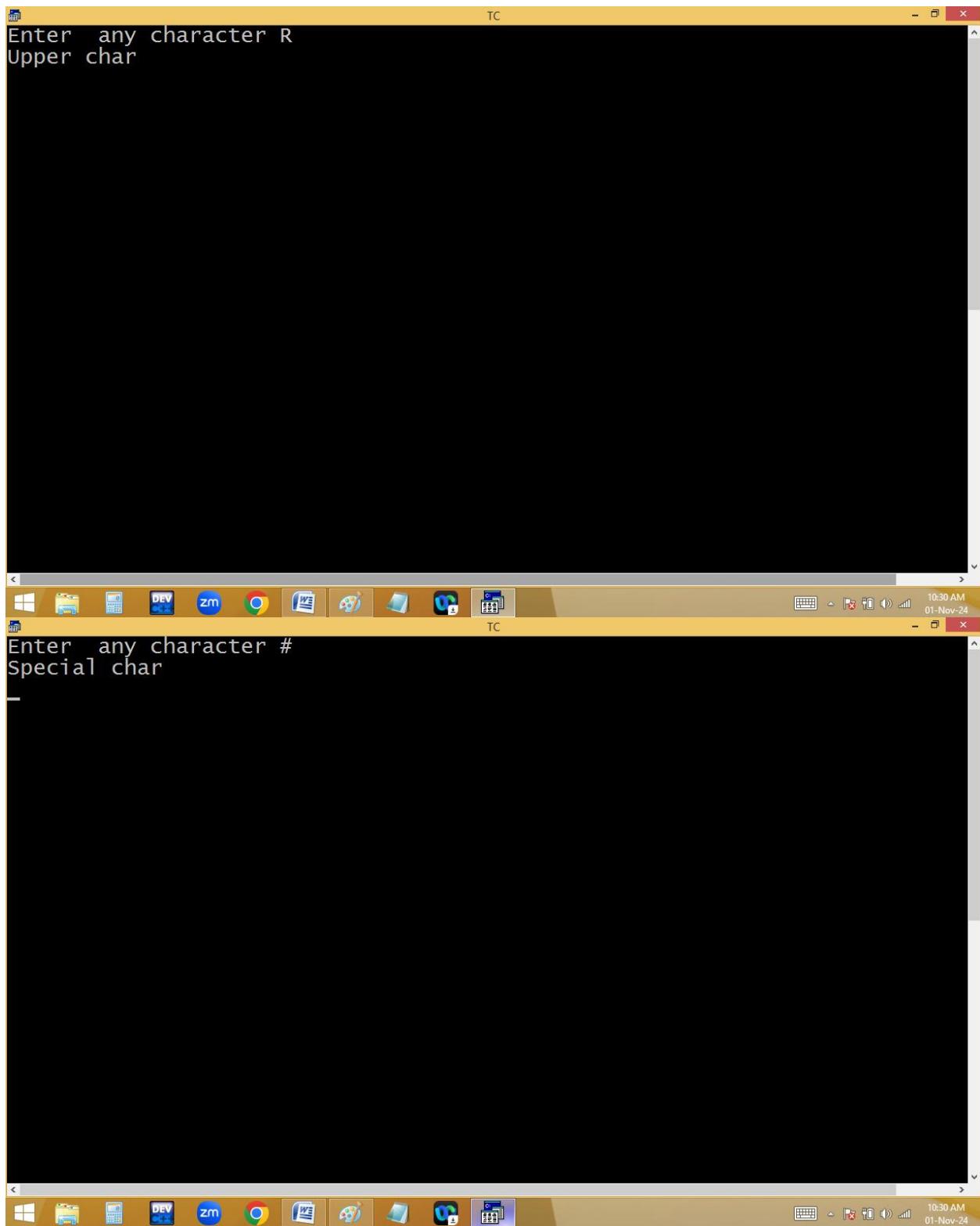
The screenshot shows the Turbo C++ IDE interface. The code in the editor window is as follows:

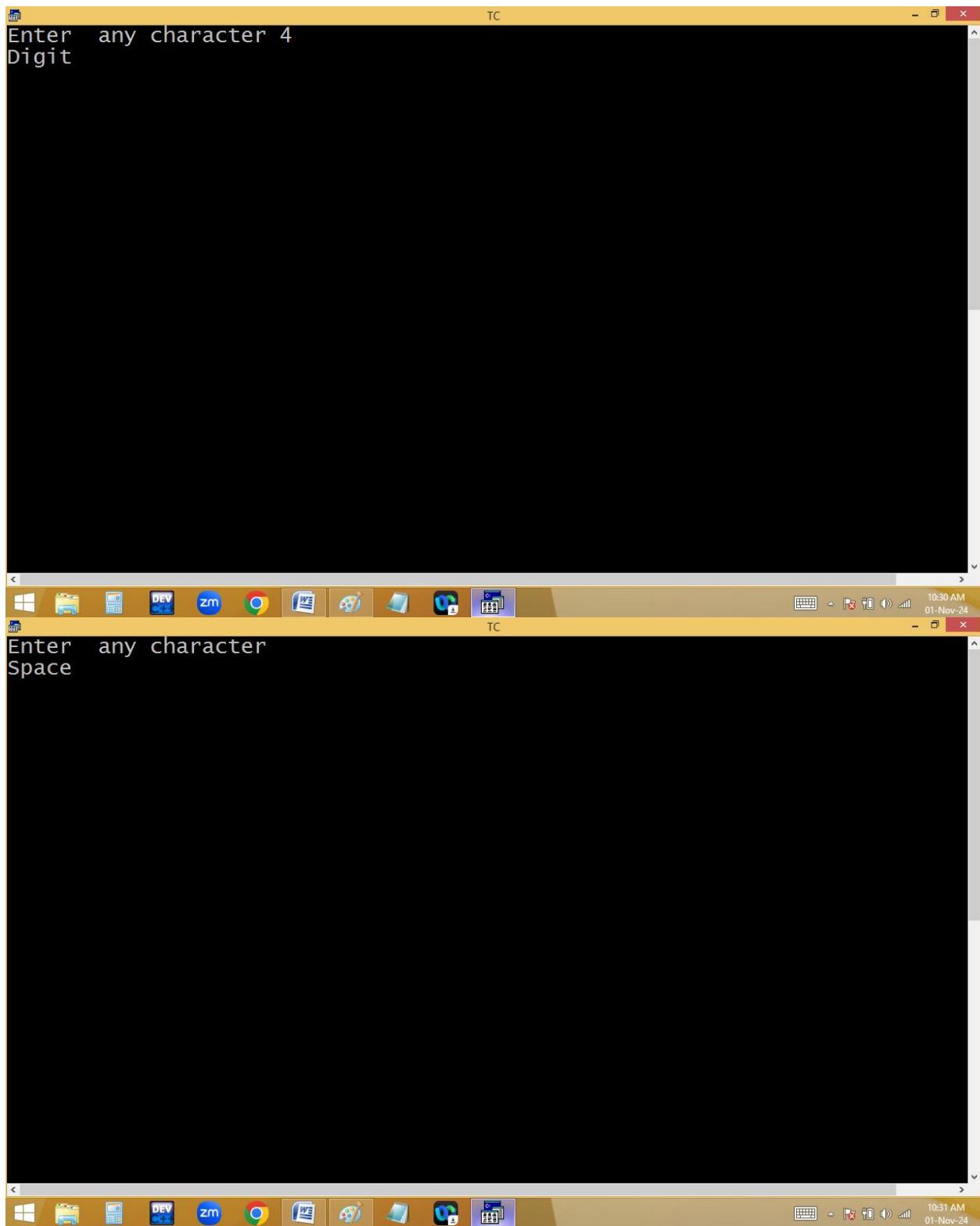
```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter any character "); scanf("%c",&ch);
if(islower(ch))puts("Lower char");
else if(isupper(ch)) puts("Upper char");
else if(isdigit(ch))puts("Digit");
else if(isspace(ch))puts("Space");
else puts("Special char");
getch();
}
```

The output window displays the following text:

```
Enter any character u
Lower char
```

The status bar at the bottom of the screen shows the date and time as 10:30 AM 01-Nov-24.





The screenshot shows the Turbo C++ IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar indicates Line 8, Col 43, Insert, Indent, Tab, Fill, Unindent, * E:9AM.C. The code in the editor is:

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

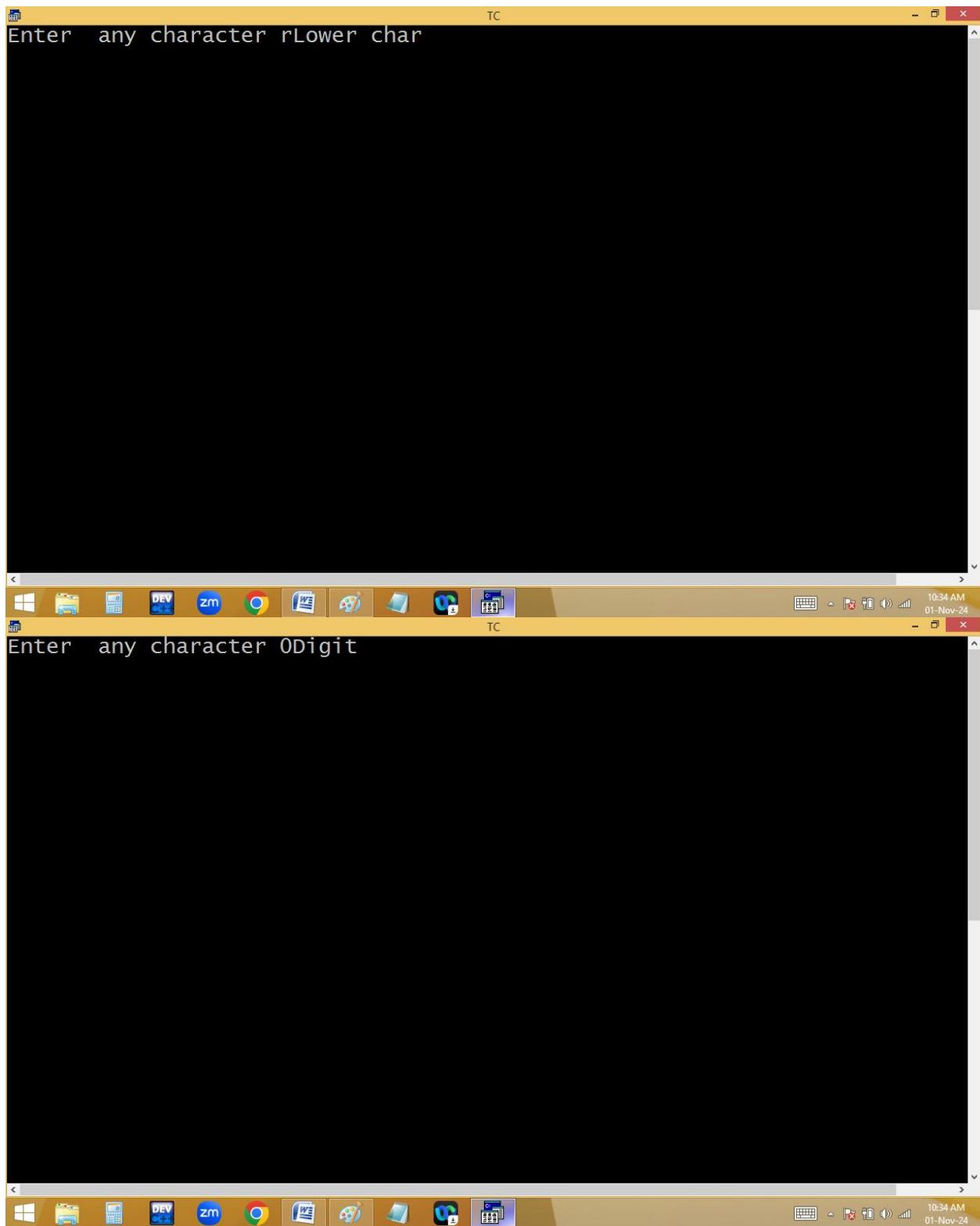
The terminal window below shows the output: "Enter any character Lower char". The taskbar at the bottom displays various application icons, and the system tray shows the date and time as 10:33 AM 01-Nov-24.

TC

Enter any character Digit

```
File Edit Run Compile Project Options Debug Break/watch
Line 8 Col 43 Insert Indent Tab Fill Unindent * E:9AM.C
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter any character "); ch=getche();
if(islower(ch))puts("Lower char");
else if(isupper(ch)) puts("Upper char");
else if(isdigit(ch))puts("Digit");
else if(isspace(ch))puts("Space");
else puts("Special char");
getch();
}
```

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM



The screenshot shows the Turbo C++ IDE interface. The code editor window displays a C program for character classification. The terminal window below shows the execution of the program, where it prompts for a character input and then classifies it as a special character.

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

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

TC

Enter any character *

Special char

getch()

getche()

getchar()

Reads single char	Reads single char	Reads single char
Entered char is not visible	char is visible	char is visible
Not waiting for enter key	Not waiting for enter key	Waiting for enter key
Belongs to conio.h	Belongs to conio.h	Belongs to stdio.h
char not changeable	char not changeable	char changeable

Note: All the above functions returns ASCII value(int) of reading character.

isupper(), islower(), isdigit(), isspace():

They are used to check the given character is upper / lower/ digit / space.

tolower(), toupper(): They are used to convert the character from upper case to lower and lower to upper.

All these functions / macros available in **<ctype.h>**

Lower to upper / upper to lower conversion:

$$a = 91$$

$$\begin{array}{r} -32 \\ \hline 65 = A \end{array}$$

$$\begin{array}{r} +32 \\ \hline \end{array}$$

$$a = 97$$

Using predefined functions:

A screenshot of the Turbo C++ IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the bottom shows "Line 11 Col 20 Insert Indent Tab Fill Unindent * E:9AM.C". The code editor contains the following C program:

```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter any character "); scanf("%c",&ch);
if(islower(ch))ch=toupper(ch);
else ch=tolower(ch);
printf("char=%c ",ch);
getch();
}
```

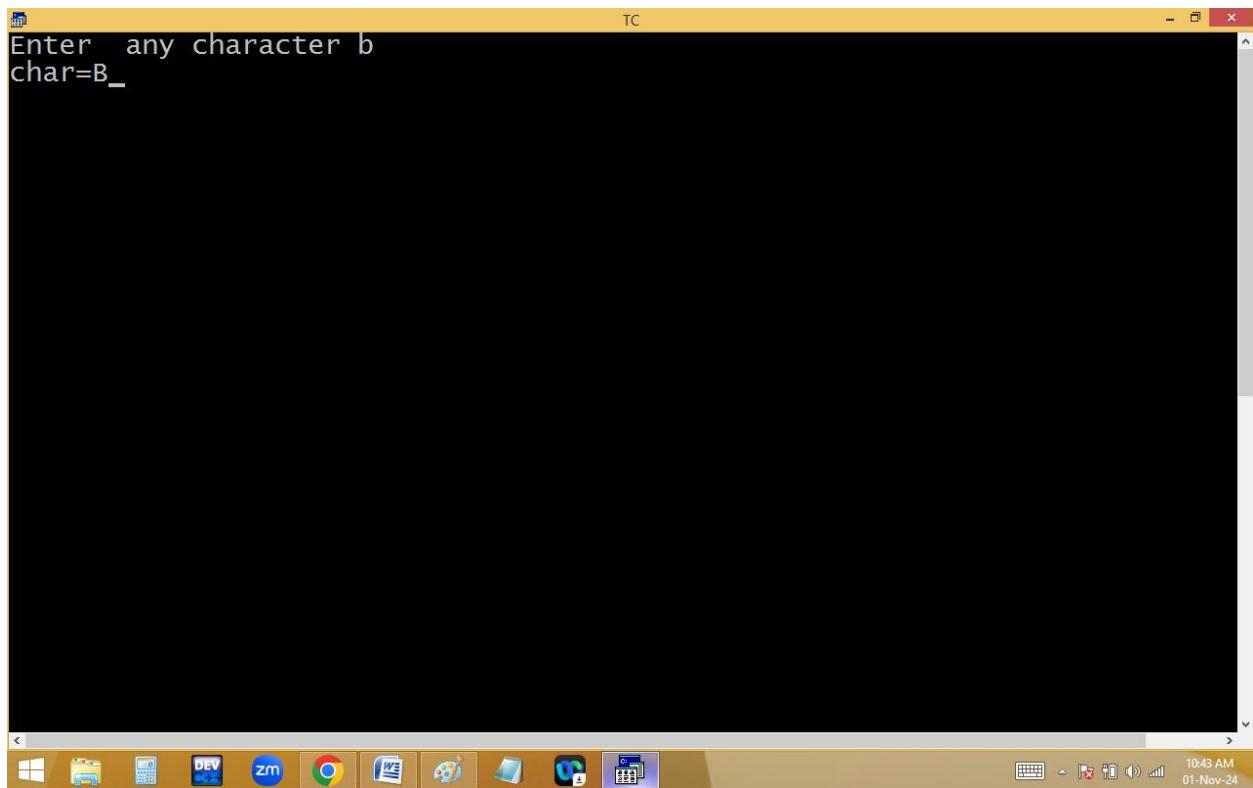
The status bar also displays keyboard shortcuts: F1-Help, F5-Zoom, F6-Switch, F7-Trace, F8-Step, F9-Make, F10-Menu, and NUM.

A screenshot of the terminal window from the Turbo C++ IDE. The window title is "TC". The terminal displays the output of the program:

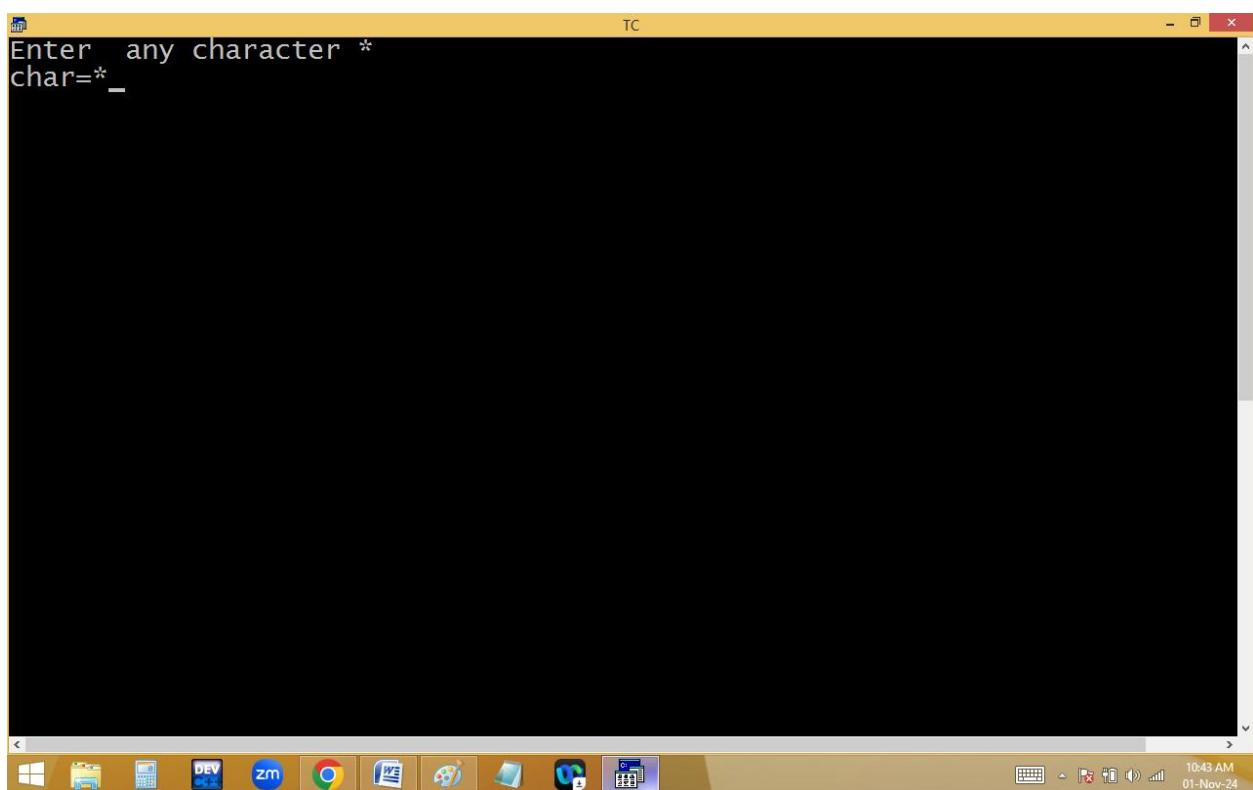
```
Enter any character H
char=h_
```

The status bar at the bottom of the terminal window shows the date and time: 10:42 AM 01-Nov-24.

```
TC
Enter any character b
char=B_
```



```
TC
Enter any character *
char=*_
```



Without predefined:

TC

File Edit Run Compile Project Options Debug Break/watch

Line 11 Col 1 Insert Indent Tab Fill Unindent * E:9AM.C

```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
void main()
{
char ch;
clrscr();
printf("Enter any character "); scanf("%c",&ch);
if(ch>='a' && ch<='z')ch=ch-32;
else ch=ch+32;
printf("char=%c ",ch);
getch();
}
```

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu NUM

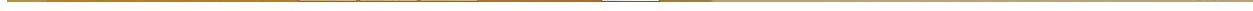
10:44 AM 01-Nov-24

TC

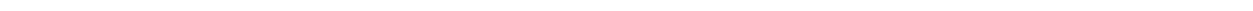
```
Enter any character G
char=g
```

10:44 AM 01-Nov-24

```
TC
Enter any character d
char=D_
```

A screenshot of a Windows 7 desktop environment. The taskbar at the bottom features a standard set of icons including File Explorer, Task View, Start, Task Switcher, and several pinned application icons like DEV, zm, Google Chrome, Microsoft Edge, Paint, and File Explorer. The system tray shows the date and time as 10:44 AM on 01-Nov-24.

```
TC
Enter any character *
char=J_
```

A second screenshot of the same Windows 7 desktop environment, showing the taskbar and system tray at the bottom.

TC

```
Enter any character 9
char=Y
```

Windows taskbar icons: DEV, zm, Google Chrome, Paint, etc.

System tray: 10:45 AM, 01-Nov-24

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>
#include<ctype.h>
void main()
{
    char ch;
    clrscr();
    printf("Enter any character ");
    scanf("%c",&ch);
    if(ch>='a' && ch<='z') ch=ch-32;
    else if(ch>='A' && ch<='Z') ch=ch+32;
    printf("char=%c",ch);
    getch();
}
```

F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Make F10-Menu | NUM

Windows taskbar icons: DEV, zm, Google Chrome, Paint, etc.

System tray: 10:48 AM, 01-Nov-24

