

printf():

It is the major output function in c language.

It is a predefined function available in standard input output header file <stdio.h>

Printf always refers standard output device i.e. monitor.

In printf, f means formatted.

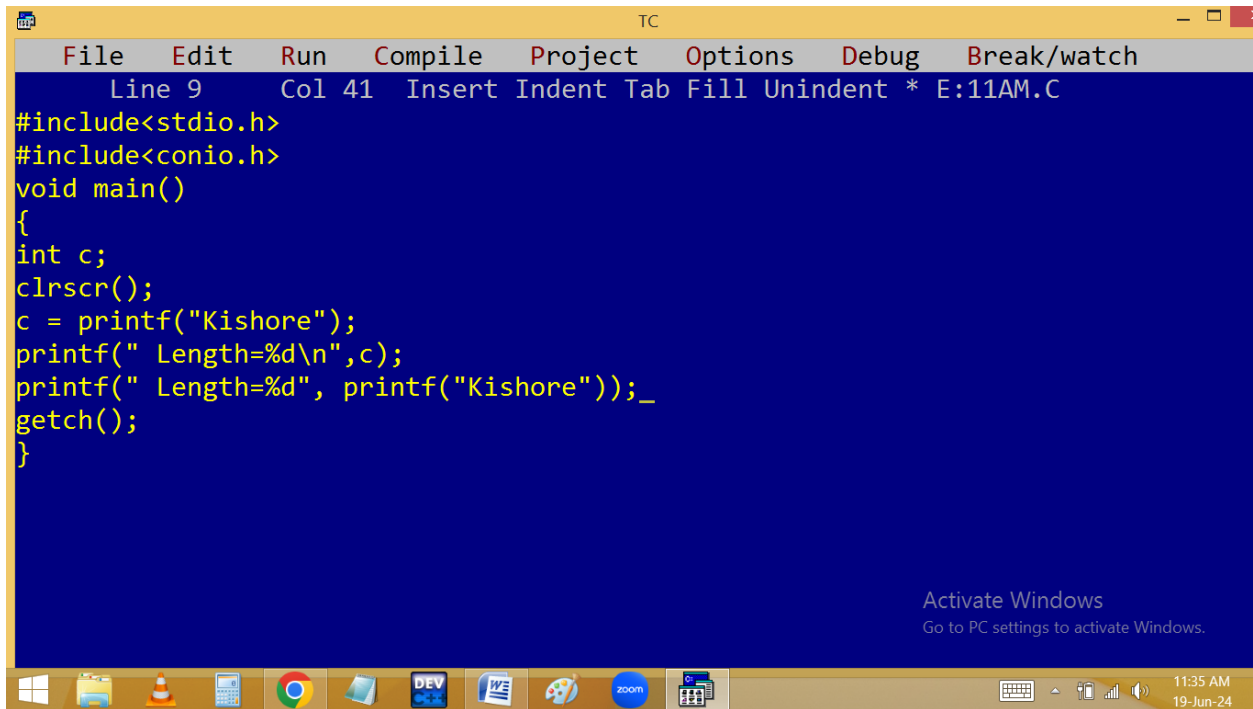
Syntax:

```
int printf("[text] [ conversion characters / format specifiers /  
format strings ] " [ , variables ] [ , expressions ] );
```

Note:

1. In printf, the first value [argument] should be within " ".
2. Printf always return int which indicates the no of visible characters.
3. In printf execution order is right to left but printing is left to right.
4. Printf can perform both formatted and unformatted outputs.
5. In printf everything printed as it is except conversion characters and format specifiers.

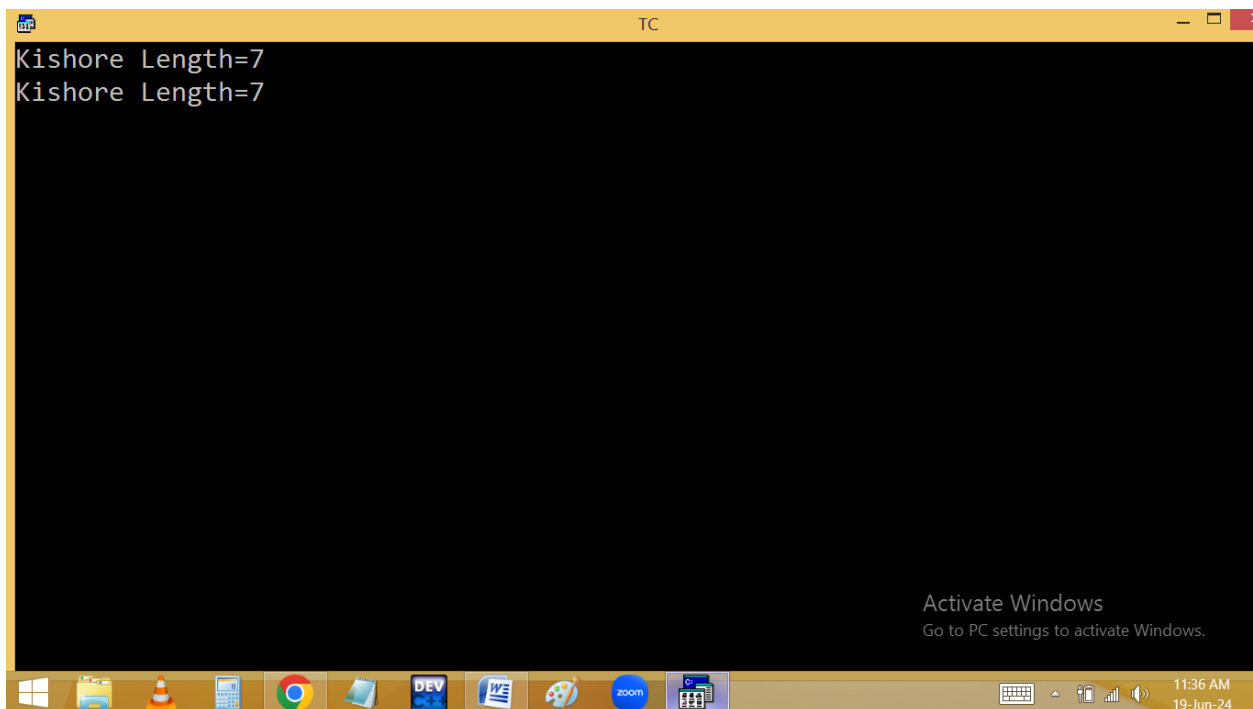
Eg: Write a c program to find the string length without using strlen() or a loop.



The screenshot shows the Turbo C++ (TC) IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 9 Col 41 Insert Indent Tab Fill Unindent * E:11AM.C'. The code is as follows:

```
#include<stdio.h>
#include<conio.h>
void main()
{
int c;
clrscr();
c = printf("Kishore");
printf(" Length=%d\n",c);
printf(" Length=%d", printf("Kishore"));_
getch();
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window. The Windows taskbar at the bottom shows various icons including File Explorer, VLC, Calculator, Chrome, and others, with the system clock displaying 11:35 AM on 19-Jun-24.



The screenshot shows the same Turbo C++ IDE window after execution. The output is displayed in the console area:

```
Kishore Length=7
Kishore Length=7
```

The 'Activate Windows' watermark is also present here. The Windows taskbar at the bottom shows the system clock displaying 11:36 AM on 19-Jun-24.

```
TC
#include<stdio.h>
#include<conio.h>
void main()
{
int a=10;
float b=1.2;
clrscr();
printf("Good morning\n"); /* unformatted */
printf("a=\n");
printf("a=%d\n",a); /* formatted */
printf("a=%d b=%f\n",a,b);
printf("sum=%f\n",a+b);
printf("a=%d, b=%f, sum=%f\n",a,b,a+b);
printf("%d + %f = %f\n",a,b,a+b);
printf("%d",a);
getch();
}
```

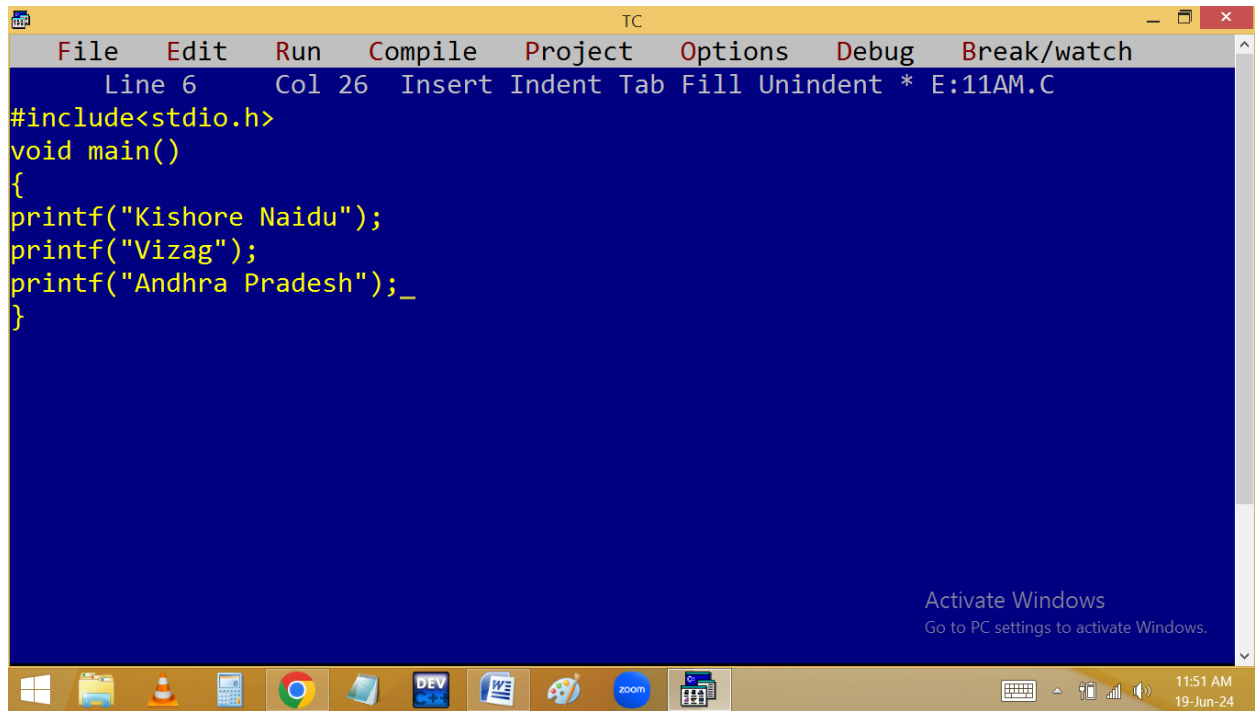
Activate Windows
Go to PC settings to activate Windows.

11:49 AM
19-Jun-24

```
TC
Good morning
a=
a=10
a=10 b=1.200000
sum=11.200000
a=10, b=1.200000, sum=11.200000
10 + 1.200000 = 11.200000
10
```

Activate Windows
Go to PC settings to activate Windows.

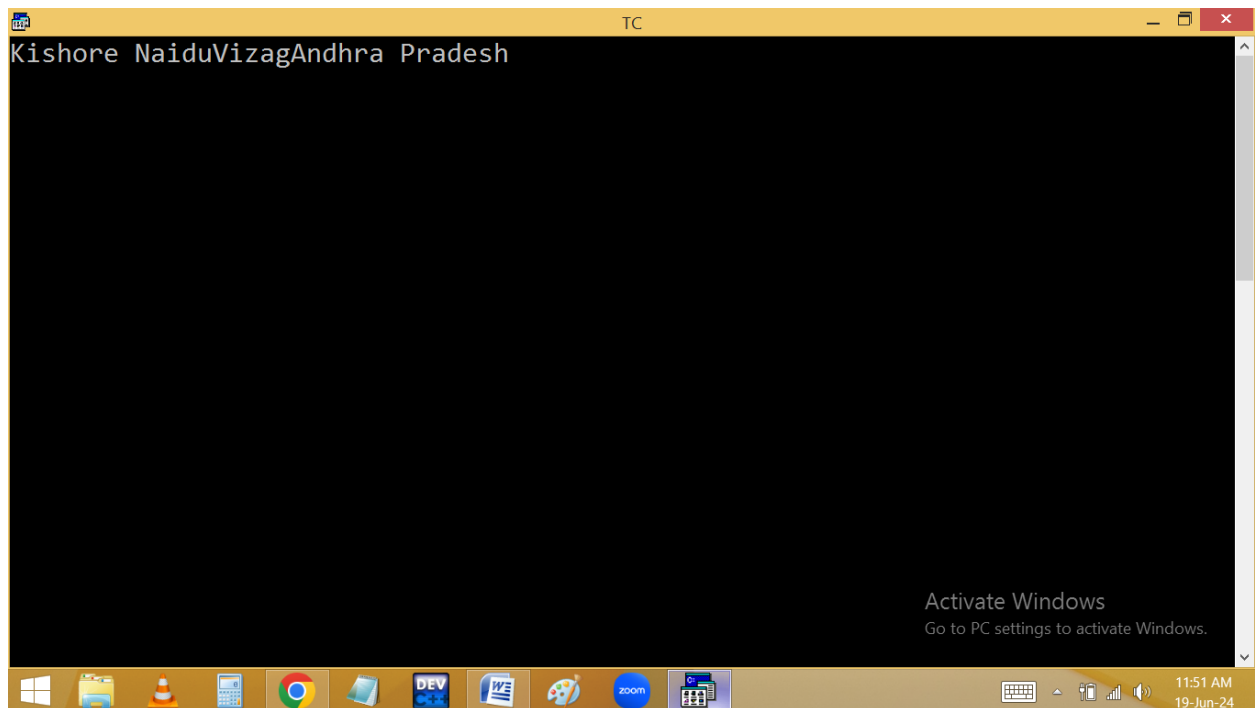
Page: 3 of 3 Words: 139 100% 11:50 AM
19-Jun-24



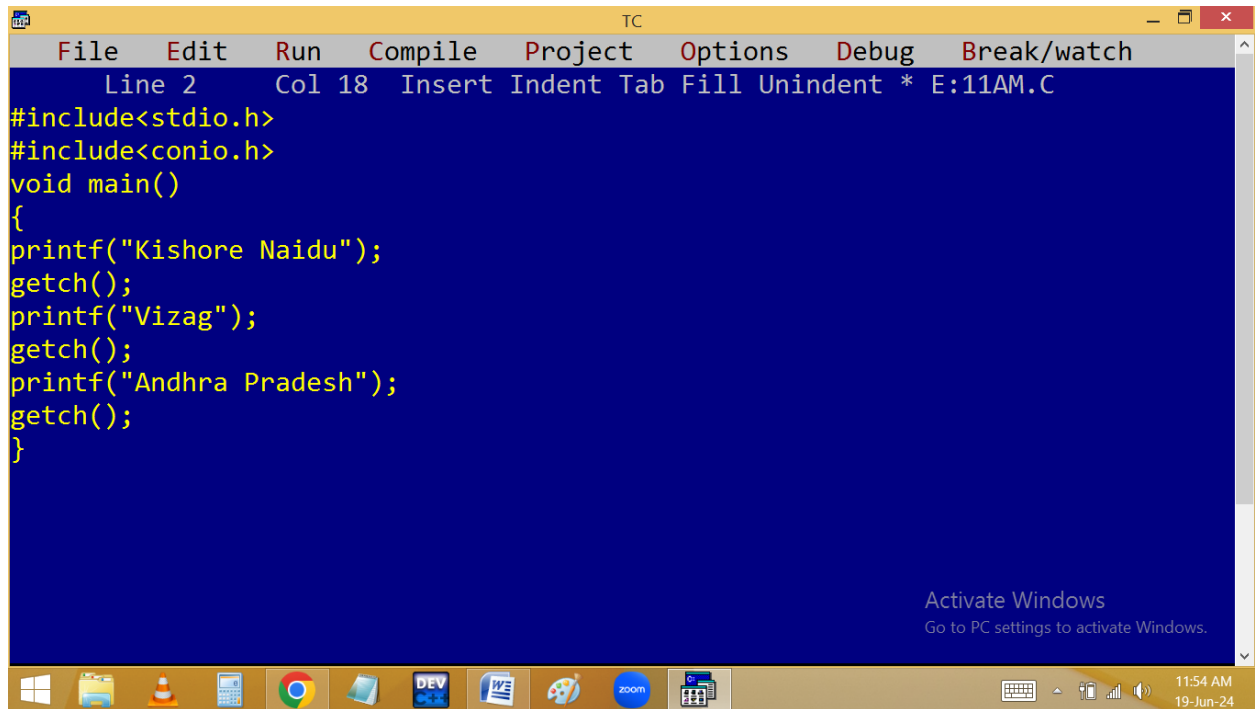
The screenshot shows the Turbo C++ (TC) IDE window. The title bar is yellow and says "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 6 Col 26 Insert Indent Tab Fill Unindent * E:11AM.C". The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
void main()
{
printf("Kishore Naidu");
printf("Vizag");
printf("Andhra Pradesh");_
}
```

An "Activate Windows" watermark is visible in the bottom right corner of the editing area, with the text "Go to PC settings to activate Windows." The Windows taskbar is at the bottom, showing icons for File Explorer, VLC, Calculator, Chrome, and several development tools. The system clock shows 11:51 AM on 19-Jun-24.



The screenshot shows the Turbo C++ (TC) IDE window after execution. The title bar is yellow and says "TC". The main editing area now has a black background and displays the output of the program as a single line of text: "Kishore NaiduVizagAndhra Pradesh". The "Activate Windows" watermark is still present in the bottom right corner. The Windows taskbar and system clock are identical to the first screenshot, showing 11:51 AM on 19-Jun-24.



TC

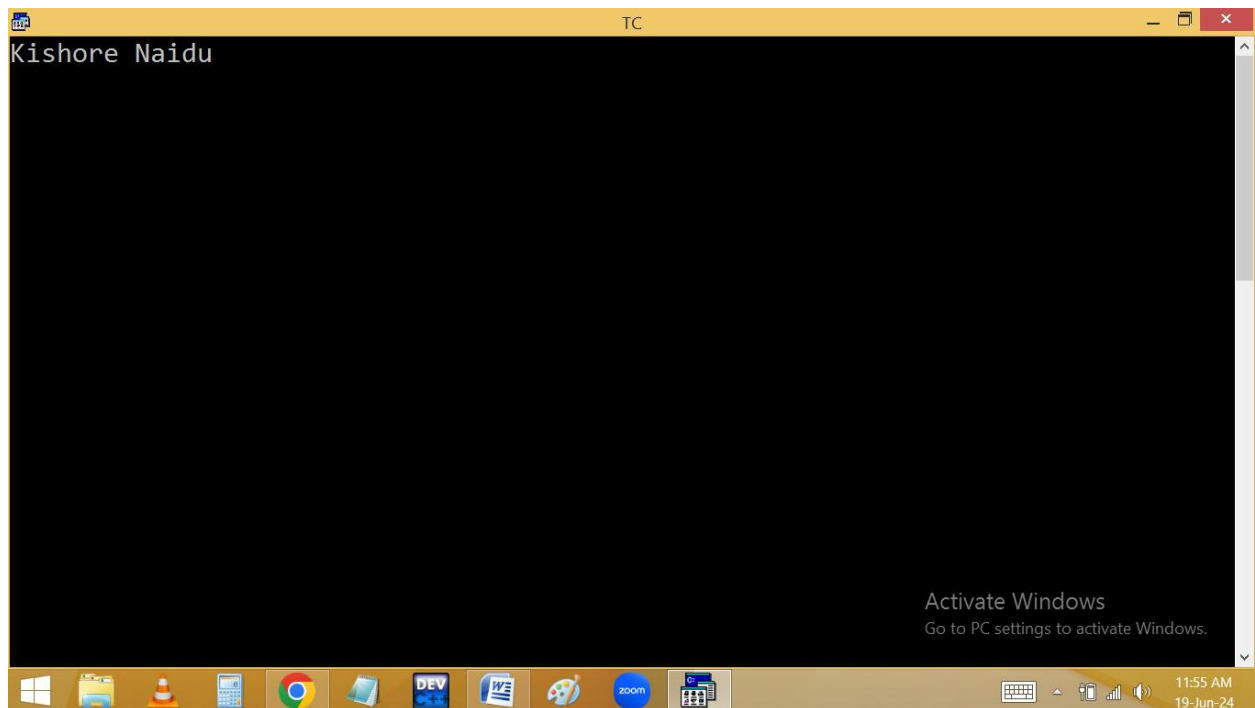
File Edit Run Compile Project Options Debug Break/watch

Line 2 Col 18 Insert Indent Tab Fill Unindent * E:11AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
printf("Kishore Naidu");
getch();
printf("Vizag");
getch();
printf("Andhra Pradesh");
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

11:54 AM
19-Jun-24

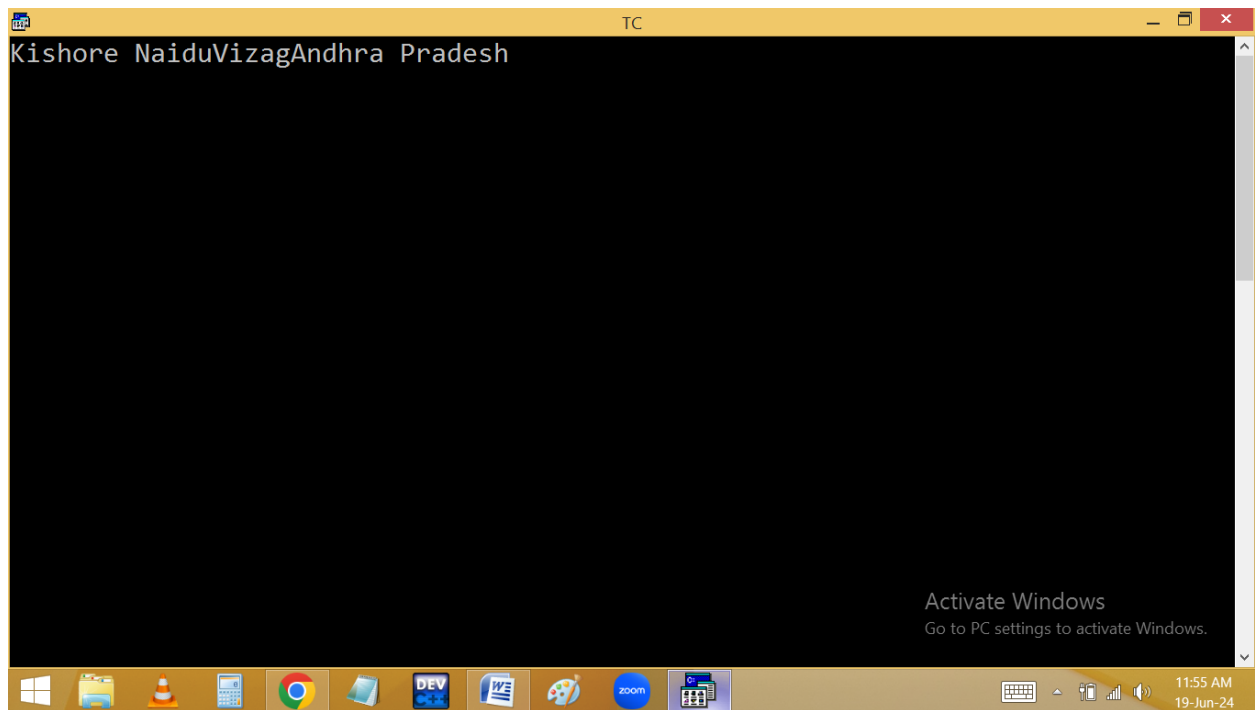
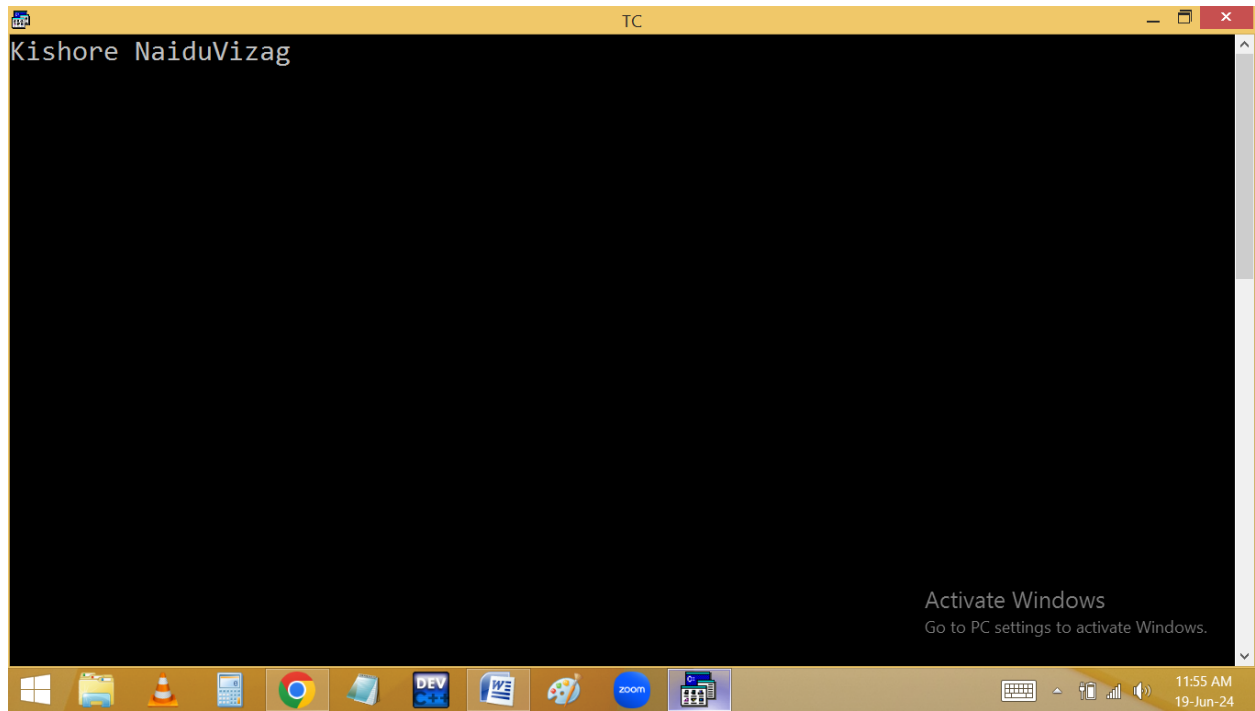


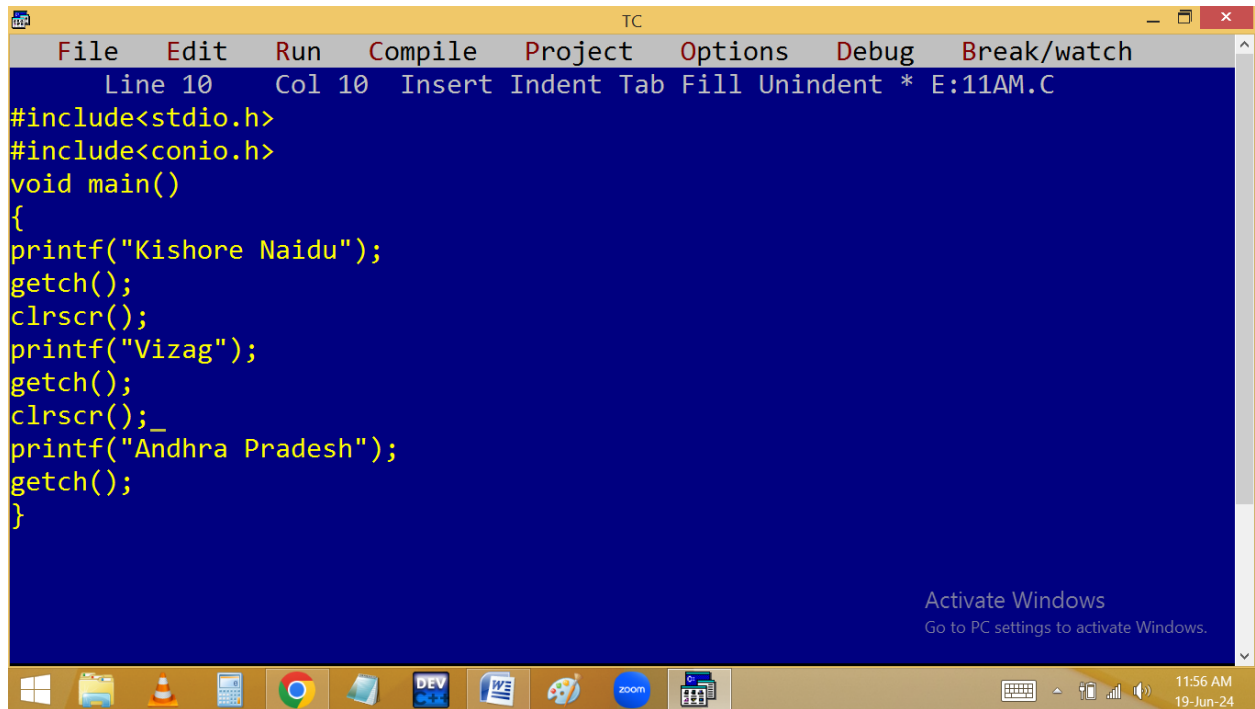
TC

Kishore Naidu

Activate Windows
Go to PC settings to activate Windows.

11:55 AM
19-Jun-24

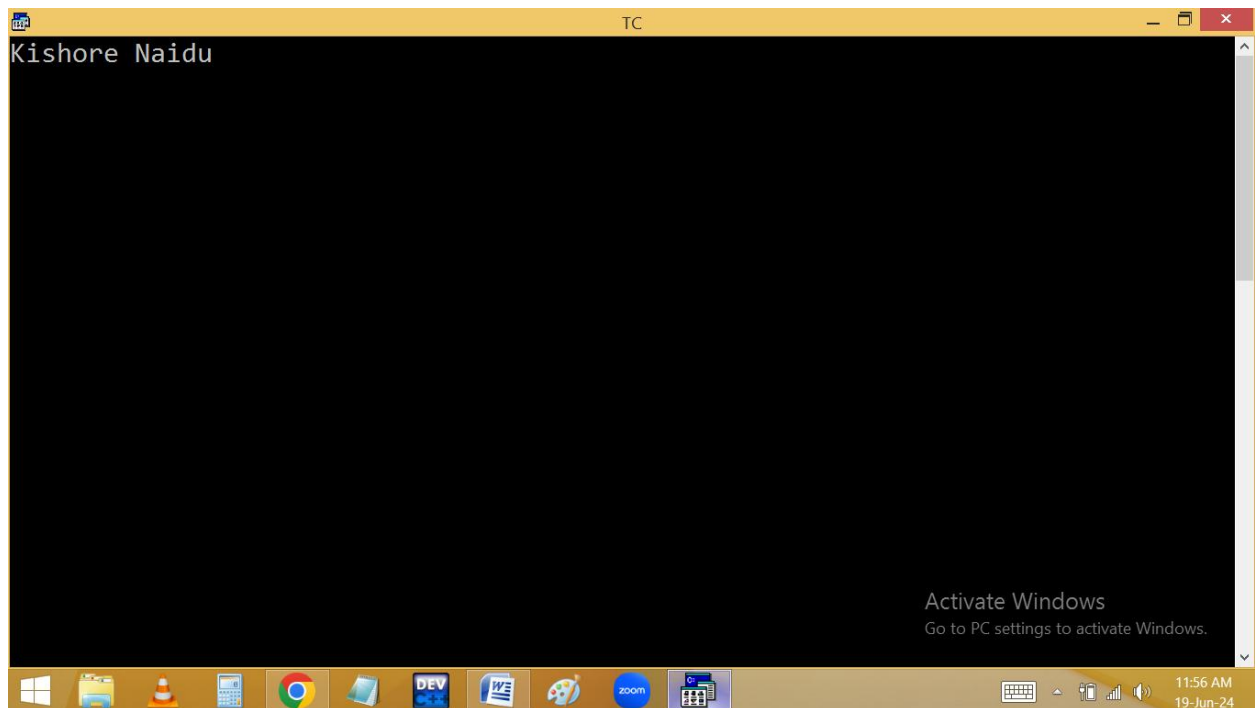




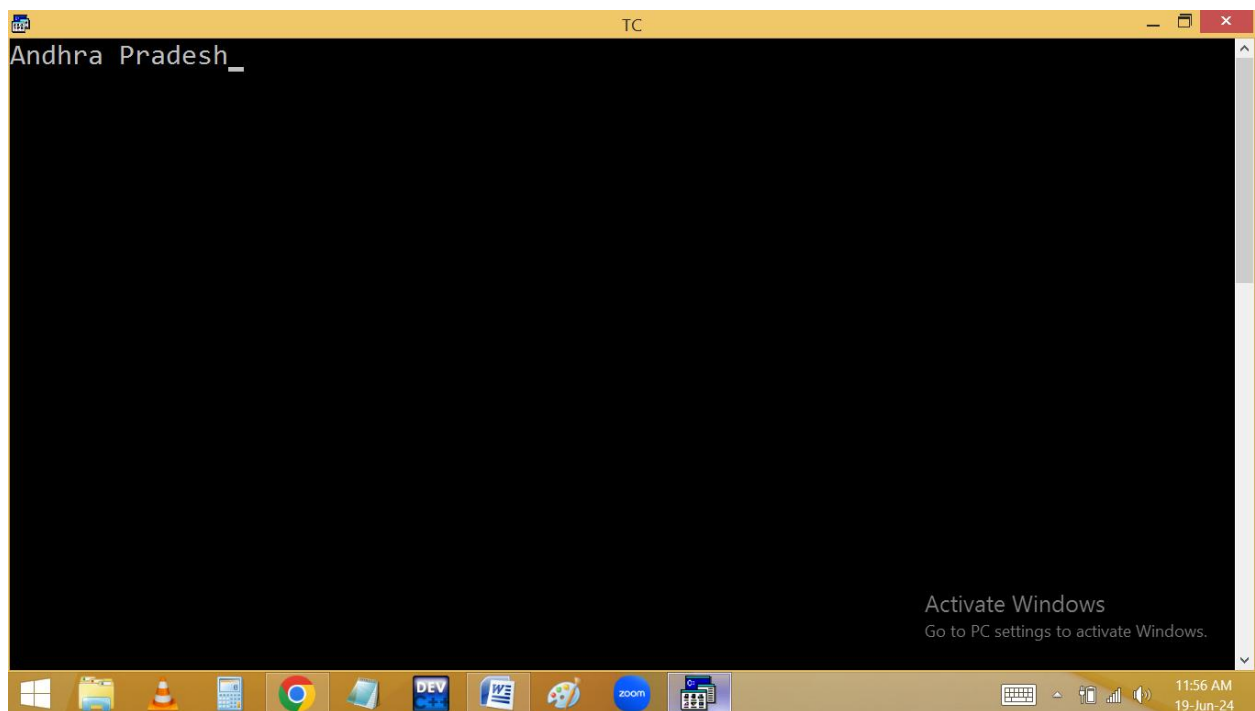
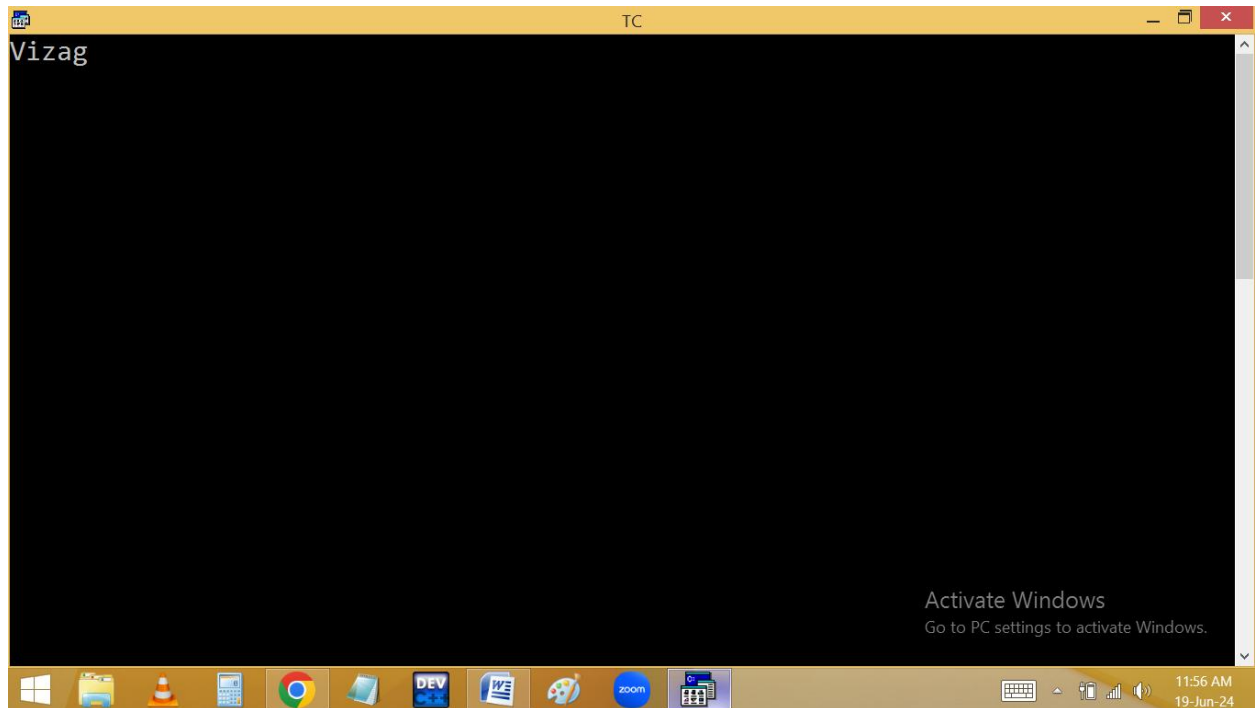
The screenshot shows the Turbo C++ (TC) IDE window. The title bar is yellow and says "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 10 Col 10 Insert Indent Tab Fill Unindent * E:11AM.C". The main editing area has a blue background and contains the following C code:

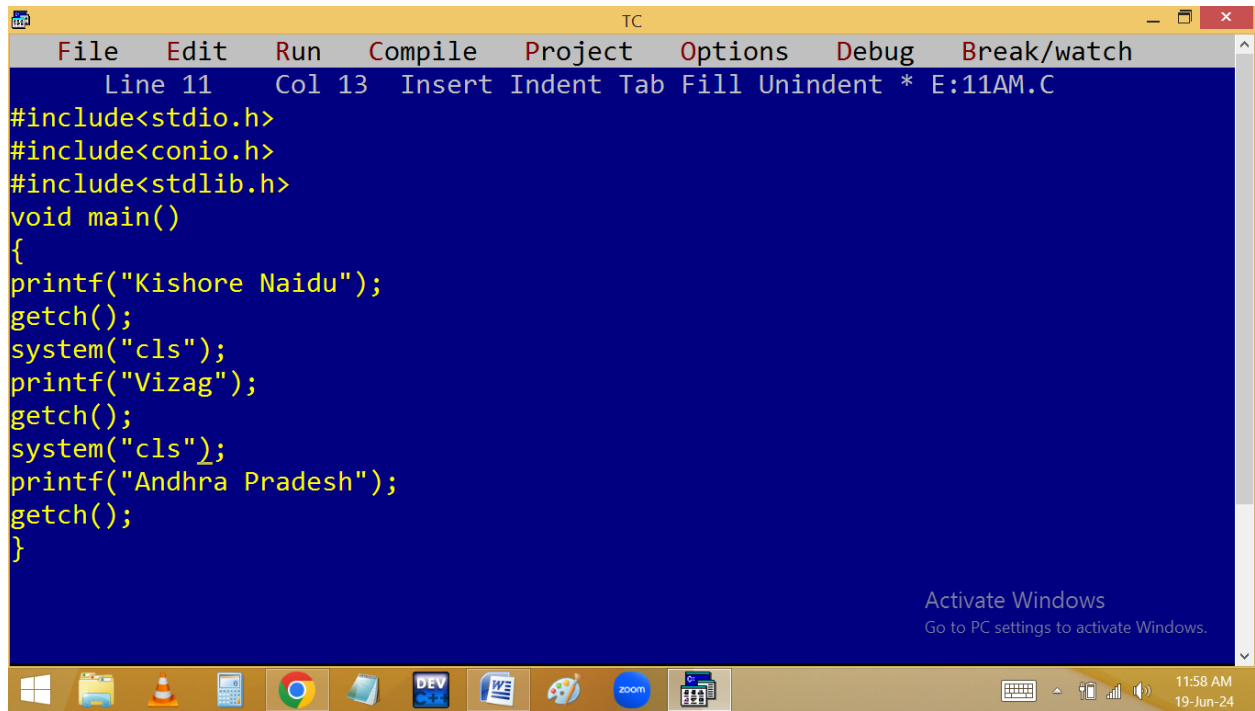
```
#include<stdio.h>
#include<conio.h>
void main()
{
printf("Kishore Naidu");
getch();
clrscr();
printf("Vizag");
getch();
clrscr();_
printf("Andhra Pradesh");
getch();
}
```

An "Activate Windows" watermark is visible in the bottom right corner of the editing area. The Windows taskbar is at the bottom, showing icons for File Explorer, VLC, Calculator, Chrome, File Explorer, DEV, WE, Paint, Zoom, and a folder icon. The system tray shows the time as 11:56 AM on 19-Jun-24.



The screenshot shows the Turbo C++ (TC) IDE window after execution. The title bar is yellow and says "TC". The main editing area now has a black background and displays the output of the program: "Kishore Naidu". The "Activate Windows" watermark is still present in the bottom right corner. The Windows taskbar and system tray are identical to the first screenshot, showing the time as 11:56 AM on 19-Jun-24.

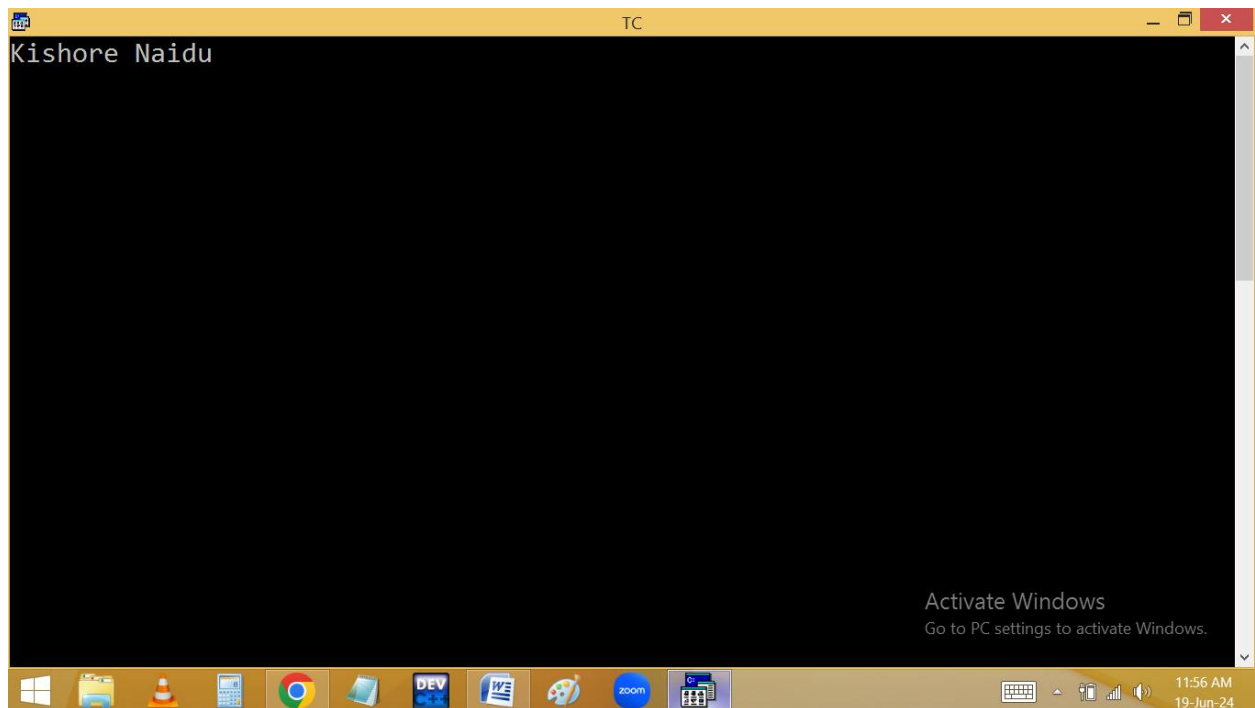




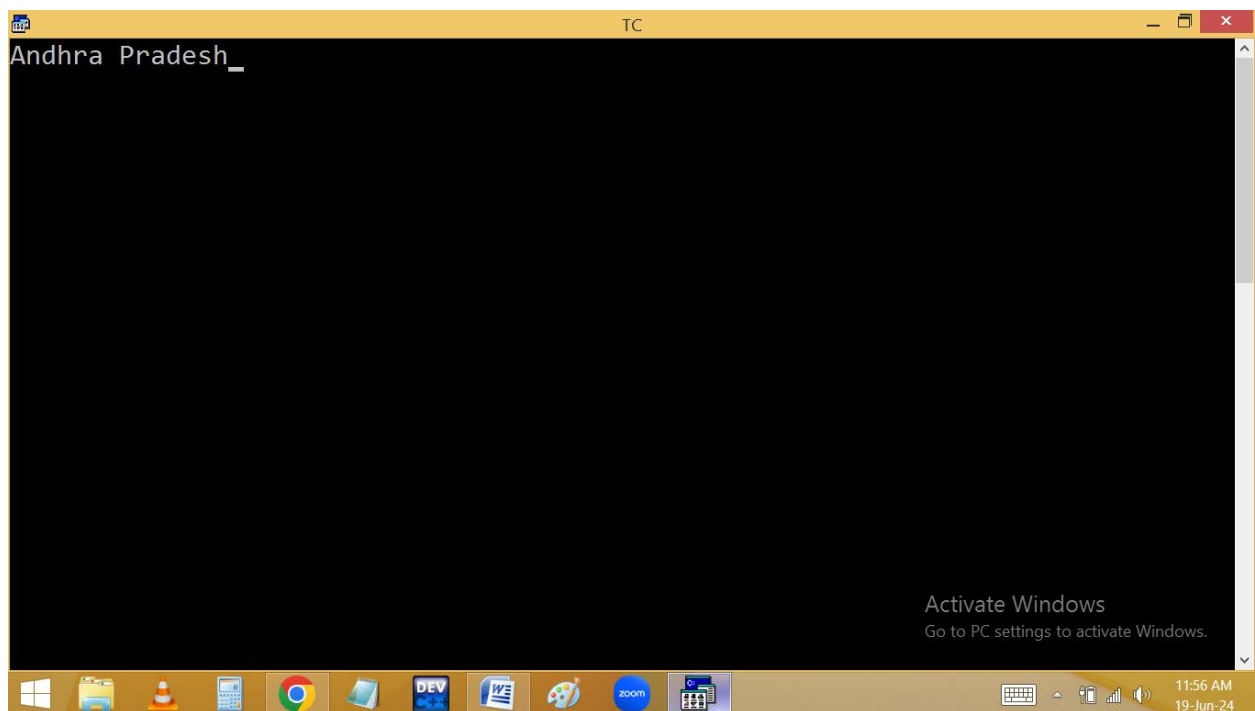
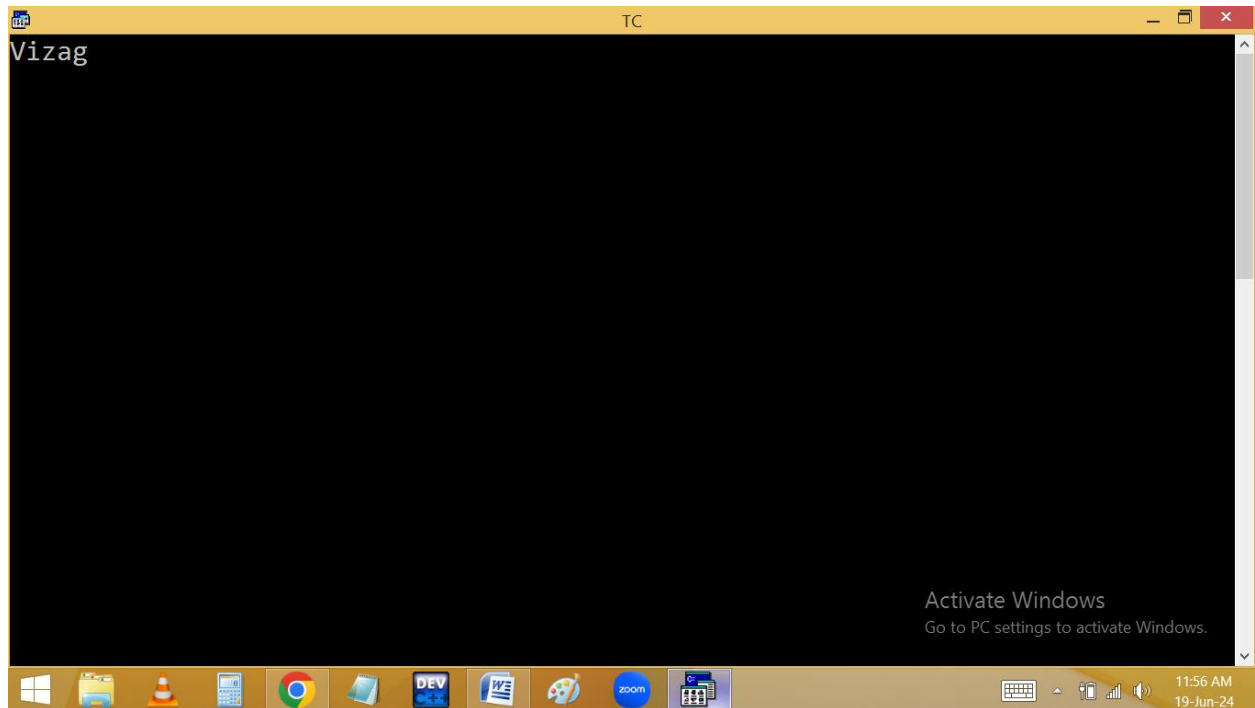
The screenshot shows the Turbo C++ IDE with a yellow title bar labeled 'TC'. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 11 Col 13 Insert Indent Tab Fill Unindent * E:11AM.C'. The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
void main()
{
printf("Kishore Naidu");
getch();
system("cls");
printf("Vizag");
getch();
system("cls");
printf("Andhra Pradesh");
getch();
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the editing area. The Windows taskbar at the bottom shows various application icons and the system clock displaying 11:58 AM on 19-Jun-24.



The screenshot shows the Turbo C++ IDE with the same yellow title bar and menu bar. The main editing area now has a black background and displays the output of the program: 'Kishore Naidu'. The 'Activate Windows' watermark is also present in the bottom right corner. The Windows taskbar at the bottom shows the same application icons and system clock displaying 11:56 AM on 19-Jun-24.



In DevC++:

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

```
#include<stdlib.h>

main()
{
    system("cls");
    printf("Kishore naidu");
    getch();
    system("cls");
    printf("ap");
    getch();
}

// f9 - compile
// f10 - run
// f11 - compile + run
```

BACK SLASH / ESCAPE SEQUENCE CHARACTERS

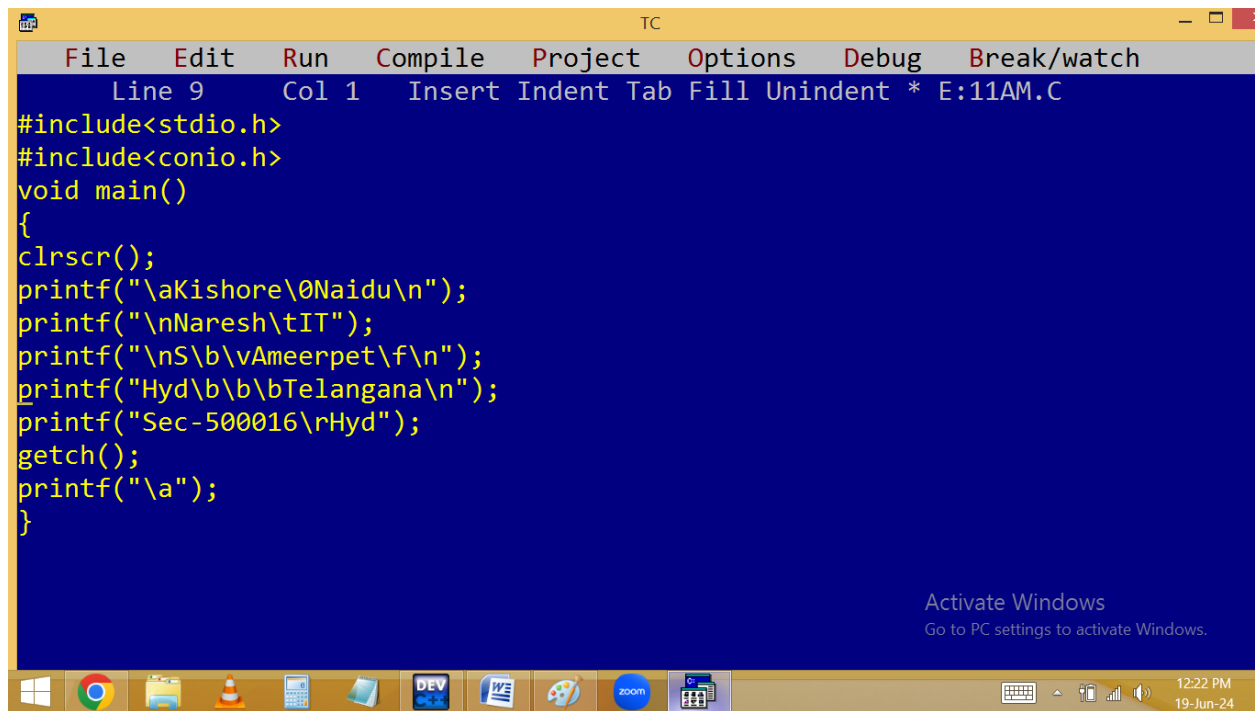
They started with back slash [\].

They used to format the outputs.

They participated in program execution but not displayed in output. Hence they are also called **escape sequence characters**.

Each back slash character=**1 byte i.e. one character**.

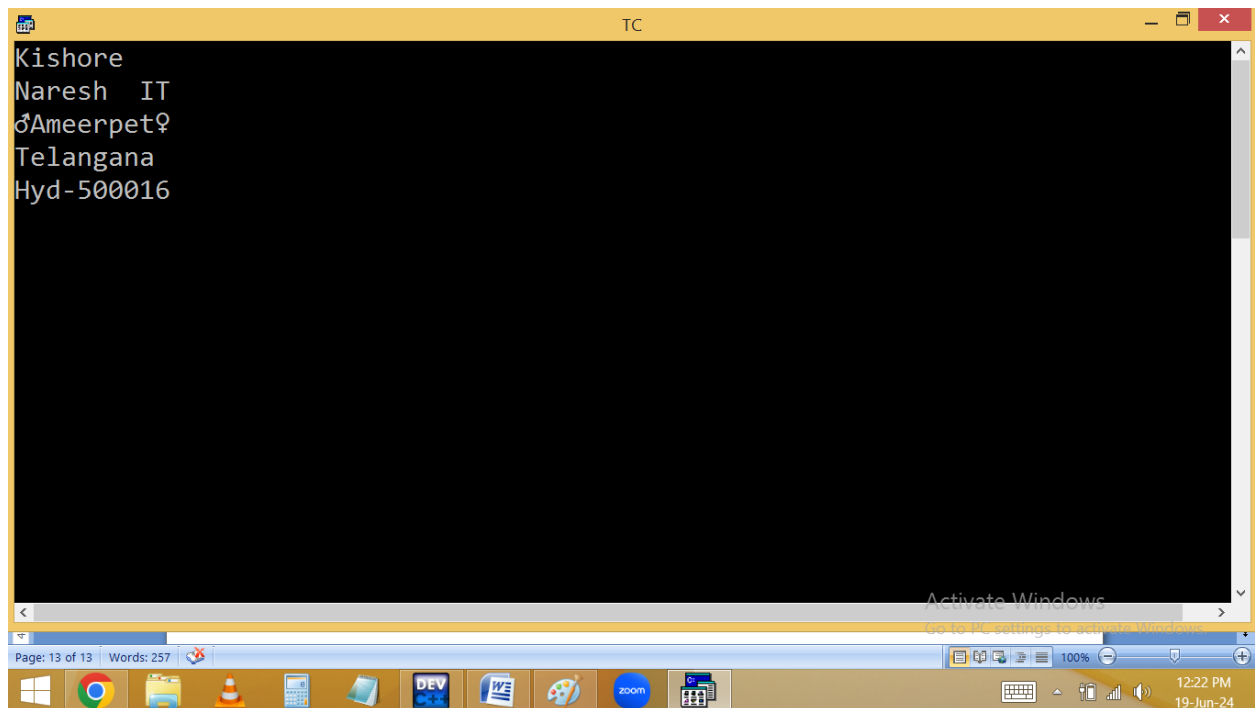
BACK SLASH CHARACTER	DESCRIPTION
\a	Alert [beep sound]
\b	Back space
\n	New line character
\t	Tab space
\r	Carriage return[beginning of line]
\f	Form feed ♀
\v	Vertical tab ♂
\0	Null char
\\	\ [invalid]
\k	k [invalid]



The screenshot shows the Turbo C++ (TC) IDE with a yellow title bar and a menu bar containing File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 9 Col 1 Insert Indent Tab Fill Unindent * E:11AM.C'. The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("\aKishore\0Naidu\n");
printf("\nNaresh\tIT");
printf("\nS\b\vAmeerpet\f\n");
printf("Hyd\b\b\bTelangana\n");
printf("Sec-500016\rHyd");
getch();
printf("\a");
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window. The Windows taskbar at the bottom shows various application icons, including Chrome, File Explorer, VLC, Calculator, and several development tools, along with the system clock showing 12:22 PM on 19-Jun-24.

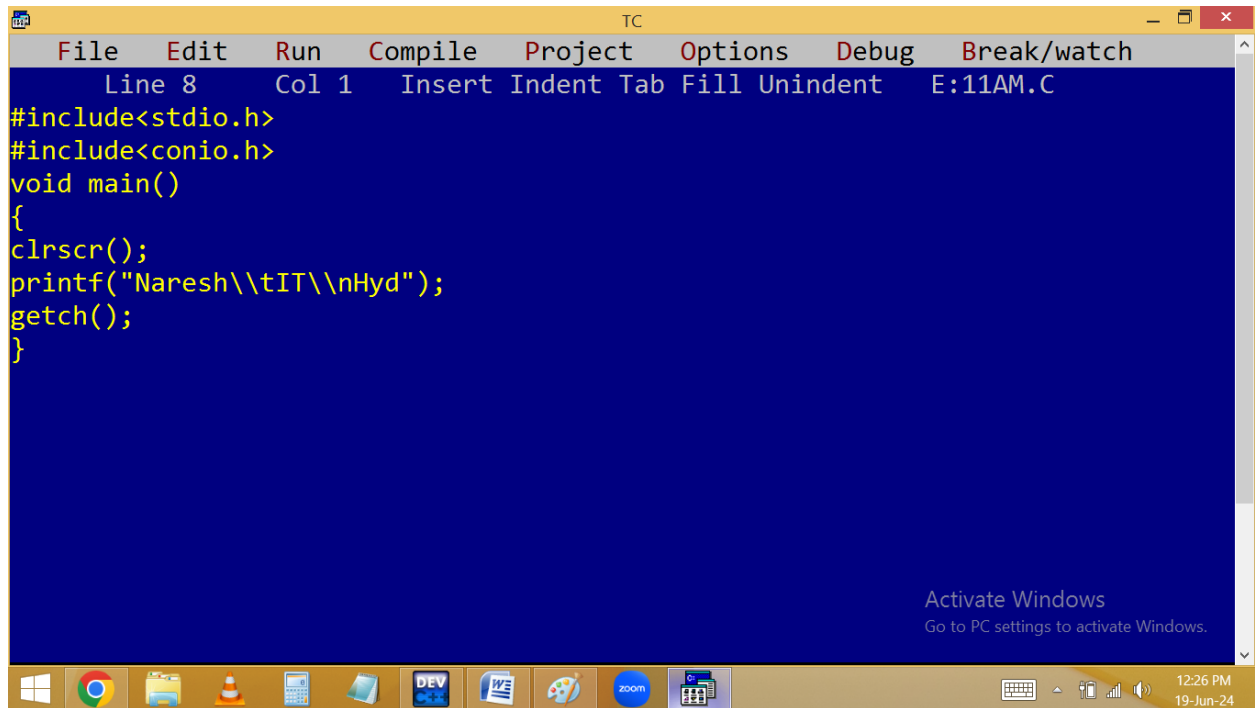


This screenshot shows the same Turbo C++ IDE after the program has been executed. The output of the program is displayed in the main window:

```
Kishore
Naresh IT
Ameerpet
Telangana
Hyd-500016
```

The IDE's status bar now shows 'Page: 13 of 13 Words: 257'. The 'Activate Windows' watermark is also present here. The Windows taskbar remains the same, showing the system clock at 12:22 PM on 19-Jun-24.

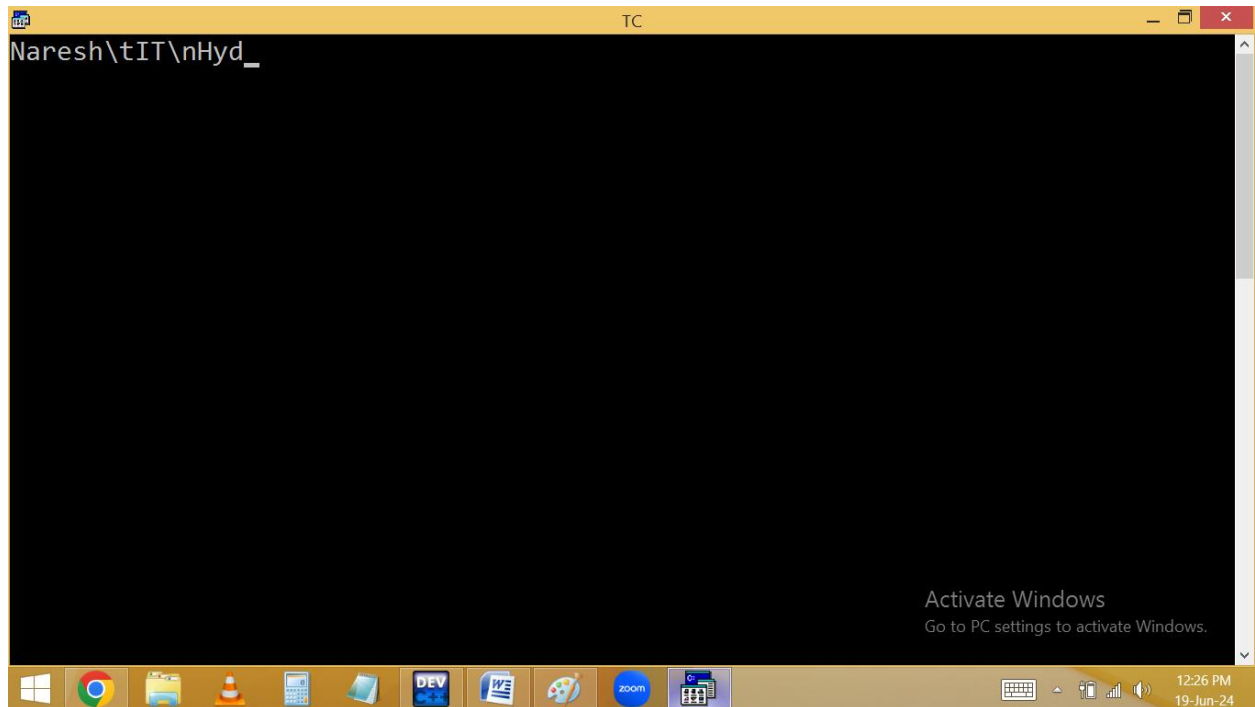
Write a c program to print \t and \n



The screenshot shows the Turbo C++ (TC) IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 8 Col 1' and 'E:11AM.C'. The code editor contains the following C program:

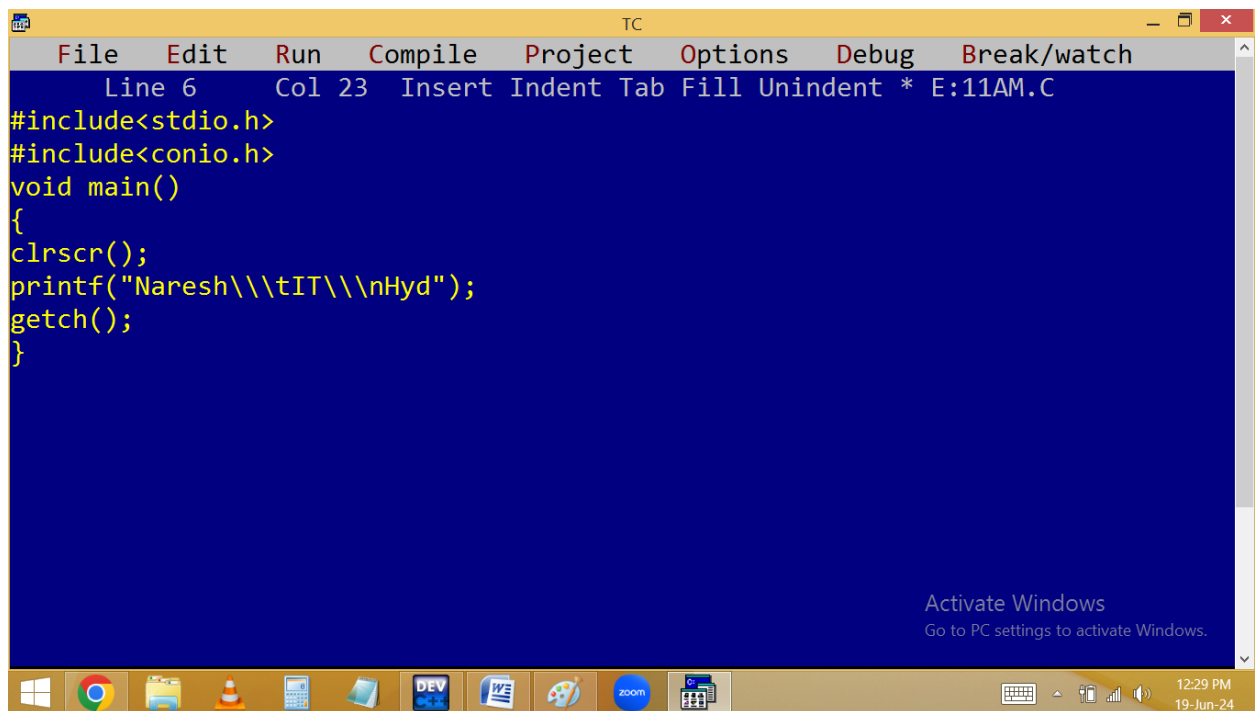
```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("Naresh\\tIT\\nHyd");
getch();
}
```

An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window. The Windows taskbar at the bottom shows various application icons and the system clock indicating 12:26 PM on 19-Jun-24.



The screenshot shows the same Turbo C++ IDE window, but now displaying the output of the program. The text 'Naresh\tIT\nHyd_' is printed on the first line of the black output window. The rest of the window is empty. The 'Activate Windows' watermark and the Windows taskbar are also visible, consistent with the previous screenshot.

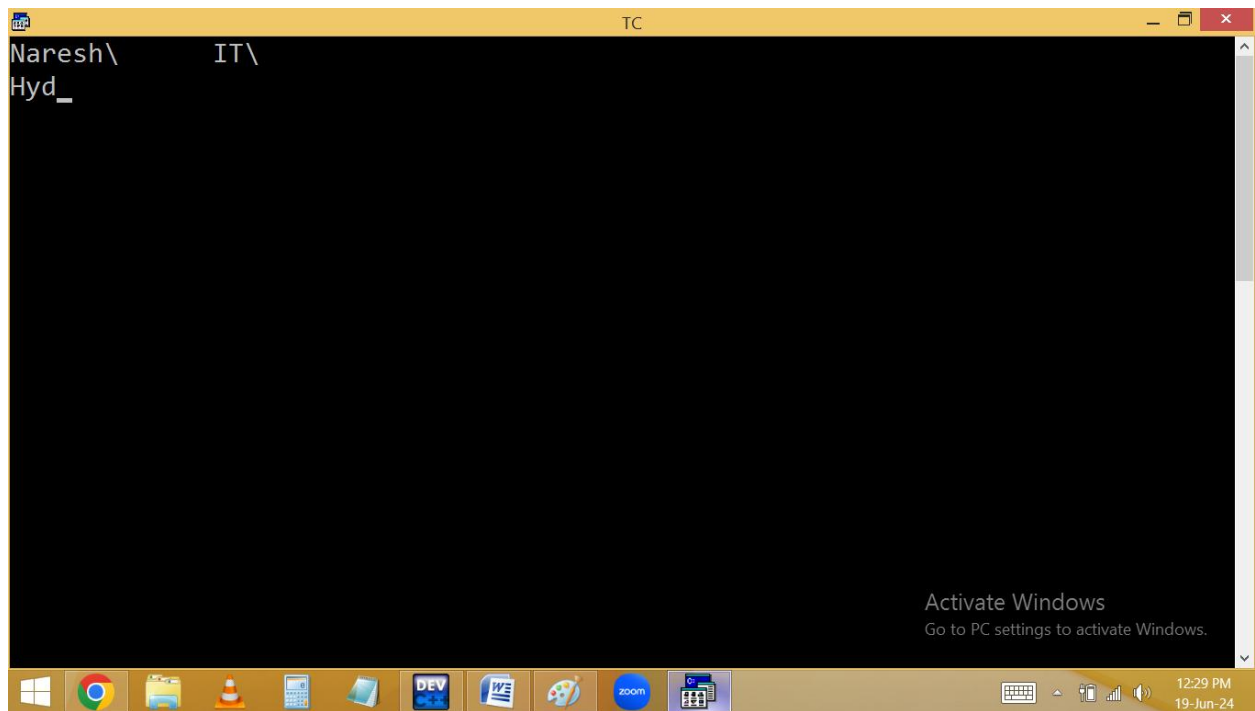
~~p("Naresh\\tIT\\nHyd");~~
Naresh\tIT\nHyd



The screenshot shows the Turbo C++ (TC) IDE interface. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 6 Col 23 Insert Indent Tab Fill Unindent * E:11AM.C'. The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("Naresh\\tIT\\nHyd");
getch();
}
```

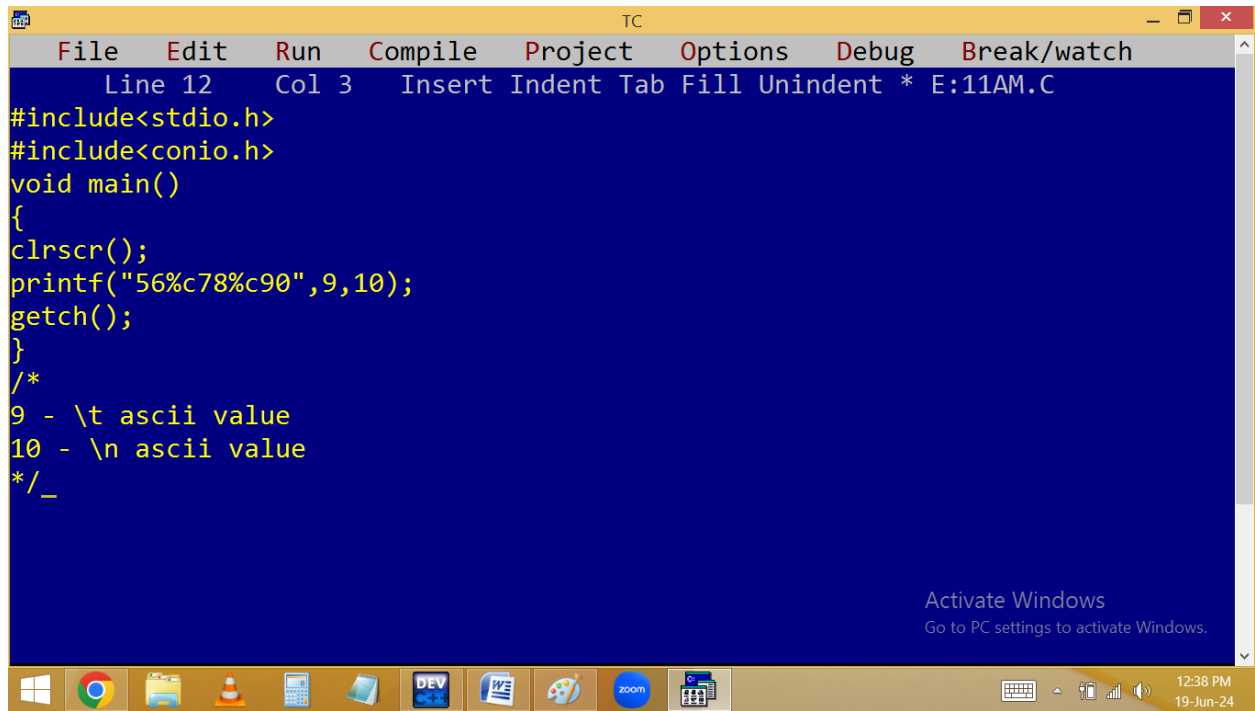
An 'Activate Windows' watermark is visible in the bottom right corner of the IDE window. The Windows taskbar at the bottom shows various application icons including Chrome, File Explorer, VLC, Calculator, DEV, Word, Paint, Zoom, and a calendar icon. The system clock in the bottom right corner displays '12:29 PM' and '19-Jun-24'.



p("Naresh\\tIT\\nHyd");

Naresh\
Hyd

IT\
Hyd



TC

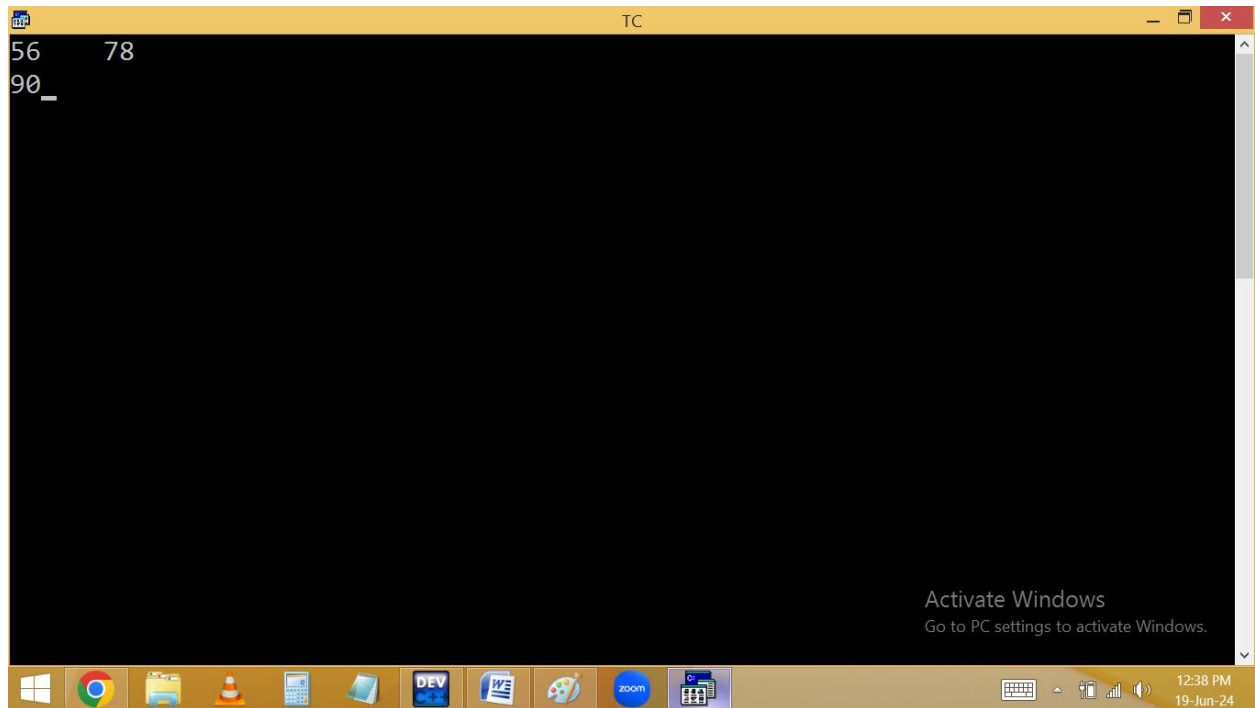
File Edit Run Compile Project Options Debug Break/watch

Line 12 Col 3 Insert Indent Tab Fill Unindent * E:11AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("56%c78%c90",9,10);
getch();
}
/*
9 - \t ascii value
10 - \n ascii value
*/_
```

Activate Windows
Go to PC settings to activate Windows.

12:38 PM
19-Jun-24



TC

56 78

90_

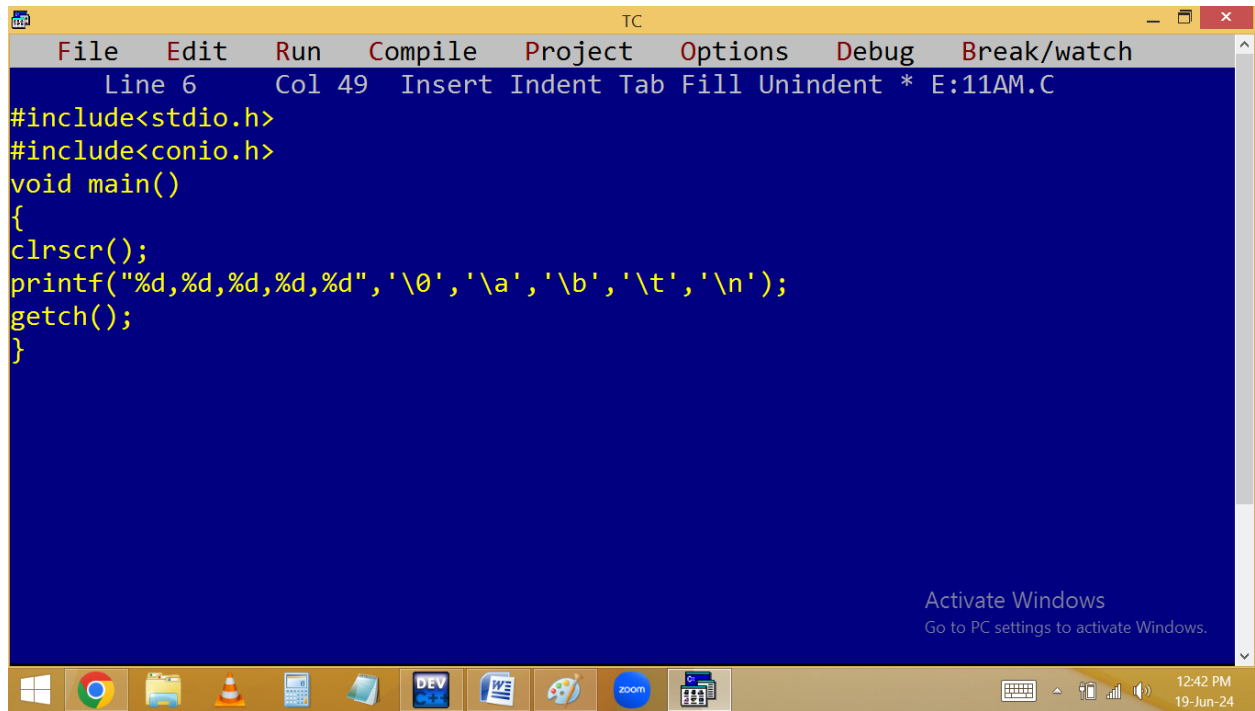
Activate Windows
Go to PC settings to activate Windows.

12:38 PM
19-Jun-24

p("56%c78%c 90", 9, 10);

Handwritten annotations on the code snippet:

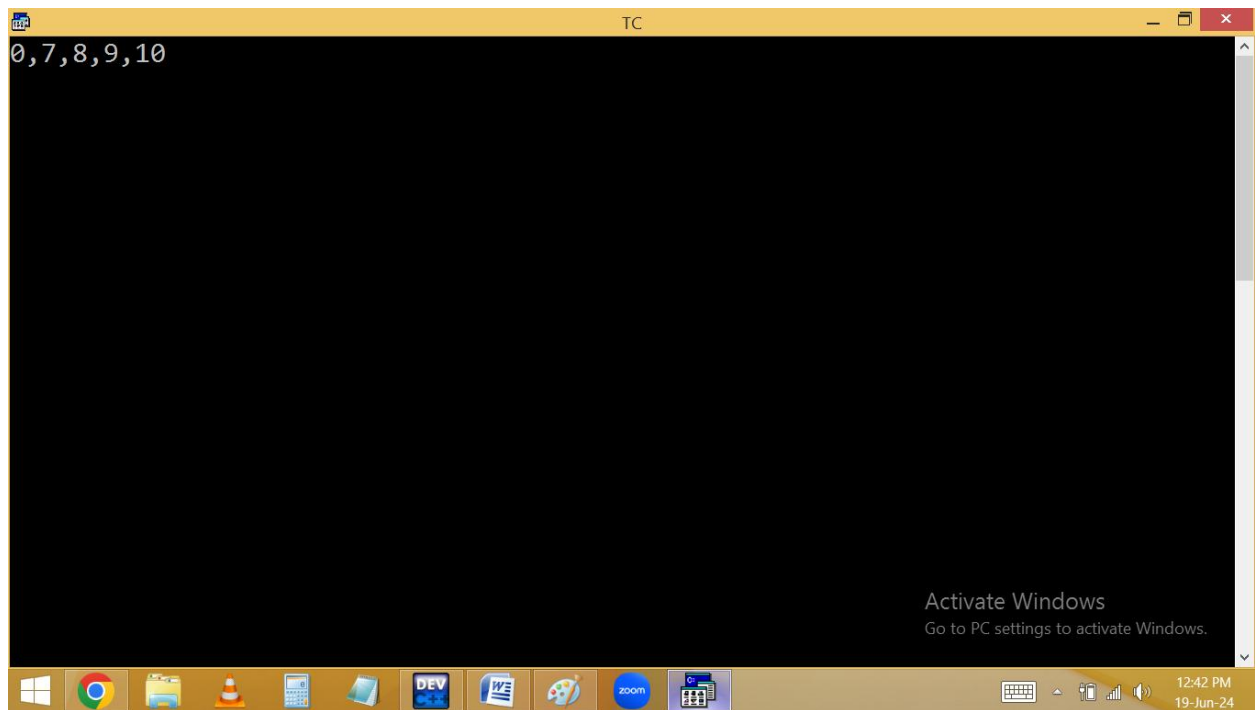
- A red arrow points from the closing quote of the string to the first argument `9`.
- A blue `\n` is written above the space before `90`.
- A red `\t` is written above the closing quote.
- A blue `\t` is written below the space before `90`.
- A red arrow points from the second argument `10` to the space before `90`.



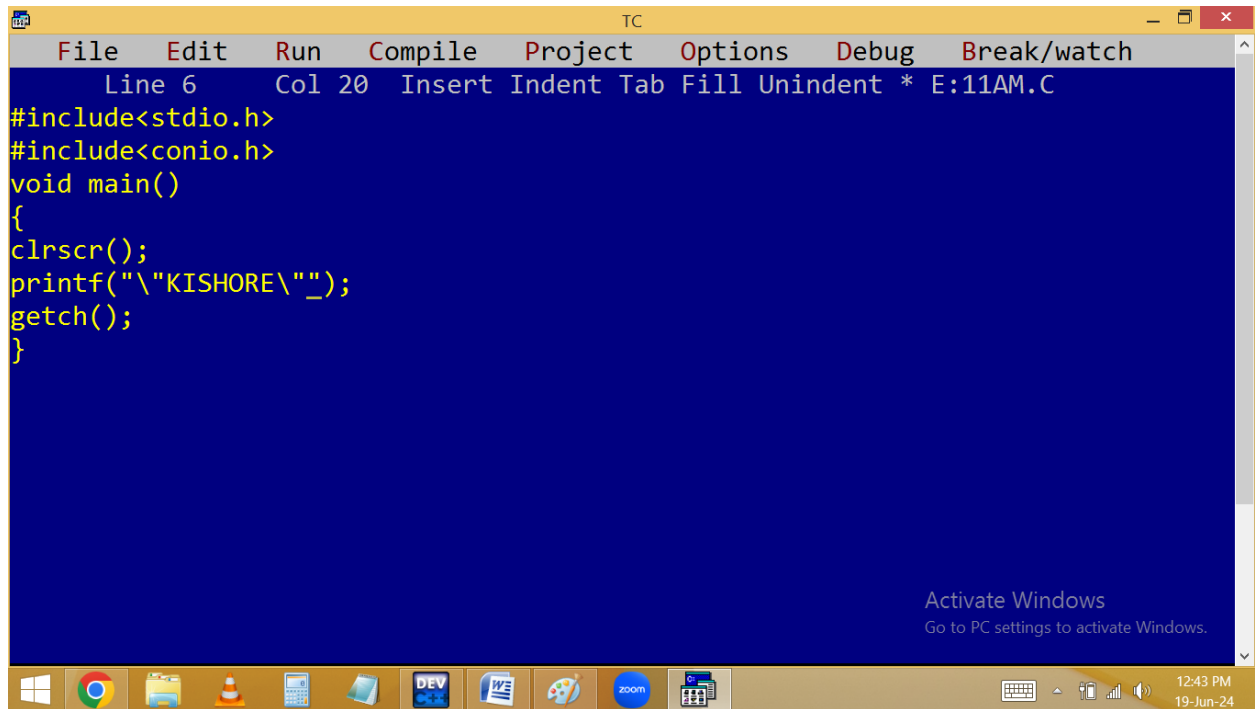
The screenshot shows the Turbo C++ (TC) IDE window. The title bar is yellow and says "TC". The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates "Line 6 Col 49 Insert Indent Tab Fill Unindent * E:11AM.C". The main editing area has a blue background and contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%d,%d,%d,%d,%d", '\0', '\a', '\b', '\t', '\n');
getch();
}
```

An "Activate Windows" watermark is visible in the bottom right corner of the IDE window. The Windows taskbar is at the bottom, showing icons for Windows, Chrome, File Explorer, VLC, Calculator, DEV, WE, Paint, Zoom, and a folder icon. The system tray on the right shows the date and time: "12:42 PM 19-Jun-24".



The screenshot shows the same Turbo C++ (TC) IDE window after execution. The title bar and menu bar are the same. The main editing area now has a black background and displays the output of the program: "0,7,8,9,10". The "Activate Windows" watermark is still present in the bottom right corner. The Windows taskbar and system tray are identical to the first screenshot, showing the same icons and date/time: "12:42 PM 19-Jun-24".



TC

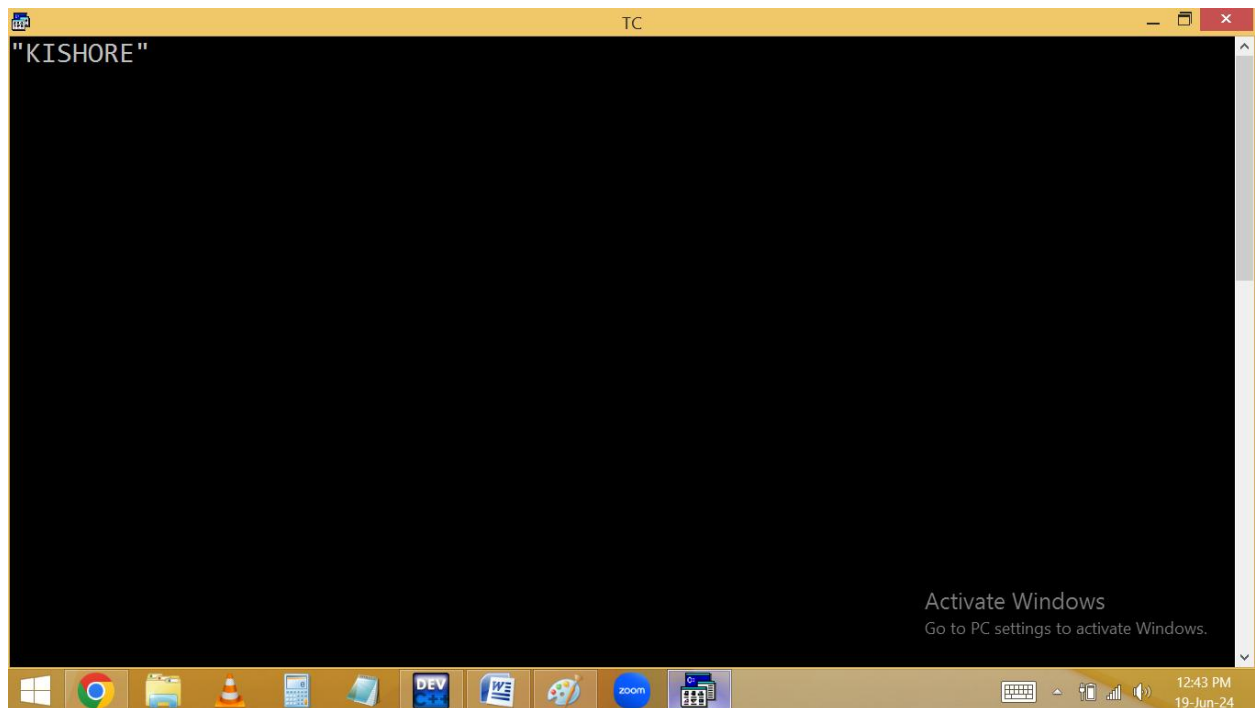
File Edit Run Compile Project Options Debug Break/watch

Line 6 Col 20 Insert Indent Tab Fill Unindent * E:11AM.C

```
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("\nKISHORE\'_");
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

12:43 PM
19-Jun-24



TC

"KISHORE"

Activate Windows
Go to PC settings to activate Windows.

12:43 PM
19-Jun-24

P("\nKISHORE\'_');

```
TC
File Edit Run Compile Project Options Debug Break/watch
Line 6 Col 27 Insert Indent Tab Fill Unindent * E:11AM.C
#include<stdio.h>
#include<conio.h>
void main()
{
clrscr();
printf("%cKISHORE%c",34,34);
getch();
}
```

Activate Windows
Go to PC settings to activate Windows.

12:45 PM
19-Jun-24

```
TC
"KISHORE" _
```

Activate Windows
Go to PC settings to activate Windows.

12:45 PM
19-Jun-24