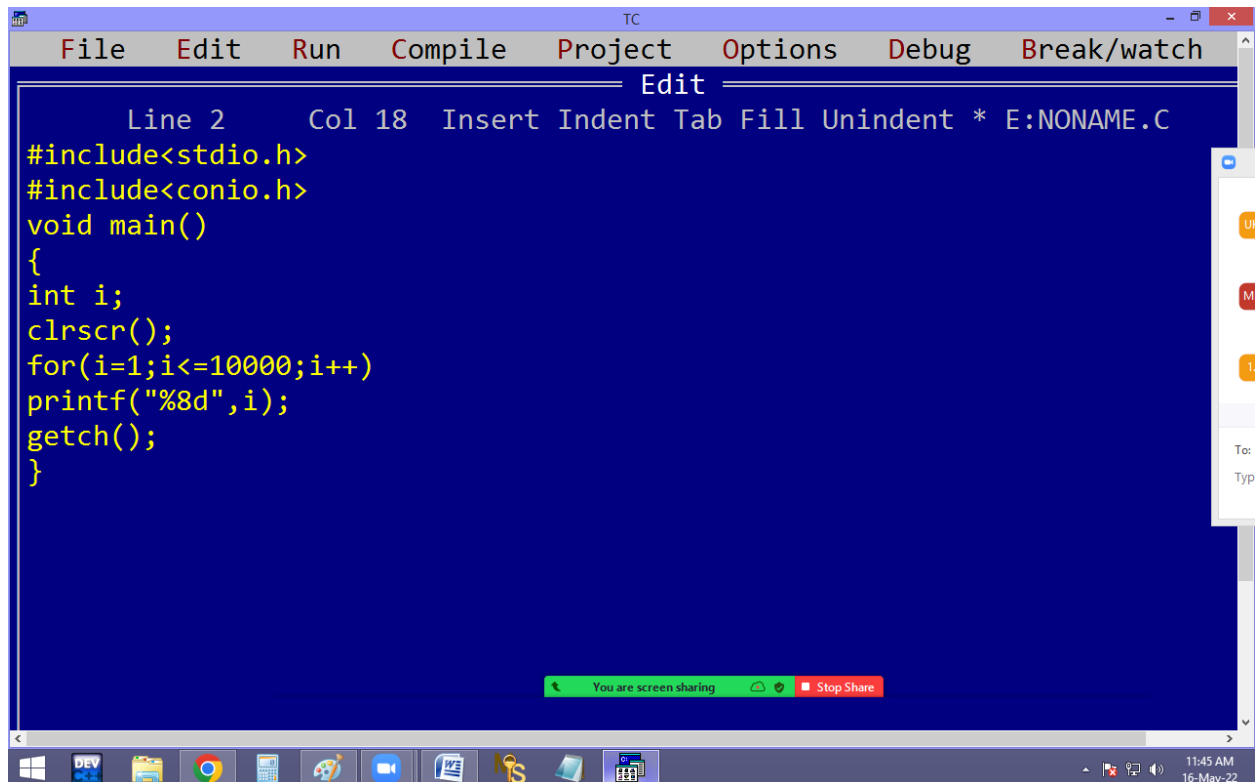


# INTRODUCTION TO C

'C' is a

- 1.It is a high level / middle level language.
- 2.It is a compiler based language.
- 3.It is a general purpose language.
- 4.It is a procedure oriented programming language [ POP ]

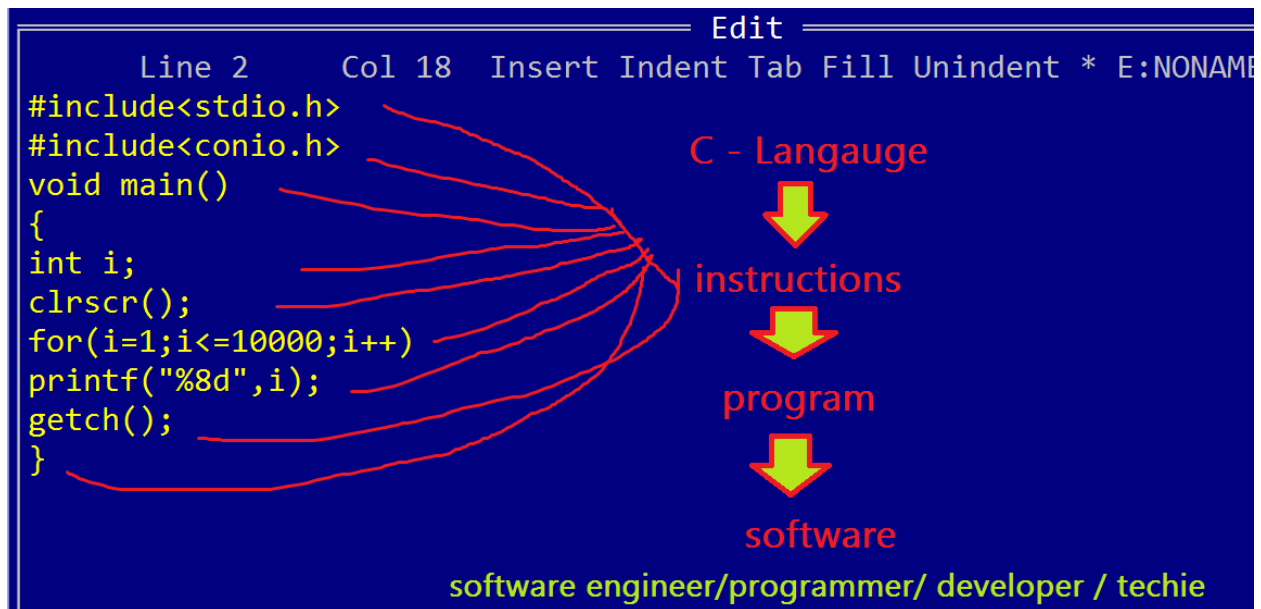
What is a language?



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 2 Col 18 Insert Indent Tab Fill Unindent \* E:NONAME.C'. The main editing area contains the following C code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i;
    clrscr();
    for(i=1;i<=10000;i++)
    printf("%8d",i);
    getch();
}
```

At the bottom of the window, there is a green status bar that says 'You are screen sharing' and a red button labeled 'Stop Share'. The Windows taskbar is visible at the very bottom, showing various application icons and the system clock indicating 11:45 AM on 16-May-22.



Generally the languages like telugu, English, hindi, Marathi etc are used to communicate with the humans.

To communicate with the machines we need the computer languages like C, C++, Java, Python, .Net, R-Language, Go Language,.....

Computer languages used to write the programs to develop the software. By using which we can communicate with the machines.

Basically the computer languages divided into 3 types.

1. **Machine language**: Created with binary code [1,0].

2. **Low level / assembly language**: Created with English like shortcuts called MNEMONICS.

Eg: gd mrg, sub, plz,....

3. **High level language**: Created with simple English. Hence they are easy to understand.

Eg: Good morning, subject, subtract, subscribe, subordinate, subway, substitute,...

C comes with both low level and high level features. Hence it is also called middle level language.

Low level features used to develop **system software** like operating system, device drivers, translators etc.

High level features used to develop **application software** like ms-office, media player, accounting software, data basea, antivirus,...

## **What is a compiler?**

Always the user given instructions [ programs ] in English, which is called source code/source program. The computer understandable code is binary code. To convert this source code to binary code we are using the translators like

**1.Compiler**

**2.Interpreter**

**3.Assembler**

Every translator does 2 things.

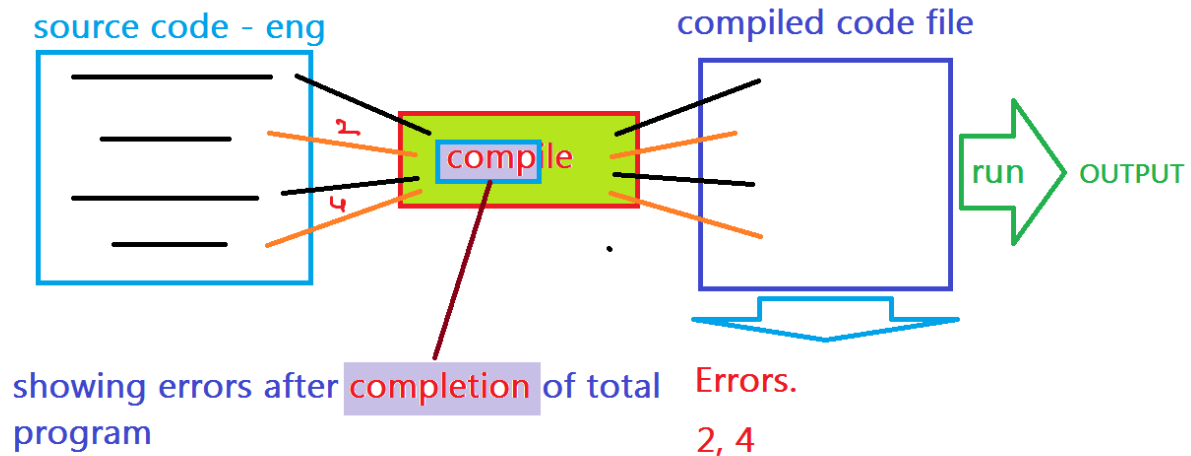
**1.Checking errors [ program mistakes ]**

**2.Source code to binary code conversion**

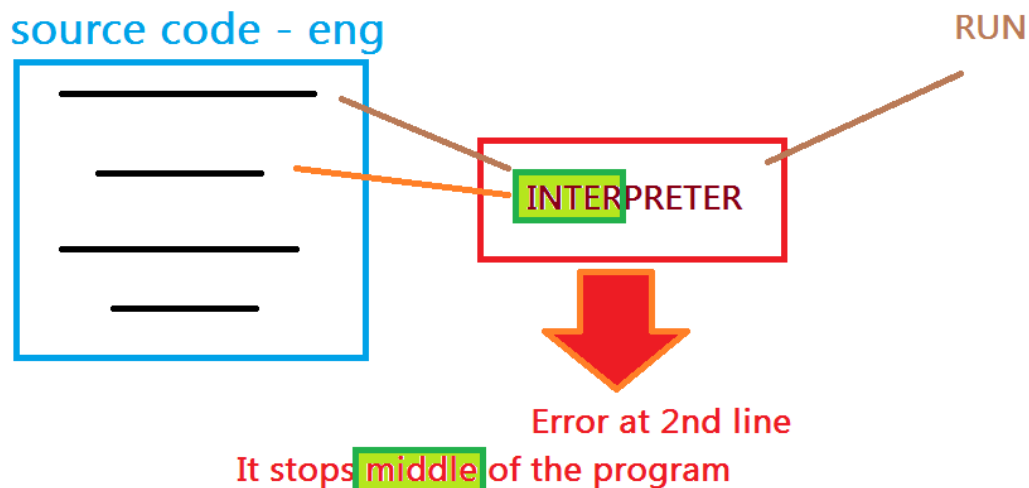
Compiler and interpreter both used to convert high level programs to binary code.

Assembler used to convert low level programs to binary code.

Compiler completes the total task **at a time** by leaving error lines.



Interpreter checks **line by line.**



In C we are using compiler. Hence c is a compiler based programming language.

Assembler work is similar to the compiler.

**Why C is a general purpose language?**

Using c language we can design the software like

## 1.Operating systems

Eg. windows, unix, linux,mac, android,...

## 2.Editors

Eg. Notepad, wordpad, ms-word,....

## 3.Translators

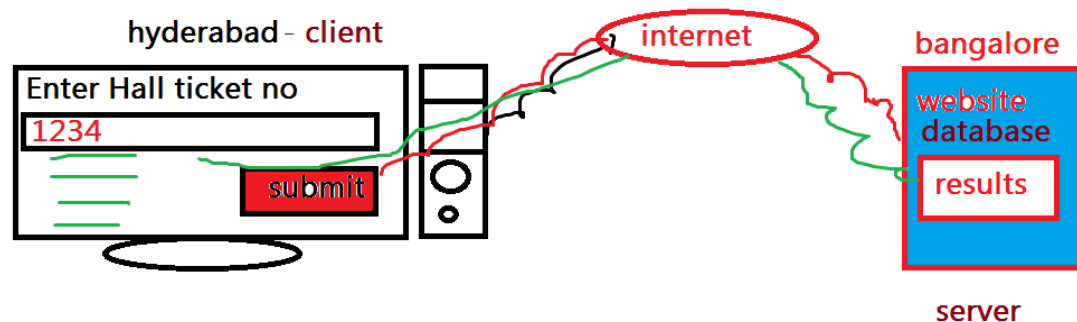
Eg: compiler, interpreter, assembler

## 4.Commercial applications

Eg. hotel, super market, college programs

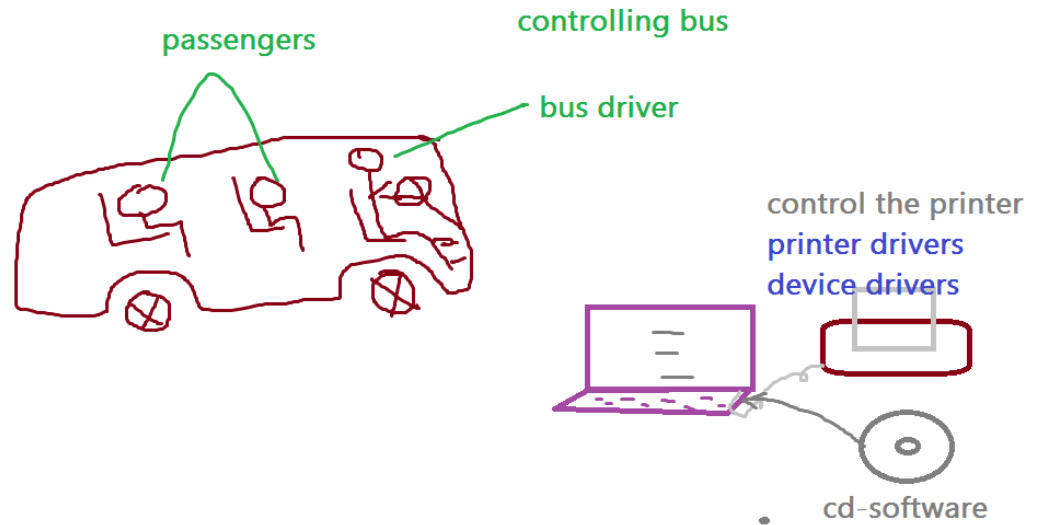
## 5.Data base

Eg. SQLITE, ORACLE, SQL Server, My SQL,...



## 6.Device drivers

Eg. audio / video / printer / usb drivers,...



## 7. Media players

Eg. vlc , windows media player, mx player,...

## 8. Antivirus software

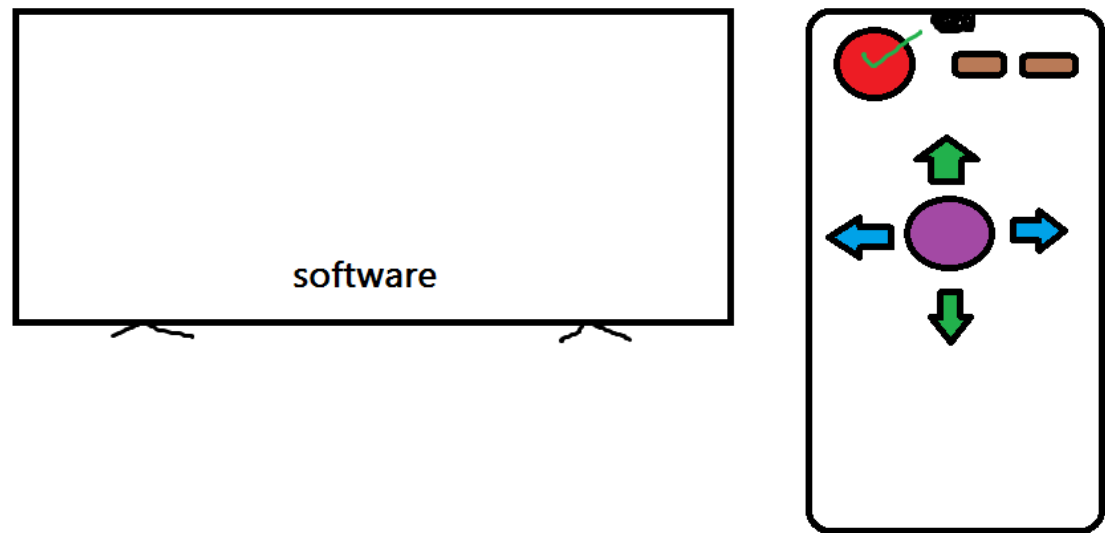
Eg. avast, quick heal, Norton,

## 9. Browsers

Eg. chrome, firefox, i.e., edge,...

## 10. Embedded applications

Eg: Tv , A/C , washing machine, car sensors,...



## 11. PC & Mobile games

Hence C is a multi-purpose programming language.



## What is pop?

Every programming language having a particular programming structure, which consists of certain rules and regulations, which is also called **programming paradigm**.

Before C language the languages are using **monolithic programming** which consists of total program in single program. Due to this it is very difficult to identify the errors and there is no chance for reusability. It is also called **unstructured programming**.

The image shows a screenshot of a Turbo C++ (TC) IDE window. The top menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 1 Col 41 Insert Indent Tab Fill Unindent \* C:GL.CPP'. The main text area contains the following C code:

```
/* Example for monolithic programming */
#include<stdio.h>
void main()
{
printf("-----\n");
printf("Welcome To C\n");
printf("-----\n");
printf("Have a nice day\n");
printf("-----\n");
printf("THANK YOU\n");
printf("-----");
}
```

Below the code editor, there is a toolbar with icons for Mute, Start Video, Participants (56), Chat (2), New Share, Pause Share, Annotate, Apps, and More. A green status bar above the toolbar says 'You are screen sharing' with a 'Stop Share' button.

The bottom window shows the output of the program on a black background with white text:

```
-----
Welcome To C
-----
Have a nice day
-----
THANK YOU
-----
```

The bottom status bar shows the time as 12:18 PM on 18-May-22.

**In POP a big program divided into several small sub programs / sub routines / procedures / functions / modules / structures. Hence pop is also called structure oriented programming [ sop ] / function oriented programming [fop] / pop.**

The image shows a screenshot of a Turbo C++ (TC) IDE window. The top menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'Line 1 Col 35 Insert Indent Tab Fill Unindent \* C:GL.CPP'. The main text area contains the following C code:

```
/* Example for procedure oriented _programming */
#include<stdio.h>
void line()
{
printf("-----\n");
}
void main()
{
line();
printf("Welcome To C\n");
line();
printf("Have a nice day\n");
line();
printf("THANK YOU\n");
line();
}
```

Below the code editor, there is a toolbar with icons for Mute, Start Video, Participants (57), Chat, New Share, Pause Share, Annotate, Apps, and More. A green notification bar above the toolbar says 'You are screen sharing' with a 'Stop Share' button. The bottom of the window shows the Windows taskbar with various application icons and the system clock displaying '12:21 PM 18-May-22'.

The output window at the bottom shows the execution results of the program:

```
-----
Welcome To C
-----
Have a nice day
-----
THANK YOU
-----
```

The output window also has a similar toolbar and a 'You are screen sharing' notification bar. The system clock at the bottom right of the output window shows '12:22 PM 18-May-22'.

**Advantages:**

1. **Modularity**: Dividing big program in to small modules as per the program requirement.
2. **Reusability**: write once, use many times.
3. **Simplicity**: easy to read.
4. **Efficiency**: performance is high.

