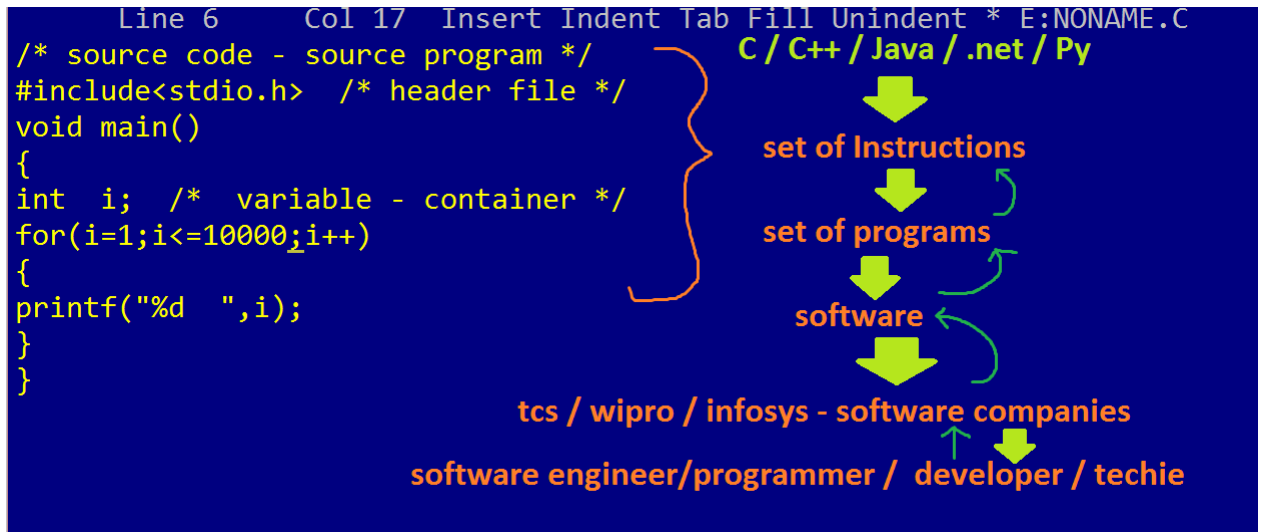


INTRODUCTION TO C

C is a

1.It is a high level / middle level programming language.

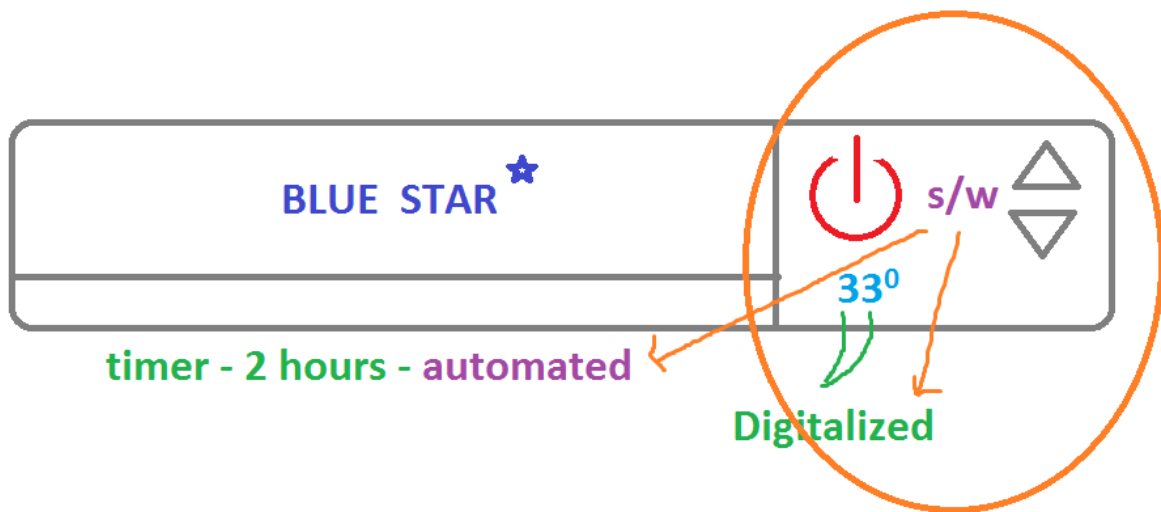
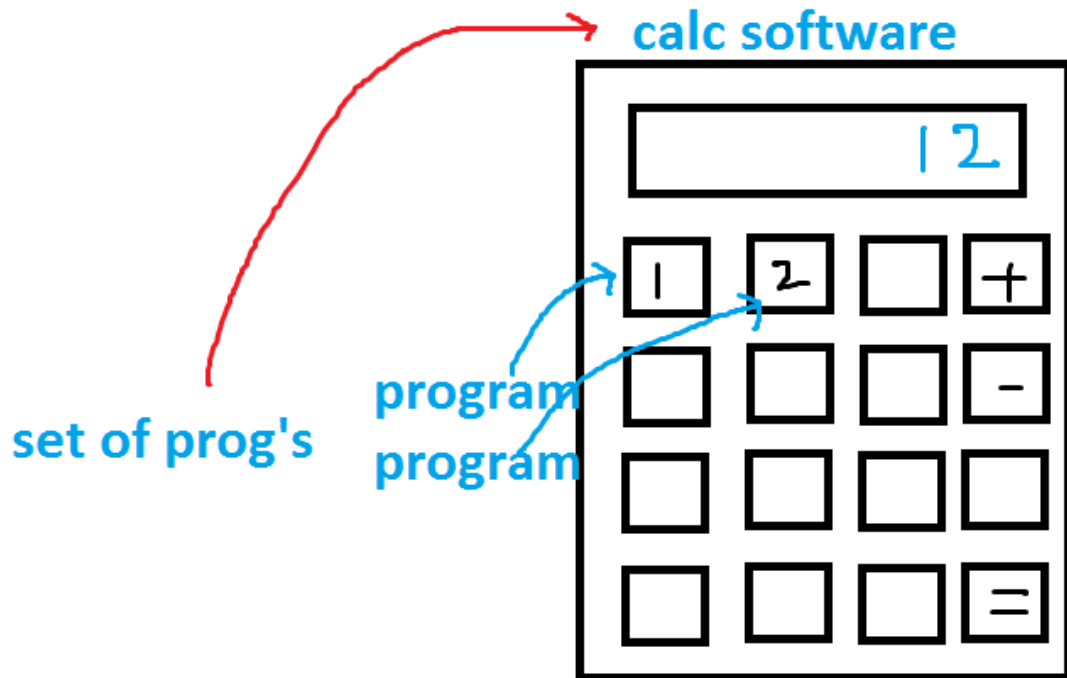


What is a program?

Set of instructions are called program

What is a software?

Set of programs is called software. As per IT Industry software is a digitalized and automated process.



We are having basically 2 type of software.

1. System software:

Eg: os, device drivers, translators

2.Application software

Eg: whatsapp, fb, insta,...

What is a language?

Generally the languages are used to communicate with others. For example the languages like telugu, English, hindi, Marathi etc are called human languages, which are used to communicate only with humans. But by using these languages we can't communicate with the machines. For that we are using the computer programming languages like C / C++ / java / Python / .net / Go / R language etc to create the programs [software]. These software making our work easy, faster and accurate.

Basically these languages are divided into 3 types.

1. Machine language: Created with binary code and very difficult to read by the user.

Eg: 10001111

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

Eg: add, sub,...

Example for assembly programming:

The screenshot displays the Turbo C++ IDE interface. The top window, titled 'ASS.CPP', contains the following code:

```
// example for low level / assembly program
#include<stdio.h>
void main() {
    int a = 10, b = 20, c;

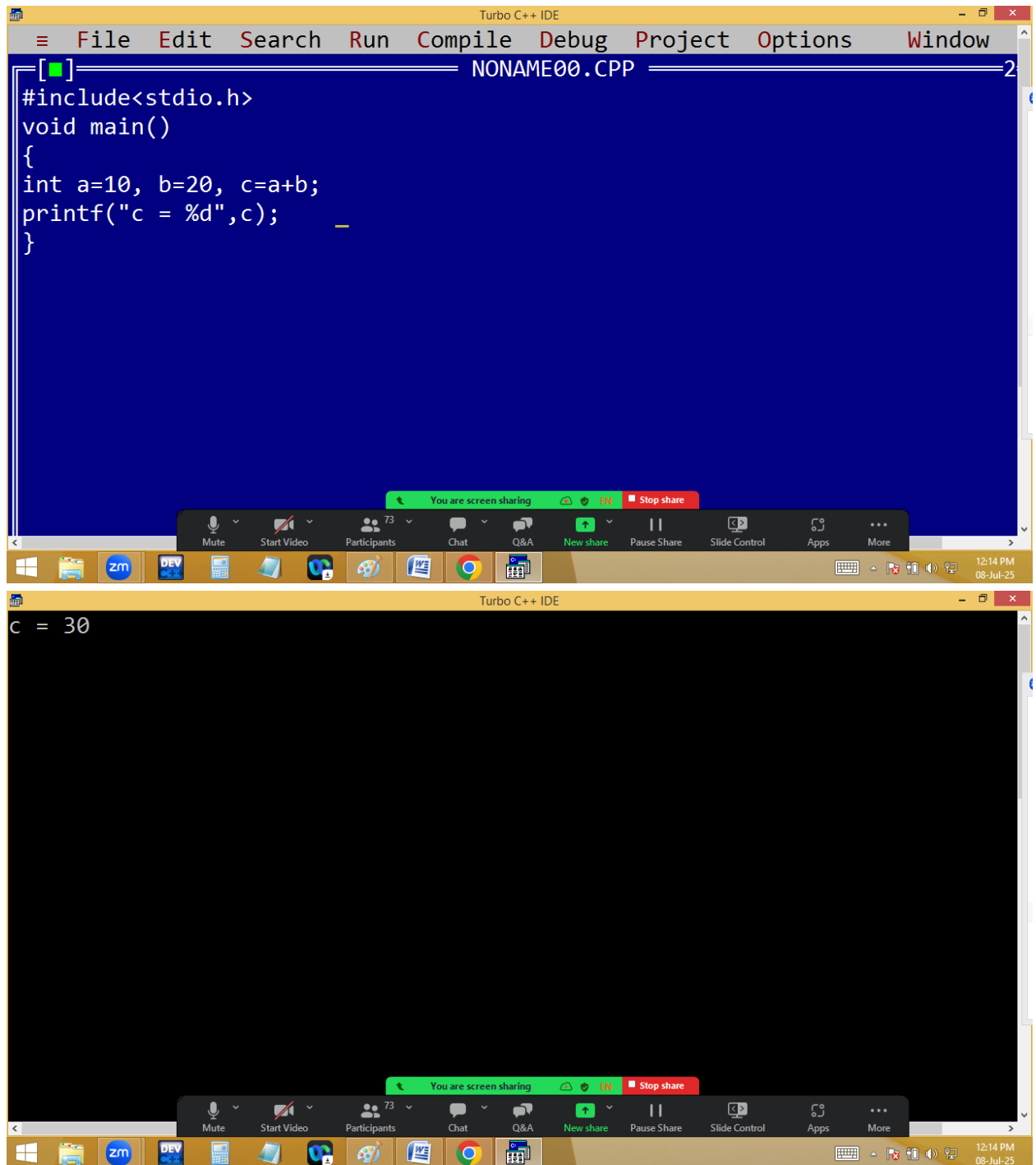
    asm {
        mov ax,a
        mov bx,b
        add ax,bx
        mov c,ax
    }

    printf("c = %d",c);
}
```

The bottom window shows the output of the program: 'c = 30'. The Windows taskbar at the bottom includes icons for various applications and the system clock, which shows 12:04 PM on 08-Jul-25. A green status bar at the top of the bottom window indicates 'You are screen sharing'.

3. High level language: Created with simple English and easy to understand.
Eg: addition, subtraction,...

Example for high level program:



The image consists of two screenshots of the Turbo C++ IDE. The top screenshot shows the source code of a C program in a file named NONAME00.CPP. The code is as follows:

```
#include<stdio.h>
void main()
{
int a=10, b=20, c=a+b;
printf("c = %d",c);
}
```

The bottom screenshot shows the output of the program, which is "c = 30". Both screenshots include a Windows taskbar at the bottom with various application icons and a system clock showing 12:14 PM on 08-Jul-25. A Zoom toolbar is also visible in the center of each screenshot, indicating a screen-sharing session.

C is a **high level language** with **low level features**.
Hence it is a **middle level language**.

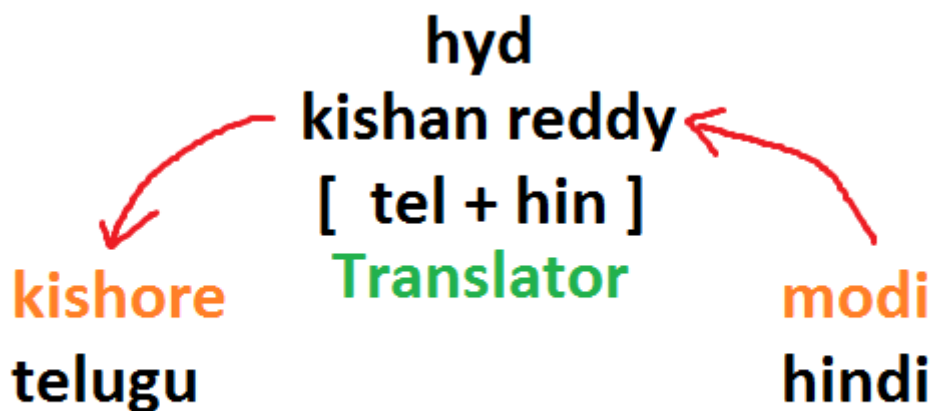
C low level features are used to design system software.

C high level features used to design application software.

Hence C is a **Multi-Purpose programming language**.

2. C is a compiler based programming language.

What is a translator?



Always the user given instructions are in English, which are called source code / source program. but the computer is not able to understand this English. To convert this English code to binary code

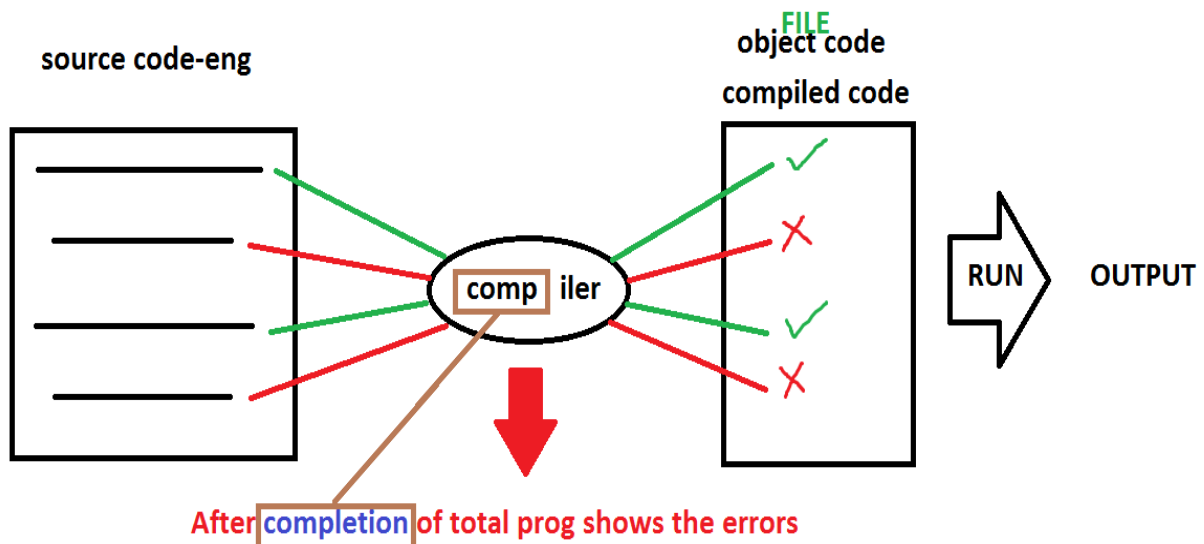
and to check the errors we are using the translators.

We are having 3 types of translators.

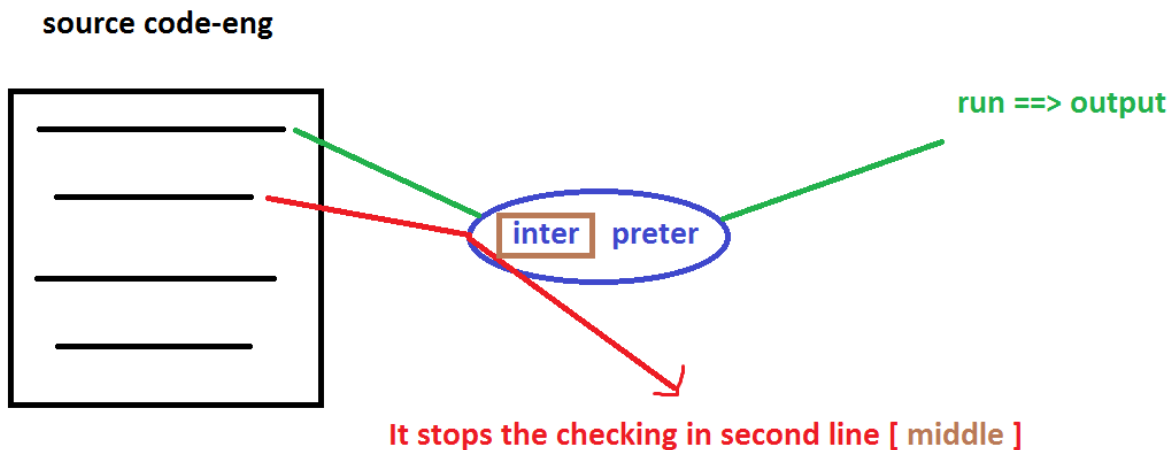
- 1.Compiler
- 2.Interpreter
- 3.Assembler

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

Compiler converts the total source code into binary code **at once** by leaving error lines.



Interpreter converts **line by line**.



Assembler is used to convert low level programs to binary code.

Assembler working style is similar to compiler.

In C & C++ we are using only the compilers. Hence they are called compiler based programming languages.

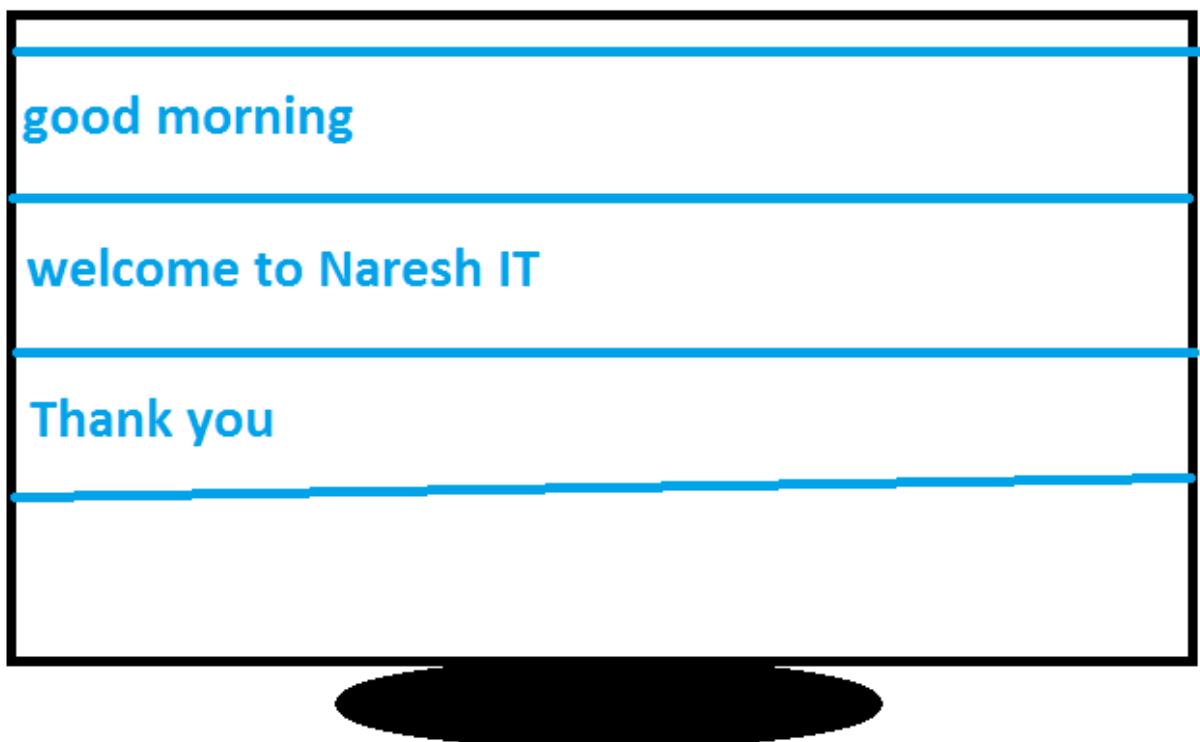
In java / .net / py etc we are using both compiler and interpreters. Hence they are called compiler based and interpreted languages.

3. C is a procedure oriented programming language [POPs]

What is called programming paradigm?

Every programming language comes with a particular syntax [rules and regulations] and a structure, which is technically called programming paradigm. To solve a problem, we should have to use that **programming paradigm** only.

Before C language the languages are using **monolithic programming paradigm**.



The image shows a screenshot of the Turbo C++ IDE. The top window displays the source code for a file named NONAME00.CPP. The code is a C program that demonstrates monolithic programming using printf statements. The code is as follows:

```
// monolithic programming
#include<stdio.h>
void main()
{
printf("-----\n");
printf("Good morning\n");
printf("-----\n");
printf("Welcome to Naresh IT\n");
printf("-----\n");
printf("Thank You\n");
printf("-----");
}
```

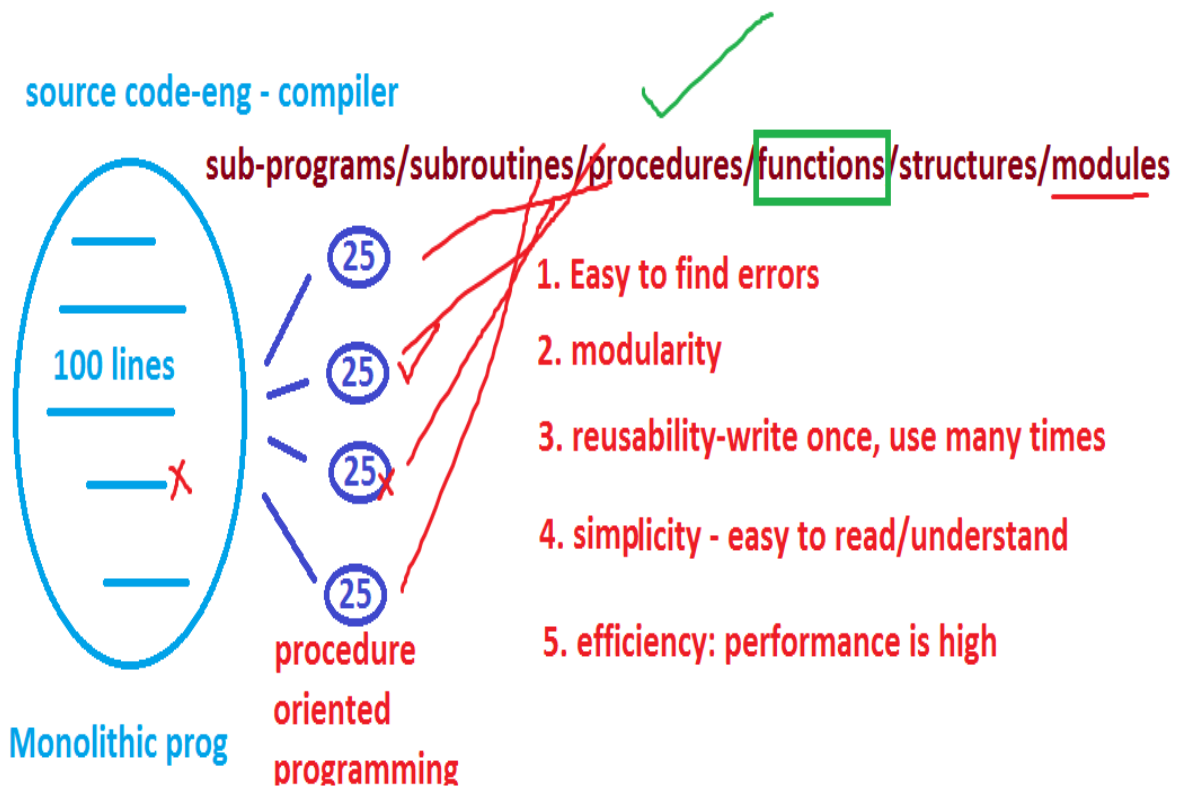
The bottom window shows the output of the program. The output is displayed on a black background with white text, showing the results of the printf statements: a line of dashes, "Good morning", another line of dashes, "Welcome to Naresh IT", a third line of dashes, "Thank You", and a final line of dashes.

POPs – Procedure oriented programming structure:

The image shows a screenshot of the Turbo C++ IDE. The top window displays the source code for a file named NONAME00.CPP. The code is written in C and uses the printf function to output text. The code is as follows:

```
// procedure oriented programming
#include<stdio.h>
void line() // procedure or function
{
printf("-----\n");
}
void main() // procedure or function
{
line();
printf("Good morning\n");
line();
printf("Welcome to Naresh IT\n");
line();
printf("Thank You\n");
line();
}
```

The bottom window shows the output of the program. It displays the text "Good morning", "Welcome to Naresh IT", and "Thank You", each preceded by a line of dashes. The IDE interface includes a menu bar with options like File, Edit, Search, Run, Compile, Debug, Project, Options, and Window. A status bar at the bottom indicates "You are screen sharing" and "Stop share". The system tray shows the time as 12:31 PM on 09-Jul-25.



Basic language following monolithic programming.

C is following procedure oriented programming structure [POPs]

C++ and Python following POPs and OOPs. Hence they are called multi paradigm programming languages.

Java and .net are oops

Object oriented programming structure [OOPs]:

1. Class

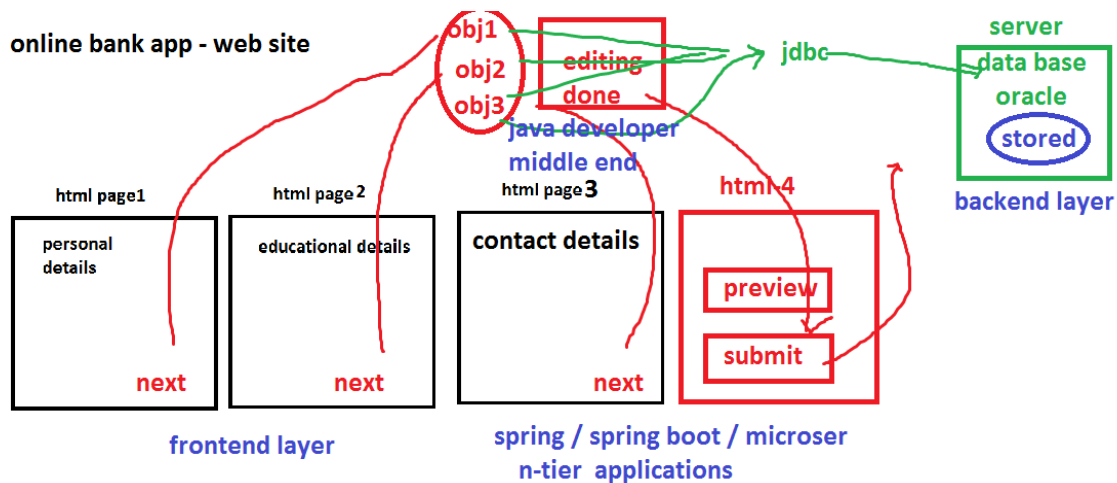
2. Object

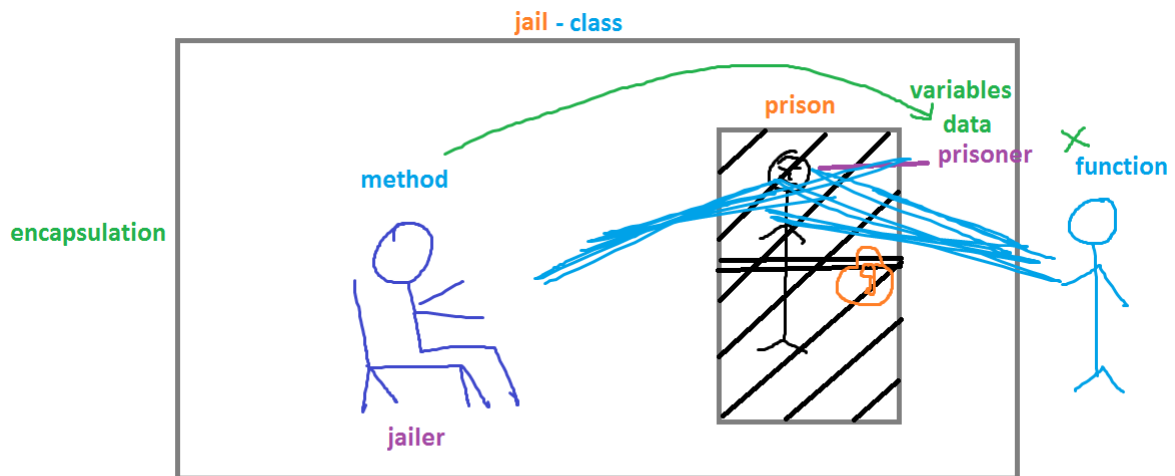
3. Encapsulation

4. Inheritance

5. Polymorphism

6. Abstraction





Sum(int, int);

Sum(float, float);

Sum(int, float);

Sum(float, int);

Previous class video links:

▶ □ Day 1:

<https://youtu.be/3rSQMvl6Ovs>

▶ □ Day 2:

<https://youtu.be/AI2W2f78wEc>

▶ □ Day 3:

<https://youtu.be/0bD3hU1wM9I>

Basically C is developed for rewriting UNIX operating system.

Nowadays we can create and execute a c program on any machine with **any processor**. i.e. we can run a c program on the processors like 80386 / 80486 / 80586 / intel core i3 / i5 / i7 / i9 / amd etc. Hence C **is called it is a machine independent programming language**.

The languages like 8086/ 8088 are working only on 8086 and 8088 processors. Hence they are called machine dependent programming language.

But c is a platform dependent programming language. i.e. the application designed for one operating system is not working in another operating system. For example the application designed for windows operating system with c language is not working in UNIX operating system. Due to this problem we can't design web applications with c language. C allows only the stand-alone applications.

The stand-alone application installed in a single system and operated from that system only and which is also called non-server based application or desktop application.

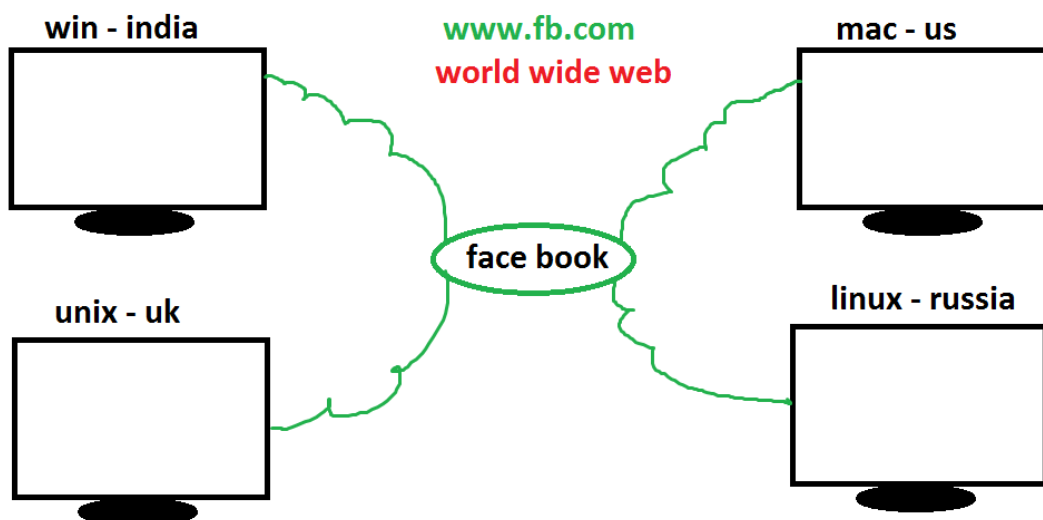
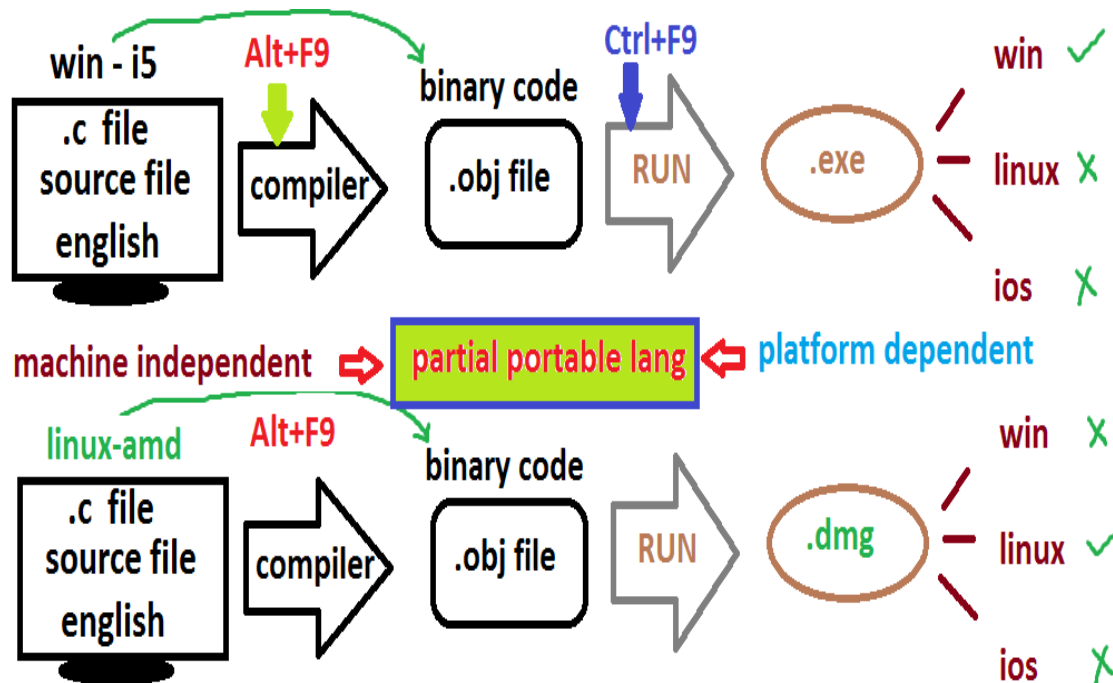
Eg: calculator, ms-office, antivirus, media player,

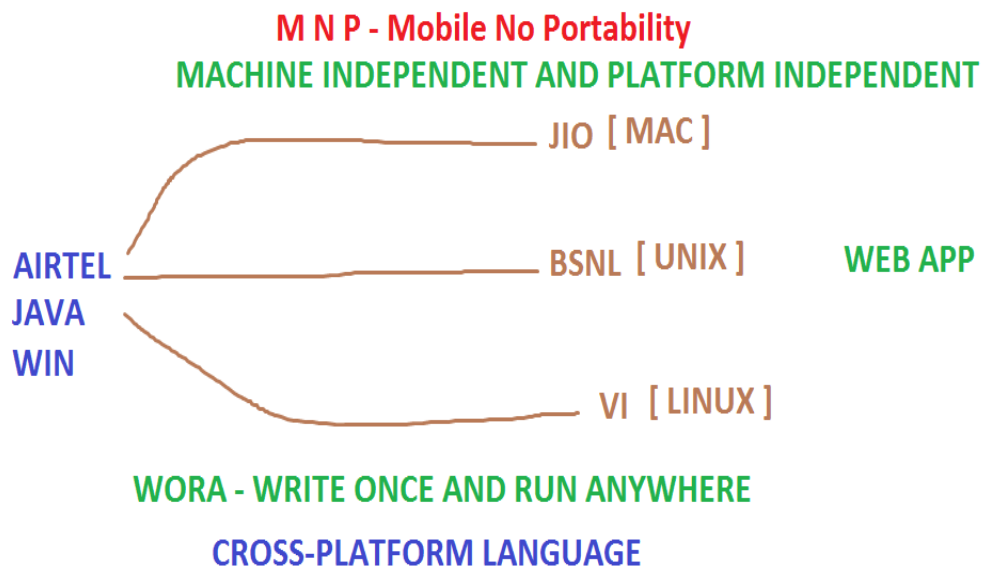
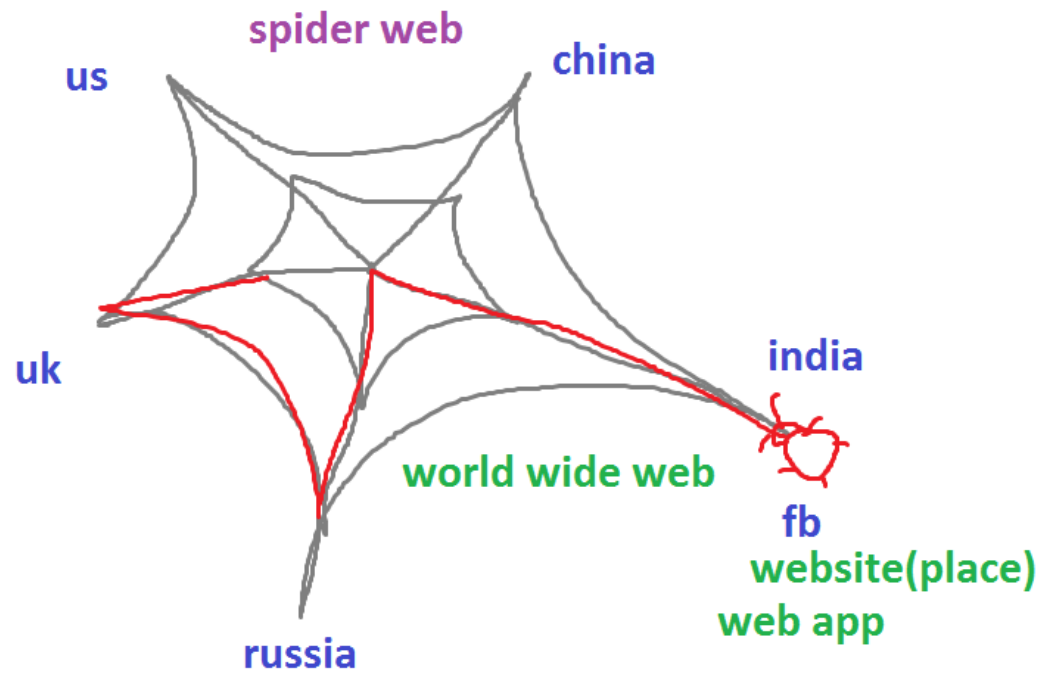
The application which is installed in a sever and used from various computers by using internet is called web application or server based application.

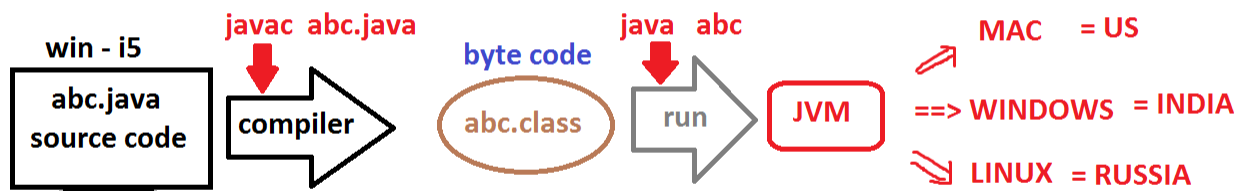
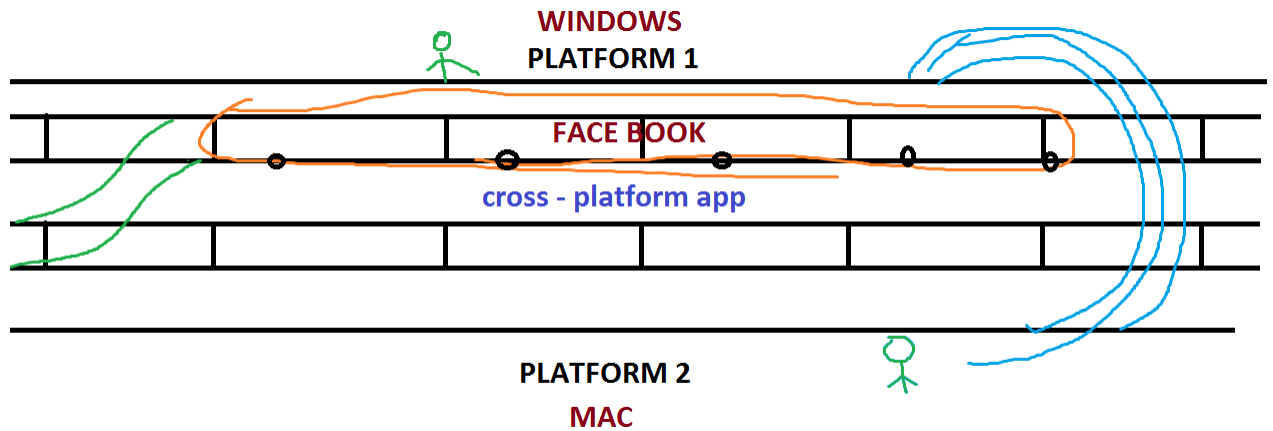
Eg: facebook, whatapp, insta, irctc, googlepay,...

To design these web applications we are using the languages like java / .net / python, which are machine independent and platform independent programming languages. Hence these languages are also called portable languages.

C is a machine independent but platform dependent. Hence c is a partial portable language.







JAVA - WRITE ONCE AND RUN ANYWHERE

1972 - LAN – LOCAL AREA NETWORK

**MAN – METROPOLITAN AREA NETWORK – City
cable**

WAN - wide area network - internet

C is a General / multi-purpose programming language?

Using c we can develop different type of software like

- 1. Operating system**
- 2. Translators**
- 3. Device drivers**

