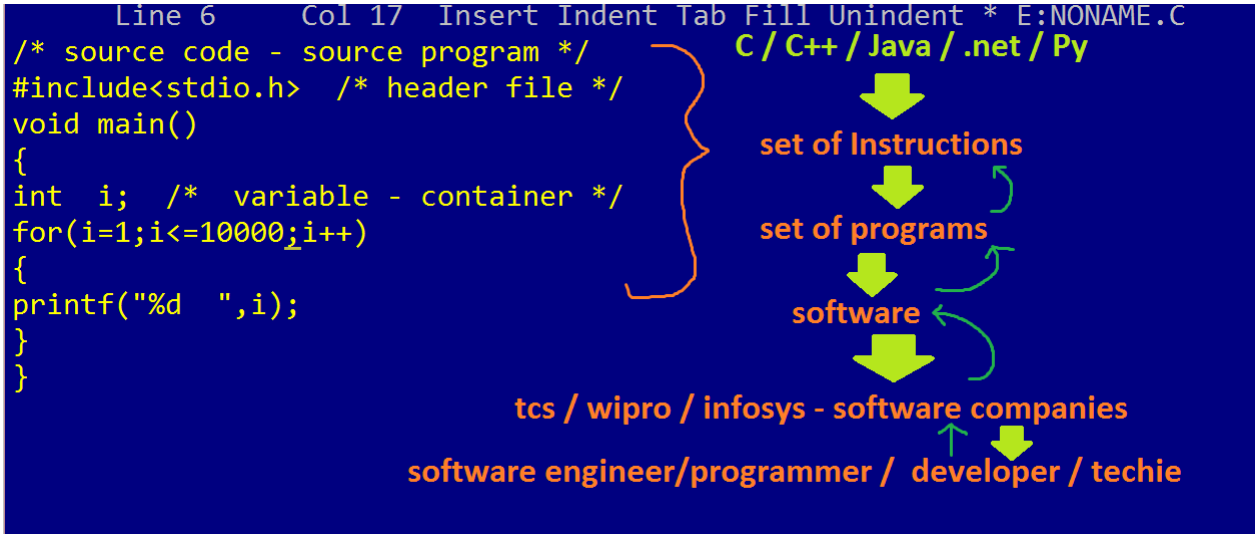
INTRODUCTION TO C

C is a

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

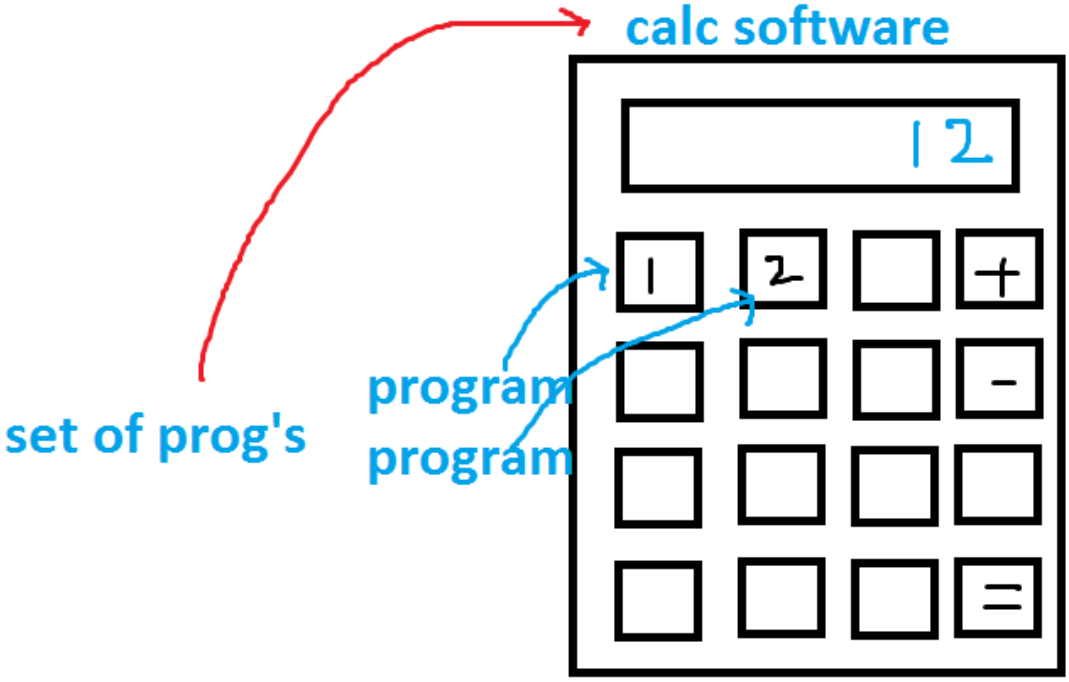


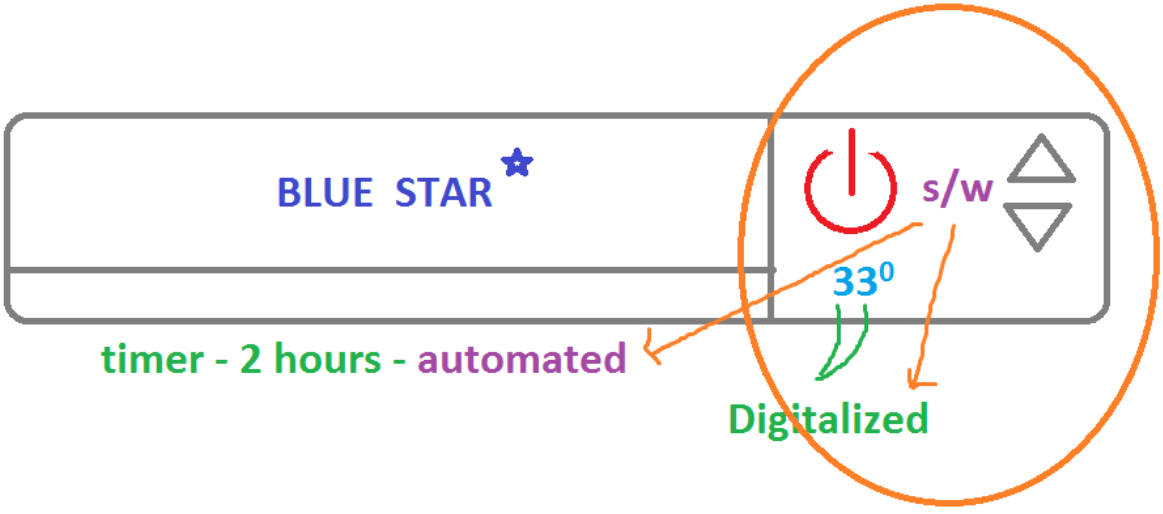
What is a program?

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.

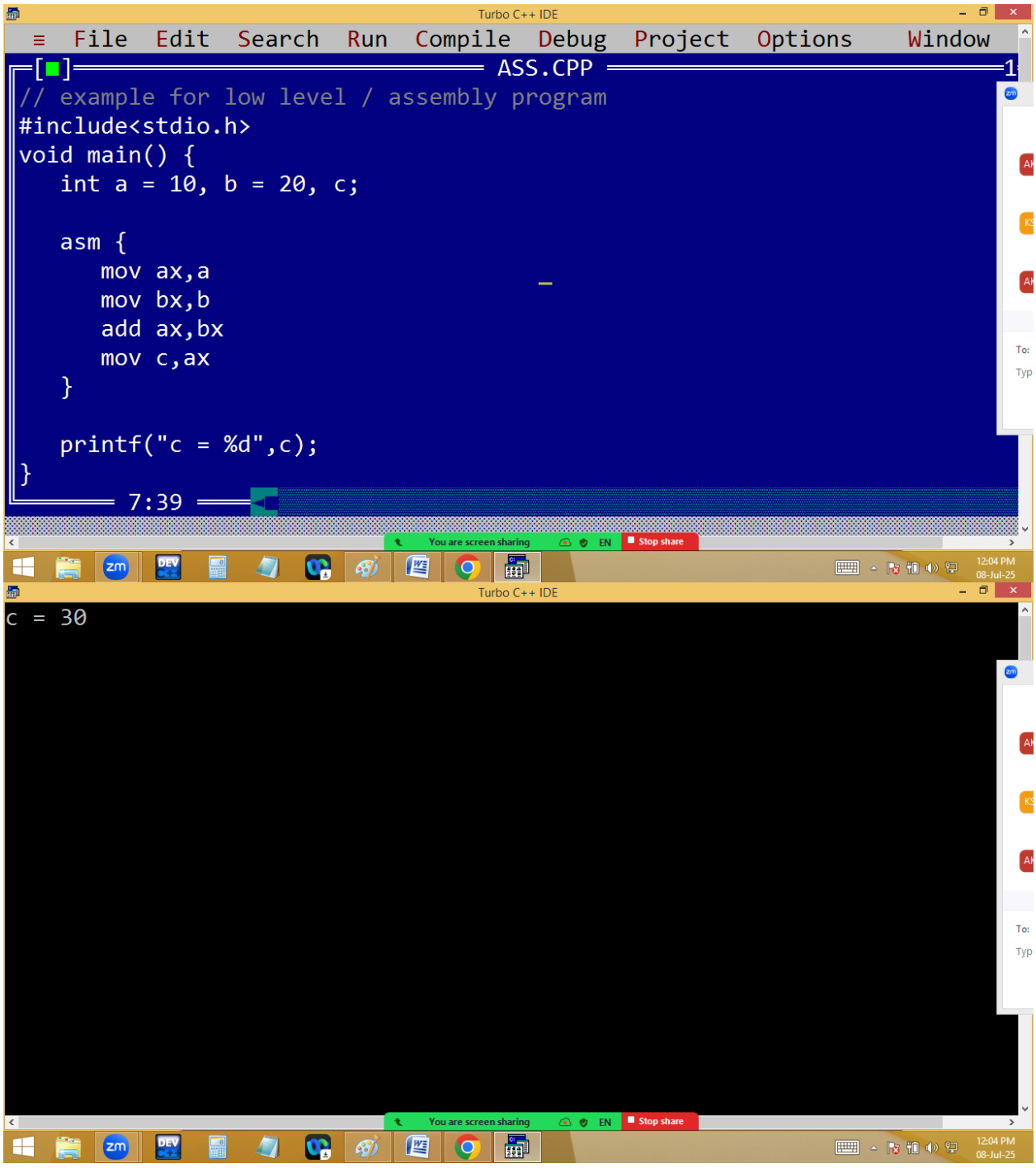
1. **Machine language: Created with binary code and very difficult to read by the user.**

   Eg: 10001111

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

   Eg: add, sub,…

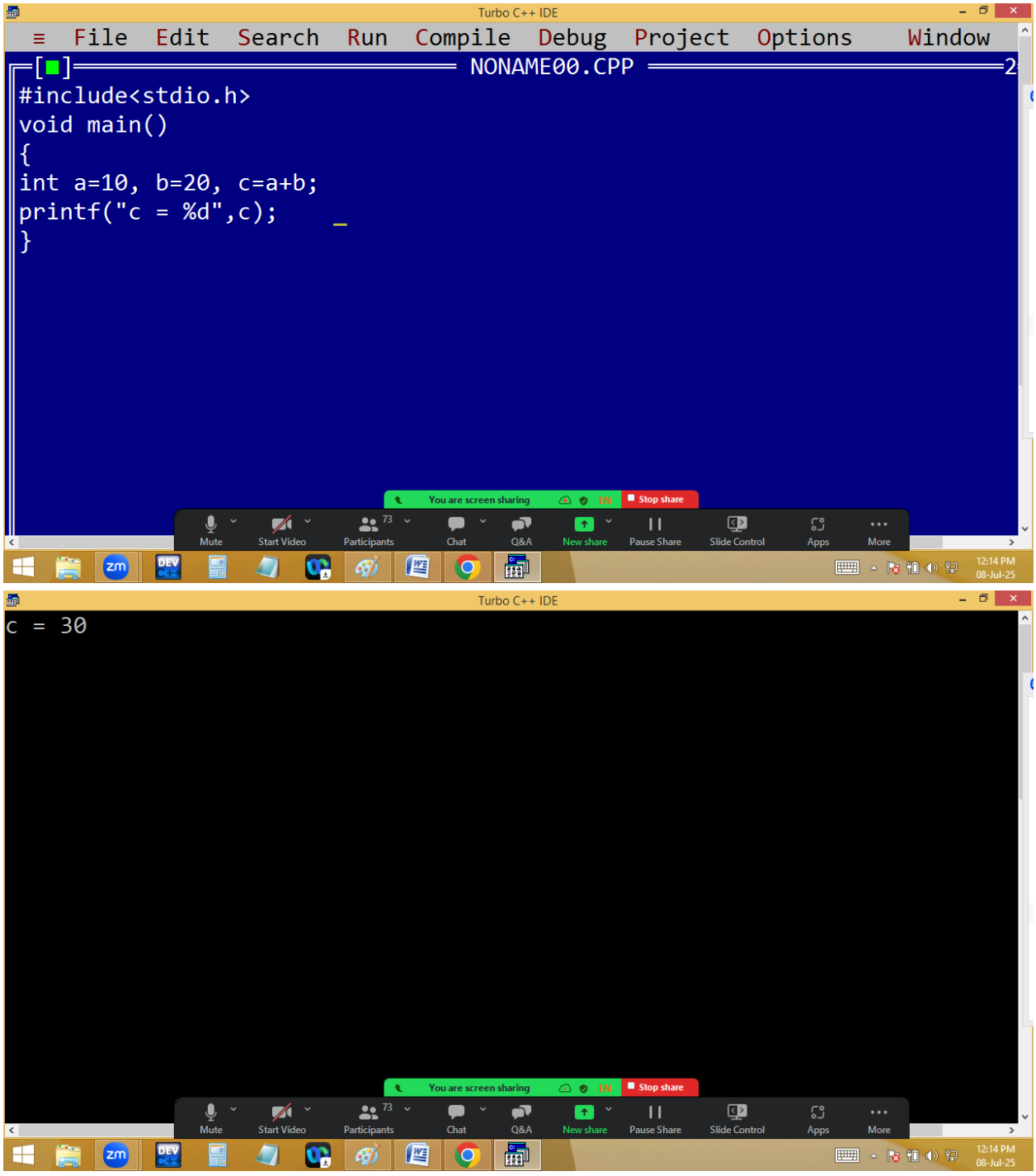
Example for assembly programming:



3.High level language: Created with simple English and easy to understand.

Eg: addition, subtraction,…

Example for high level program:



C is a high level language with low level features.

Hence it is a middle level language.

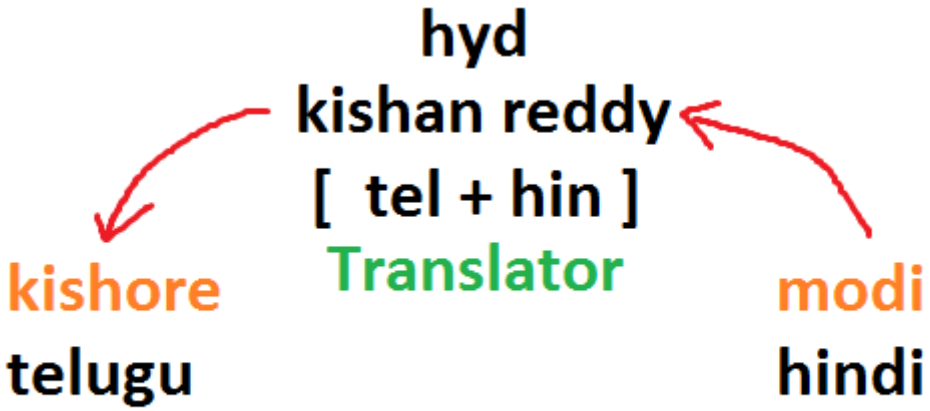
C low level features are used to design system software.

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

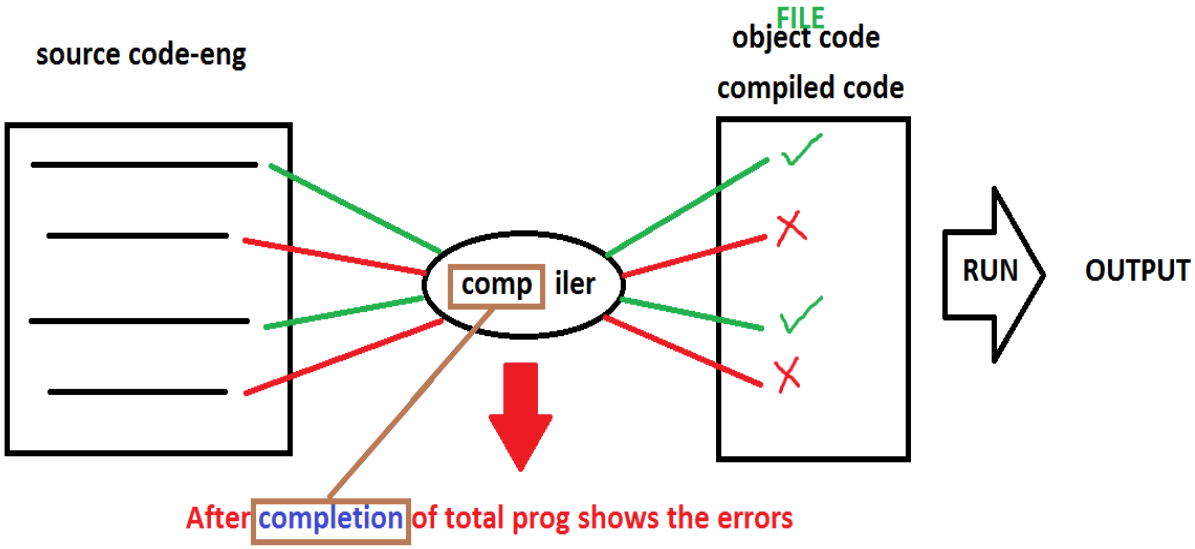
and to check the errors we are using the translators.

We are having 3 types of translators.

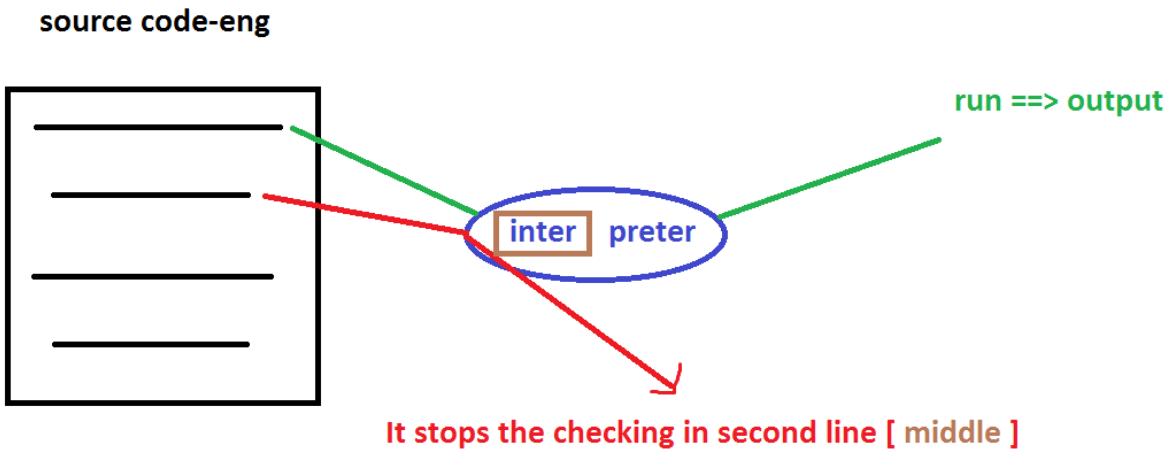
1. Compiler
2. Interpreter
3. Assembler

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.

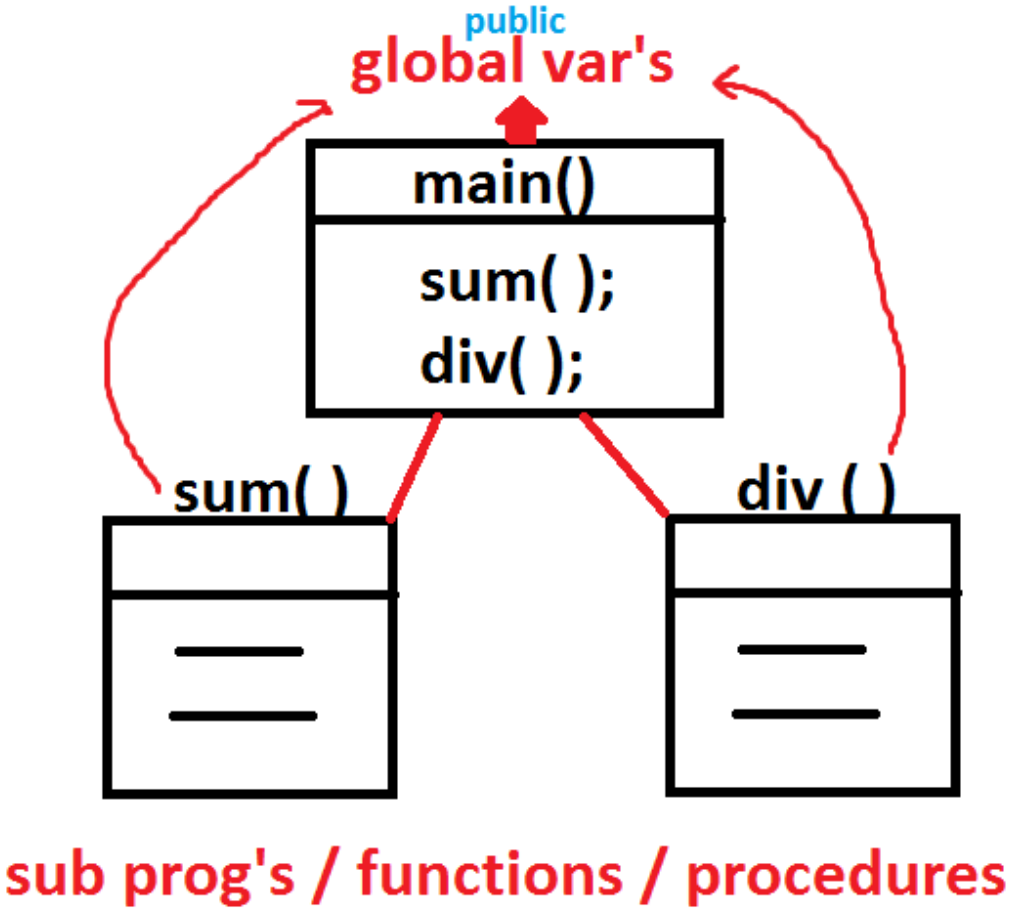


Assembler is used to convert low level programs to binary code.

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.

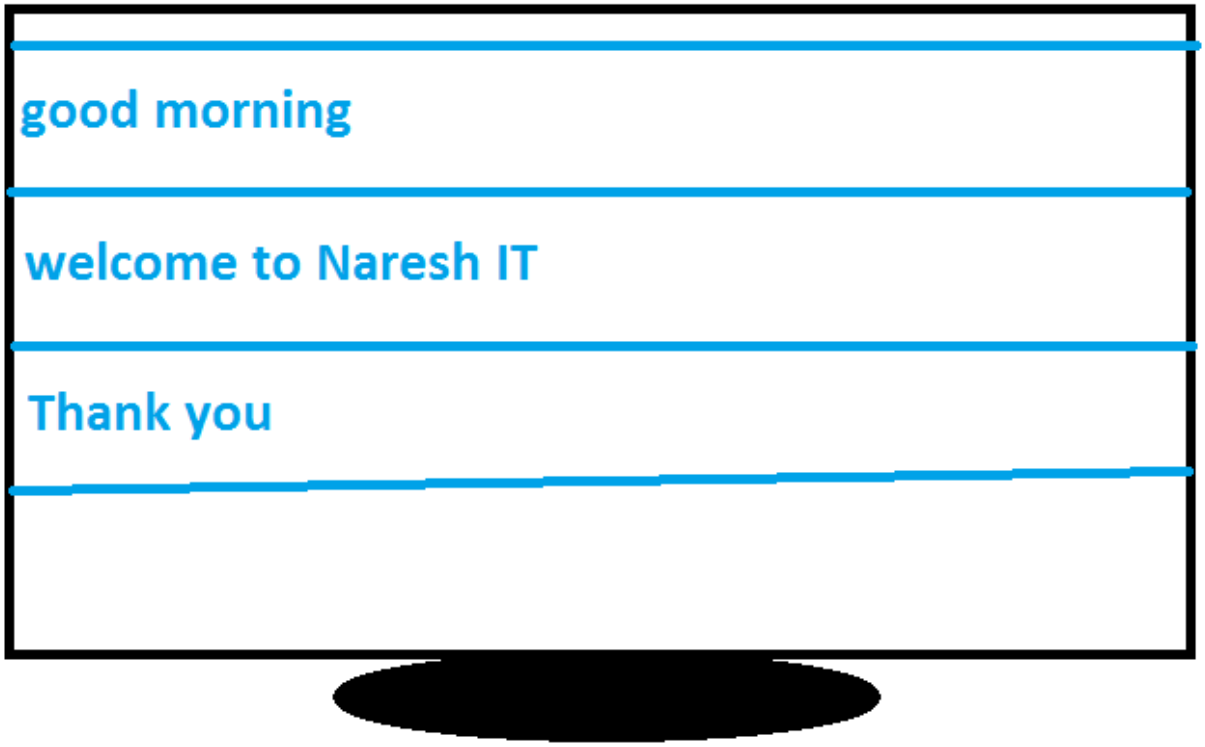


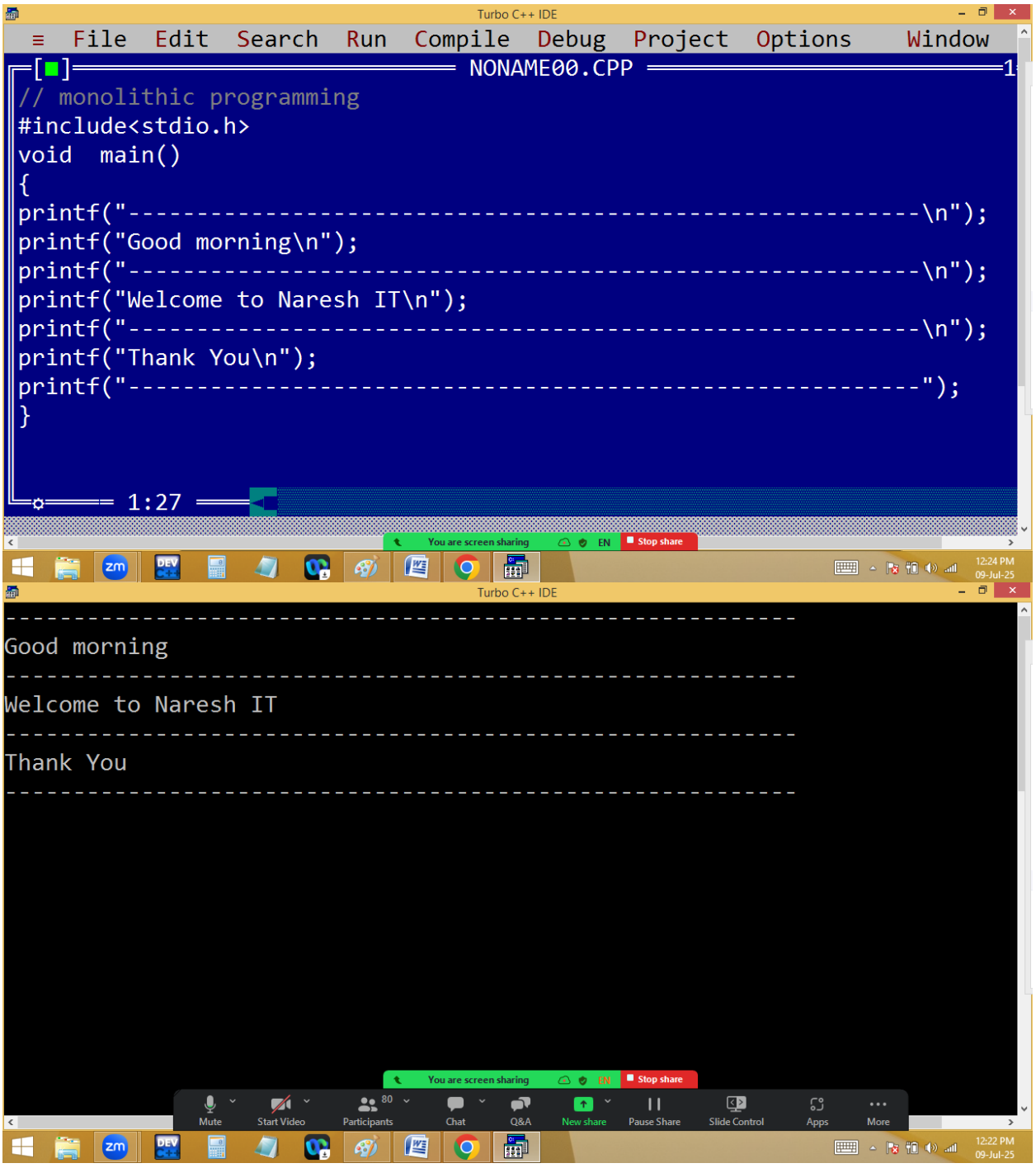
3. C is a procedure oriented programming language [POPs]

What is called programming paradigm?

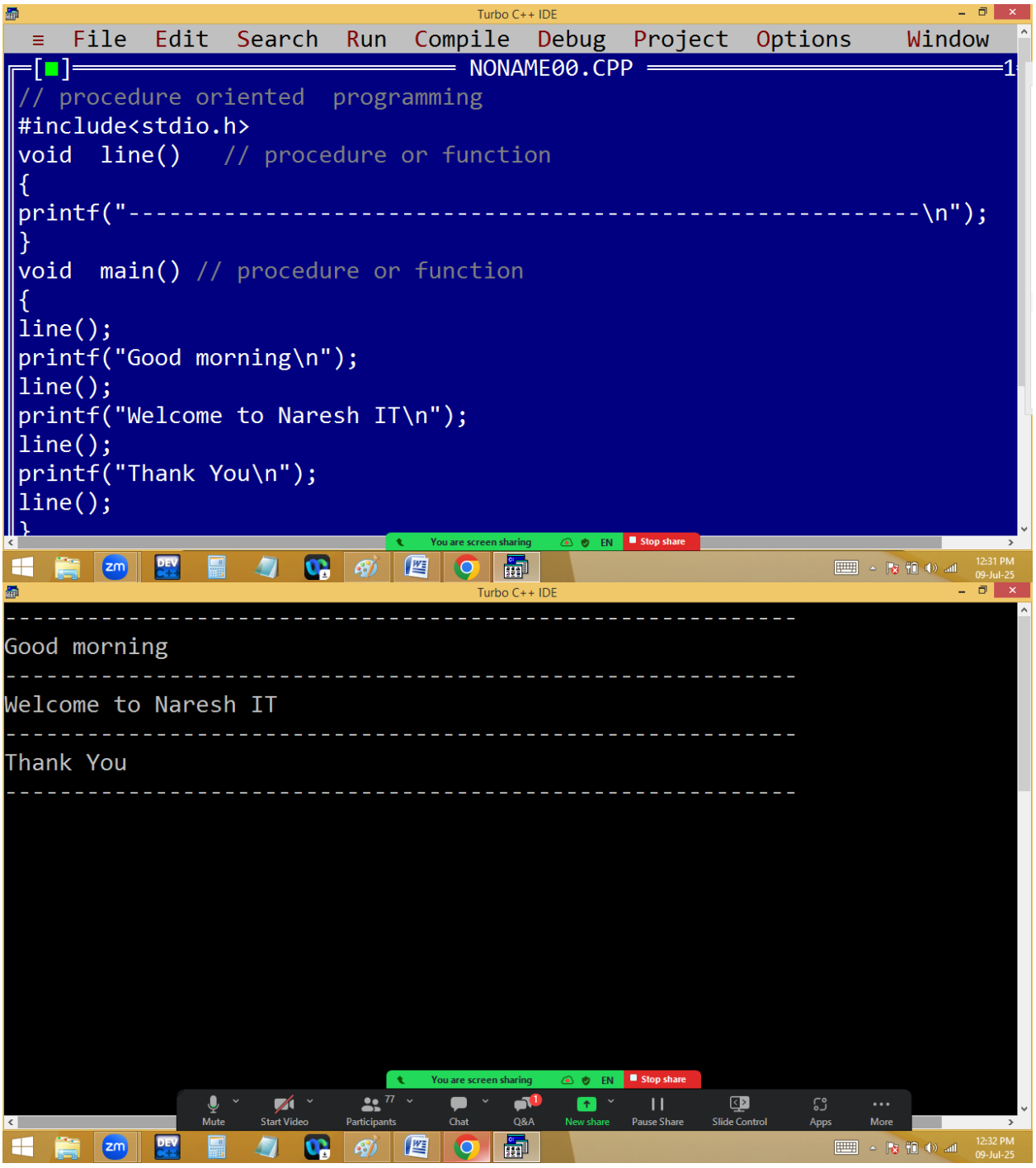
Every programming language comes with a particular syntax [rules and regulations] and a structure, which is technically called programming paradigm. To solve a problem, we should have to use that programming paradigm only.

Before C language the languages are using monolithic programming paradigm.





POPs – Procedure oriented programming structure:


Turbo C++ IDE
File Edit Search Run Compile Debug Project Options Window
NONAME00.CPP
// 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();
}
You are screen sharing
EN
Stop share
12:31 PM
09-Jul-25
Turbo C++ IDE
Good morning
Welcome to Naresh IT
Thank You
You are screen sharing
EN
Stop share
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More
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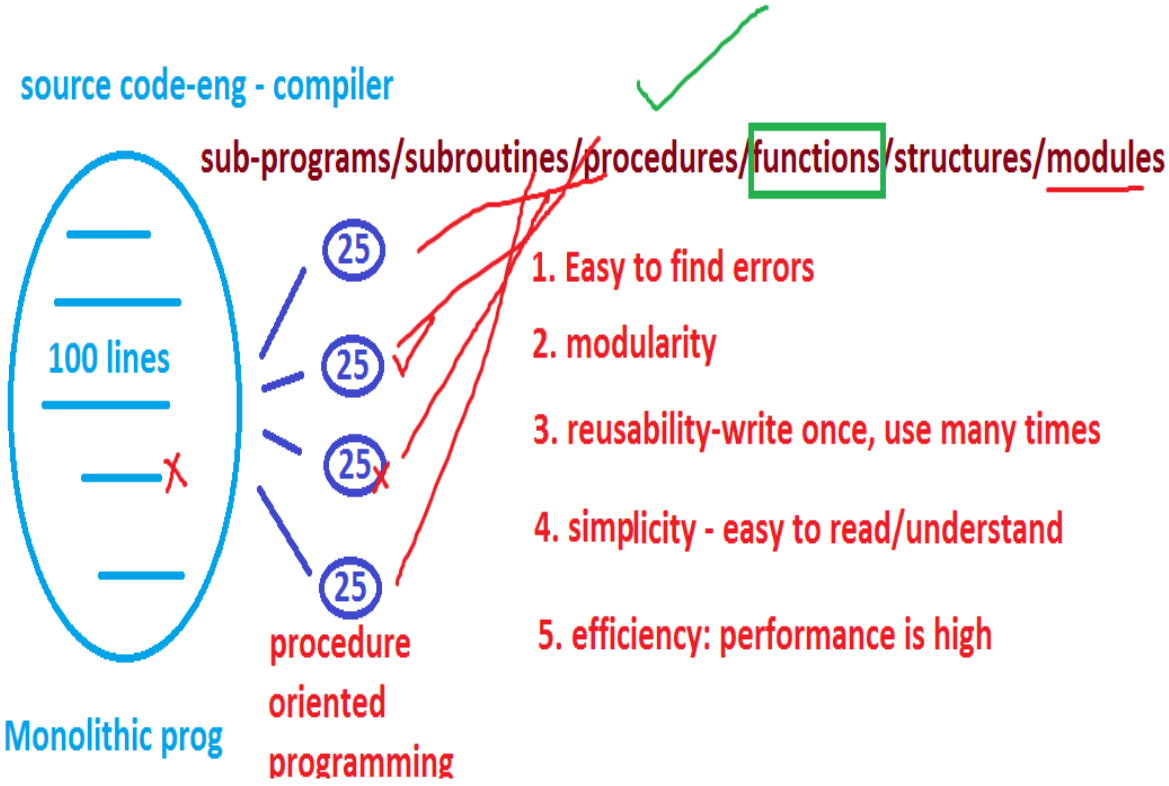


Basic language following monolithic programming.

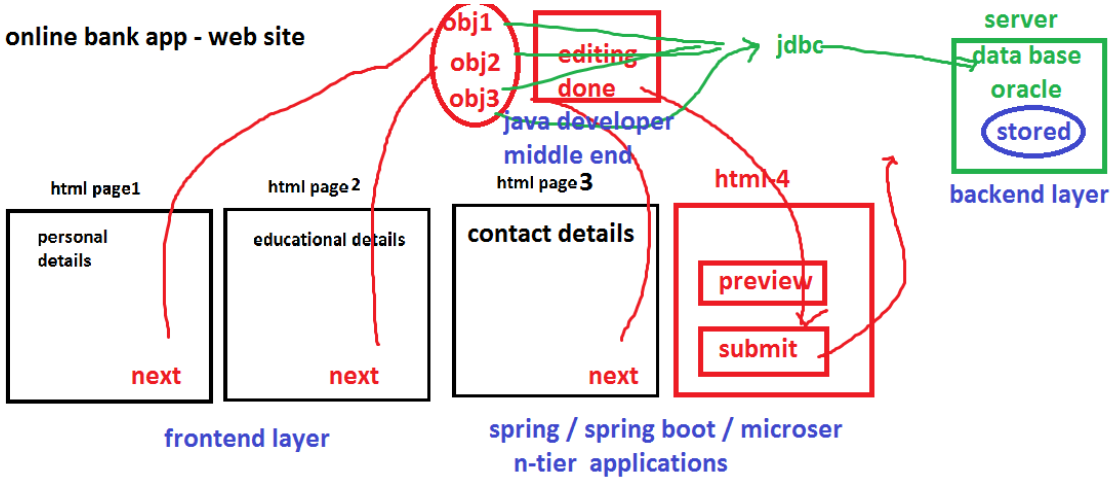
C is following procedure oriented programming structure [POPs]

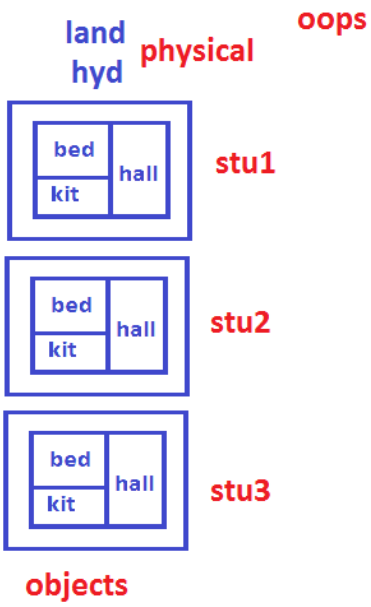
C++ and Python following POPs and OOPs. Hence they are called multi paradigm programming languages.

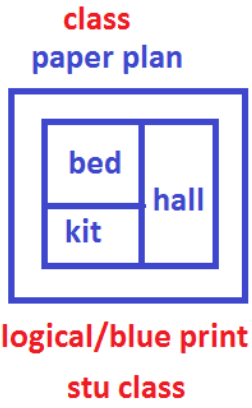
Java and .net are oops

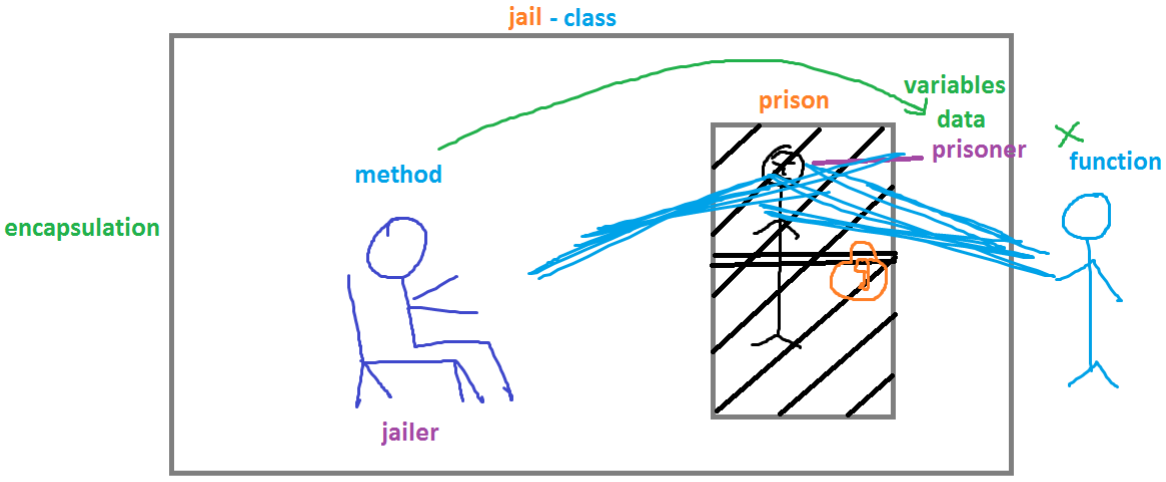
Object oriented programming structure [OOPs]:

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.

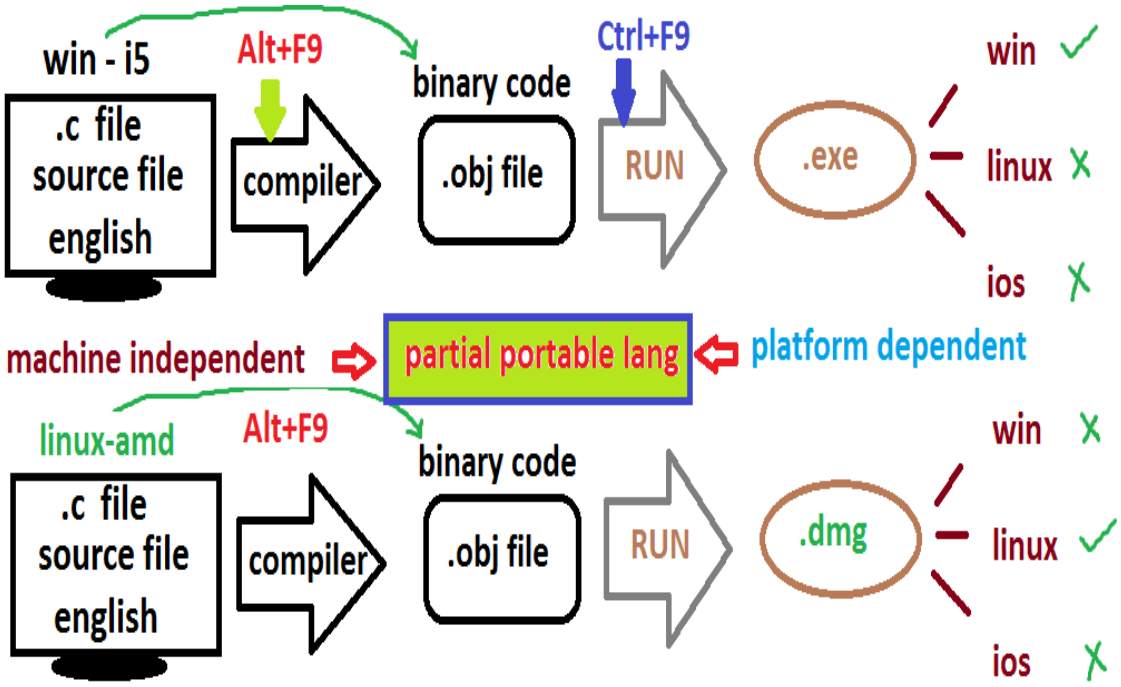
Eg: calculator, ms-office, antivirus, media player, ….

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.


win - i5
Alt+F9
Ctrl+F9
.c file
source file
english
compiler
binary code
.obj file
RUN
.exe
win
linux
ios
machine independent
partial portable lang
platform dependent
linux-amd
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compiler
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RUN
.dmg
win
linux
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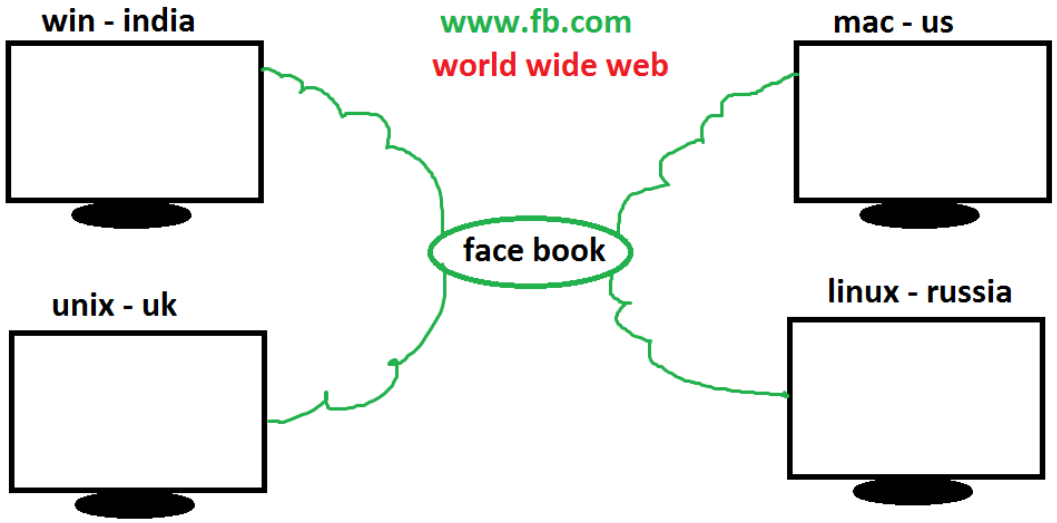
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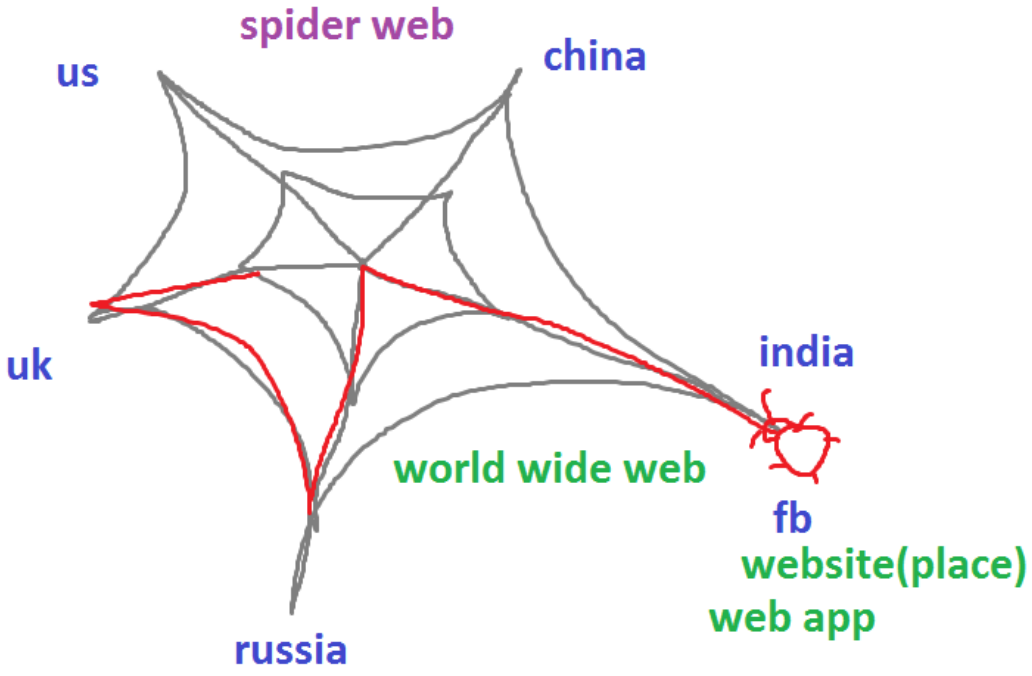
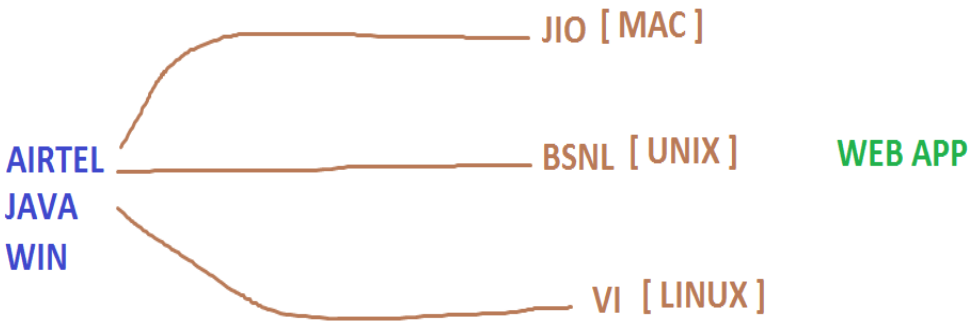


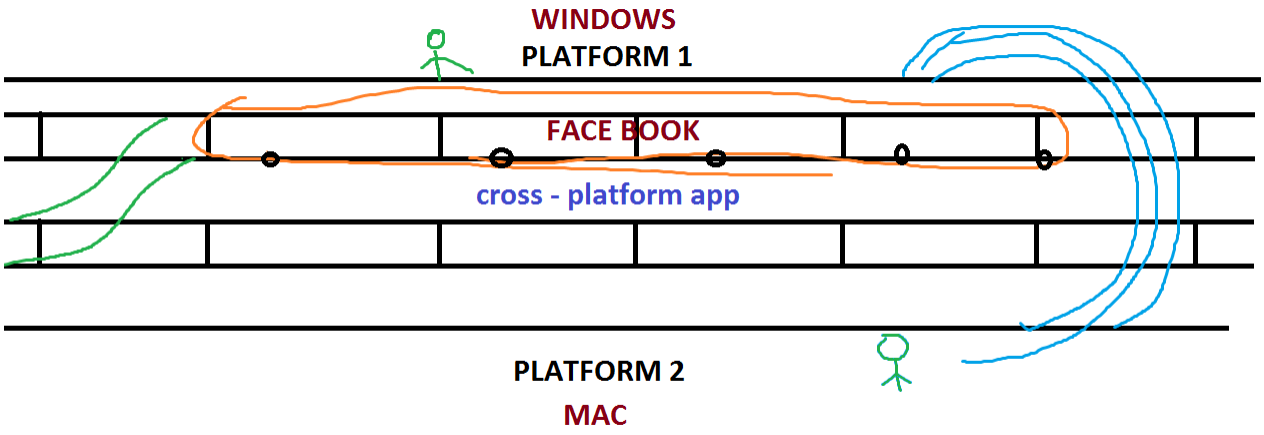
M N P - Mobile No Portability

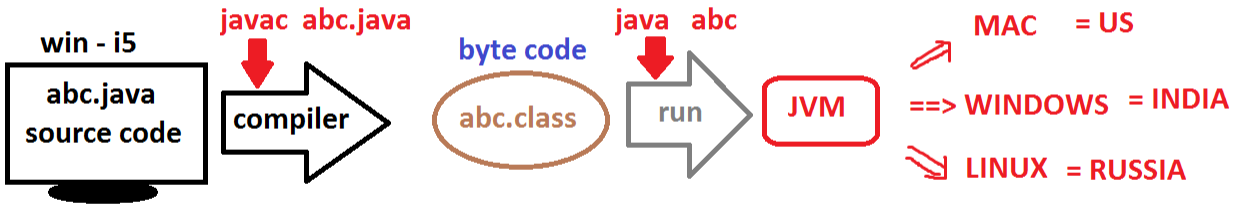
MACHINE INDEPENDENT AND PLATFORM INDEPENDENT



WORA - WRITE ONCE AND RUN ANYWHERE

CROSS-PLATFORM LANGUAGE





JAVA - WRITE ONCE AND RUN ANYWHERE

1972 - LAN – LOCAL AREA NETWORK

MAN – METROPOLITAN AREA NETWORK – City cable

WAN - wide area network - internet

Previous class video links:

Day-1 https://youtu.be/3rSQMvl6Ovs

Day-2 https://youtu.be/AI2W2f78wEc

Day-3 https://youtu.be/0bD3hU1wM9I

Day-4 https://youtu.be/bi1gAJJ18W8

Day-5 https://youtu.be/NZkLZa2w2Dc

C is a General / multi-purpose programming language?

Using c we can develop different type of software like

1. Operating system

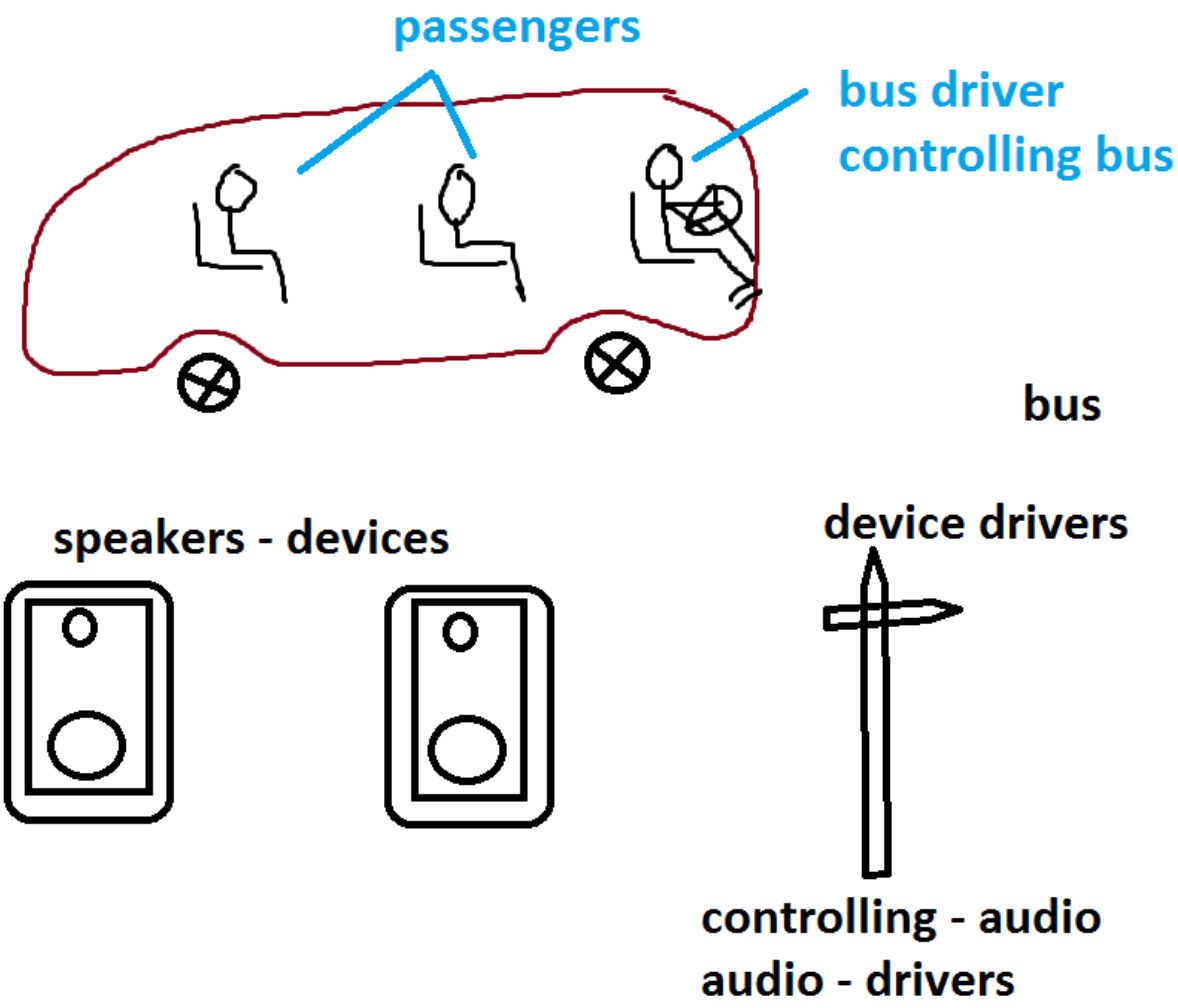
   Eg: windows, unix, mac, android, …

2. Translators

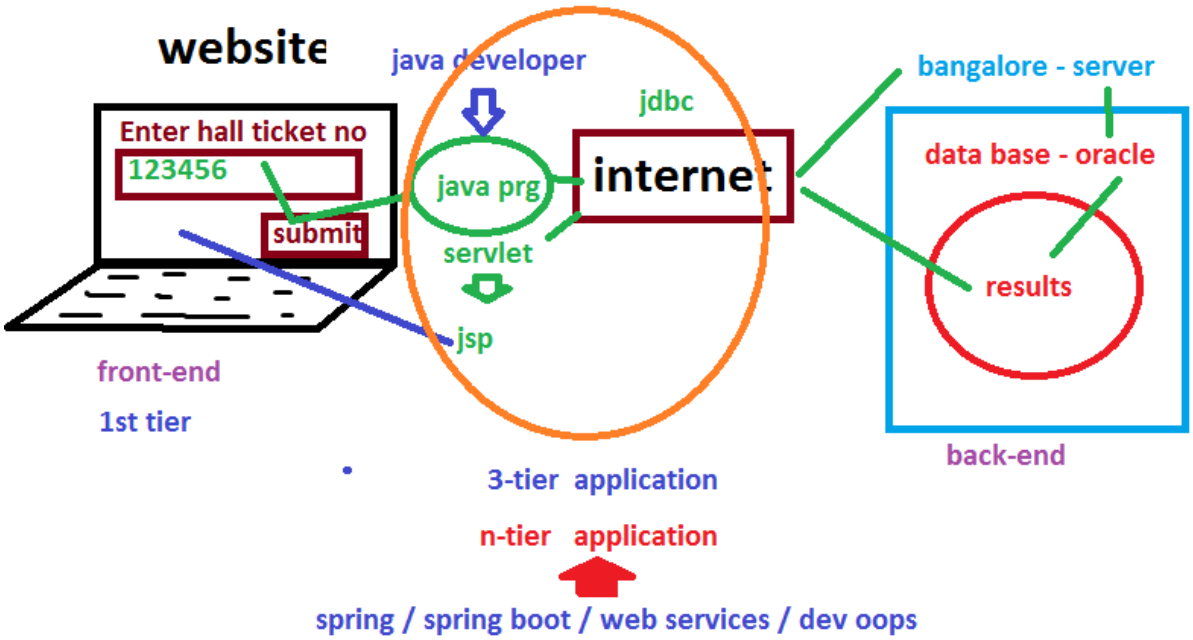
   Eg: compiler, interpreter, assembler

3. Device drivers

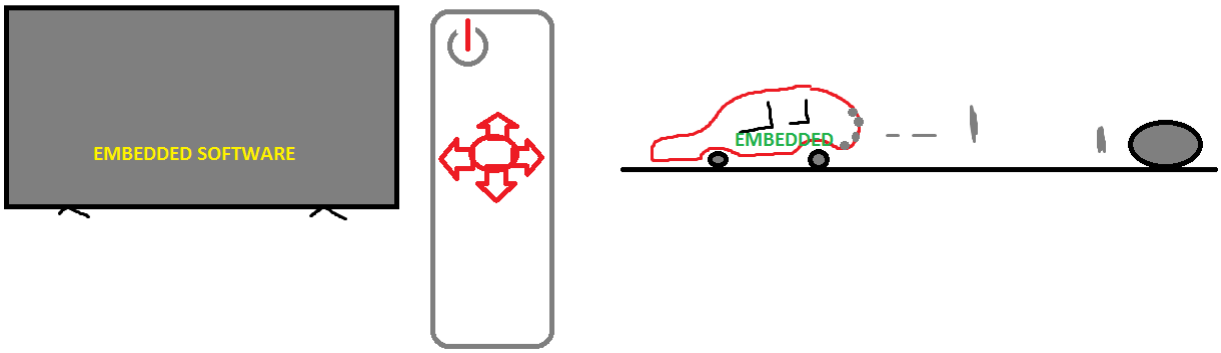
Eg: audio /video / usb drivers,….



4. Data base



5.Embedded applications.



6.Commercial applications

Eg: hotel program, super market, college programs etc.

7. Editors

   Eg: notepad, wordpad, ms-word,..

8. Antivirus software

   Eg: avast, mcafee, nod,…

9. Media players

   Eg: vlc, mx-player, windows media player,…

10. Pc and mobile games

11. Browsers

    Eg: chrome, firefox, edge,…

12. Any type of stand-alone applications

HISTORY OF C

Basically C language introduced in 1972 by "DENNIS RITCHIE", One of the software engineer in AT & T [American Telephone & Telegraph] Bell labs, located at Murray Hills, New Jersy, USA.

Ritchie adopted C language from B Language / B compiler, designed by "KEN THOMSON", one of the software engineer in AT & T Bell labs.

Thomson adopted B language from BCPL [Basic Combined Programming Language], designed by "MARTIEN RICHARDS", an Assistant Professor in Cambridge University.

In 1989 ANSI [American National Standards Institute] released a new version of C language with the name "ANSI-C", which is familiar with the name "C-89".

In 1999 ISO [International Standard Organization] released a new version of C language with the name "C-99".