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COMPUTER ⇒ 1) Collection of many parts
2) Computer is Not a physically entity
3.) It is a class (group of objects)

Hardware
All physical parts that making up a Computer Known as Hardware
like Key board, mouse, monitor

Software
Set of instruction is known as Program
Set of Program Known as Software

Software
System
Application
Utility
Operating System
Win 7
Win 10
Win 11
Linux
UNIX
Mac
Language Processor
Compiler
Interpreter
Assembler
M.S.office
Tally
Photoshop
Antiviruses
PDF Reader
Disk cleanup

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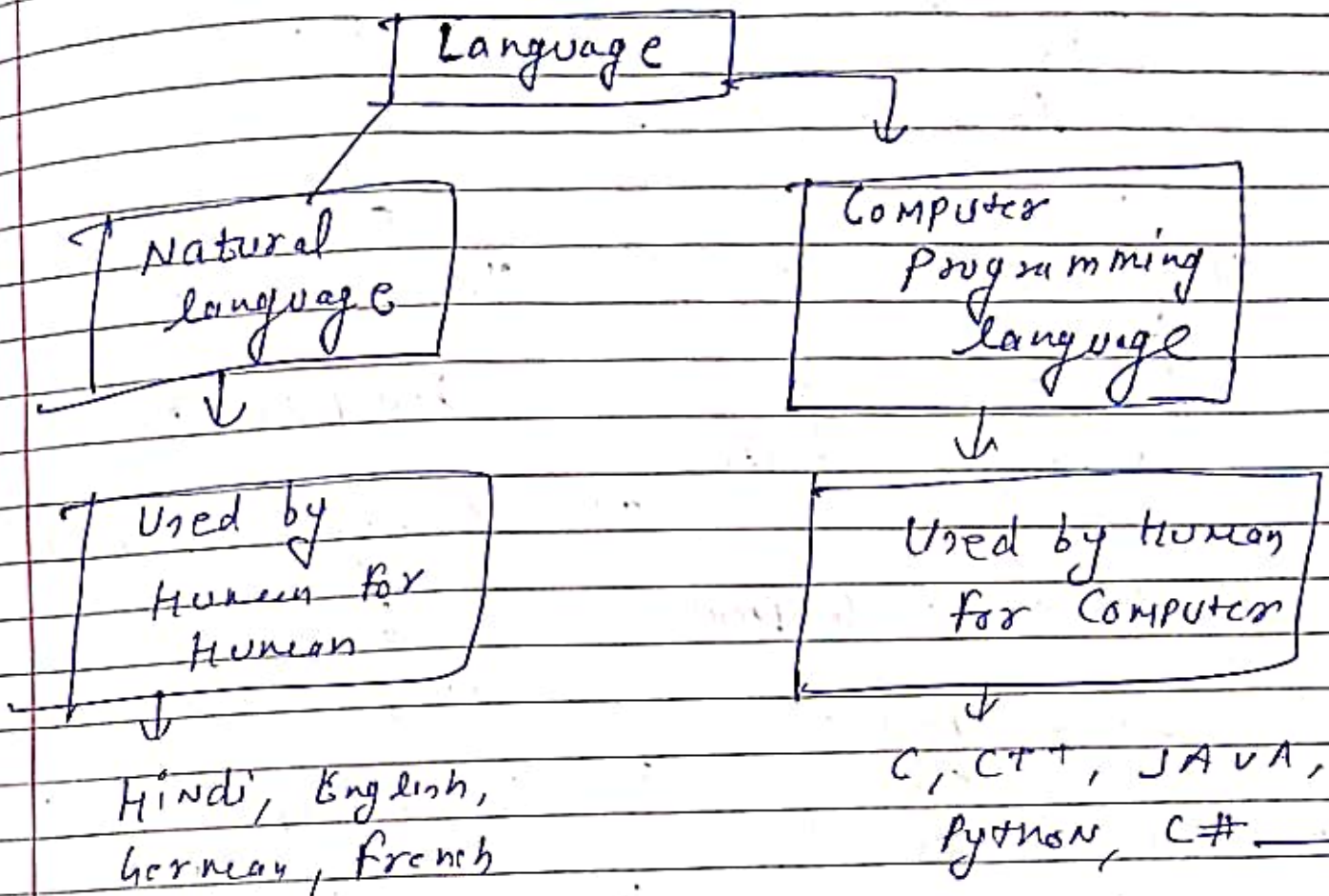
Language :- Language is a way to express the instruction



Computer Programming language :-

Used to express the set of Computer instruction.

In simple words, We can say that they are used to create software, Website or Mobile Apps.

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Computer programming language

Low Level Language

1) They are machine dependent [coding according to hardware]
2) Coding is complex
3) Coding speed is slow
4) Code in machine Readable form
5) Execution (run) speed is fast
6) Ex Binary, Assembly

high level language

1) They are machine independent
2) Coding is simple bcz code is simple English words
3) Coding speed is fast
4) Code in Human Readable form
5) Execution speed is slow bcz they are translated
6) Ex C, C++, JAVA, Python

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0 and 1 (Binary or machine language) → COMPUTER

A = 1 0 0 0 0 0 1

B = 1 0 0 0 0 1 0

C = 1 0 0 0 0 1 1

During 1940 :- Binary language (Low level language)

During 1950 :- Assembly "

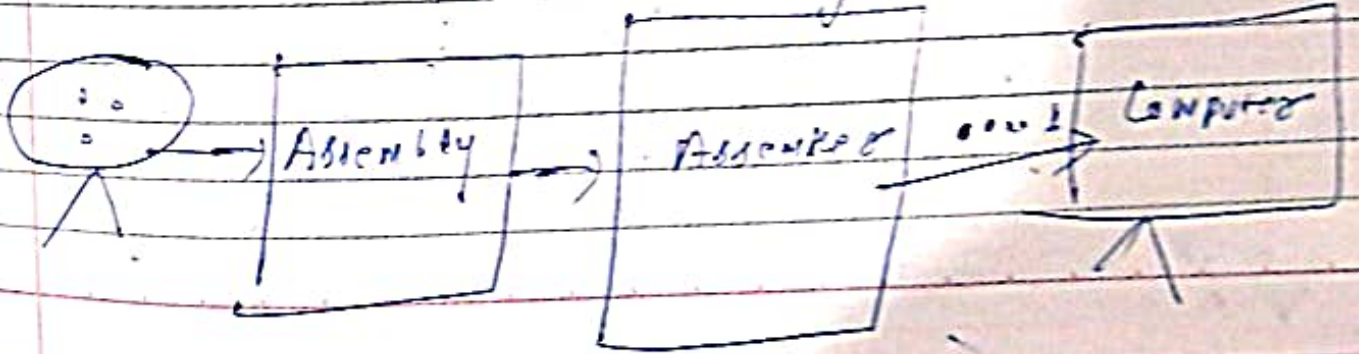
Assembly language Use Mnemonic words like

add :- Addition

cp :- Copy

mov → move

xch → Exchange



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Note :- Assembler is a translator that convert assembly language code into binary language

1957 :- FORTRAN

1960's :- BASIC
COBOL
PASCAL
BCPL
SIMULA67
& all table

} High level language

1969 :- KEN Thomson decided to write an operating system

1970 :- KEN thomson developed a new language "B"

"B" Language
↓
Operating System → failed in Testing

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1972 :- Denis Ritchie modified "B" Language and make a new language "C"

"C" Language

Operating System → UNIX

$2^2 \Rightarrow 4$

2
+2
4

$100^2 \Rightarrow 10000$

100
100
100

100
10000

$2^2 \Rightarrow 4$ [2x2]

$100^2 \Rightarrow 10000$ [100x100]

1980's Bjarne Stroustrup developed a new language (C++)

C + Simula 67 ⇒ C++

C with class

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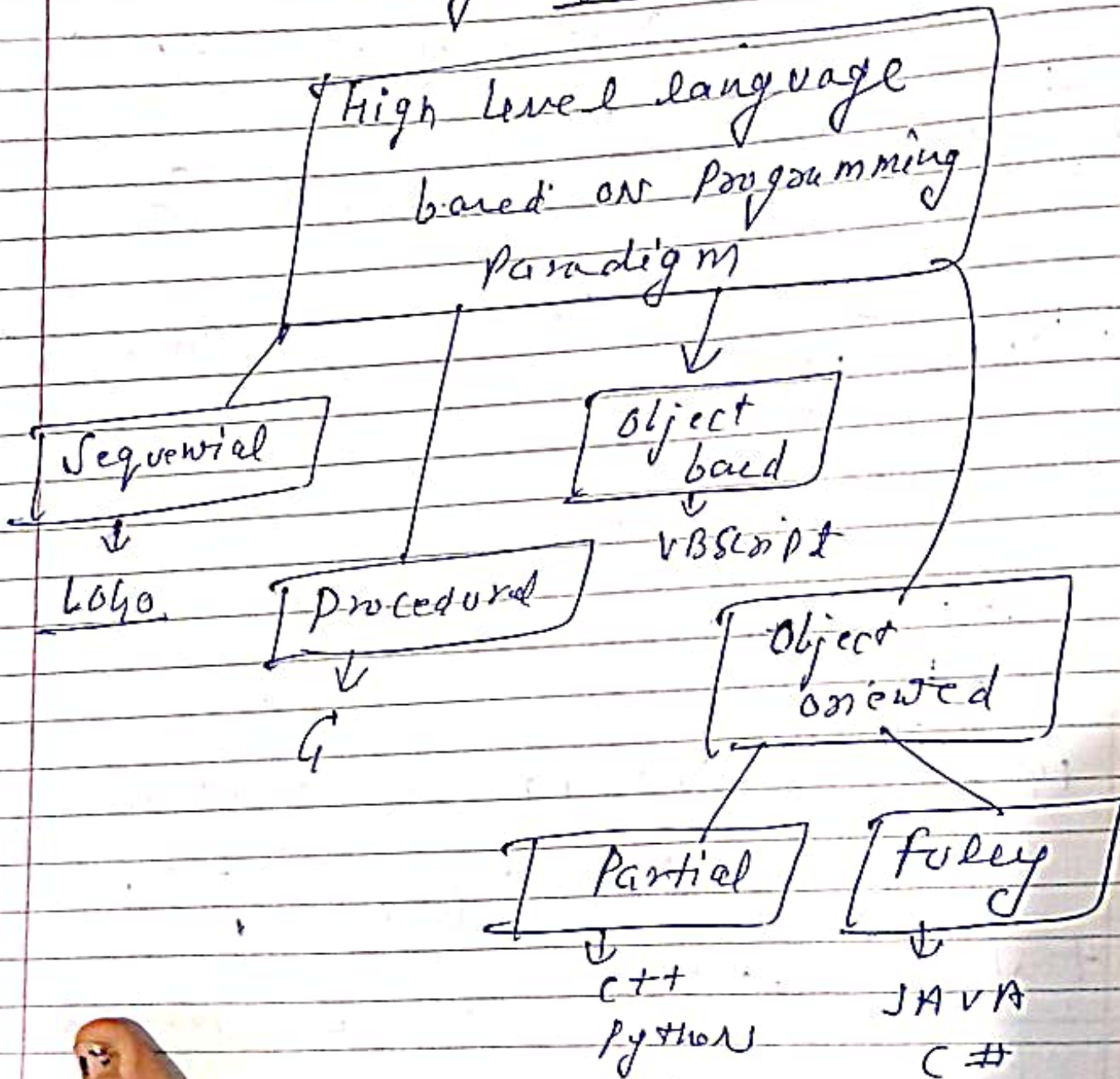
Programming Paradigm (methodology)

It defines the methodology to design and implement a program using key features provided by language.



A Sample Program in C language

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```
#include <stdio.h>
void main()
{
    printf("Hello");
}
```

Python

1) print("Hello") ✓ Sequential

2) def show():
       print("Hello") — Procedural language

3) class A:
       . . . — Object oriented

JAVA

```
class A
{
}
```

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Sequential Programming Paradigm

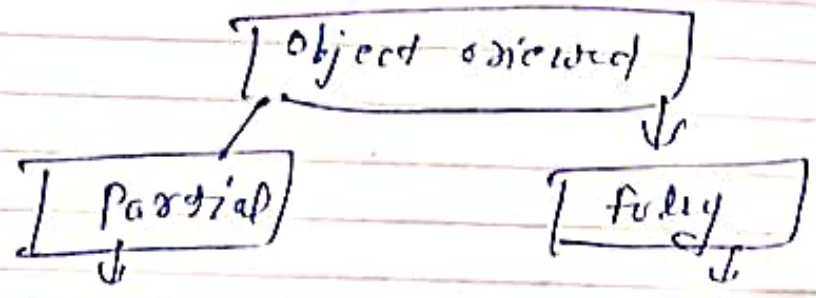
1) Code line by line
2) No class, No function
3) Ex LOGO

Procedural Programming Paradigm

1) Code by function (procedure)
2) Ex: C language
3) Coding is lengthy
4) No, Reliability

object oriented

1) coding by class
2) Yes, Reliability (by Inheritance)
3) Coding is Minimized
4) Ex C++, JAVA



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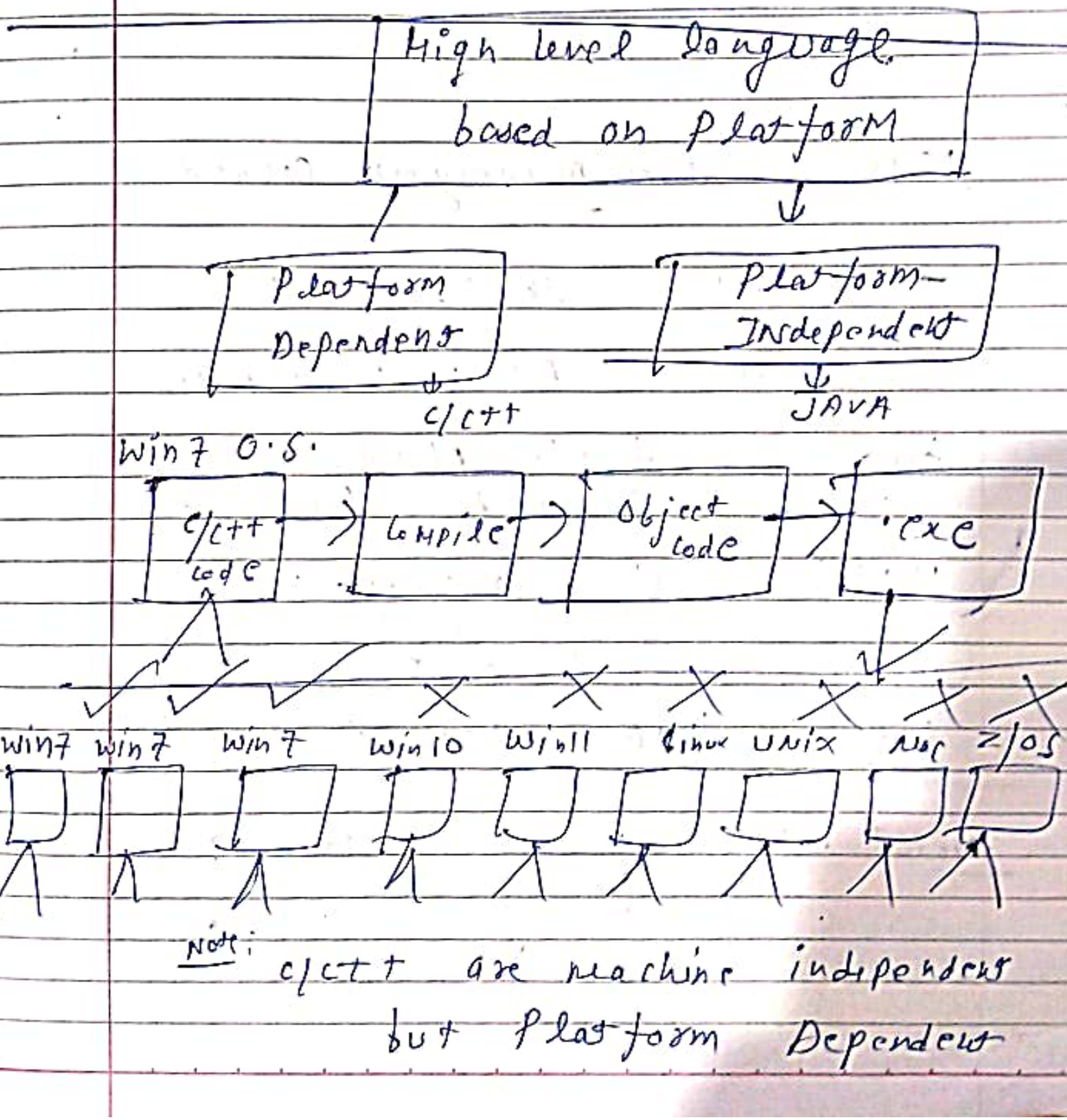
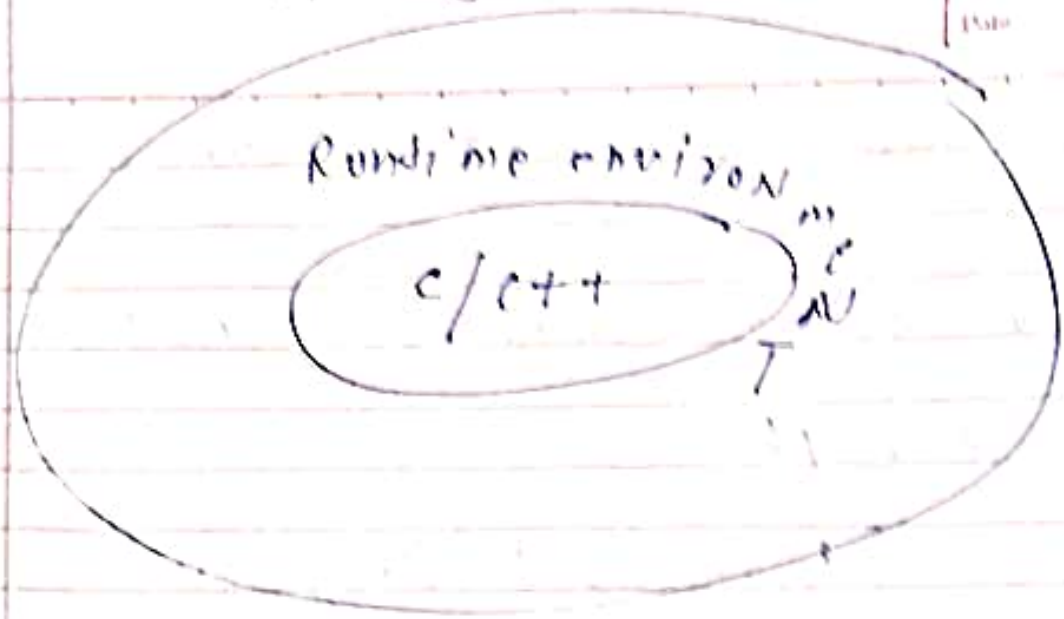
Object based programming Paradigm

1) Same as object oriented but No Inheritance
2) Ex VBScript



Note: C/C++ are machine independent but Platform Dependent

Operating System



1990 :- SUN Microsystem Created a Team

Team head :- JAMES GOSLING

Team members :- Patrick, Mike, Richard

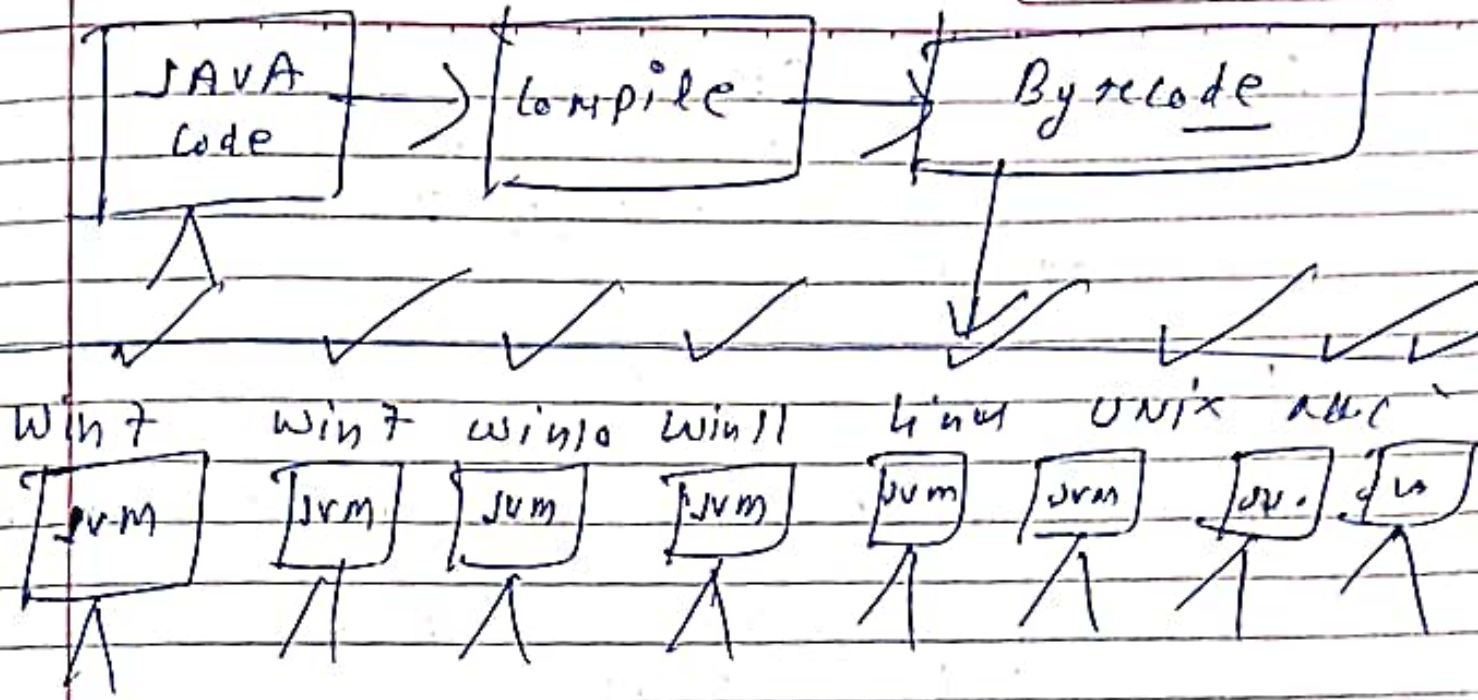
aim :- To develop platform independent language

1991 :- "Oak" Language was introduced

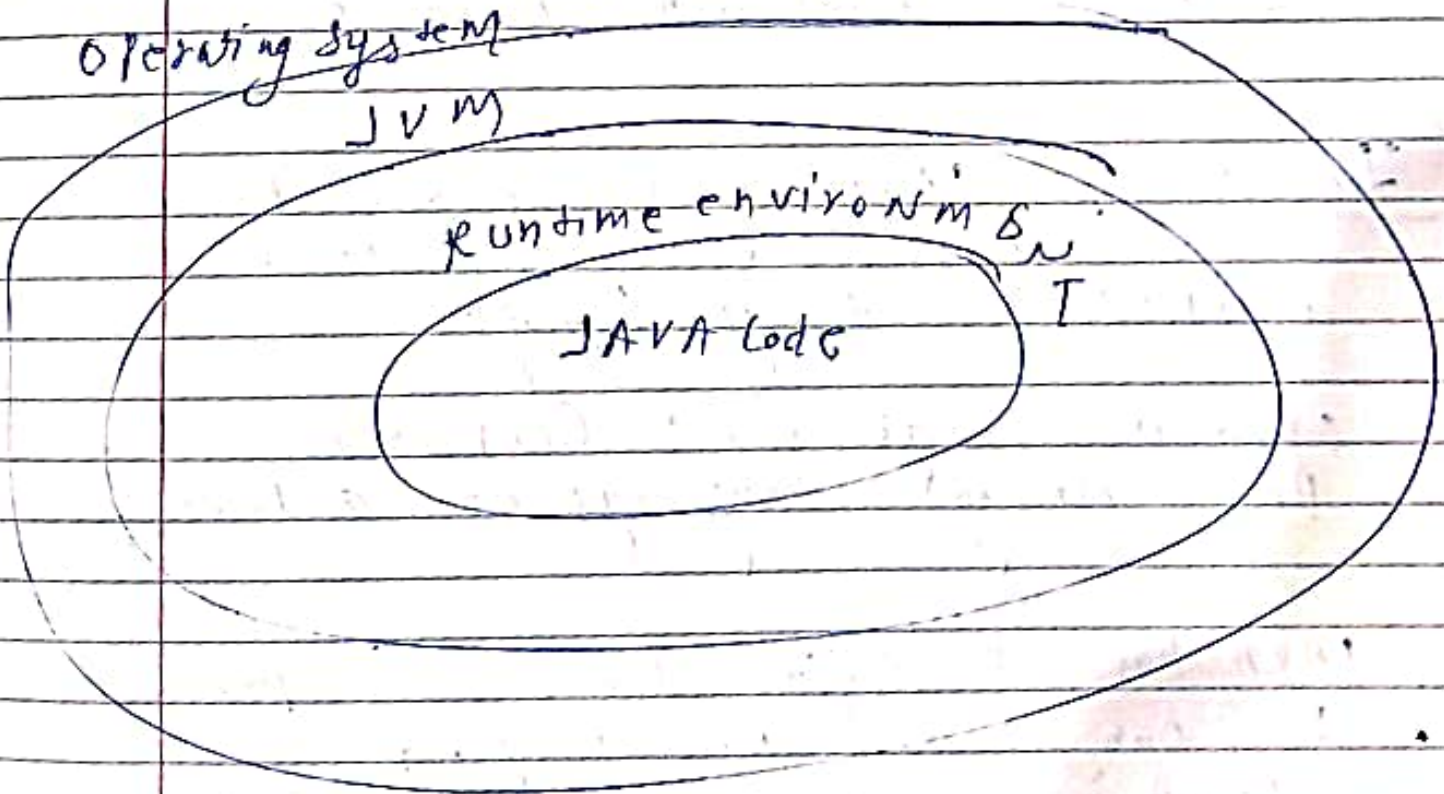
1995 :- "OAK" renamed as JAVA

Note :- JAVA does Not stand for anything

Win 7 O.S.



Note:- JAVA is a machine & Platform both independent



Note:- Write once run anywhere

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Bytecode :- It is an intermediate representation of JAVA source code that understand by JVM

Bytecode is the magic key of JAVA

Bytecode is Not a executable code

Bytecode converted into executable code by JVM

JAVA is a platform independent but JVM is a platform dependent

---

JAVA :- JAVA is a General Purpose, Robust (Strong), Platform independent, truly object oriented high leved Computer programming language and a Platform.

JAVA has predefine classes Using them we can create a new program so JAVA is a Computer Programming language

Since, JAVA has its own runtime environment so JAVA is a platform

Platform :- Any hardware or software environment on which something is executed, called Platform