- Day 7   23/08/2025 → Saturday.
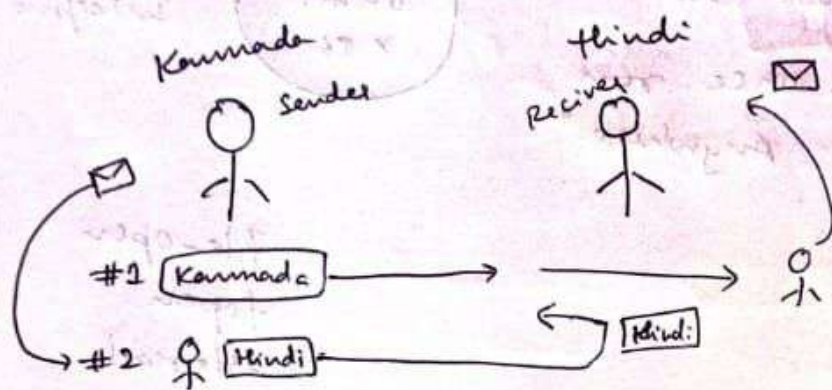
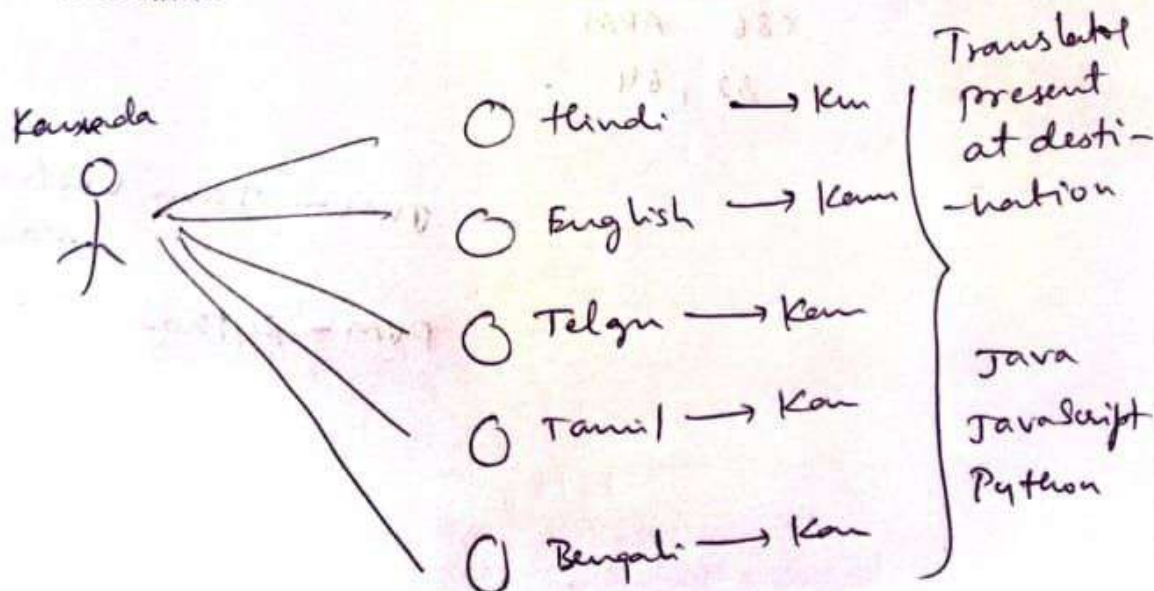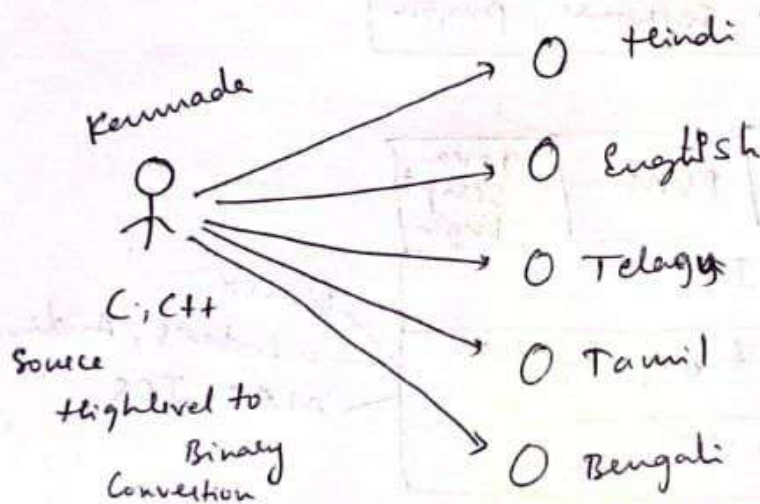write once, Run Anywhere

⇒ understand compiled VS Interpreted languages.

* Java, Python, JavaScript follows write once
and Run Anywhere concept.

Kannada
Sender

Hindi
Reciver

#1 [Kannada] →
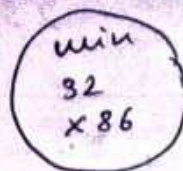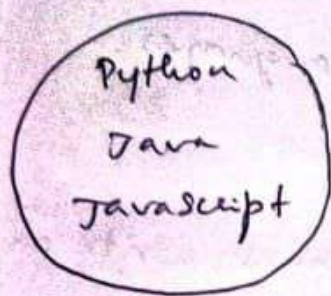#2 ♀ [Hindi] ←   [Hindi]

option
① Java, Python
    JavaScript

Highlevel → Binary
              Reciver

option
② C C++

sender
Highlevel →
              Binary

Kannada
♂
C, C++
Source
Highlevel to
        Binary
Convertion

O Hindi
O English
O Telagu
O Tamil
O Bengali

Kannada
♀

O Hindi → Kn
O English → Kann
O Telgu → Ken
O Tamil → Kan
O Bengali → Kan

Translated
present
at desti-
-nation

Java
JavaScript
Python

Python
Java
Javascript

win
32
x86

Java &
Java Script

win
64
x86

Python
Interpreter

win
ARM

Python
Interpre.

Linux
6ubit
x86
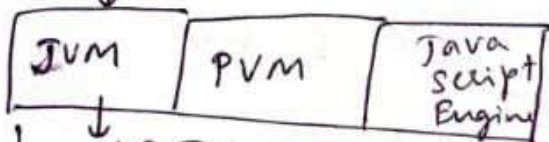
Python
Interpre

By this kind we can achive "write once run Anywhere"

file-open
fopen
file read
fread

HLL

Code, Software, program

JVM | PVM | Java Script Engine

APIs

operating System

Hardware

X86   ARM

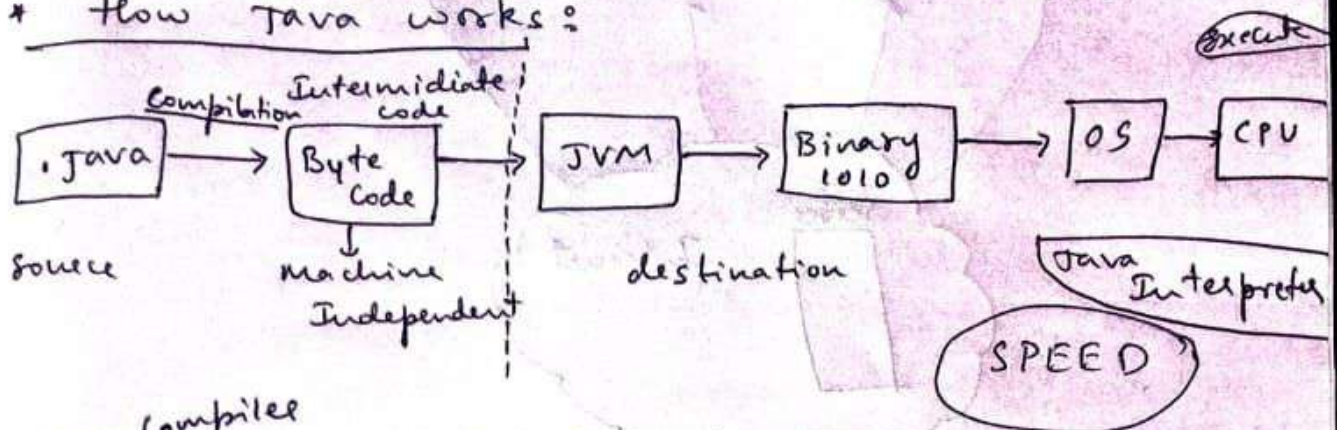. 32 , 64

Linux
windows, Android
MAC, IOS

JVM — Java virtual machine

PVM — Python virtual Machine

* The written Java (or) python code which has to match with API function the mapping will done with the help of JVM (or) PVM

* How Java works:

Compilation → Intermidiate code

| .Java | → Byte Code | → JVM | → Binary 1010 | → OS | → CPU |

Source   Machine Independent   destination   Java Interpreter   Execute
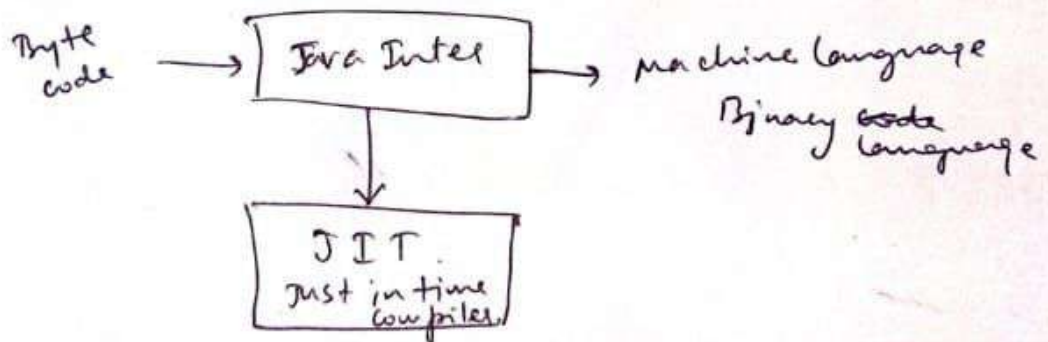
SPEED

* Java --Compiler--> Highlevel to Bytecode

* the drawback of Java is it slower than C, C++

Rocket launch
Moon landing
driving car's navigation
} These all done with C, C++. High speed. **

* python language is developed in C language

* | Java Interpreter | → convert Byte code to machine language Binary language.

Byte code → | Jva Inter | → machine language Binary code language

↓

| JIT.
Just in time compiler |

* what is JavaScript :

It is famous for Browser

→

| Safari [J] | IE [J] | Chrome [J] | Fire fox [J] |

Java Script Engine

Server   Internet

Mobile Application

Java Script → Android
→ iOS
→ 80% same

REACT.   Frontend
⇓
node.js   Backend

Python

```
┌─────────┐        ┌──────────────┐
│  Print  │ ─────→ │ Python.exe   │
└─────────┘        │ Interpreter  │
   HLL             └──────────────┘
```

Mapping done
with API

How Python code run in your System

```
┌──────────┐
│  Binary  │
└──────────┘
     │
     ▼
┌──────────────┐
│  Operating   │
│  System      │
└──────────────┘
     │
     ▼
┌──────────┐      ┌──────────┐
│   CPU    │ ───→ │  Driver  │
└──────────┘      └──────────┘
     │                 │
     ▼                 │
┌──────────┐           │
│  Screen  │ ←─────────┘
└──────────┘
```

* How LED's work's

* Adharr and UPI Backend is built by Java proopamming Conguage.