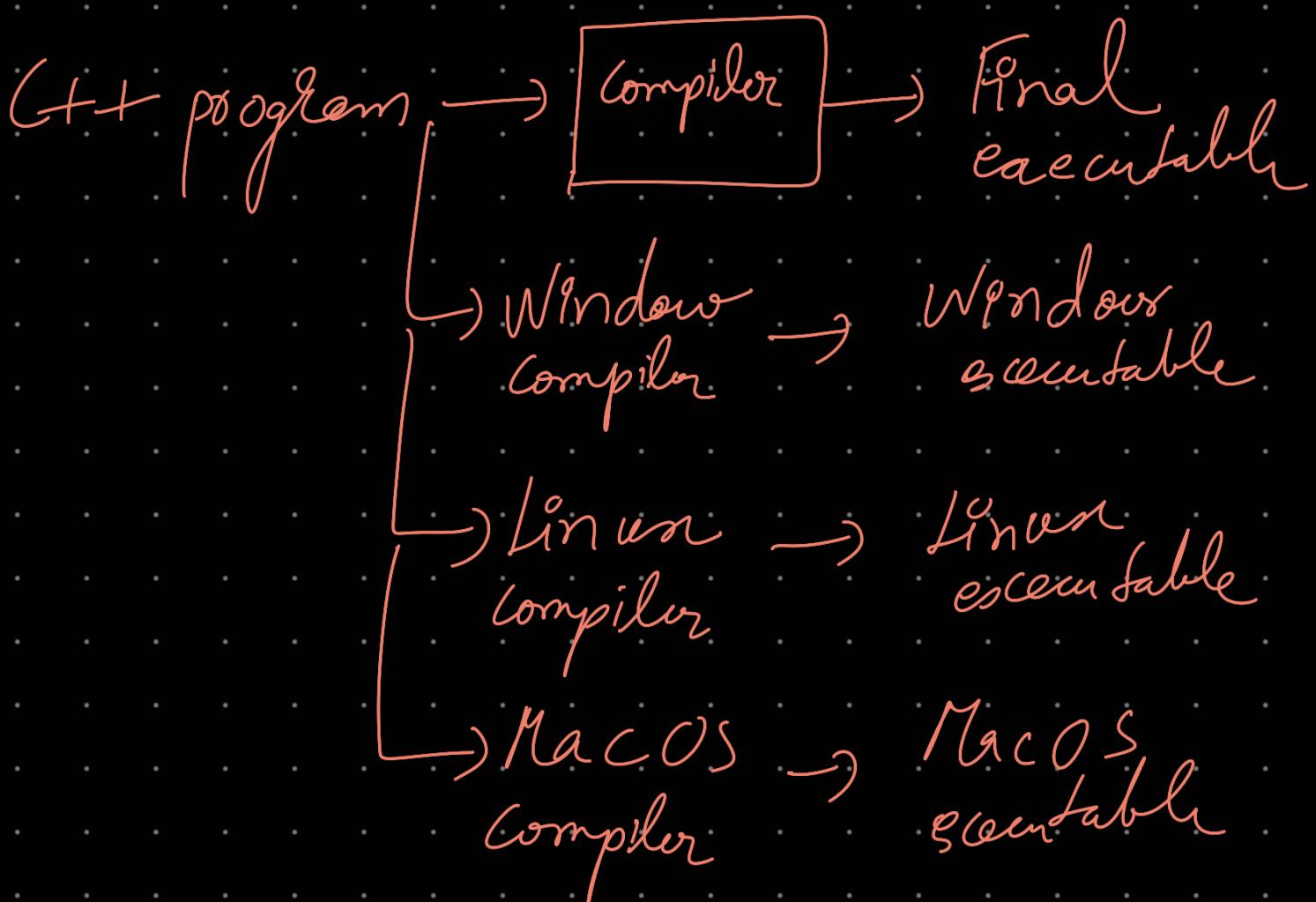


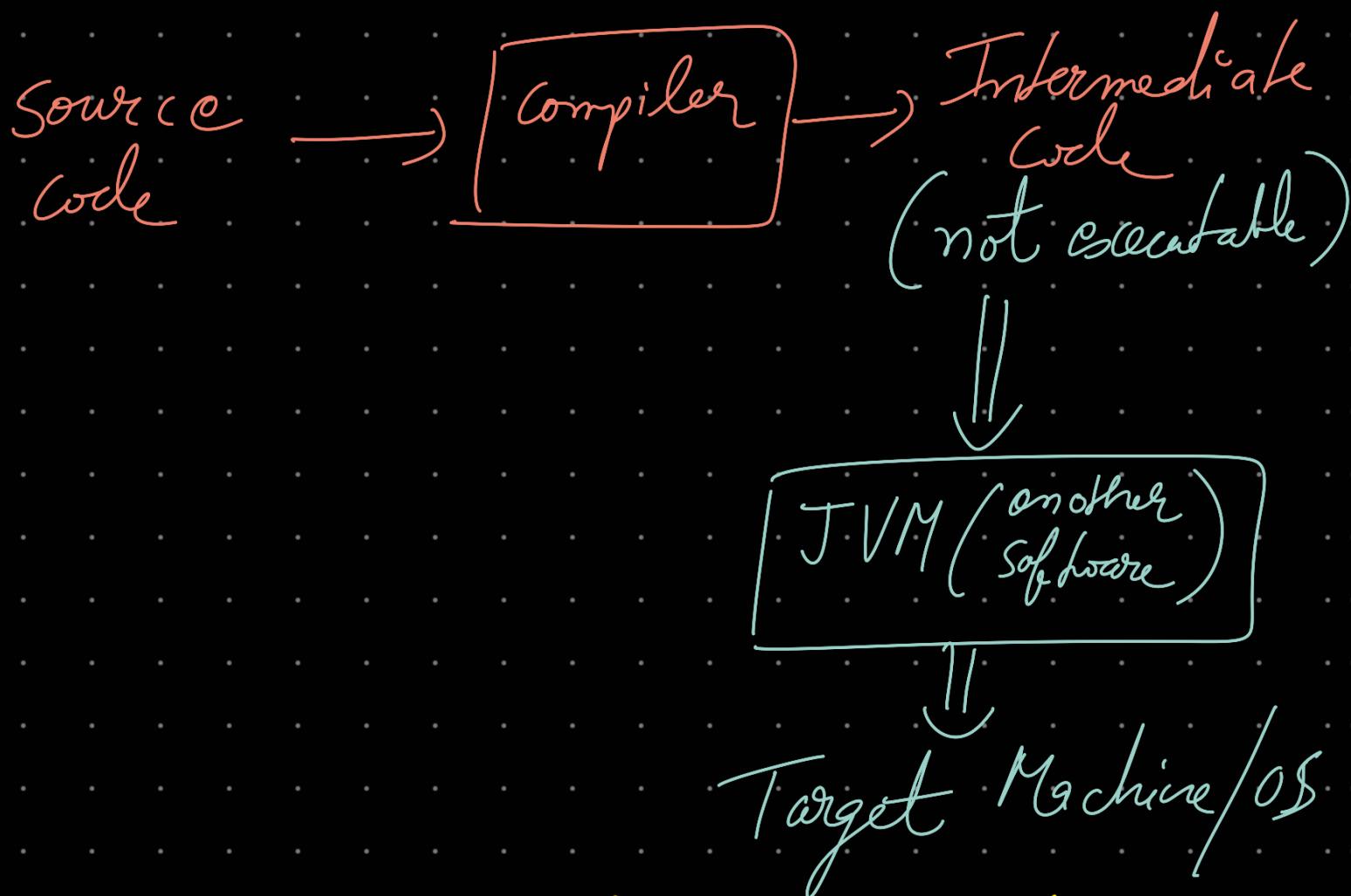
# [Why Java?]



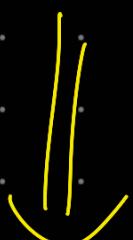
\* If, we compile in one Machine with some OS → we can't use that executable in another Machine with different OS

↳ Problem of portability

## Solution



① This is what Java does,  
we can compile the source code  
in one M/C and run that code  
in another M/C



Achual responsibility of converting to Machine Instruction set is of JVM → another software.

② Easier Syntax with Memory

Management done by JVM

↳ Developers don't need to explicitly write code in  $\text{gb}$  source code

③ Strictly Object Oriented

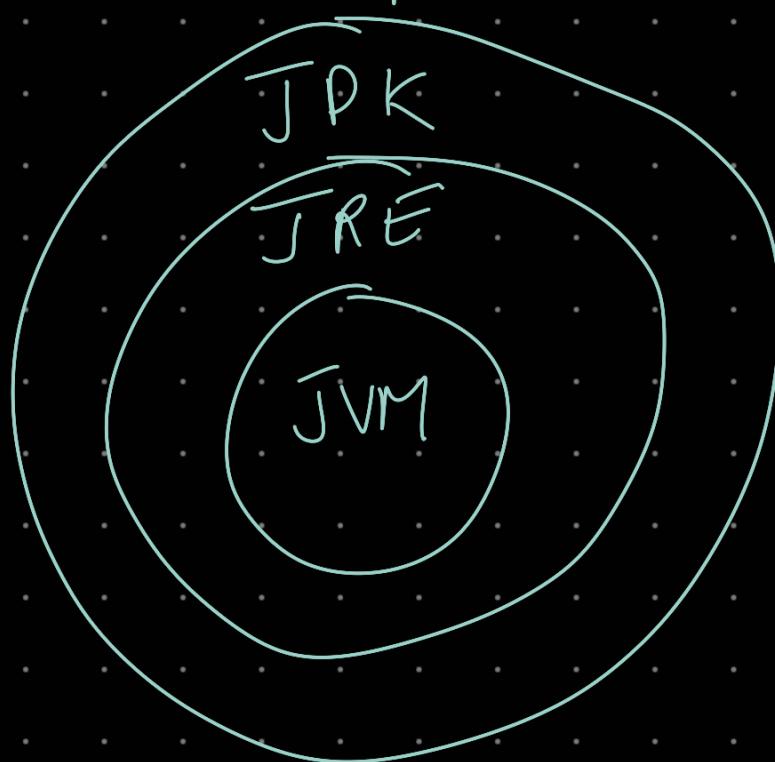
↳ C++ doesn't enforce this,

↳ we can write pure functional program in C++ or pure OOP or mix of both

④ Java Ecosystem and Many library support for GUI apps, Networking apps as well as Android apps.

[Understanding Execution of Java source code]

3 Main Components



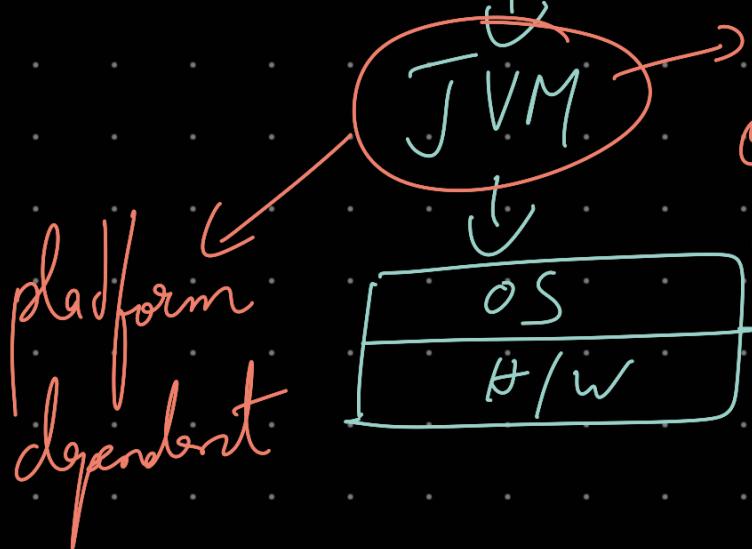
① JVM → Software

Source code

Platform  
Independent

Compiler → By code

class  
file



For each  
H/W arch  
e.g. x86, ARM  
JVM  
needs  
to be  
written

\* JVM has JIT compiler

Just in time

\* Contains Garbage collector code  
running on different thread

↓

JVM process

GC thread

Main thread

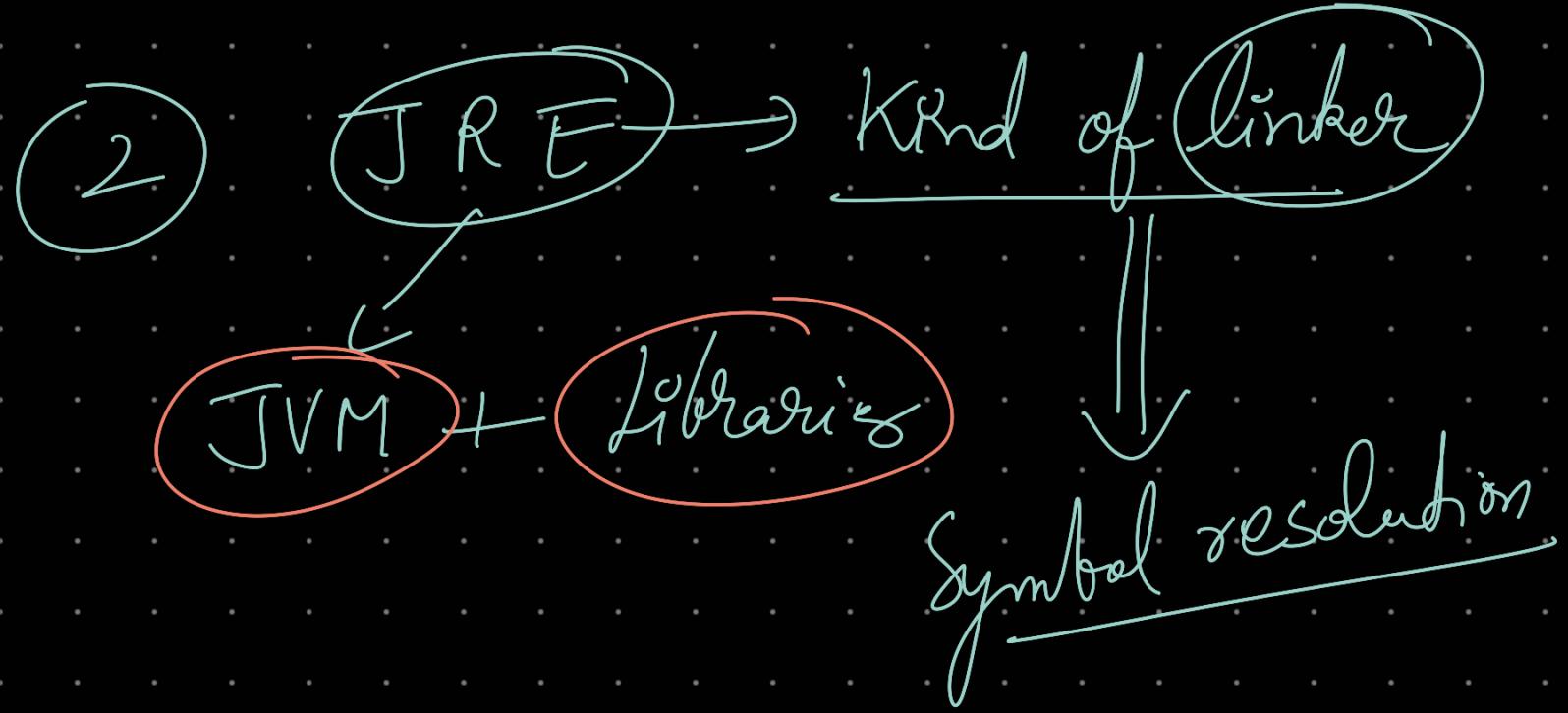
Both GC needs to free up  
memory allocated by Main thread,

It has to implement locks and  
can lead to pause of Main thread

Here our program  
pauses

\* JVM provides heap, stack (i.e  
process memory Map)

\* It runs Main Method or starting  
point



## 1. Java SE (Standard Edition)

- ↳ Core Libraries
- ↳ JVM
- ↳ Compiler, Debugger

## 2. Java EE (Enterprise edition)

- ↳ For large scale Application
- ↳ Servlets
- ↳ EJB
- ↳ JPA
- ↳ JMS
- ⋮

## 3. Java ME (Micro Edition)

- ↳ Subset of Java SE + API  
for Mobile, embedded systems

- \* File can have only 1 public class, class Name == File Name
  - ↳ Compiler is designed in this way to avoid ambiguity.
  - ↳ Single Responsibility principle
- ↳ Part of Java Design Decision

- \* Why Main Method is public static void ?
- \* public → can be invoked by JVM
- \* static → Directly accessed without object creation

R void → Don't return value

public static void main(String arg[])

Command line  
arguments