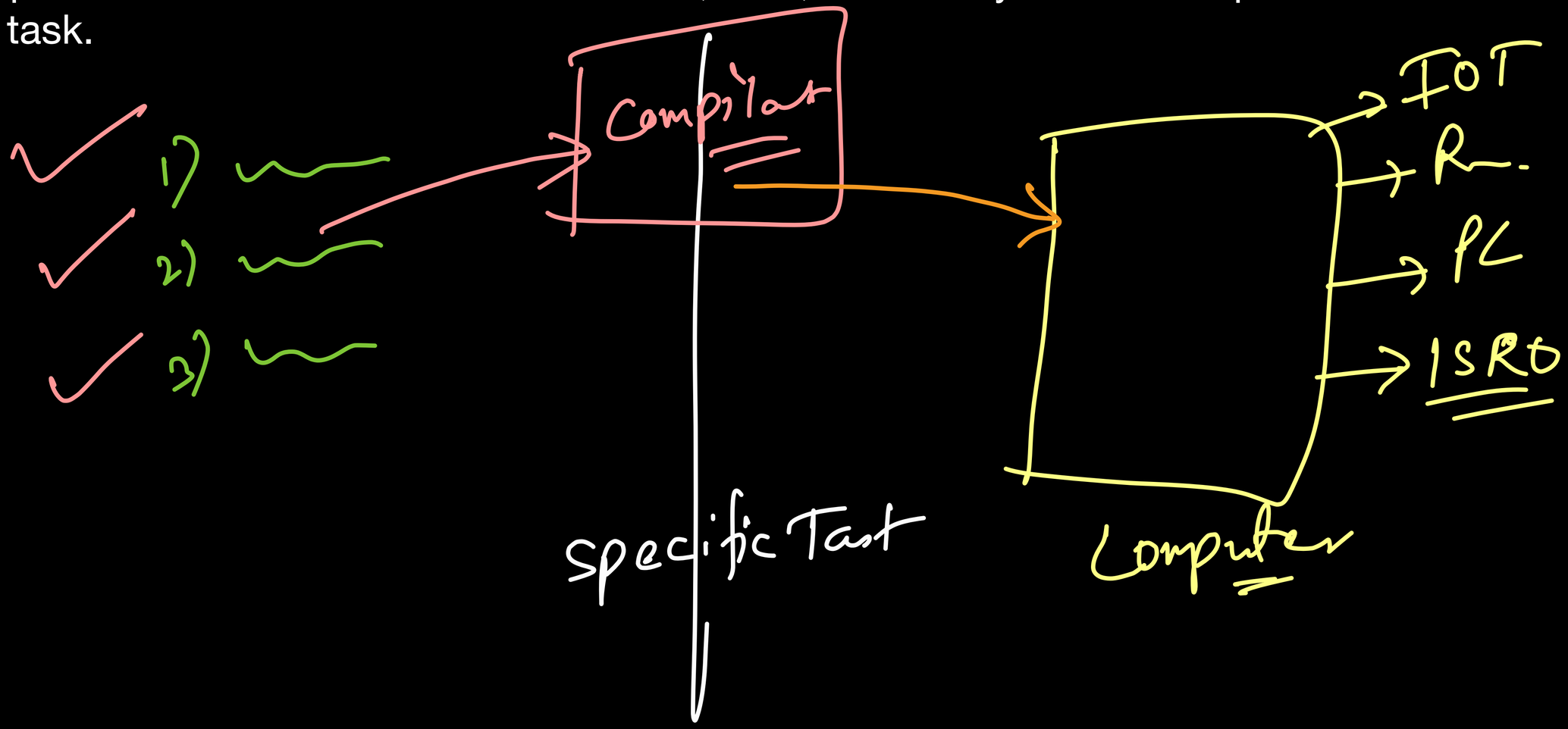
Introduction to Java

- Lakshay

Programming Language

1. Medium used by programmers to communicate with computers.
2. Used to provide set of instructions written in C, C++, Java or Python etc. to perform a specific task.

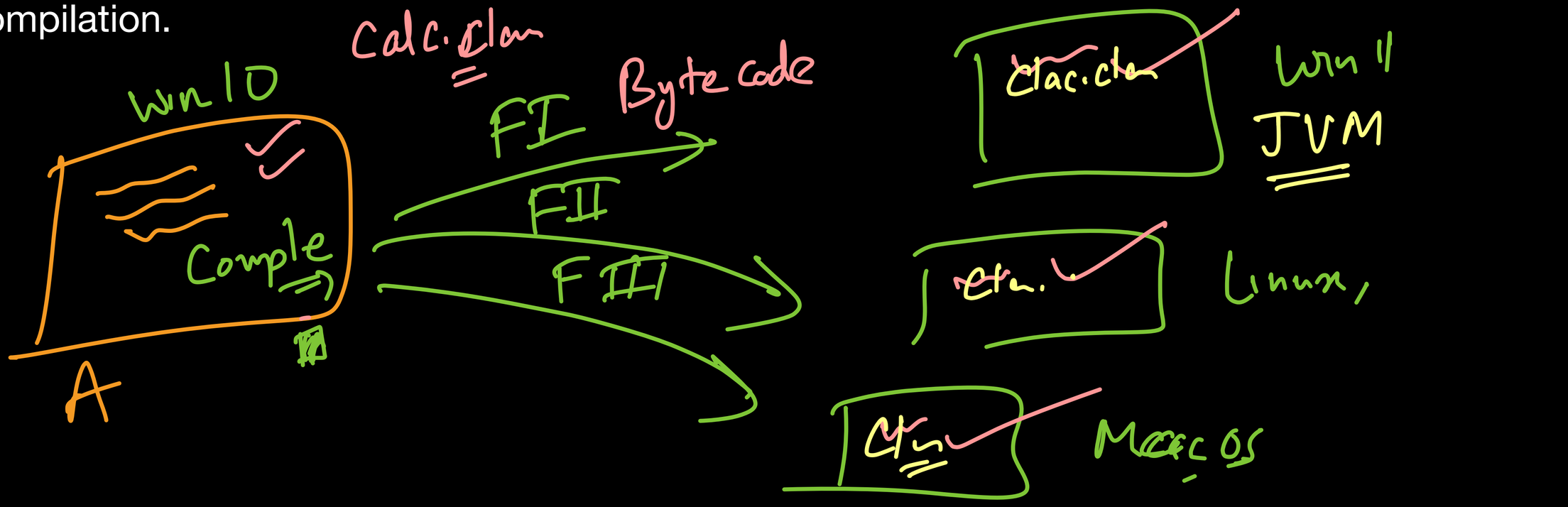


Brief history of Java

1. Created by James Gosling and Patrick Naughton, employees of Sun Microsystems, with support from Bill Joy, co-founder of Sun Microsystems.

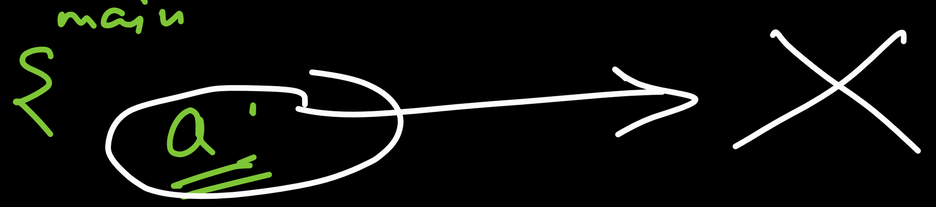
What is Java?

1. Java as a high-level, class-based, object-oriented programming language.
2. **Design goal** of allowing application developers to **"write once, run anywhere" (WORA)**, meaning compiled Java code can run on all platforms that support Java without the need for recompilation.

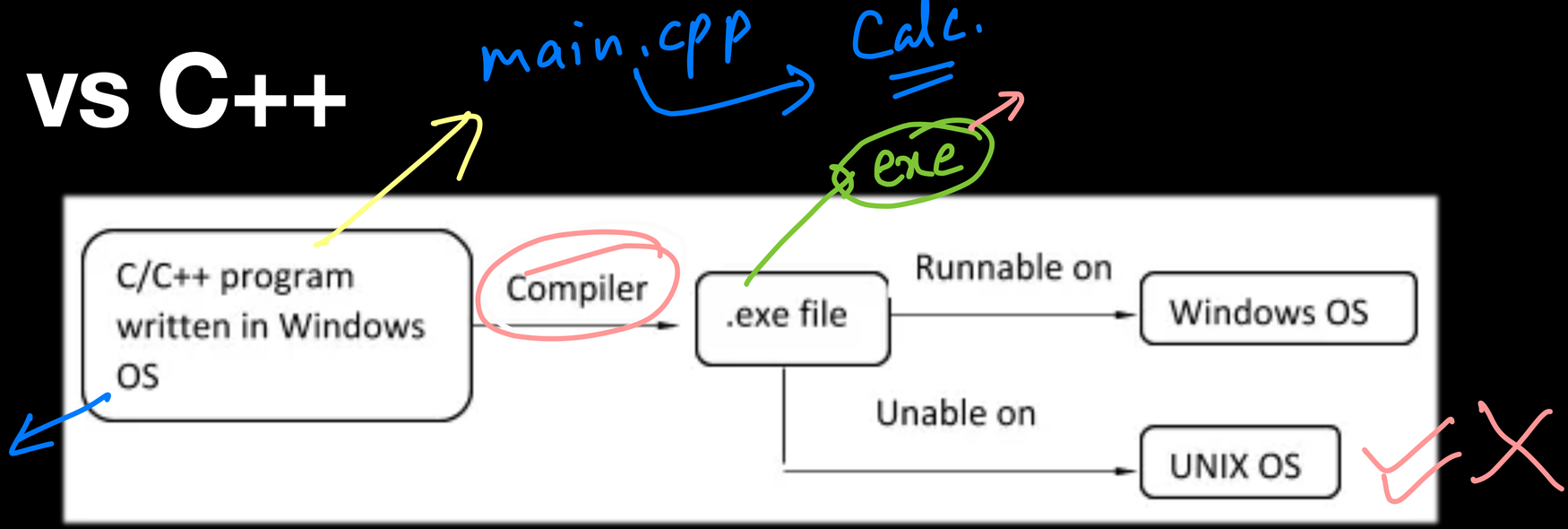


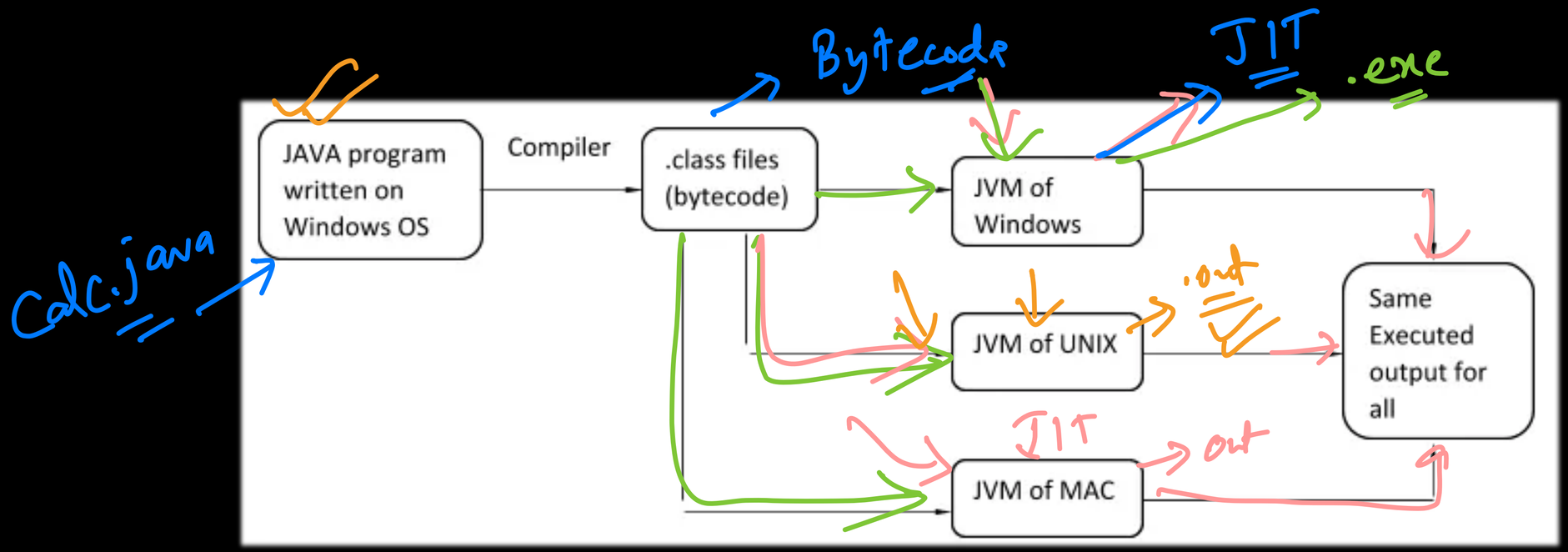
Key Features of Java

1. **Platform Independent:** Java code is compiled into bytecode, which can run on any device equipped with a Java Virtual Machine (JVM).
2. **Object-Oriented:** Discuss the basics of object-oriented programming (OOP) principles such as encapsulation, inheritance, and polymorphism as they apply to Java.
3. **Performance:** Even though Java is platform independent, it's performance is still good, all thanks to Just-In-Time (JIT) Compilation.
4. **Garbage Collection:** JVM keeps track of objects the program creates, and when it determines that an object is no longer being used, it removes it and frees up memory space.



Java vs C++


main.cpp
Calc.
exe
C/C++ program written in Windows OS
Compiler
.exe file
Runnable on
Windows OS
Unable on
UNIX OS


Bytecode
JIT
.exe
Calc.java
JAVA program written on Windows OS
Compiler
.class files (bytecode)
JVM of Windows
JVM of UNIX
.out
Same Executed output for all
JIT
JVM of MAC
out

Java in the Real World

-Java to illustrate its versatility and widespread use.

1. Desktop applications
2. Web applications
3. Enterprise solutions
4. Mobile applications (Android)
5. Embedded systems.