Session 1

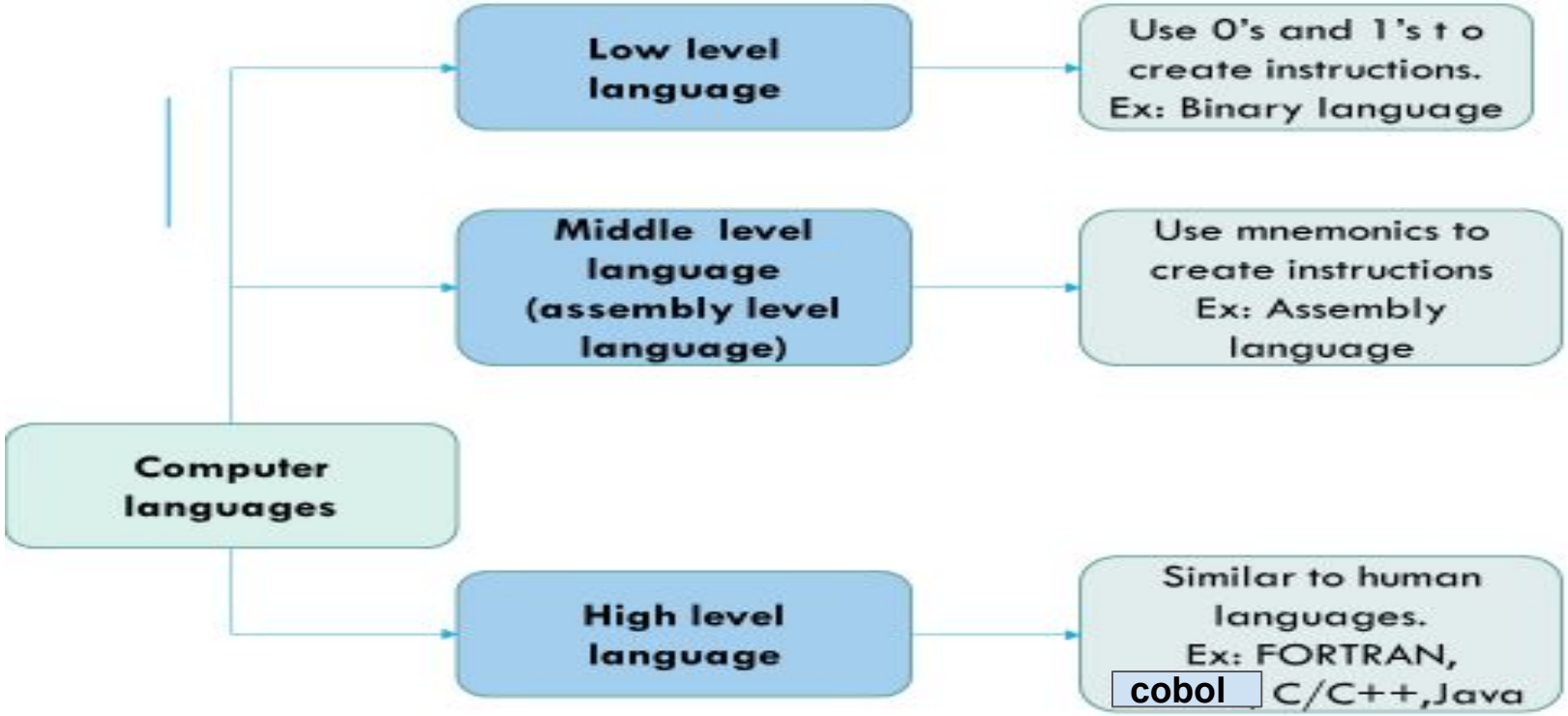
- Programming language
- Types of programming language
- Platform dependent language
- Platform Independent language
- What is Java
- History of Java
- Types of Java Application
- Java Platforms

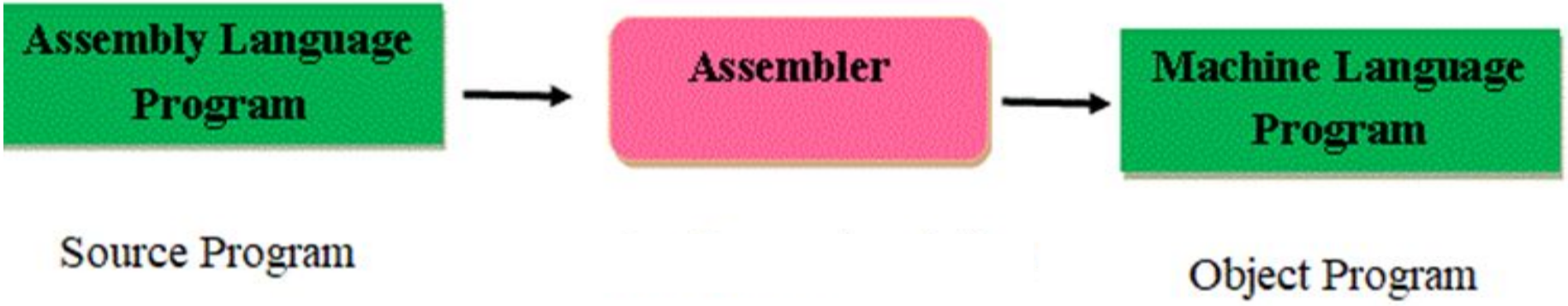
PROGRAMMING LANGUAGE

Definition: The languages used to communicate with a computer to perform a specific task is known as programming languages.

Types of programming languages

- **Low Level language**: Also known as machine level language. A language which is understandable, readable by a machine. Machine understands only binary language i.e. 0's and 1's. which is easy for a computer to understand but not for humans.
- **Assembly Level language**: Language understandable by microprocessor is known as assembly level language.
- **High Level language**: The languages which is easy to read, write and understand the instructions is known as High level language.
  The high level language is understandable by the machine with the help of a software called **compiler**.

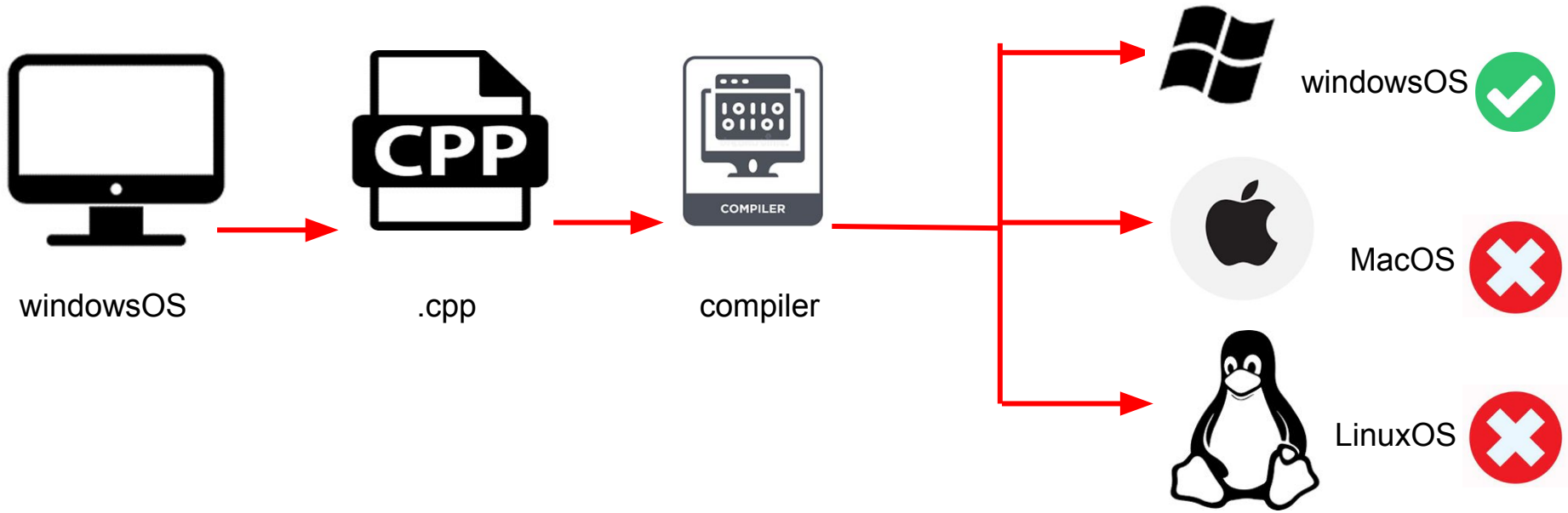

Computer languages
Low level language
Use 0's and 1's t o create instructions. Ex: Binary language
Middle level language (assembly level language)
Use mnemonics to create instructions Ex: Assembly language
High level language
Similar to human languages. Ex: FORTRAN, cobol C/C++,Java


Assembly Language Program
Assembler
Machine Language Program
Source Program
Object Program


High Level Language Program
Compiler
/ Interpreter
Machine Language Program
Source Program
Object Program

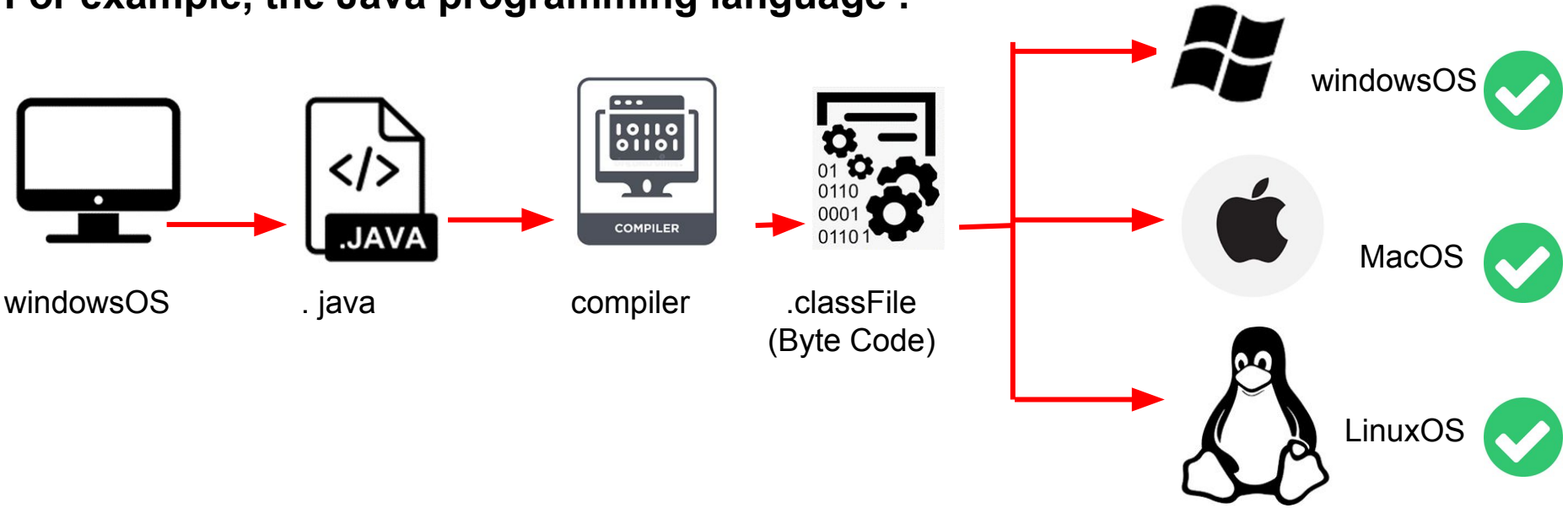
PLATFORM DEPENDENT LANGUAGES

A software developed on one platform and executed on the same platform is known platform dependent.



PLATFORM INDEPENDENT LANGUAGES

Software that can run on a variety of hardware platforms or software architectures. Platform-independent software can be used in many different environments, requiring less planning and translation across an enterprise. For example, the Java programming language .



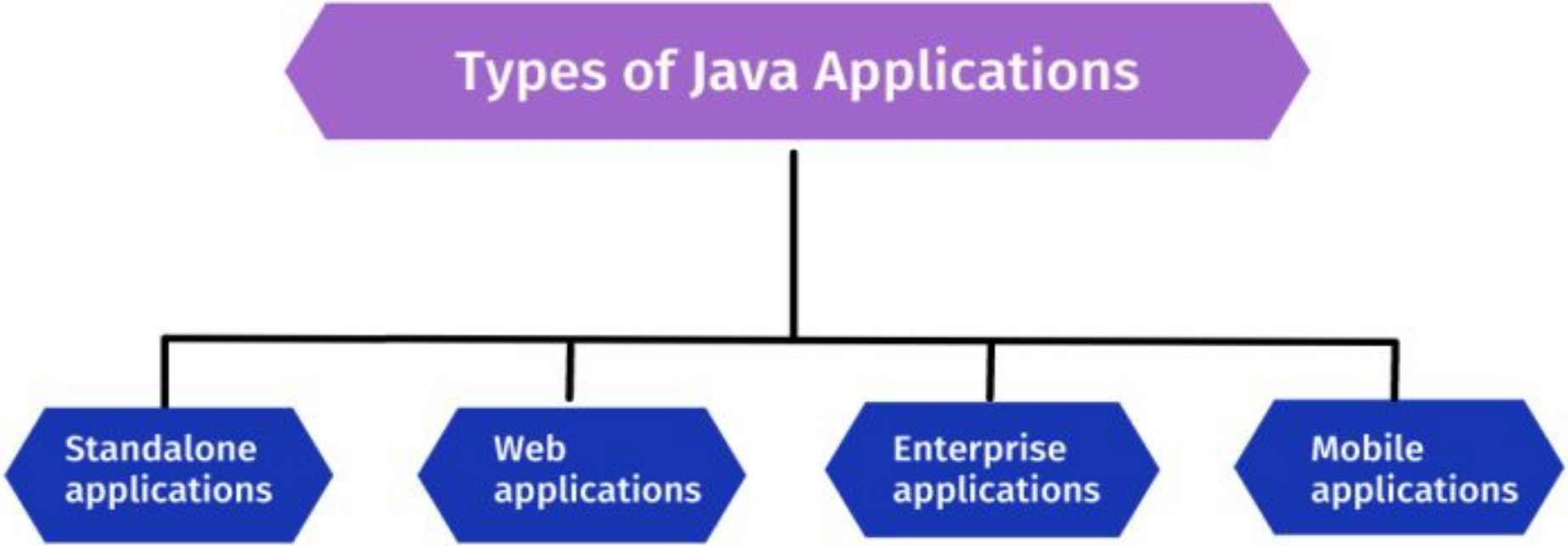
What is Java?

1. **Programming language:-** Java is a High level Programming Language. It derives much of its syntax from C and C++, but it has free low level facilities than either of them.

2. **Platform:-** Java is a Platform because it has its own runtime environment that is JVM(Java Virtual Machine). JVM provides a platform which accepts the byte code and executes on the machine.

History of Java

Year	Development
1990	Sun Microsystems decided to develop a special software for consumer electronics devices. A Team has been formed to undertake this task. James Gosling was the head of that team.
1991	The team announce a new language called "Oak"
1992	The team known as "Green Project" team, have demonstrated the use of language on a list of home appliances.
1993	World Wide Web (WWW) has given support to Green Project Team and they have started thinking for development of Web Applets
1994	A new Web browser called HotJava has been developed by the Team to run applets.
1995	Oak was rename to Java due to some legal problems.
1996	Sun release Java Development Kit 1.0 (JDK 1.0)


Types of Java Applications
Standalone applications
Web applications
Enterprise applications
Mobile applications

- Standalone Application are also known as desktop applications or window-based applications. These are traditional software that we need to install on every machine. Examples of standalone application are Media player, antivirus, etc. AWT and Swing are used in Java for creating standalone applications.
- An application that runs on the server side and creates a dynamic page is called a Web application. Currently, Servlet, JSP, Struts, Spring, Hibernate, JSF, etc. technologies are used for creating web applications in Java.
- An application that is distributed in nature, such as banking applications, is called an Enterprise application. It has advantages like high-level security, load balancing, and clustering. In Java, EJB(Enterprise Java Bean) is used for creating enterprise applications.
- An application which is created for mobile devices is called a Mobile application. Currently, Android and Java ME are used for creating mobile applications.

Java Platforms

There are four different types of Java programing language platforms:

1. Java Platform, Standard Edition (Java SE): Java SE's API offers the Java programming language's core functionality. It defines all the basis of type and object to high-level classes. It is used for networking, security, database access, graphical user interface (GUI) development, and XML parsing.

2. Java Platform, Enterprise Edition (Java EE): The Java EE platform offers an API and runtime environment for developing and running highly scalable, large-scale, multi-tiered, reliable, and secure network applications.

3. Java Programming Language Platform, Micro Edition (Java ME): The Java ME platform offers an API and a small-footprint virtual machine running Java programming language applications on small devices, like mobile phones.

4. Java FX: JavaFX is a platform for developing rich internet applications using a lightweight user-interface API. It user hardware-accelerated graphics and media engines that help Java take advantage of higher-performance clients and a modern look-and-feel and high-level APIs for connecting to networked data sources.