Basics of JAVA

* Java is a programming language and a platform.
* Any hardware or software environment in which a program runs is called platform.

Uses

1. Desktop Application (Acrobat Reader, Media player)
2. Web Application
3. Enterprise Application (Banking apps)
4. Mobile
5. Embedded System
6. Smart Card
7. Robotics
8. Games

Types of Applications

1. Standalone application
   Also called as desktop application or window-Based applications.
2. Web Application
   An application that runs on the server side and creates dynamic page is called web Application.
3. Enterprise Application
   It is useful in Banking operations for high level security, Load Sharing and clustering.
   EJB - Enterprise Java Bean.

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④ Mobile Application
Android and Java ME (Java platform Microed

Q1 Write in Brief the History of Java?

Ans1 ① Java team members also known as Green team, develope a language for digital devices such as set-top boxes, Television etc.

② Currently, Java is used in mobile devices, internet programming, games and e-bussiness solutions etc.
(a) James Gosling
(b) Mike Sheridan
(c) Patrick ~~Norton~~ Naughton
Started Java research in 1991 (June).

③ It was also called as GREENTALK by James gosling and used extension (.gt)

④ Later on, It was called as OAK. OAK is a symbol of strength and chosen as a national tree in many countries.

⑤ Acc. to James Gosling, JAVA was one of the top choices along with SILK, since, JAVA was unique so most of ~~true~~ team members chosed JAVA.

⑥ Originally developed by James Gosling, at Sun Microsystem which is now subsidiary of Oracle corp., released in 1995.

JAVA Version History

JDK (Java Deve. Kit)

J2SE (Java to Standard Editi.) Code Name

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1. JDK α & β (1995)
2. JDK 1.0 (23rd Jan, 1996) - Oak
3. JDK 1.1 (19th Feb, 1997)
4. J2SE 1.2 (8th Dec, 1998) - Playground
5. J2SE 1.3 (8th May, 2000) - Kestrel
6. J2SE 1.4 (6th Feb, 2002) - Merlin
7. J2SE 5.0 (30th Sep, 2004) - Tiger
8. JavaSE 6 (11th Dec, 2006) - Mustang
9. JavaSE 7 (28th July, 2011) - Dolphin
10. JDK 13

Features of Java (Java Buzzwords)

→ Simple
→ Object-oriented
→ Platform Independent
→ Secured
→ Robust (Strong)
→ Architectured Neutral
→ Portable
→ Dynamic
→ Interpreted
→ High performance
→ Multi-threaded
→ Distributive

Simple

1. Syantax is based on C++ so it is similar.
2. It removed rarely used features like explicit pointers, operator overloading etc.
3. NO need to remove unreferenced object because there is automatic garbage collection in JAVA.

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Object Oriented

→ Object has 3 main characteristics:
(1) Identity
(2) State
(3) Behaviour

Identity: The name associated with obj. helps in identifying the Object.

State: The state of an object.

Behaviour: It means what the object or what is capable of doing.

Data Abstraction & Encapsulation

Encapsulation is a way of combining data and functions into an independent entity called class.
Class is a data type and it can be used to create objects of its type.

Basic concepts of OOPS are:
(a) Object
(b) Class
(c) Inheritance
(d) Polymorphism
(e) Abstraction
(f) Encapsulation

Platform - Independent

It has 2 components:
(1) Runtime Environment.
(2) Application programming interface (API)

JVM - Java Virtual Machine

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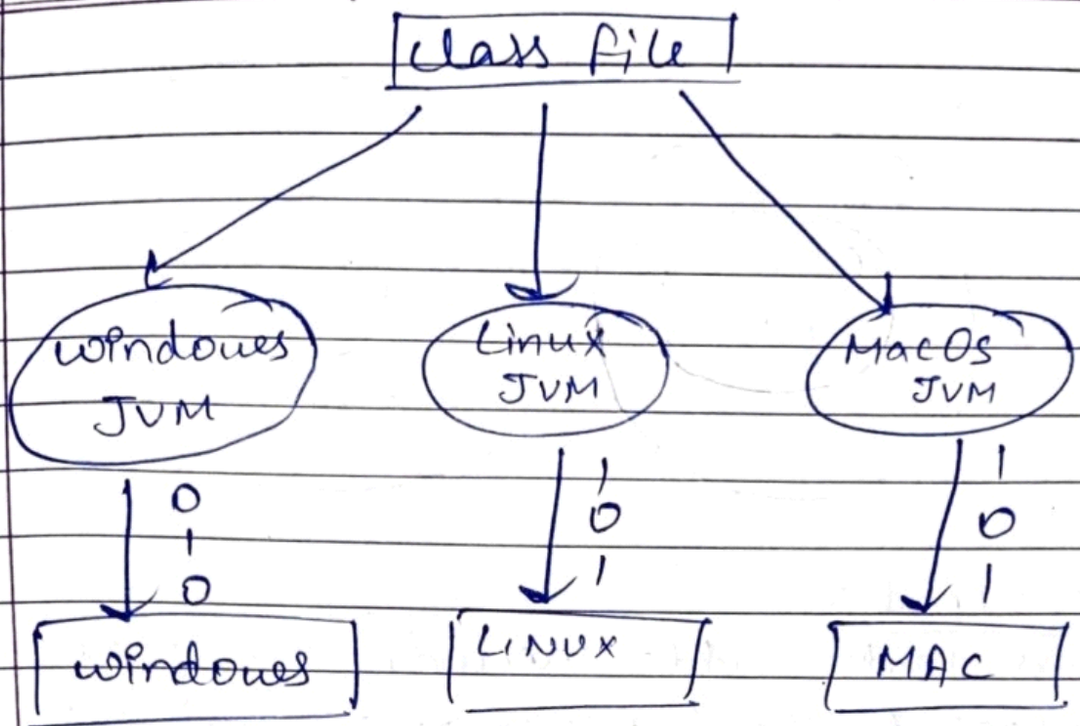
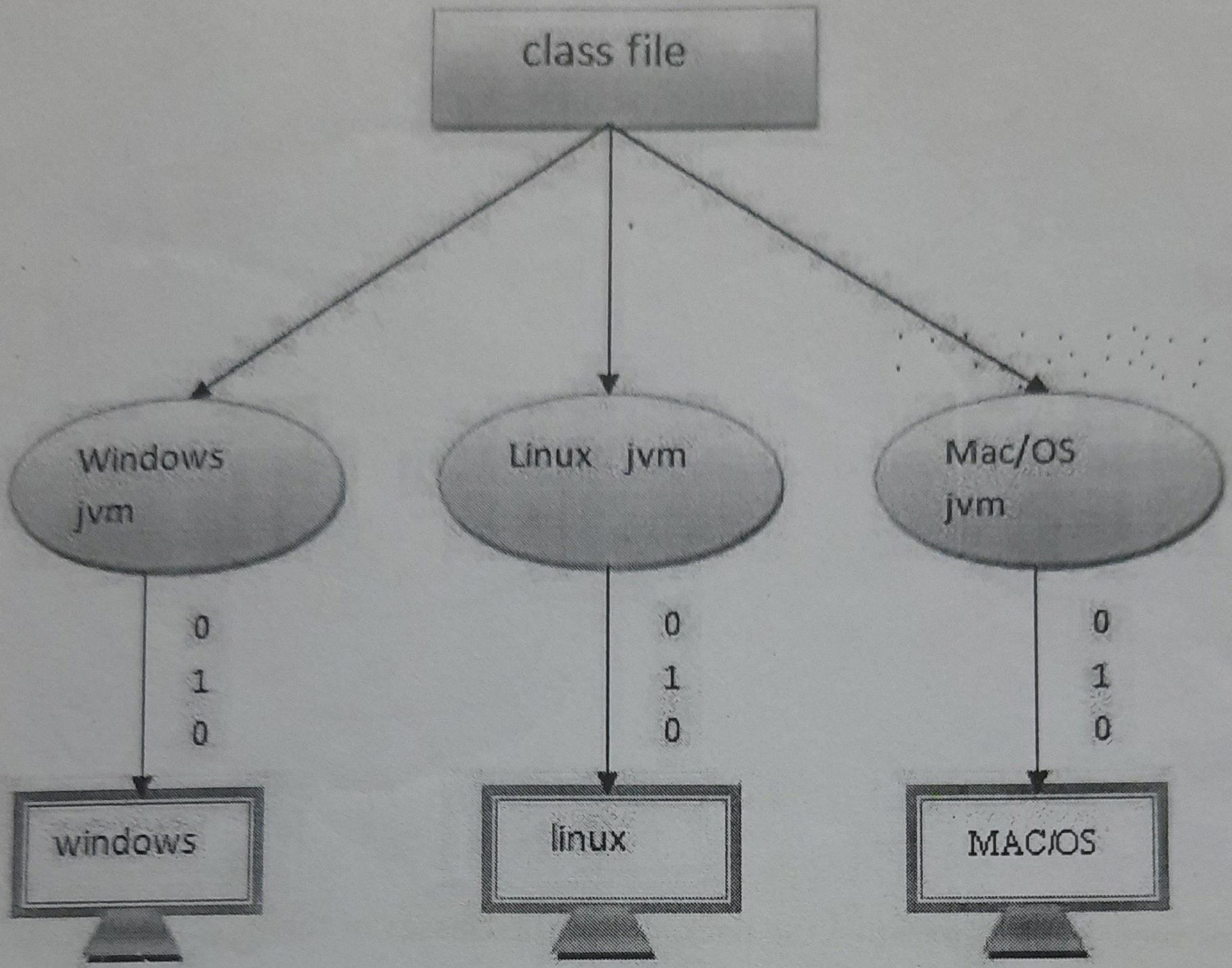


Java code is compiled by the compiler and converted into bytecode

Note: Bytecode is a platform-independent code because it can run on multiple platforms i.e WORA (Write Once Run everywhere)

Secured
- → No explicit pointers
- → Programs runs inside virtual Machine Box.
- → Bytecode verifier checks the code fragments for illegal code.
- → security manager determines what resources a class can access like reading or writing to the disc etc.

Robust
- → It has strong memory management.
- → Lack of pointers avoids security problem
- → Automatic garbage collection.
- → Exception handling, Type checking mechanism etc.


class file
Windows
jvm
Linux jvm
Mac/OS
jvm
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1
0
0
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0
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1
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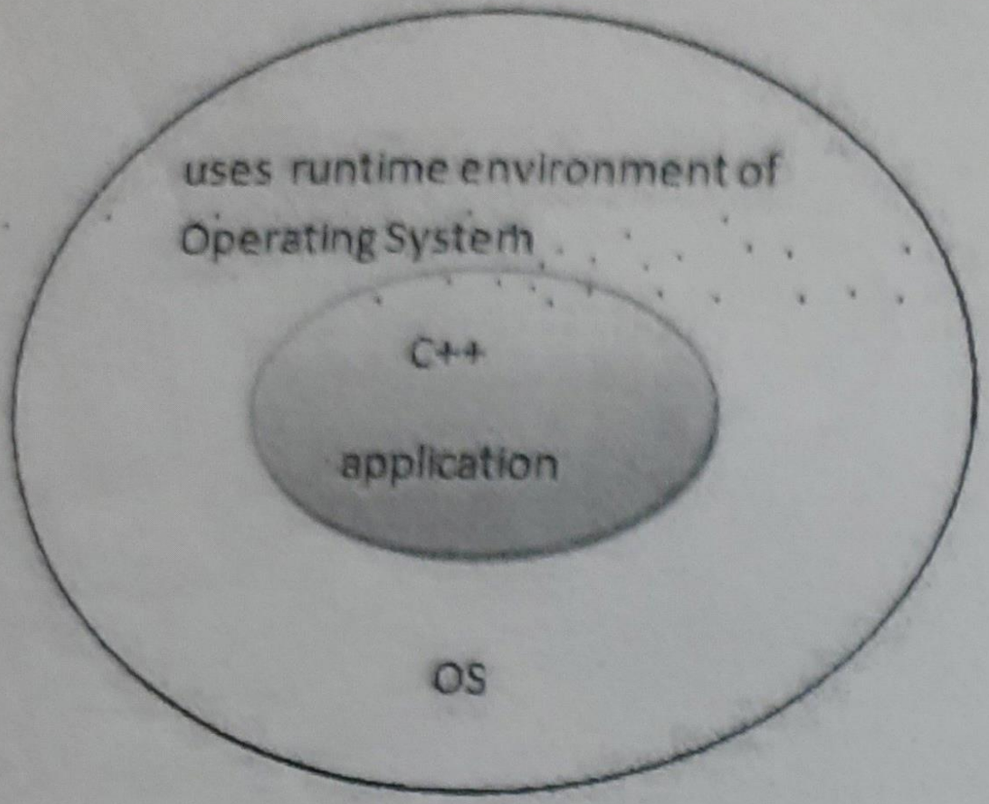
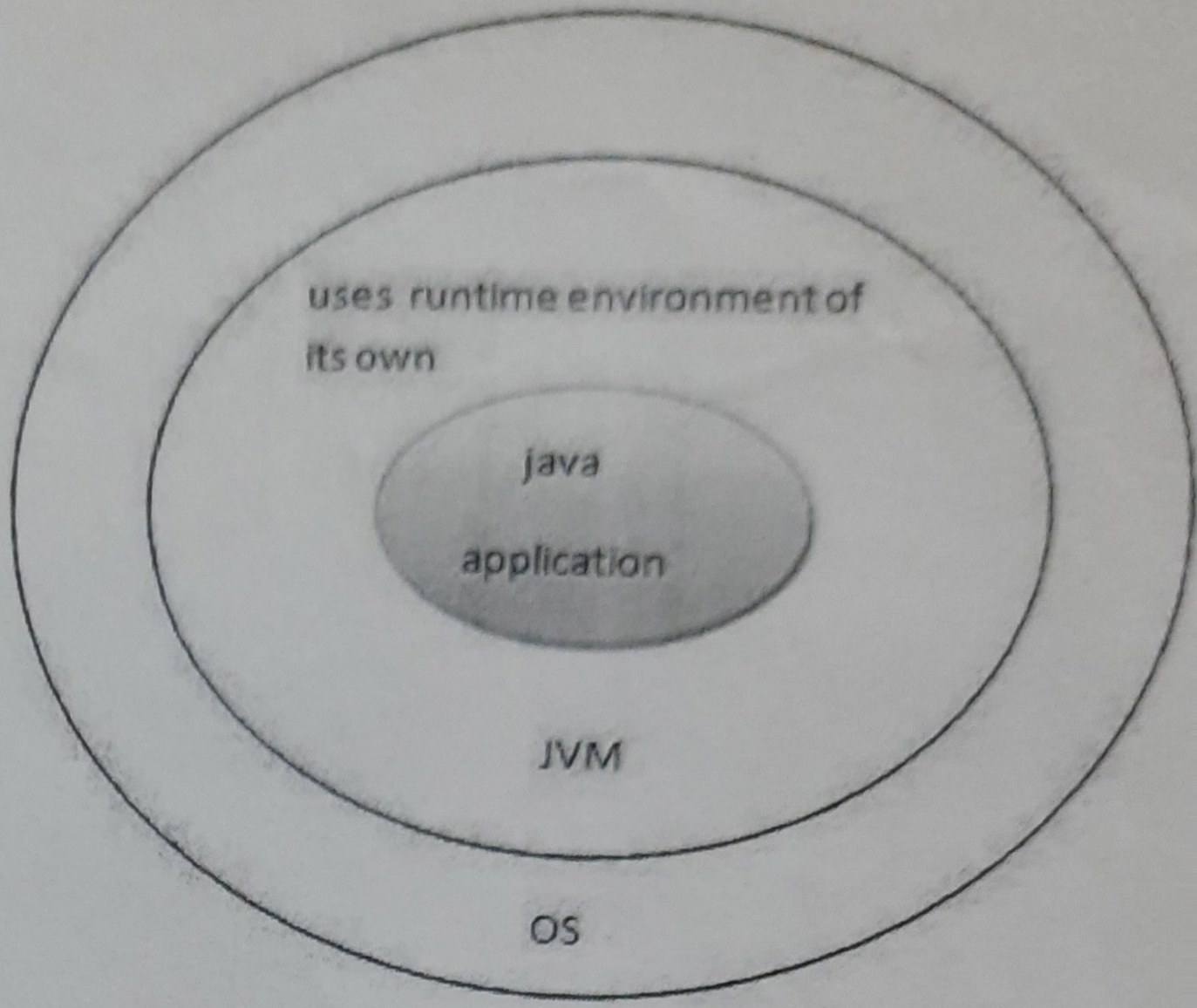
windows
linux
MAC/OS


uses runtime environment of
Operating System
C++
application
OS


uses runtime environment of
its own
Java
application
JVM
OS