



GOVERNMENT OF ANDHRA PRADESH COMMISSIONERATE OF COLLEGIATE EDUCATION



Features of Java and Program Structure

Java
(Computer Science
/Applications)

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Objectives

- Features of Java
- Sample Program Structure



Features of Java

Simple

Secured

Platform Independent

Robust

Portable

Architecture Neutral

Dynamic

Interpreted

High Performance

Object Oriented

Multi Threaded

Distributed

1. Simple



User friendly Syntax

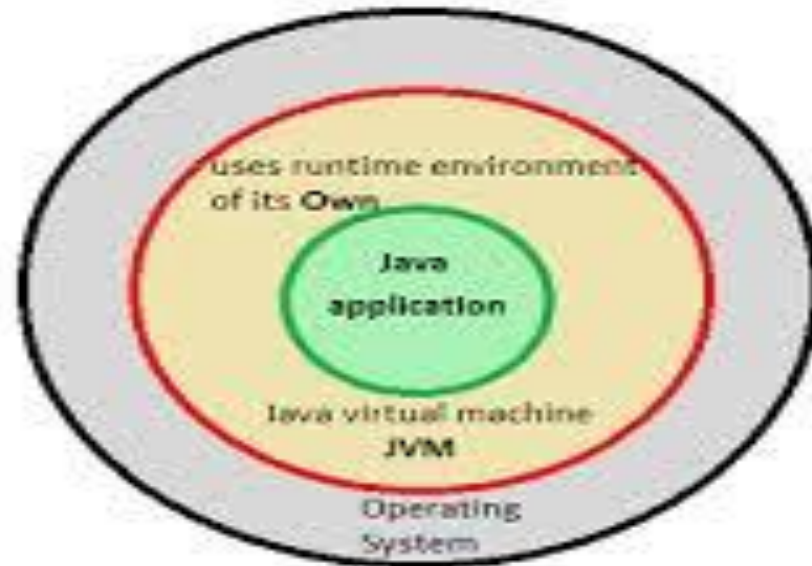
There is automatic Garbage collection.

No complicated features like operator overloading, pointers etc., as in C and C++

2. Secured



Java is secured as it uses runtime environment of its own with almost no interaction with System OS.



2. Secured (contd..)

The components Classloader, Bytecode Verifier and Security Manager of Java makes it much more secure.

The Classloader loads the Java Classes into JVM dynamically. It separates the package for the classes of the local file system from those that are imported from network sources to provide security.

(contd..)

The Bytecode Verifier checks the code fragments to identify illegal code, if any, which violate access right to objects.

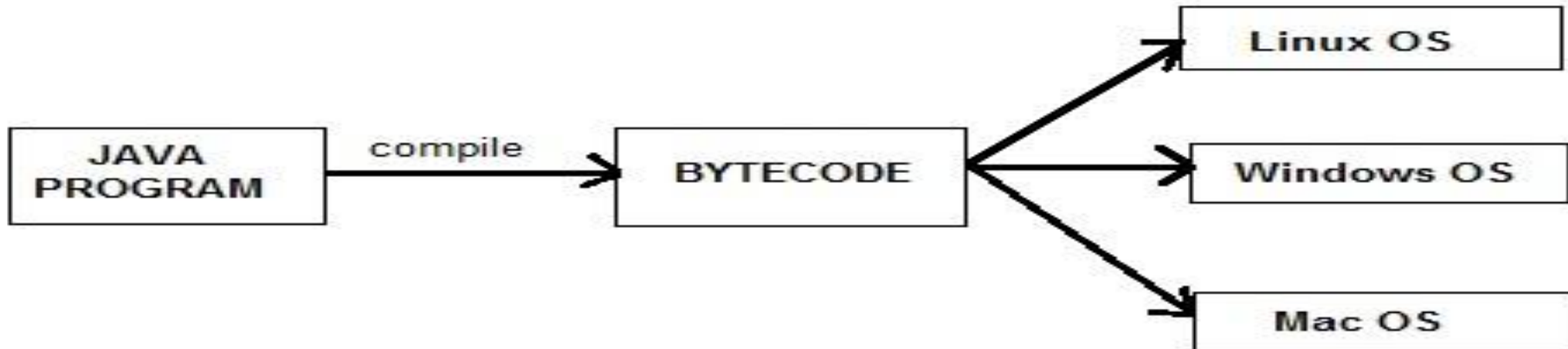


The Security manager determines what resources a class can access such as reading and writing to the local disk is determined

Independent

Java is compiled into bytecode(an intermediate format).

This Bytecode can be run on any machine with Java Virtual Machine.

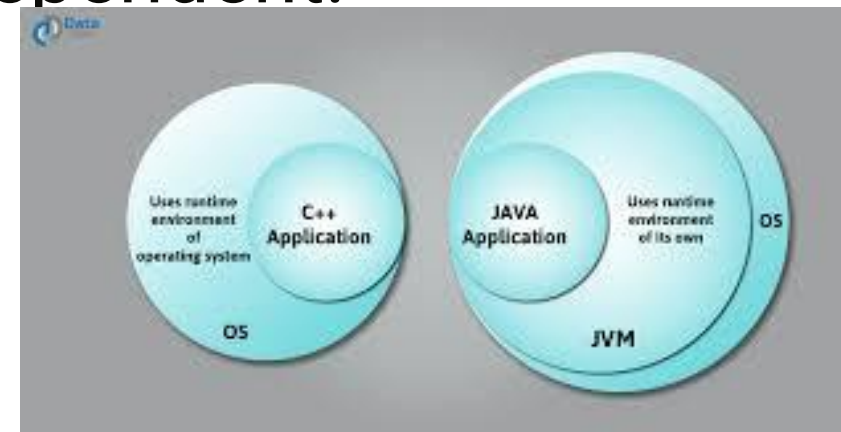


Independent (contd..)

Java Program is written once and can be run that java program in any of the operating systems Windows, Linux etc., without re-compiling.

Hence Java Program is considered as “Write Once, Run Anywhere”

This concept made Java Platform Independent.



4. Robust



Java has automatic Garbage Collector which helps to get rid of objects which are not being used by a Java application anymore.

This makes memory management stronger.

Java emphasizes on compile time error checking and runtime error checking to eliminate error prone codes.

Exception handling Mechanism also makes Java Robust.

5. Portable



Java Programs can be on any platform like Windows, Linux, Mac etc.,

Java Programs, applets can be transferred over world wide web.

Java Compiler outputs a Byte code which is executed by Java run-time system, Java Virtual Machine.

Once, JVM is installed for particular system, any java program can run on it.

Neutral

Java is not Machine Dependent,
Java is not dependent on Operating
System.

No implementation dependent features
like the fixed size of basic data types as
in C.

7. Dynamic

Java supports substantial amount of run-time type information to verify and resolve access to objects during run-time.

It supports automatic memory management, loading of classes on demand et.,

8. Interpreted

Java outputs Bytecode after compilation.

This Bytecode can be interpreted on any platform by JVM, which makes Java Portable and Platform Independent.



9. High Performance

Java is faster than traditional interpreted programming languages because Java Bytecode is “close” to native code.



JVM can execute them much faster.

Oriented



Java is pure Object Oriented Language.

Java supports OOP concepts such as :

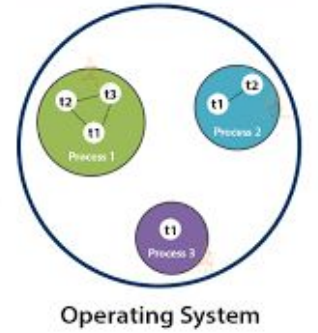
Abstraction

Encapsulation

Inheritance and
polymorphism



11. MultiThreaded



MultiThreading concept allows to write programs that can perform many tasks simultaneously.

This MultiThreading feature allows to develop interactive applications that run smoothly.

Java Language is designed with integrated support of Multithreading capabilities.

12. Distributed



Distributed feature enables the user to access files by calling methods from any computer on the internet.

Java supports Distributed environment by creating distributed applications using

RMI (Remote Method Invocation)

and

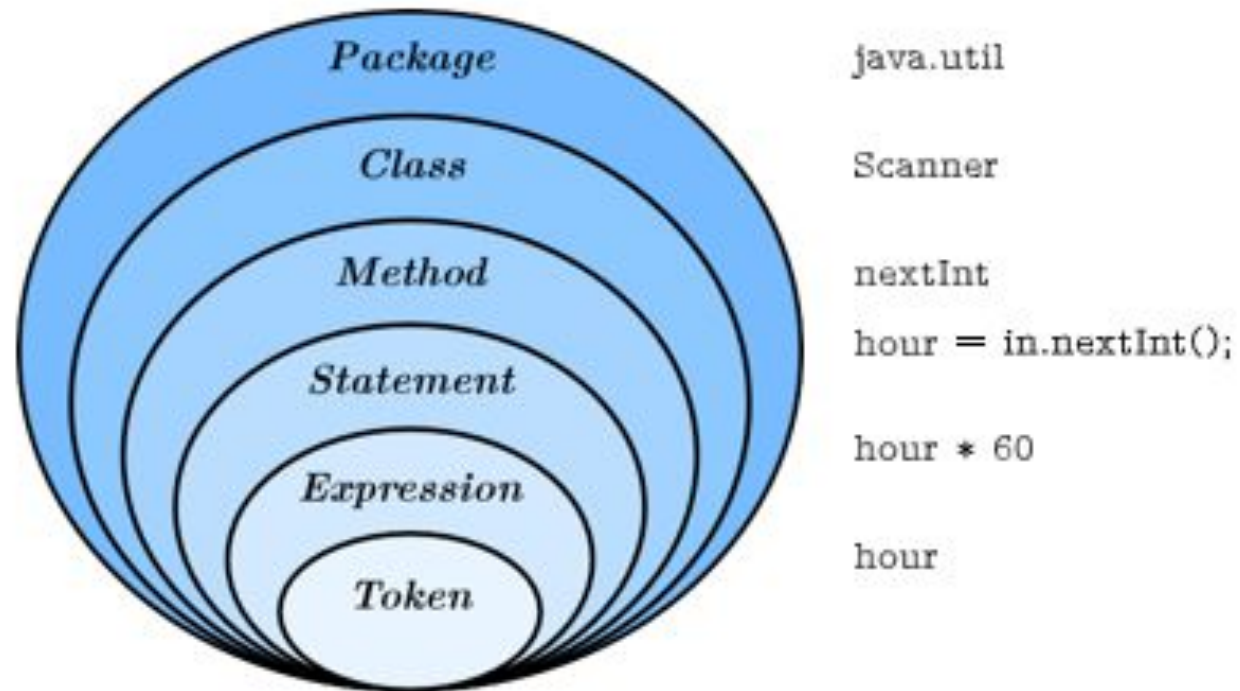
EJB (Enterprise Java Bean)

Java

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Java Program Structure





Java Program Structure (contd..)

- Package is a collection of classes, which define methods.
- Methods contain statements, some of which contain expressions.
- Expressions are made up of tokens.
- Tokens are the basic elements of a program, which include numbers, variable names, operators, keywords, and punctuation like parentheses, braces and semicolons.



Summary

- Features of Java
- Sample Program Structure



References

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THANK YOU



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