CORE JAVA
CLASS -2

Presented By Vtech Integrated Solutions
Trainer: Vinay

RECAP

- **Programming – why, history**

- **Java – What, Where, Why**

- **Installations – JDK, Notepad ++**

TOPICS EXPLORING TODAY

- **History Of Java**

- **Versions of Java**

- **Editions of Java**

- **JDK, JRE, JVM**

- **Features Of Java**

HISTORY OF JAVA

- **Origin of Java – "The Green Project**

- **Why Oak Failed**

- **Birth of Java (1995)**

JAVA VERSIONS

- **1995 - Java 1.0 - Official release with applets, AWT(Abstract Window Toolkit)**

- **1997 - Java 1.1   Inner classes, JDBC (Java Database Connectivity)**

- **1998 - Java 2 (J2SE 1.2) - Collections, Swing(advanced GUI toolkit), JVM improvements**

- **2004 - J2SE 5.0 - Generics, enhanced for-loop, annotations**

- **2011 - Java 7 - try-with-resources, switch with strings**

- **2014 - Java 8 - Lambda, Streams, default methods**

- **2017+ - Java 9+ - Modular system, Local Variable Type Inference (var)**

- **2021 - Present   - Java 17 (LTS), 21 - Pattern matching, records, sealed classes**

Java Editions

Edition	Full Form	Purpose
Java SE	Standard Edition	Core Java development (desktop, basic apps)
Java EE	Enterprise Edition	Web and enterprise-level apps
Java ME	Micro Edition	Embedded systems, IoT, mobile devices
Java FX	Java FX	GUI and Rich Internet Applications (RIA)

JAVA SE - STANDARD EDITION (CORE JAVA)

INCLUDES:

- Core language features (syntax, OOP, data types)
- Collections Framework
- Multithreading
- Exception handling
- I/O operations
- JavaFX (as a library)
- Utility classes (java.lang, java.util, etc.)

USED FOR:

- Standalone desktop applications
- Command-line tools
- Learning Java basics

JAVA EE – ENTERPRISE EDITION (JAKARTA EE)

What it adds to SE:

- Servlets, JSP, JSF
- EJB (Enterprise JavaBeans)
- JPA (Java Persistence API)
- JAX-RS / JAX-WS (Web Services)
- CDI (Contexts and Dependency Injection)

USED FOR:
- Web applications
- Large-scale enterprise applications (banking, e-commerce)
- Backend services (APIs, Microservices)

Frameworks built on top:
- Spring, Hibernate, JSF, etc.

Java ME – Micro Edition

WHAT IT INCLUDES:

➢ **Lightweight version of Java SE**
➢ **Designed for devices with limited memory and processing power**

USED FOR:
➢ **Mobile phones (pre-Android)**
➢ **Embedded systems**
➢ **IoT devices**

DECLINING USAGE:
➢ **Java ME is largely replaced by Android and modern embedded tech**

JAVAFX – JAVA FOR RICH UI

WHAT IT IS:
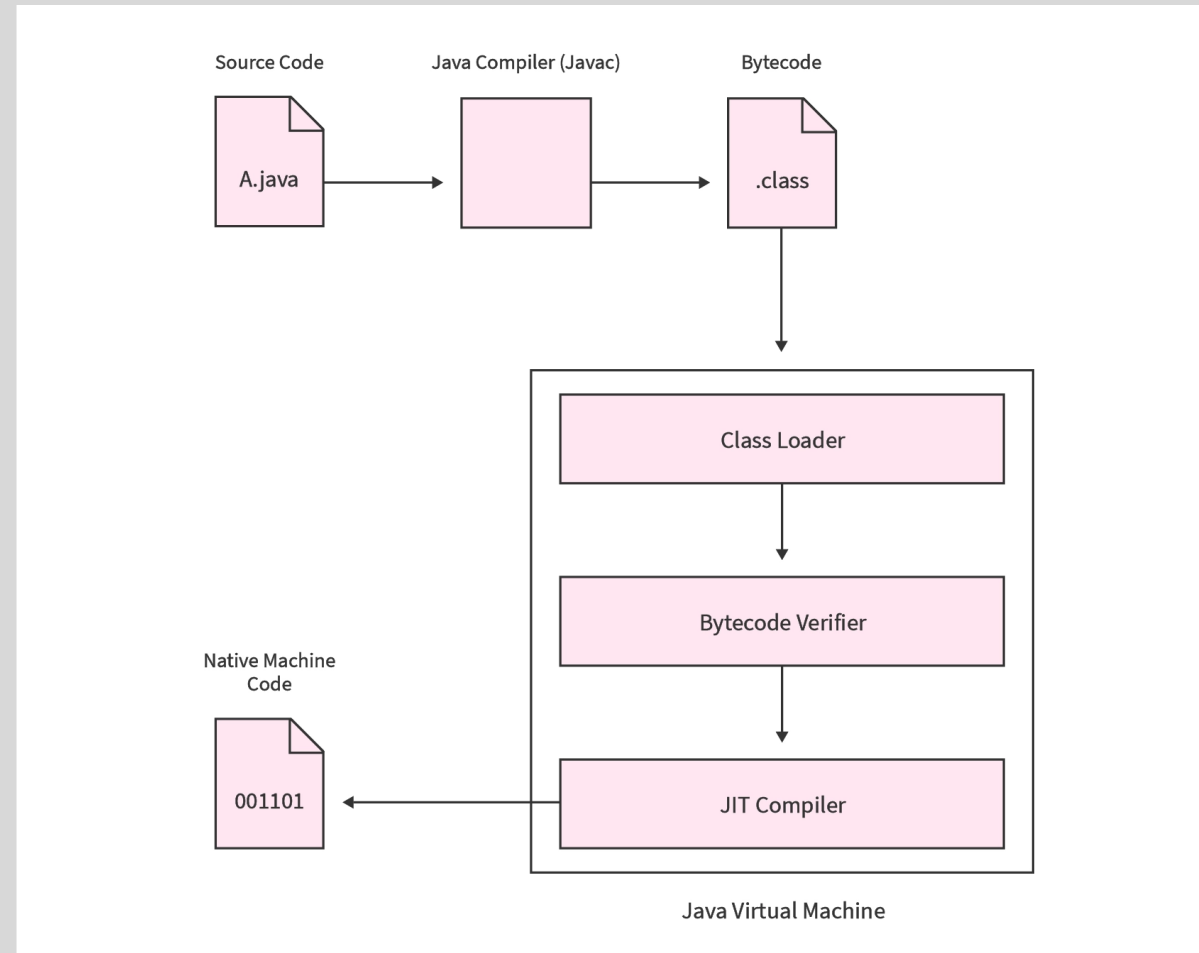
➢ **Used for creating rich graphical user interfaces (GUI)**
➢ **Replaced Swing (which is old now)**

FEATURES:
➢ **2D & 3D graphics**
➢ **Media playback**
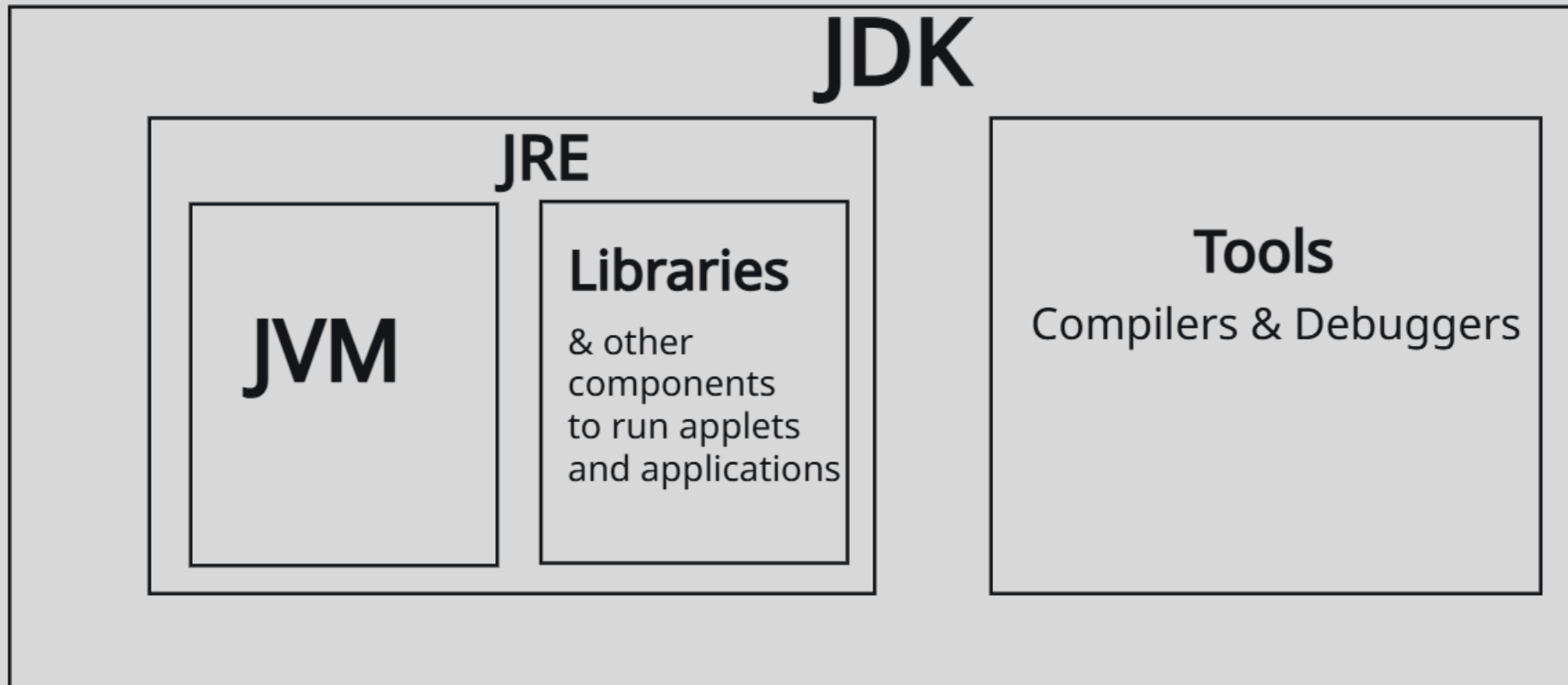➢ **CSS styling**
➢ **Built-in charting & animation APIs**
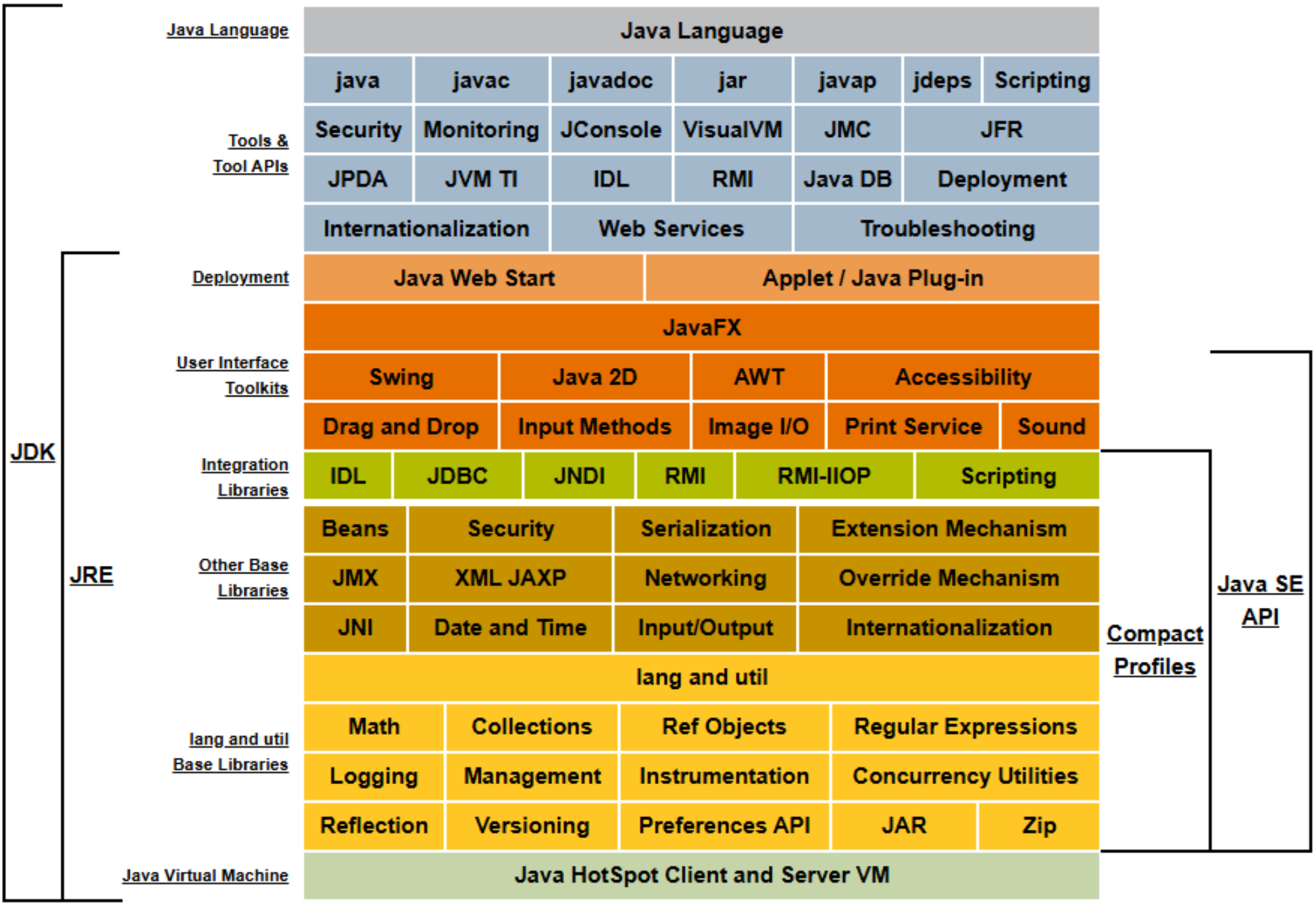
JavaFX is now a standalone module (since Java 11+)

WHAT HAPPENS WHEN WE RUN JAVA CODE?

JDK / JRE / Java SE API / Compact Profiles

Java Language

Java Language

Tools & Tool APIs

java	javac	javadoc	jar	javap	jdeps	Scripting
Security	Monitoring	JConsole	VisualVM	JMC	JFR	
JPDA	JVM TI	IDL	RMI	Java DB	Deployment	
Internationalization		Web Services		Troubleshooting		

Deployment

Java Web Start	Applet / Java Plug-in

User Interface Toolkits

JavaFX			
Swing	Java 2D	AWT	Accessibility
Drag and Drop	Input Methods	Image I/O	Print Service	Sound

Integration Libraries

IDL	JDBC	JNDI	RMI	RMI-IIOP	Scripting

Other Base Libraries

Beans	Security	Serialization	Extension Mechanism
JMX	XML JAXP	Networking	Override Mechanism
JNI	Date and Time	Input/Output	Internationalization

lang and util Base Libraries

lang and util			
Math	Collections	Ref Objects	Regular Expressions
Logging	Management	Instrumentation	Concurrency Utilities
Reflection	Versioning	Preferences API	JAR	Zip

Java Virtual Machine

Java HotSpot Client and Server VM

COMPARISON

Feature	JVM	JRE	JDK
Full Form	Java Virtual Machine	Java Runtime Environment	Java Development Kit
Main Purpose	Executes bytecode	Runs Java programs	Develops Java programs
Contains	Execution engine	JVM + libraries	JRE + development tools
Includes Compiler?	❌ No	❌ No	✅ Yes (javac)
End User/Developer	Both	End User	Developer

JDK, JRE, JVM

➢ **What is JVM (Java Virtual Machine)?**

➢ **What is JRE (Java Runtime Environment)?**

➢ **What is JDK (Java Development Kit)?**

FEATURES OF JAVA

1. Simple

2. Object-Oriented

3. Platform Independent

4. Secure

5. Robust

6. Multithreaded

7. Architecture Neutral

8. Portable

9. High Performance

10. Distributed

11. Dynamic

INTERVIEW QUESTIONS

1. What are the key features of Java?

2. How is Java platform-independent?

3. How does Java ensure security?

4. What makes Java robust?

5. Difference between Java and C++ in terms of simplicity?

6. Why Java Doesn't Have Explicit Pointers?