JAVA
BASICS

IN THE NAME OF ALLAH

بسم الله الرحمن الرحيم

THE GRACIOUS, THE MERCIFUL.

LECTURE: 2
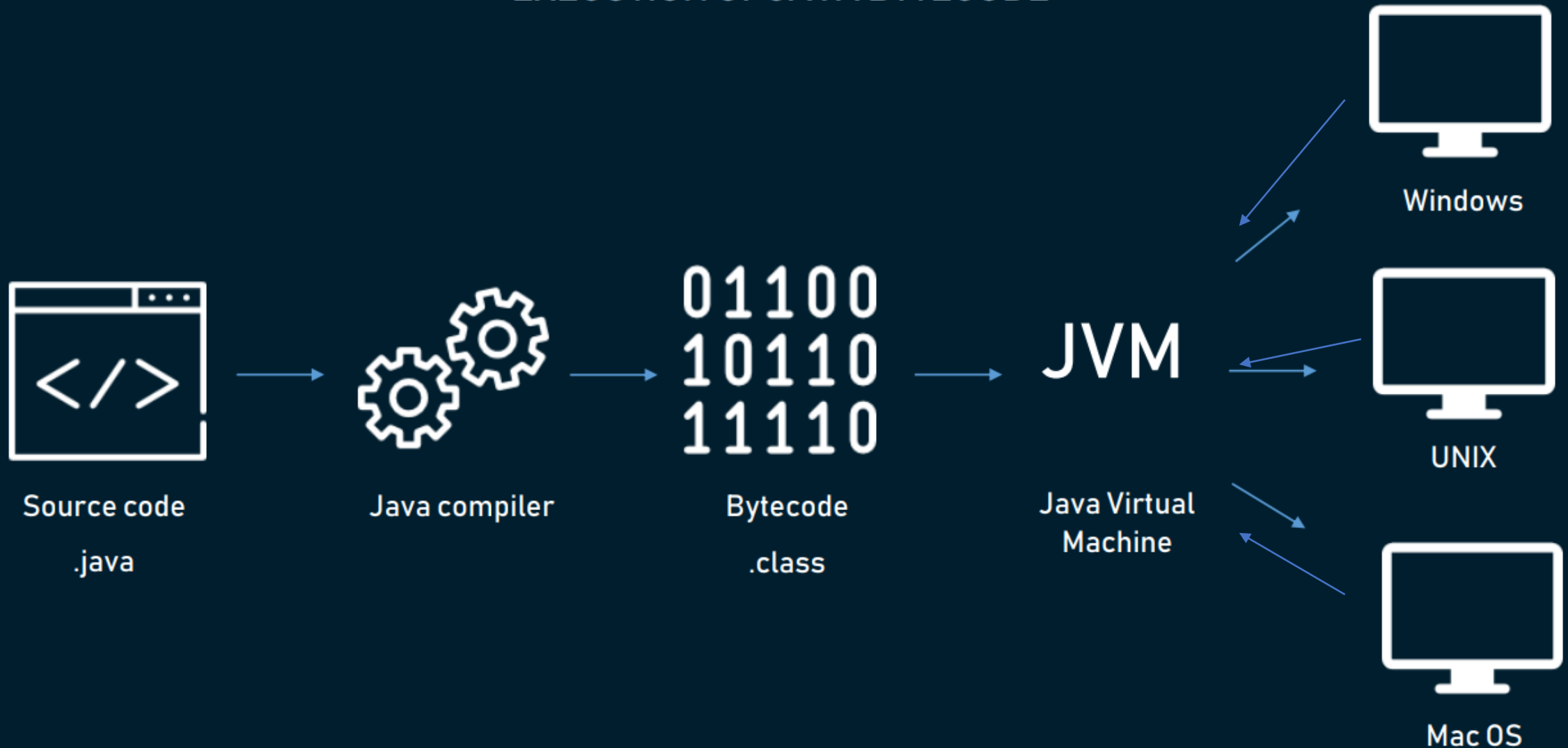# JAVA BASICS

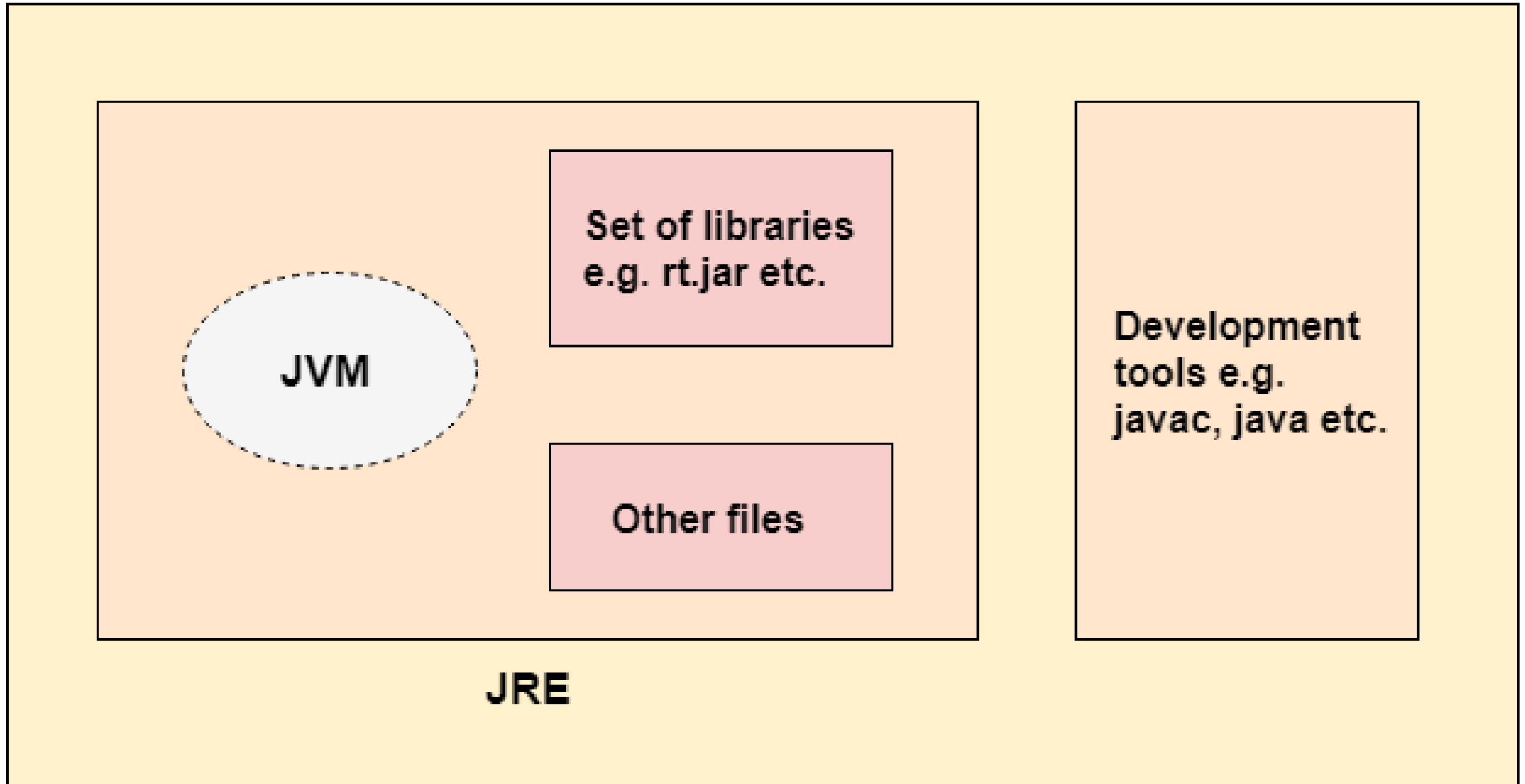# HOW JAVA CODE WORKS?

EXECUTION OF JAVA BYTECODE

Windows

```
01100
10110
11110
```

JVM

Source code
.java

Java compiler

Bytecode
.class

Java Virtual
Machine

UNIX

Mac OS

What is Different Between

- JDK - Java Development Kit
- JRE – Java Runtime Environment
- JVM – Java Virtual Machine

JVM

Set of libraries
e.g. rt.jar etc.

Other files

Development
tools e.g.
javac, java etc.

JRE

JDK

JDK - Java Development Kit

Developer <👤/>

Development Tools
java, javac, JShell, javadoc, jar, jdeps, JConsole, VisualVM, JFR, JPDA, JVM TI, IDL, Java DB, Debugging Tools, Deployment Tools, Monitoring Tools

JRE - Java Runtime Environment

Java App Users 👥

Java API, Runtime Libraries, Byte Code Verifier,
Libraries: User Interface (Swing, JavaFx, Sound, Image I/O .....),
Integration Libraries (JDBC, RMI, . .), Serialization, Netowrking,
lang and util libraries (Math, Collections, Concurrency, Logging, ...).....

JVM - Java Virtual Machine

Java Interpreter, JIT, Garbage Collector, Thread Synchronization,
Class Loader Subsystem

JDK = JRE + Development Tools
JRE= JVM + Libraries

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WHAT IS JVM WORKS?

The JVM Performs
- Loads Code
- Verified Code
- Executes Code
- Provide Runtime Environment

public is a Java keyword **which declares a member's access as public**.

public class FileName {

}

A **class** is a user **defined** blueprint or prototype from which objects are created.

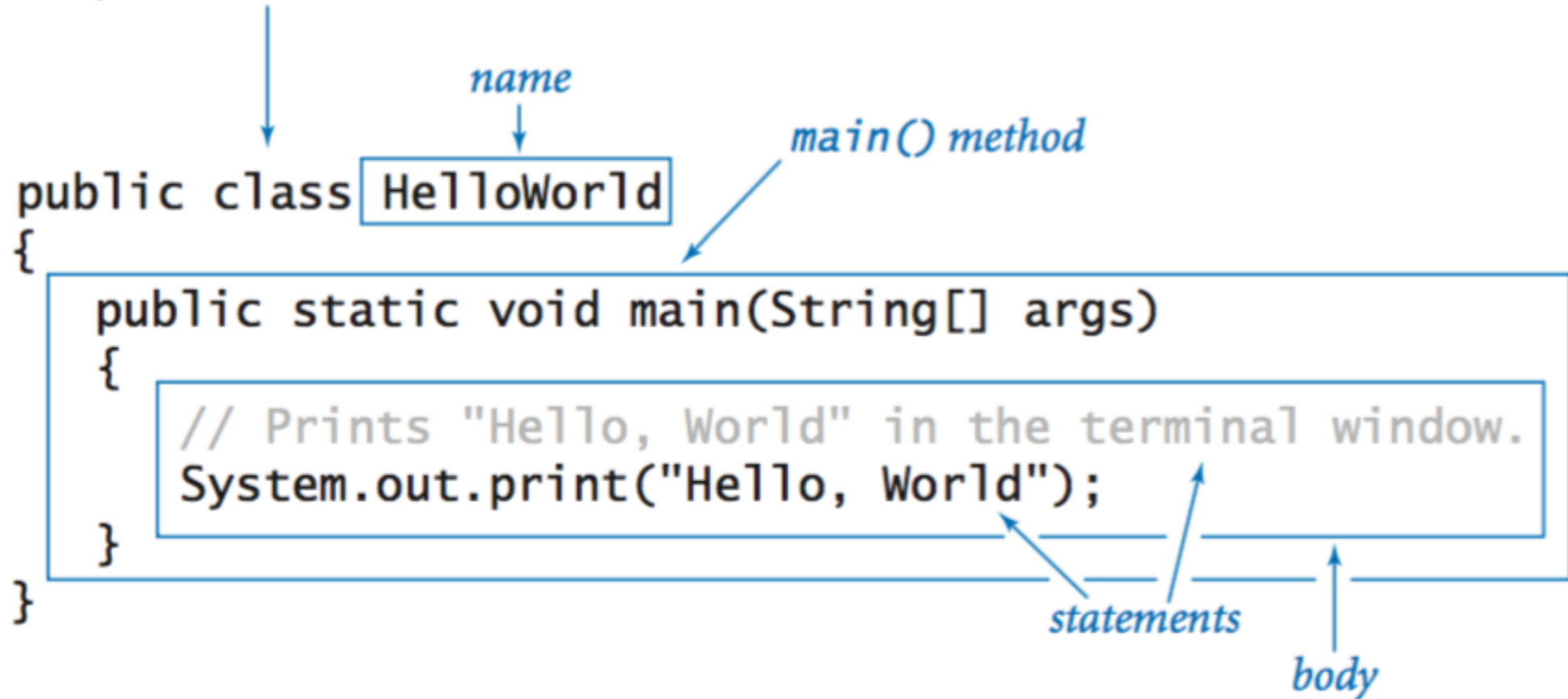Though this class the compiler convert the into byte code

Java main method

public static void main(**String[] args**) is the most important Java method. When you start learning java programming, this is the first method you encounter.

a. **public**-This is the access modifier of the main method. It has to be public so that java runtime can execute this method.

b. **static**-In this main method has to be static so that JVM can load the class into memory and call the main method.

c. **void**-Java main method doesn't return anything, that's why it's return type is void

d. **main**-This is the name of java main method. It's fixed and when we start a java program, it looks for the main method.

e. **String[] args**-Java main method accepts a single argument of type String array. This is also called as java command line arguments.

text file named `HelloWorld.java`

name

main() method

```java
public class HelloWorld
{
   public static void main(String[] args)
   {
      // Prints "Hello, World" in the terminal window.
      System.out.print("Hello, World");
   }
}
```

statements

body

Comments in a Java Program

- **Comments can be single line comments like C++**

  `Example:   //This is a Java Comment`

- **Comments can be spread over multiple lines like C**

  ```
  Example:   /* This is a multiple
                  line comment.
              */
  ```

- **Comments can be special Java comments that help produce java documentation using the javadoc utitlity program.**

  ```
  Example:   /**  comments for an HTML page
                   goes here */
  ```

What we have learn from this exercise?

➢ How Java code Works.

➢ Different Between JDK, JRE and JVM

➢ What is JVM Works?

➢ Meaning of (Public Static Void main(String[] args).

➢ How Comments Used in Java