Java

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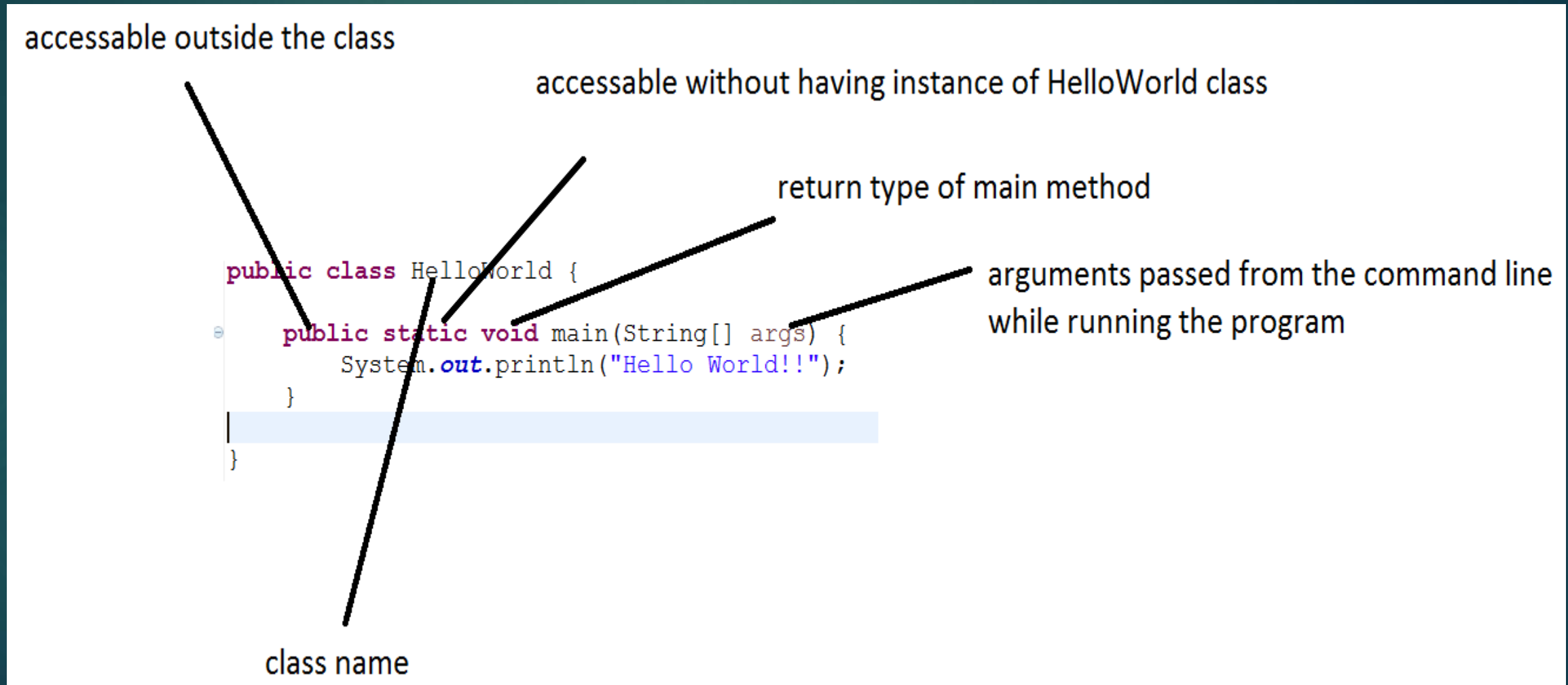
Agenda

- Introduction
  - JDK, JRE, JVM
  - features
- Main method
- Data types
- Memory allocation– Heap(objects) and stack(primitives, local variables)
- Conditional flow(If else, switch), looping, functions(methods)
- Assignments 1
- Class, object or instance of a class – new keyword, constructors
- variable scopes – class(static), instance and local
- Assignments 2

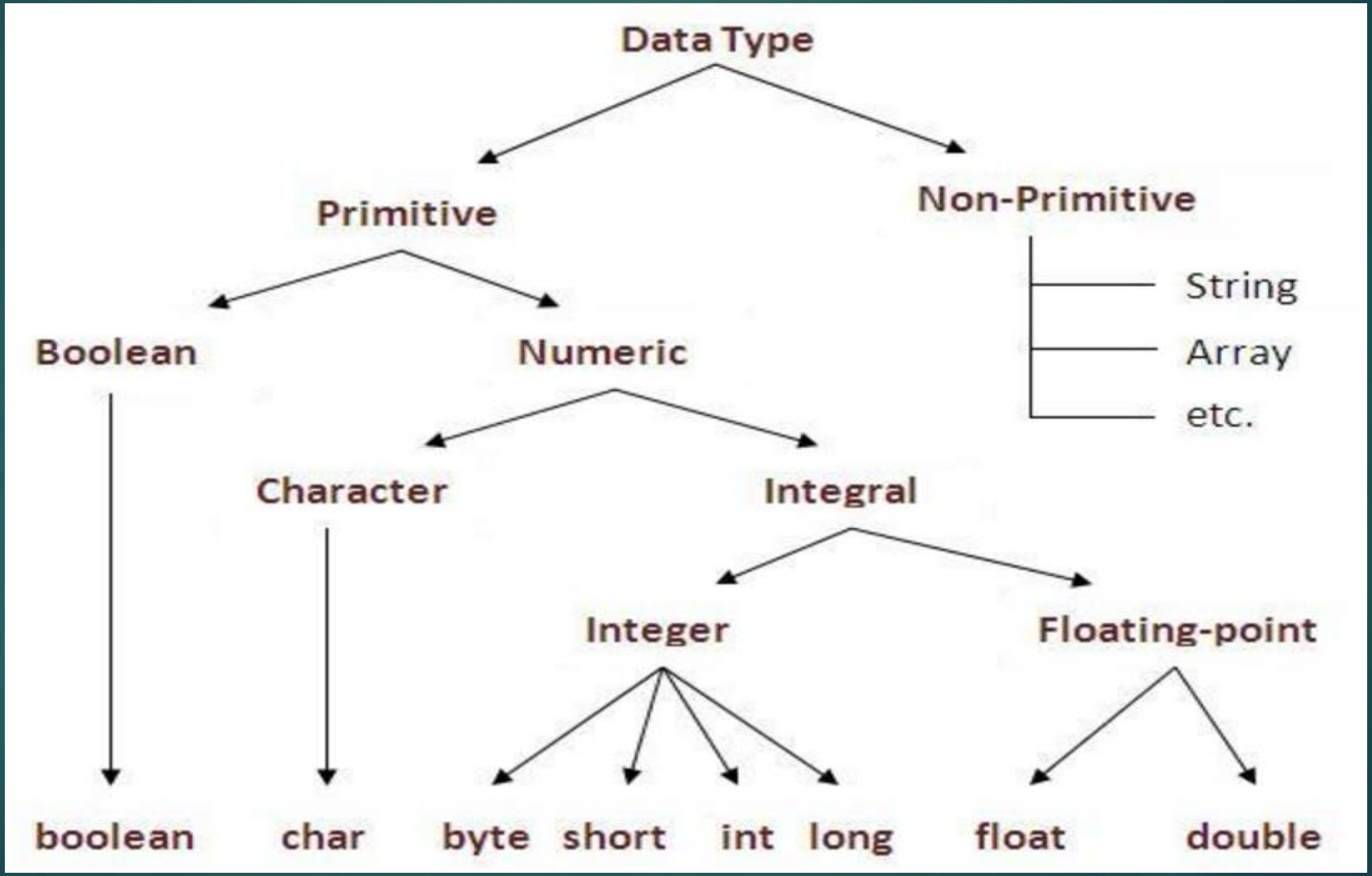
Java features

- Simple – pointers, operator over loading, garbage collection
- OO: class, instance, encapsulation, abstraction, Inheritance, polymorphism
- Architecture neutral, portable, Platform independent: Write once, run any where
- Multi threading
- Exception handling
- Secure –access to client's file system, packaging

Main method


accessable outside the class
accessable without having instance of HelloWorld class
return type of main method
arguments passed from the command line while running the program
public class HelloWorld {
public static void main(String[] args) {
System.out.println("Hello World!!");
}
}
class name

Data types


Data Type
Primitive
Non-Primitive
Boolean
Numeric
String
Array
etc.
Character
Integral
Integer
Floating-point
boolean
char
byte
short
int
long
float
double

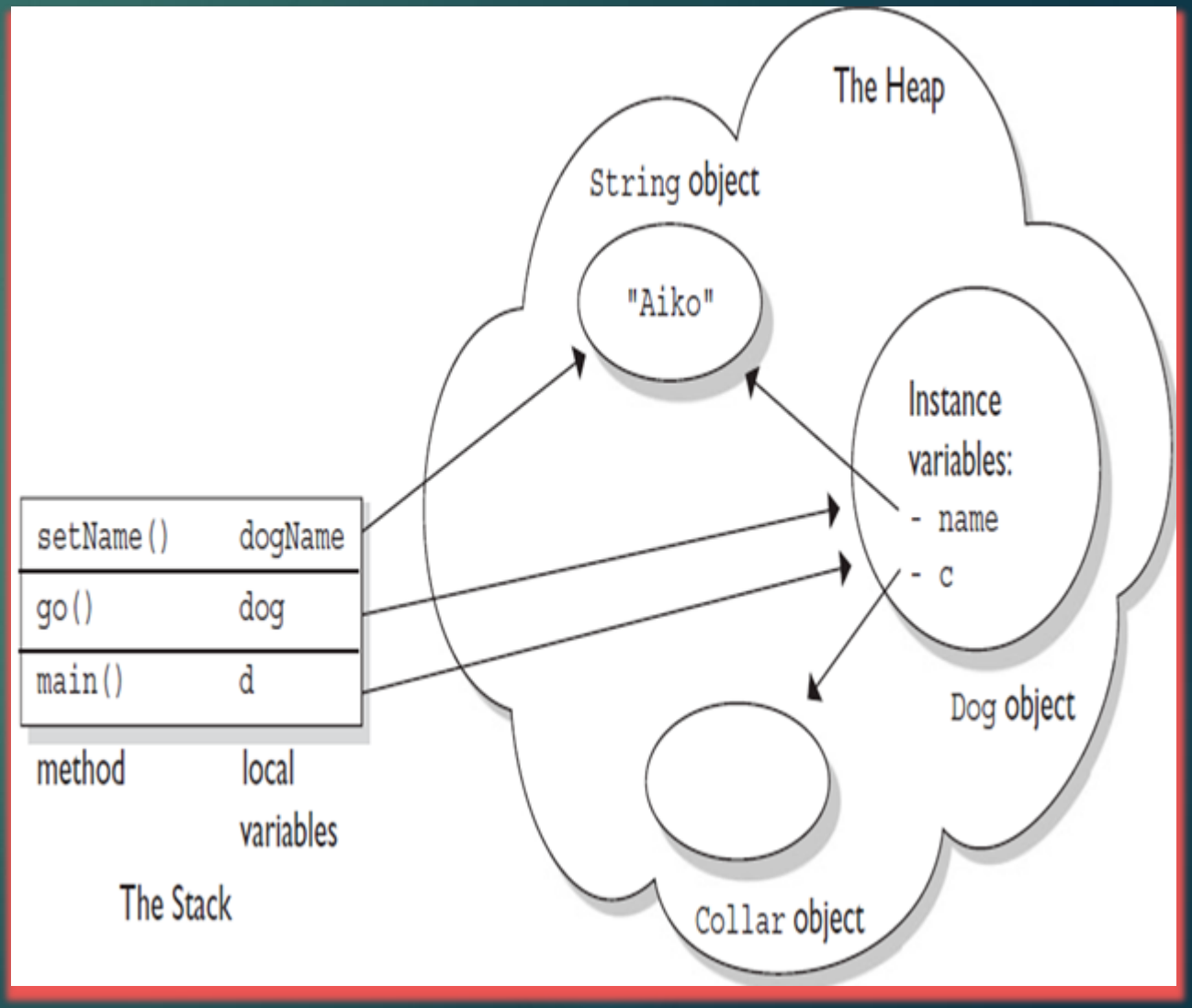
Memory allocation

```
class Collar { }

class Dog {
  Collar c;          // instance variable
  String name;       // instance variable

  public static void main(String [] args) {

    Dog d;                          // local variable: d
    d = new Dog();
    d.go(d);
  }
  void go(Dog dog) {                // local variable: dog
    c = new Collar();
    dog.setName("Aiko");
  }
  void setName(String dogName) {    // local var: dogName
    name = dogName;
    // do more stuff
  }
}
```



Conditional flow, looping, Arrays

- Arrays – 1D, 2D
- Conditional flow
  - If else
  - Switch
  - Break
  - continue
- Looping
  - For
  - While
  - Do while
- Demo

Assignments 1

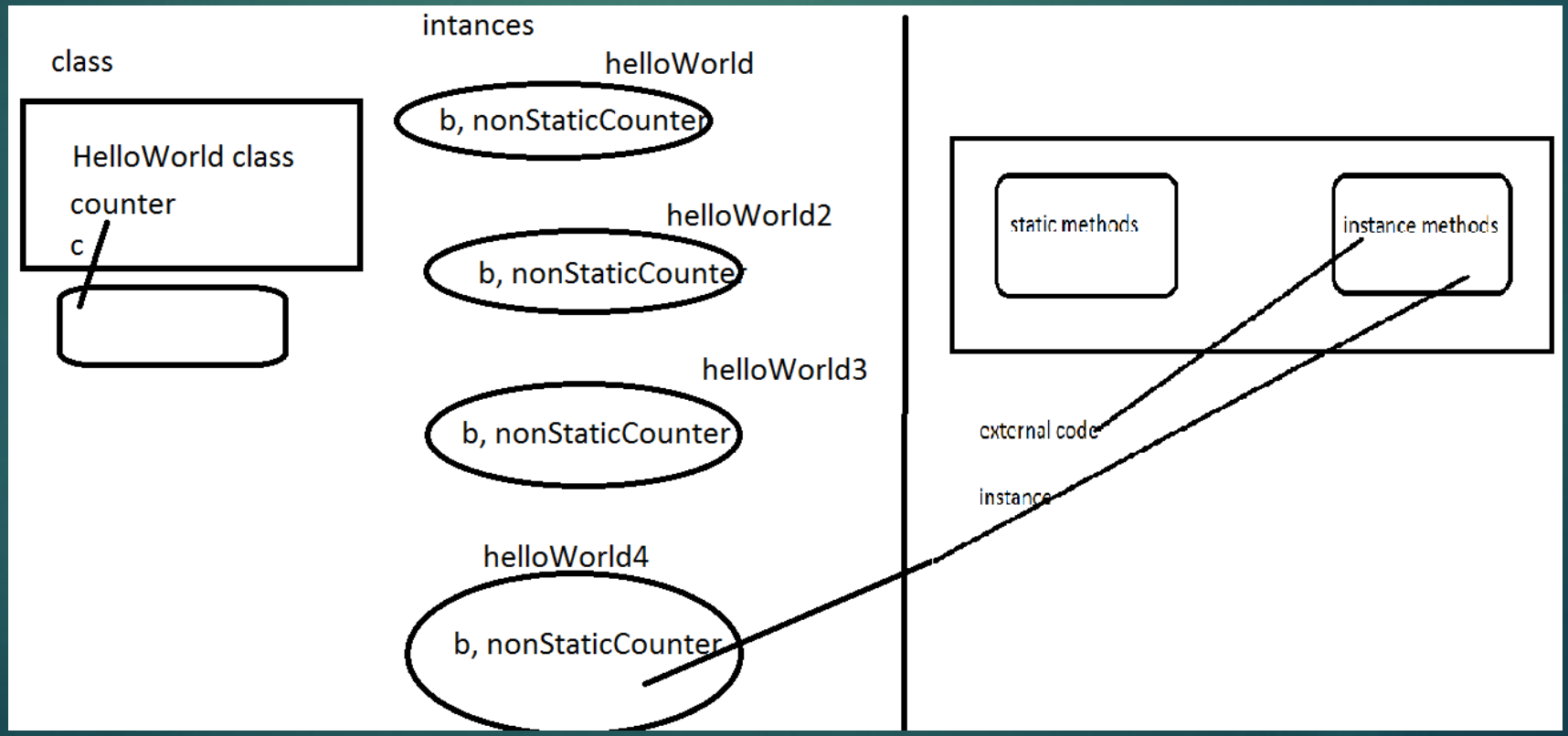
1. Program to print “hello world” to the console
2. Program to read name and print “hello {name}” to the console
3. Program to print numbers from 0 to 100 (using while loop)
4. Program to print prime numbers from 0 to 100 (using for loop)
5. program to print odd numbers from 0 to 100
6. program to find GCD and LCM of given 2 numbers
7. program to find factorial of a number
8. program to print first 10 Fibonacci numbers

Class, instances, Constructors

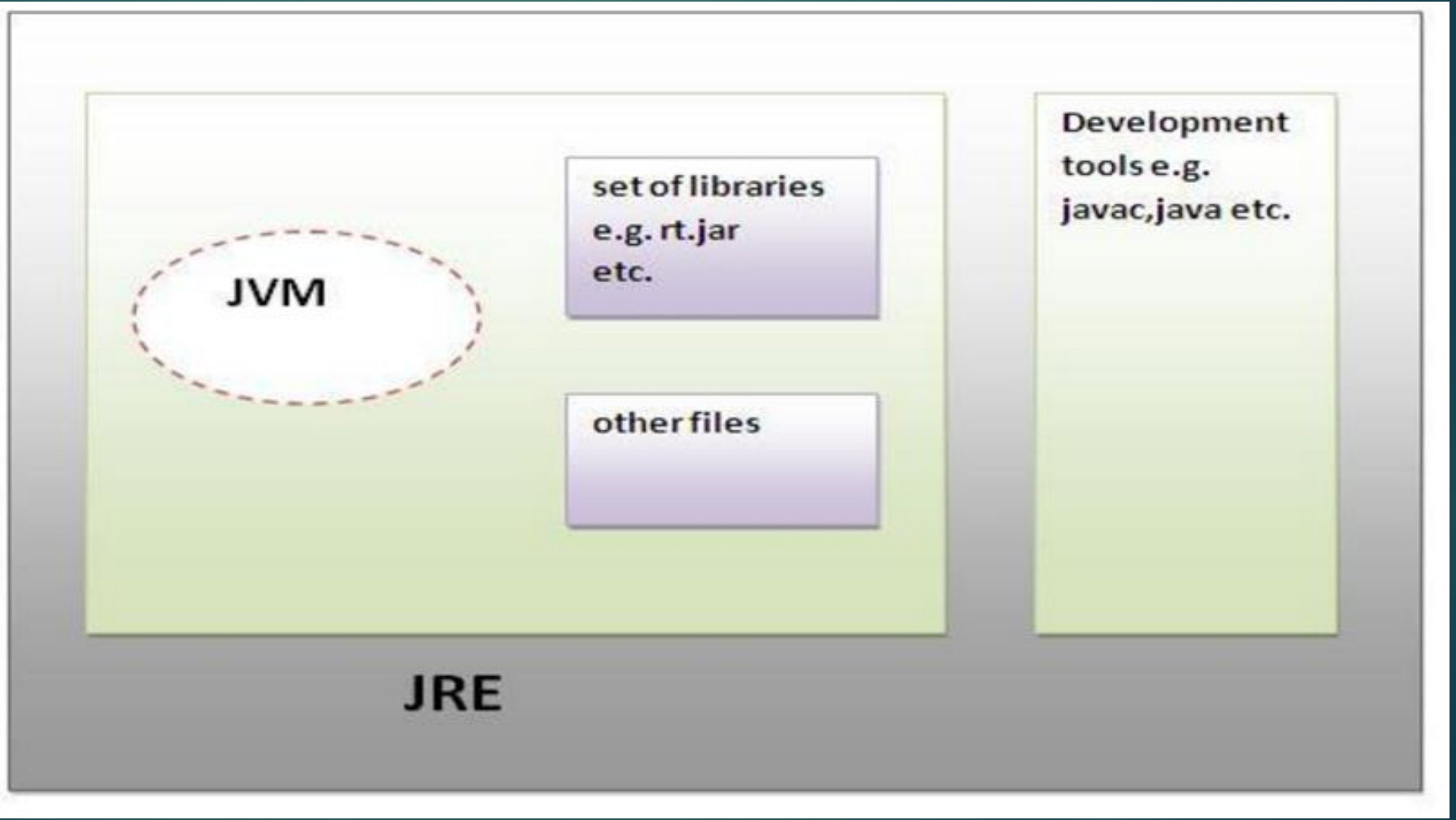
- Class
  - Template
  - Passive
- Instance
  - Active
  - Represent real time object
  - Keyword new
  - Constructors
    - Default
    - Parameterized constructors (constructor overloading)

Variables

- Based on the scope/lifespan, declaration
  - Local – method (function)
  - Instance – object level
  - Class –without an instance (static)



JDK, JVM, JRE


JVM
set of libraries
e.g. rt.jar
etc.
other files
Development
tools e.g.
javac,java etc.
JRE

Thank you!