

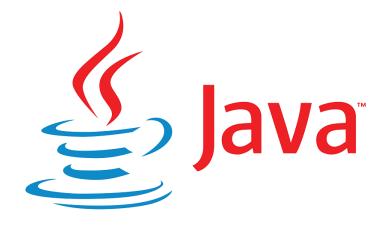
Java in Web Programming

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What is Java?

- General-purpose, object-oriented programming language.
- Widely used for web, mobile, and enterprise applications.



Basic Java Syntax

- Case-sensitive, uses curly braces {} to define code blocks.
- Every statement ends with a semicolon;
- Entry point: public static void main(String[] args).

```
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello World!");
    }
}
```

Variables and Data Types

- Primitive types: int, double, char, boolean, etc.
- Object types: classes like String, arrays, and collections.
- Declaration: type variableName = value;.

```
int number = 5;
String text = "Spring Boot";
boolean isActive = true;
```

Control Structures

- if-else, switch for decision making.
- Loops: for, while, do-while.

```
if (number > 0) {
    System.out.println("Positive
number");
} else {
    System.out.println("Non-
positive number");
}
```

```
for (int i = 0; i < 5; i++) {
    System.out.println(i);
}</pre>
```

Methods (Functions)

- Reusable blocks of code.
- Defined with return type, name, parameters.
- Can return values or be void.

```
public int addNumbers(int a, int b) {
   return a + b;
}
```

Object-Oriented Programming - Classes and Objects

- Java is object-oriented. Code is structured as classes with fields and methods.
- Classes are blueprints for creating objects (instances).

Inheritance and Interfaces

- Inheritance allows one class to inherit fields and methods from another (extends).
- Interfaces define methods that must be implemented (implements).

Error and Exception Handling

- Use try-catch to handle exceptions and avoid program crashes.
- throw exceptions when necessary.

```
try {
   int result = 10 / 0;
} catch (ArithmeticException e) {
   System.out.println("Error: Division by zero");
}
```

Collections Framework

- Store and manage groups of objects: List, Set, Map.
- Common methods: add(), remove(), get().

```
List<String> names = new ArrayList<>();
names.add("John");
names.add("Jane");

for (String name : names) {
    System.out.println(name);
}
```

Online Resources for Learning Java

- Official Documentation
 - https://docs.oracle.com/javase/tutorial/java/index.html
- Tutorials and Guides
 - W3Schools Java Tutorial https://www.w3schools.com/java/
 - Learn Java on Codecademy https://www.codecademy.com/learn/learn-java