

Algorithms

- *An algorithm is a set of step-by-step instructions to solve a problem.*
- *An algorithm can be expressed in text-based format, e.g., such as pseudo codes, or in visual format, e.g., such as using flow charts.*

Java

- Java is a powerful, high-level, general-purpose, object-oriented.
- To compile and run Java programs, it is essential to install the Java Development Kit (JDK).
- It is highly recommended to use an integrated development environment (IDE) for Java development. IDEs, such as Visual Studio Code, provide a convenient and feature-rich environment for writing, debugging, and managing Java code.

Java 10 fundamental types

- integers: **byte**, **short**, **int** and **long**
- floating point: **float** and **double**.
- characters: **char**.
- **boolean**
- **void**
- String

Java provides a rich set of expressions

- **Arithmetic Expressions:** Used for mathematical calculations like addition, subtraction, multiplication, and division. For example: `int result = 5 + 3;`
- **Bit-Level Expressions:** Used to manipulate individual bits within variables. These expressions involve operations like bitwise AND, OR, XOR, and shifting. For example: `int bitwiseResult = 10 & 7;`
- **Relational Expressions:** Used to compare values and determine relationships between them. These expressions involve operators like `==` (equal to), `!=` (not equal to), `<` (less than), `>` (greater than), etc. For example: `boolean isGreater = 8 > 5;`
- **Logical Expressions:** Used for logical operations, such as combining conditions with AND (`&&`) and OR (`||`) operators. For example: `boolean isValid = (age > 18) && (isStudent == true);`
- **String-Related Expressions:** Used to perform operations on strings, such as concatenation, comparison, and extraction. For example: `String fullName = firstName + " " + lastName;`

Naming Conventions

Identifier Type	Rules for Naming	Examples
Classes	Class names should be nouns, in mixed case with the first letter of each internal word capitalized.	<code>class Raster;</code> <code>class ImageSprite;</code>
Methods	Methods should be verbs, in mixed case with the first letter lowercase, with the first letter of each internal word capitalized.	<code>run();</code> <code>runFast();</code> <code>getBackground();</code>
Variables	Variables are named in mixed case with a lowercase first letter and internal words starting with capital letters. Variable names should not start with underscore or dollar sign characters, and should be short yet meaningful and mnemonic. One-character variable names should be avoided, except for temporary variables commonly named <code>i</code> , <code>j</code> , <code>k</code> , <code>m</code> , <code>n</code> for integers, and <code>c</code> , <code>d</code> , <code>e</code> for characters.	<code>int i;</code> <code>char c;</code> <code>float myWidth;;</code>
Constants	The names of variables declared class constants should be all uppercase with words separated by underscores (" <code>_</code> ").	<code>static final int MIN_WIDTH = 4;</code> <code>static final int MAX_WIDTH = 999;</code> <code>static final int GET_THE_CPU = 1;</code>



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