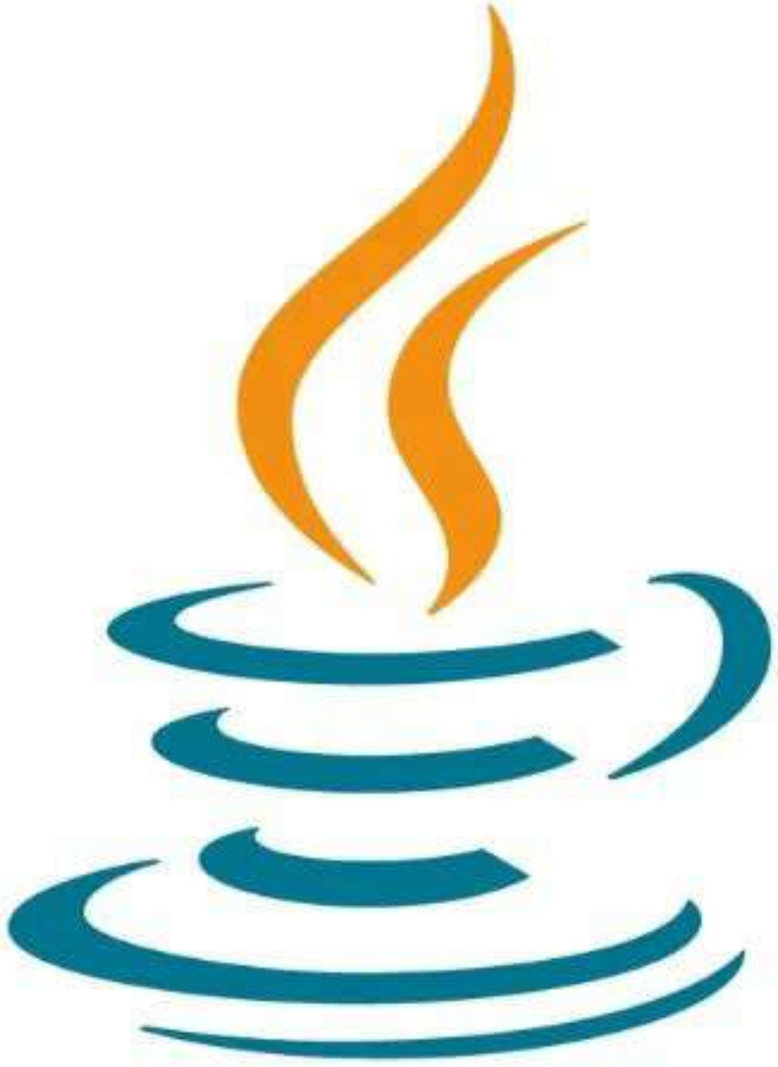
BECOME

Java

EXPERT

IN JUST 20 DAYS



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Day 1

Introduction and Setting Goals

GOALS

Understand the basics of Java and set specific learning goals for the next 20 days.

TOPICS

- Introduction to Java programming language
- Setting up the Java development environment (JDK, IDE)
- Understanding the Java Virtual Machine (JVM)

RESOURCES

https://docs.oracle.com/javase/tutorial/

Eclipse or IntelliJ IDEA (Java IDE)

Practice Questions

1. What is Java programming language and what are its key features?
2. Explain the process of setting up the Java development environment, including the installation of JDK and an IDE.
3. What is the Java Virtual Machine (JVM) and what is its role in executing Java programs?
4. Describe the steps involved in compiling and running a Java program using the command line.
5. How does Java handle memory management and what is the significance of the garbage collector?
6. Compare and contrast Eclipse and IntelliJ IDEA as Java IDEs, highlighting their key features and differences.
7. What are the basic data types available in Java, and how are they used in variable declarations and assignments?

Day 2

Java Syntax and Variables

GOALS

Gain a solid understanding of Java syntax and learn about variables.

TOPICS

- Java program structure (classes, methods, statements)
- Data types and variables in Java
- Variable declaration, initialization, and scope

RESOURCES

https://docs.oracle.com/javase/tutorial/java/nutsandbolts/index.html

Practice Questions

1. What is the basic structure of a Java program? Describe the roles of classes, methods, and statements.
2. What are the primitive data types in Java? Give examples of each.
3. How do you declare and initialize a variable in Java? Provide an example for each of the following data types: int, double, boolean, and String.
4. What is the scope of a variable in Java? Explain the concepts of local variables, instance variables, and class variables.
5. What is the difference between the "==" operator and the ".equals()" method when comparing two objects in Java?
6. Explain the concept of type casting in Java. How can you convert a variable from one data type to another?
7. What is the difference between static and non-static methods in Java? How do you call each of these methods?

Day 3

Operators and Expressions

GOALS

Learn about operators and expressions in Java.

TOPICS

- Arithmetic, assignment, and comparison operators
- Conditional and logical operators
- Precedence and associativity of operators

RESOURCES

- https://www.w3schools.com/java/java_operators.asp
- https://docs.oracle.com/javase/tutorial/java/nutsandbolts/operators.html

Practice Questions

1. 1. What will be the result of the following expression?
   ```
   int x = 10;
   int y = 3;
   int result = x % y;
   System.out.println(result);
   ```
2. Which operator is used for exponentiation in Java?
3. Consider the following code snippet:
   ```
   int a = 5;
   int b = 7;
   int c = 3;
   boolean result = (a > b) && (b < c);
   System.out.println(result);
   ```
   What will be the output of this code?
4. What is the value of the expression "Hello" + "World" in Java?
5. Which operator is used to assign a value to a variable in Java?
6. What will be the value of the expression 5 * 3 + 2 - 4 / 2 in Java?
7. Consider the following code snippet:
   ```
   int x = 5;
   int y = 3;
   int z = 7;
   boolean result = (x < y) || (y > z);
   System.out.println(result);
   ```

Day 4

Control Flow Statements

GOALS

Understand control flow statements and their usage in Java.

TOPICS

- Conditional statements (if-else, switch)
- Looping statements (for, while, do-while)
- Branching statements (break, continue, return)

RESOURCES

- https://www.w3schools.com/java/java_while_loop.asp
- https://docs.oracle.com/javase/tutorial/java/nutsandbolts/flow.html

Practice Questions

1. What is the purpose of a conditional statement in Java, and what are the two main types of conditional statements?
2. Write a Java code snippet that uses an if-else statement to check if a given number is even or odd. If the number is even, print "Even"; otherwise, print "Odd."
3. What is the purpose of a switch statement in Java, and how is it different from an if-else statement?
4. Write a Java code snippet that uses a switch statement to display the name of a day of the week based on a given integer input. For example, if the input is 1, the code should print "Monday."
5. What is the purpose of a loop statement in Java, and what are the three main types of loop statements?
6. Write a Java code snippet that uses a for loop to calculate the sum of all numbers from 1 to 10 and prints the result.
7. What is the difference between the break, continue, and return statements in Java? Explain their usage with an example for each.

Arrays and Strings

GOALS

Learn about arrays and strings in Java.

TOPICS

- Declaring and initializing arrays
- Array operations (accessing elements, length, sorting)
- String manipulation and methods

RESOURCES

- https://www.w3schools.com/java/java_arrays.asp
- https://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html
- https://docs.oracle.com/javase/tutorial/java/data/strings.html

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