Current track is **Java Developer** change

Current project: Bulls and Cows change. Stages completed: **1 / 7**.

You'll complete the current stage in 10 minutes, the project in 4 hours.

- Frontendβ — 0 / 24 topics
- Mathβ — 0 / 29 topics
- Algorithms — 50 / 50 topics
- Databases and SQLβ — 0 / 17 topics
- Essentials — 9 / 31 topics
- Dev tools — 3 / 18 topics
- Java
  - Basic syntax and simple programs
    - Introduction to Java
      - Introduction to Java (Stage 1)
      - Basic literals (Stage 1)
      - Overview of the basic program (Stage 1)
      - Printing data (Stage 1)
    - Data types and variables
      - Types and variables (Stage 1)
      - Sizes and ranges (Stage 1)
      - Type casting (Stage 1)
      - Numeric literals
      - Primitive and reference types (Stage 2)
      - Final variables
    - Code style
      - Comments (Stage 1)
      - Naming variables (Stage 1)
    - Simple programs
      - Scanning the input (Stage 1)
      - Formatted output
      - Errors in programs (Stage 7)
    - Operations on primitive types
      - Arithmetic operations (Stage 1)
      - Integer types and operations (Stage 1)
      - Bitwise and bit-shift operations
      - Floating-point types (Stage 5)
      - Boolean and logical operations (Stage 2)
      - Relational operators (Stage 2)
      - Infinity and Not a Number
      - Increment and decrement (Stage 1)
      - Characters (Stage 1)
    - Control flow statements
      - Conditional statement (Stage 2)
      - Ternary operator (Stage 2)
      - The for-loop (Stage 2)
      - The while and do-while loops (Stage 2)
      - Branching statements (Stage 2)
      - Switch statement (Stage 3)
    - Methods
      - Calling a method (Stage 2)
      - Declaring a method (Stage 3)
      - The main method (Stage 3)
      - Overloading
      - Functional decomposition (Stage 3)
      - Arrays as parameters
      - Recursion
      - Command-line arguments
    - Arrays
      - Array (Stage 2)
      - Iterating over arrays
      - Multi-dimensional array
    - Strings
      - String (Stage 2)
      - Processing strings (Stage 2)
      - StringBuilder (Stage 3)
  - Essential standard classes
    - Standard classes for computations
      - Math library (Stage 5)
      - BigInteger
      - Random (Stage 5)
    - Date and time

LocalDate · LocalTime · LocalDateTime · Comparing dates and time

- Implementation of basic algorithms
  - Introduction to algorithms
    - Algorithms in Java · Finding max and min in arrays
  - Search algorithms
    - Linear search in Java · Binary search in Java · Jump search in Java
  - Sorting algorithms
    - Selection sort in Java · Bubble sort in Java · Insertion sort in Java · Counting sort in Java
    - Merge sort in Java · Quicksort in Java
  - String algorithms
    - Edit distance in Java · Edit distance alignment in Java · Hamming distance in Java
    - Searching a substring in Java · Knuth-Morris-Pratt algorithm in Java · Rabin-Karp algorithm in Java
  - Various data structures
    - Dynamic array in Java · Doubly linked list in Java · Trees in Java · Binary search tree in Java
    - Binary heap in Java · Hash table in Java
- Regular expressions
  - Regexps in Java · Sets, ranges, alternations · Shorthands · Quantifiers
  - Regexes in programs · Patterns and Matcher · Replacing characters · Match results
- IO streams
  - What are streams · Output streams · Input streams
- Spring Boot
  - Introduction to Spring Boot · Getting started with Spring Boot · Basic project structure
  - Rest controller · Passing JSON to server · Beans and components · Exception handling
  - Bean Validation
  - + Accessing data — 0 / 3 topics
  - CRUD Repositories
- Scala[β]
  - Introduction to Scala · Overview of the basic program · Basic literals · Values and variables
  - Functions introduction · Introduction to collections · Branching · Tuples
- + Java internals — 2 / 7 topics
- + Object-oriented programming — 19 / 41 topics
- + Exception handling — 1 / 7 topics
- Design patterns
  - Singleton · Strategy · Encapsulating object creation · Command
  - Builder · Decorator · Factory method · Template method · Observer
  - Facade · Abstract factory
- Generics
  - Generic programming · Generics and Object · Generic methods · Type Bounds

Wildcards · Type Erasure · Generics and Reflection · Reification ·

- Functional programming
  - Functions
    - Lambda expressions · Method references · Functional interfaces ·
    - Standard functional interfaces · Function composition · Currying · Optional ·
  - Functional streams
    - Functional data processing with streams · Stream filtering · Map and flatMap ·
    - Reduction methods · Collectors · Streams of primitives · Stream pipelines ·
    - Taking elements · Parallel streams · Infinite streams · Grouping collectors ·
- Collections
  - What are collections · ArrayList · The Collections Framework overview · List ·
  - The utility class Collections · Set · Queue and Stack · Iterator and Iterable ·
  - Map ·
- Swing
  - The basic window in Swing · Swing components · JMenu · Layout managers ·
  - Window listeners · The Graphics class · Multithreading in Swing ·
- Logging
  - Standard logger ·
- Multithreading
  - Threads as objects · Custom threads · Thread management · Exceptions in threads ·
  - Working with shared data and problems · Thread synchronization · Interruptions ·
  - States of a thread · Executors · Callable and Future · Collections and thread-safety ·
  - Concurrent queues ·
- File processing
  - Files · Reading files · File hierarchies · Managing files · Writing files ·
- Networking
  - Sockets ·
- Testing tools and libraries
  - JUnit and Mockito ·
- JDBC
  - Connecting to a database with JDBC · JDBC Statements · JDBC Prepared Statements ·
  - JDBC Transactions ·
- Java Platform
  - Introduction to Java Platform · Inside the JVM ·