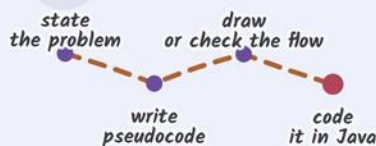


searching a list and sorting one, worked by hand before either is trusted in code



From an idea to a running program

- an **algorithm** is a finite, exact sequence of steps that solves a problem, written before any particular language is chosen
- **pseudocode** writes those steps in plain structured English, close enough to code to translate directly, but with no compiler to please
- a **flowchart** draws the same steps as boxes and arrows, useful for seeing the shape of a decision or a loop at a glance
- the actual Java code comes last, once the steps themselves are already known to be correct



the steps are settled in pseudocode before a single line of Java is written

Pseudocode against a flowchart

Pseudocode

- structured English, read top to bottom like a program
- quick to write and easy to translate line by line into Java

Flowchart

- boxes for steps, diamonds for decisions, arrows for the order
- makes a branch or a loop's shape visible at a glance, at the cost of being slower to draw

both describe the same algorithm, the choice is about which is easier to check by eye for a given problem

Linear search, the idea

- **linear search** checks every element in order, from the first index to the last, comparing each one to the target
- it stops the moment a match is found, and returns that index
- if the loop finishes without a match, the search returns an index of minus one to signal not found
- it works on ANY array, sorted or not, which is the whole reason it is still worth knowing beside faster searches

