

Java

Java Data Types

What is Arrays?

Static and Dynamic Arrays

Static Array

- 1) Storing and accessing sequential data
- 2) Temporarily storing objects
- 3) Can be used to return multiple values from a function
- 4) Used in dynamic programming to cache answers to subproblems

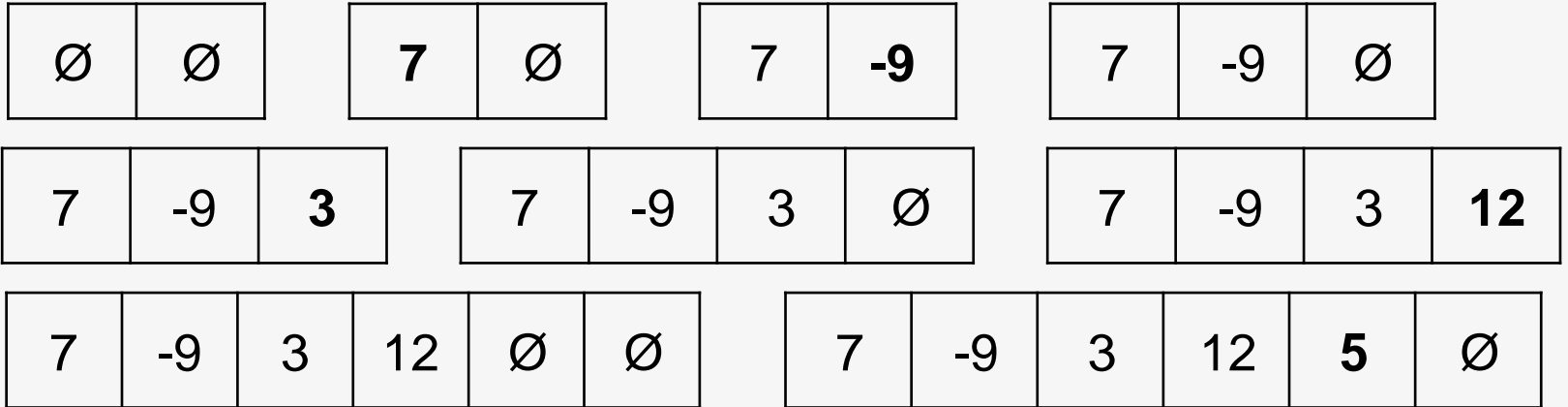
Static Array

A =

44	12	-5	17	6	0	3	9	100
↑	↓	↑	↑	↑	↑	↑	↓	↓
0	1	2	3	4	5	6	7	8

Dynamic Array

- 1) Extended capability of static array
- 2) Suppose we create a dynamic array with an initial capacity of two and then begin adding elements to it.
- 3) Formula for calculating newLength of the ArrayList
$$\text{newLength} = \text{Math.max}(\text{oldlength} + 1, \text{oldlength} \gg 1) + \text{oldLength};$$



First Problem

Given an array of integers and an integer, return the number of its occurrences.

15 Minutes

Java.utils package for Arrays and ArrayList

java.util.Arrays

- toString(T[] arr)
- deepToString(Object[] arr)
- asList(T a)
- binarySearch(T[] arr, T value)
- sort(T[] arr)
- copyOf(T[], int newLength)
- copyOfRange(T[], int start, int end)
- fill(T[] arr, T value)

java.util.ArrayList

- indexOf(T value)
- lastIndexOf(T value)
- toArray()
- sort(comparator)
- add(T value)
- addAll(Collection value)
- remove(T value)
- removeAll(Collection value)
- get(int index)
- set(int index, T value)
- clear()
- clone()
- isEmpty()
- contains(T value)
- size()