JAVA DEQUES
A library is a collection of frequently used tools to facilitate programming large applications (or other libraries).

Examples you probably have seen:
- `java.Math`
- `java.util.Scanner`
- `java.util.Random`

Other examples:
- Access to servers/databases
- Graphics
- Reflection ("self-aware" classes)
“Truly knowing a language requires knowing the library”

“Libraries are languages”
SUMMARY OF CLASSES
CONCERNING STACKS, QUEUES, AND DEQUES

- **Stack<E>** - Java documentation says to avoid (sort of deprecated)
- **ArrayDeque<E>** - Growable-array using doubling strategy (supports Deque, Stack, and Queue)
- Others outside the scope of this course
- To find how to use them, go to the Java API!
AbstractCollection\<E\>

Object

ArrayDeque\<E\>

Iterable\<E\>

Collection\<E\>

Queue\<E\>

Deque\<E\>
EXAMPLE OF USING ARRAYDEQUE\<E\>
PROBLEMS

• Rolling average (used to compute statistics for window of streaming data, e.g., miles-per-hour in a car)

• Create a stream of numbers using Brownian noise between 0 and 100 (representing speed of a car)
  • Brownian noise is a random walk. Essentially, randomly move up or down one step (±0.2)

• Use this to compute the rolling average of the last 100 numbers. Continually output the rolling average to the terminal for 100,000 iterations.