Week 2

Data Structures

Week 2

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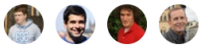
Dynamic Arrays and Amortized Analysis



In this module, we discuss Dynamic Arrays: a way of using arrays when it is unknown ahead-of-time how many elements will be needed. Here, we also discuss amortized analysis: a method of determining the amortized cost of an operation over a sequence of operations. Amortized analysis is very often used to analyse performance of algorithms when the straightforward analysis produces unsatisfactory results, but amortized analysis helps to show that the algorithm is actually efficient. It is used both for Dynamic Arrays analysis and will also be used in the end of this course to analyze Splay trees.

Less

Learning Objectives

- Describe how dynamic arrays work
- Calculate amortized running time of operations
- List the methods for amortized analysis

Less

Coursera Lab Sandbox BETA

- Easily launch Coursera's preconfigured environment for C++, Java, and Python 3 programming
- Get access to all dependencies (libraries and packages) for VSCode—no local software installation required
- Practice C++, Java, and Python 3 programming, run test cases, and work on assignments from your browser

Open Lab Sandbox

Dynamic Arrays and Amortized Analysis

Video: Dynamic Arrays 8 min Resume

Video: Amortized Analysis: Aggregate Method 5 min

Video: Amortized Analysis: Banker's Method 6 min

Video: Amortized Analysis: Physicist's Method 7 min

Video: Amortized Analysis: Summary 2 min

Quiz: Dynamic Arrays and Amortized Analysis 4 questions Due Aug 9, 1:59 AM CDT

Reading: Slides and External References 10 min