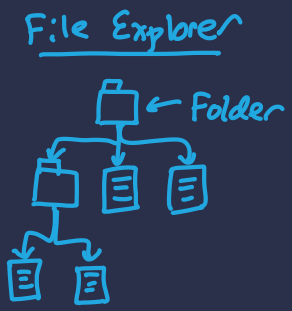
LESSON 0:
Introduction

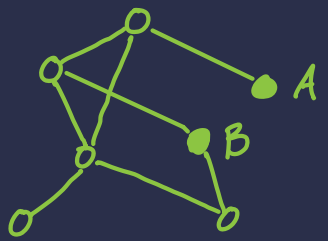
Two Main Concepts of Computer Science

① Data Structures

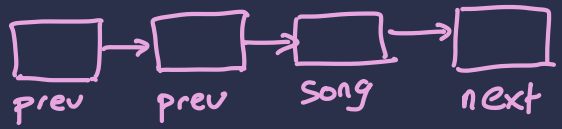
- A way we store and organize large amounts of data.



Road Network



Music Player



Two Main Concepts of Computer Science

② Analysis of Algorithms

- Way to tell which algorithms are better than others
  - efficient

Structure of the Course

Key: Coding Concepts - Data Structures - Analysis

- **Lesson 0:** Introduction to Data Structures and Analysis
- **Lesson 1:** Review of Recursion
- **Lesson 2:** Big-O Analysis and Time Complexity
- **Lesson 3:** ArrayLists and Linked Lists
- **Lesson 4:** Stacks and Queues
- **Lesson 5:** Looking at Sorting Algorithms
- **Lesson 6:** Trees
- **Lesson 7:** Binary Search Trees
- **Lesson 8:** Priority Queues and Binary Heaps
- **Lesson 9:** AVL Trees
- **Lesson 10:** Hashing and Hashmaps
- **Lesson 11:** Graphs

- ***Lessons subject to change***

Basic Prerequisites

Covered in any Entry-Level CS course!

CS Fundamentals

Variables, Data Types, Conditionals, Loops, etc.

+

Object-Oriented Programming Concepts

+

Basic Recursion and Understanding of the Stack / Heap

Languages + Tools

Java

+

Java IDE

OR

Language of Your Choice!

+

OPTIONAL

GitHub

Extra Resources

Where: In the description below!

Contents:

- Code and notes posted to GitHub
- Any useful external resources