



CS 400

B-Tree Introduction

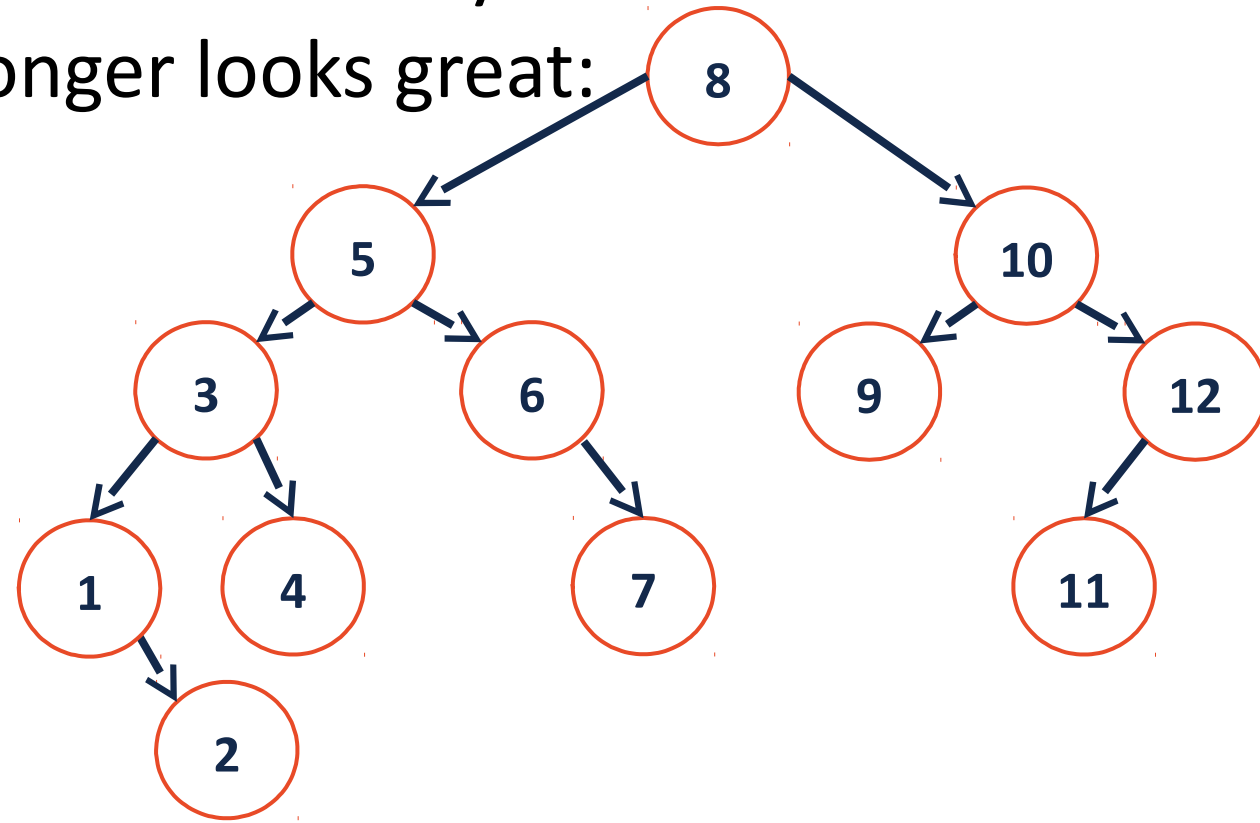
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B-Tree Motivation

Big-O assumes uniform time for all operations, but this isn't always true.

However, seeking data from the cloud may take 100ms+.

...an $O(\lg(n))$ AVL tree no longer looks great:



Real Application

Imagine storing Facebook profiles for everyone in the US:

How many records?

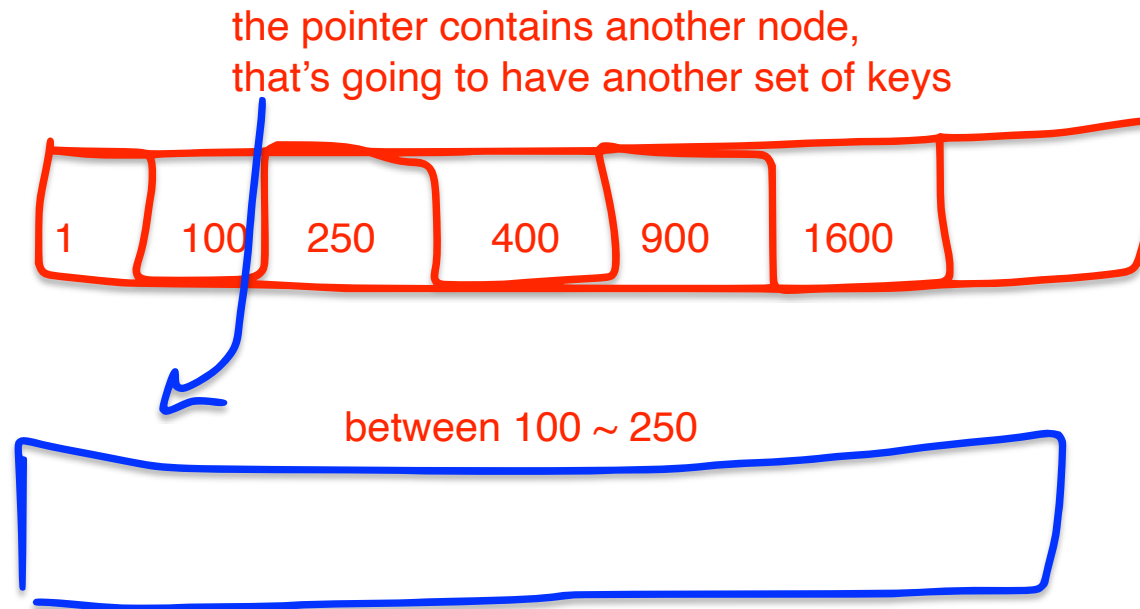
How much data in total?

How deep is the AVL tree?

BTree Motivations

Knowing that we have large seek times for data, we want to:

The goal of BTree : to create a data structure that is going to perform extremely well in both main memory, as well as in on disk



BTree (of order m)

-3	8	23	25	31	42	43	55
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8 keys
 $m=9$

order of a BTree refers to the size of the nodes, not the fact that the keys are in sorted order.

order of a BTree : maximum number of keys that a given node can have, plus one

Goal: Minimize the number of reads! we want to minimize the seeks to reach our data

Build a tree that uses _____ / node
[1 network packet]
[1 disk block]