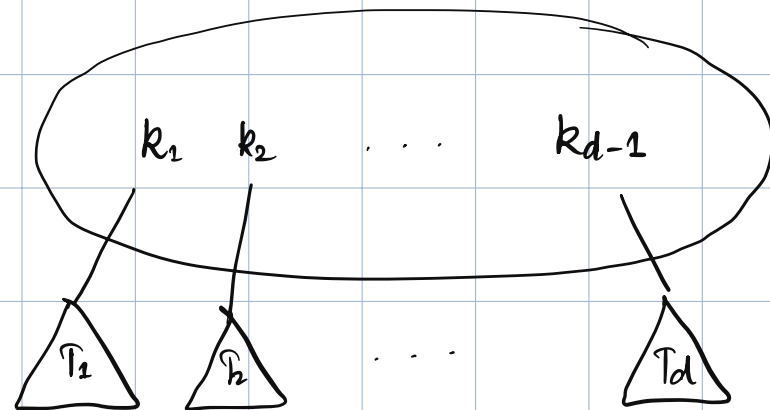


2024/10/01 - Data Structures - Week 10

Multiway Search Tree: Each internal node of a multiway search tree

T

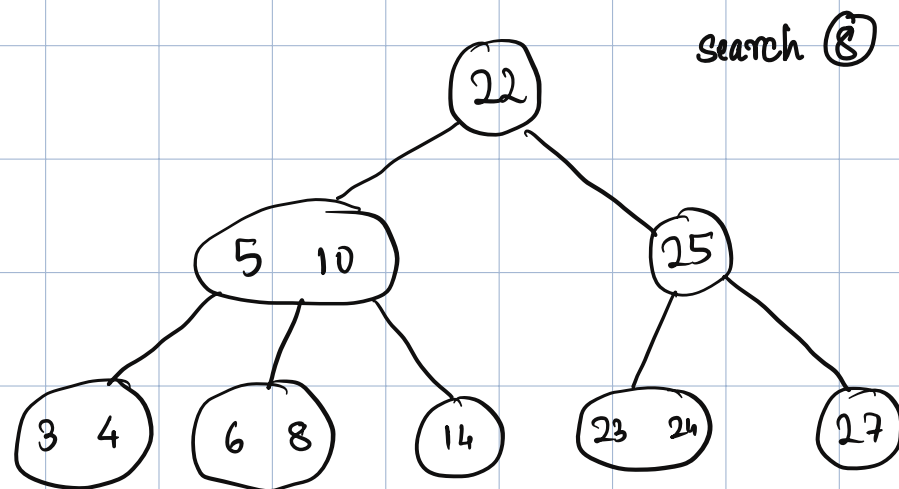
- * has at least two children.
- * stores collection of attributes of form (key, val) .
- * has at least one and at most $(d-1)$ keys
- * if an internal node has k keys, then it should have $(k+1)$ children



$$key(T_1) \leq k_1 \leq key(T_2) \leq k_2 \leq \dots \leq k_{d-1} \leq key(T_d)$$

(2-4) tree : $d = 4$
at most 3 keys
at most 4 children

Each node can have at least one key and at most 3 keys
at

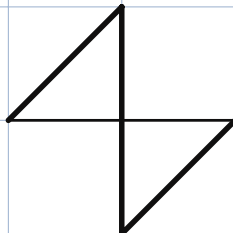
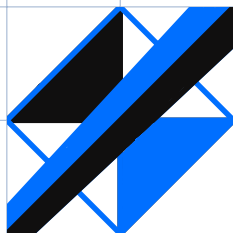


Claim: If (2-4) tree consists of n nodes

$$\log_4 n \leq h \leq \log_2 n$$

each node has exactly 4 children

each node has exactly 2 children



2024/10/03

B - Trees

Multway search tree (M-way search tree)

— if internal node is half full

$$\frac{M}{2} - 1 \leq \# \text{ keys} \leq M - 1$$

For simplicity, we consider M even.

~