

CMPT 225 - B-trees

m-ary Search Tree

Rooted tree where

- each node may have up to m children
- a node with k children has $k-1$ keys
- keys and children are arranged so that
The natural generalization of in-order traversal visits keys in order
Search is a natural generalization of BST search

Order m B-tree

- m -ary search tree
- the root has between 2 and m children, or is a leaf
- non-leaf nodes, other than the root have between $\lceil m/2 \rceil$ and m children
- data items stored at leaves; keys in other nodes guide search
- in a non-leaf node, the i th key is the smallest key stored in the $i+1$ st subtree
- all leaves are at the same depth
- for some fixed $l > 2$, every leaf has between $\lceil l/2 \rceil$ and l keys, unless there are fewer than $\lceil l/2 \rceil$ keys in the tree.

Perfect Trees

A perfect m -ary tree is an m -ary tree where:

- every node has 0 or m children
- every leaf has the same depth