CSCI 2270: Data Structures

Lecture 15: Binary Search Trees (introduction)

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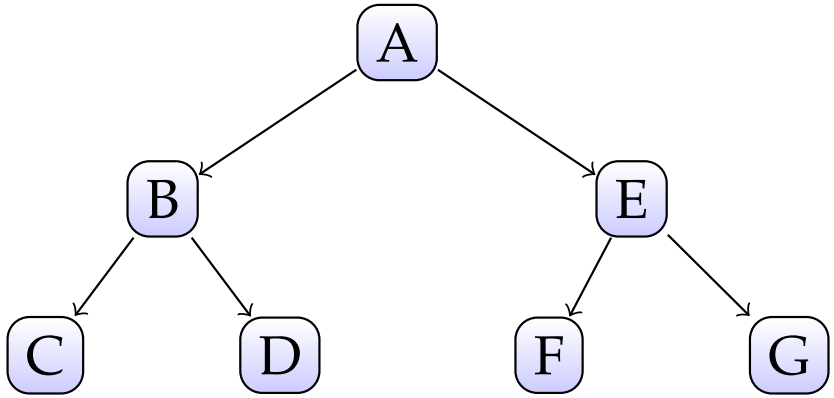

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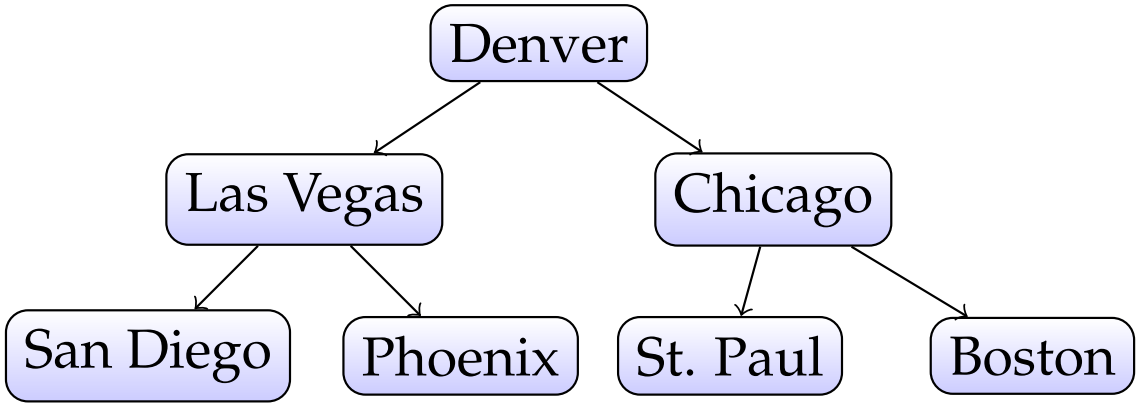
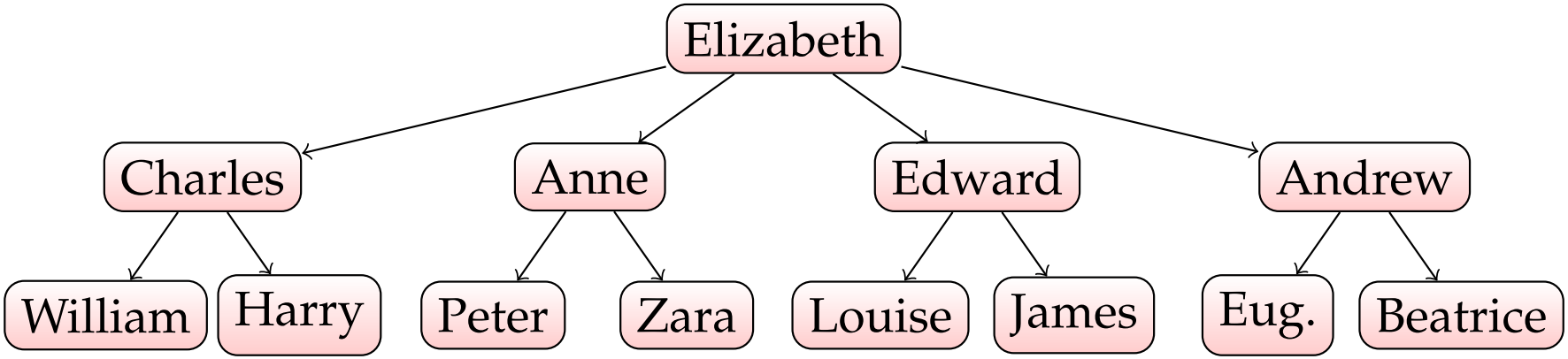
Trees

Binary Search Trees

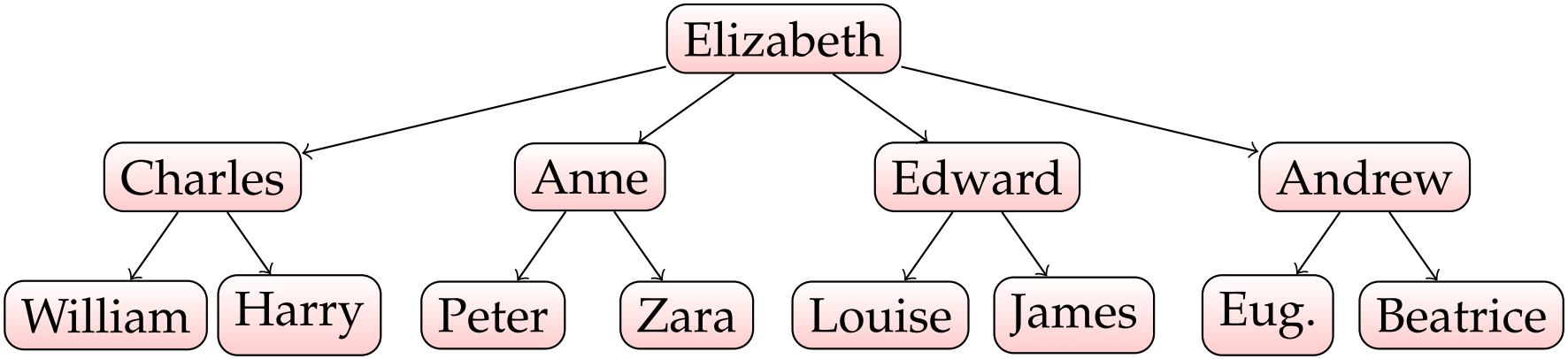
Trees: Terminology



Trees: Terminology

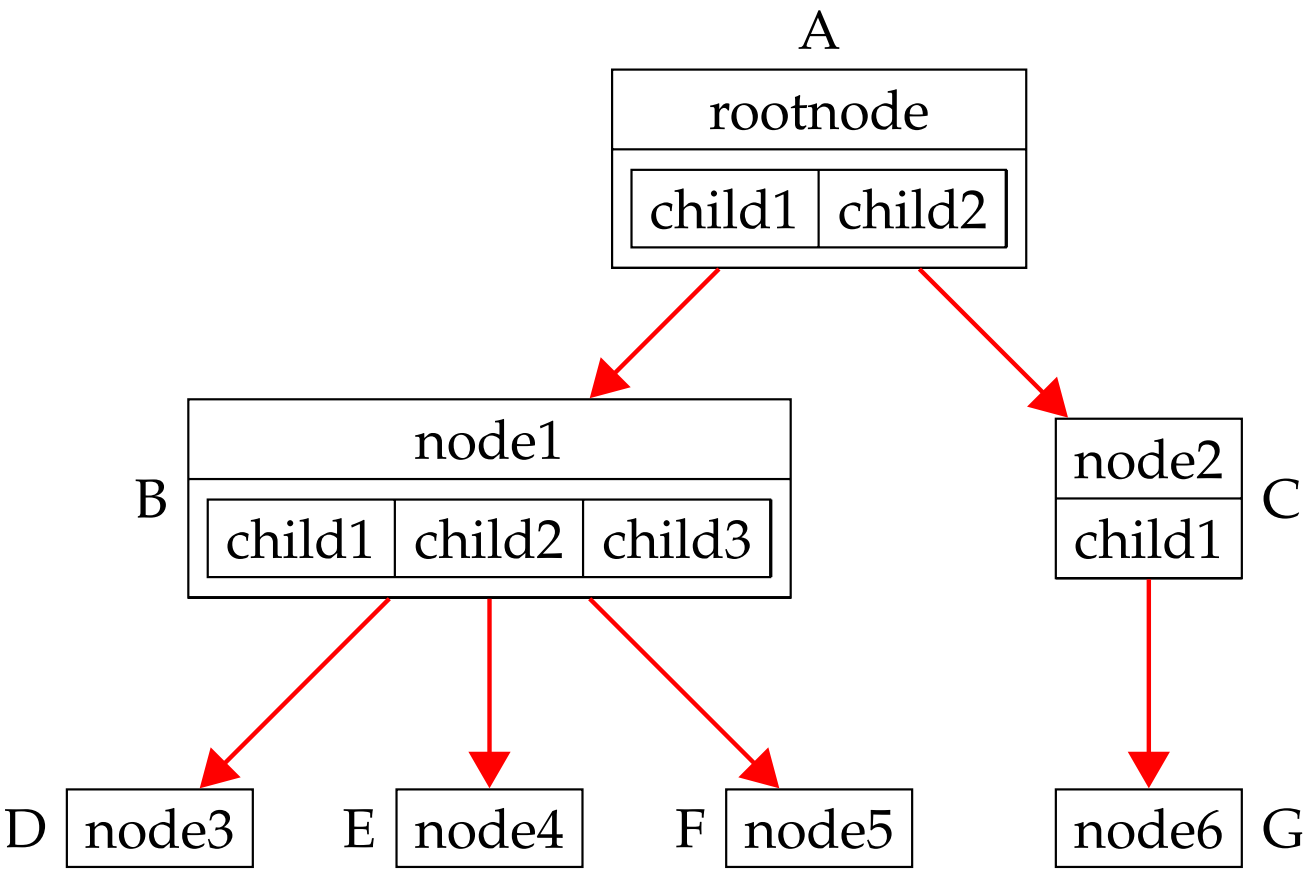


Trees: Terminology

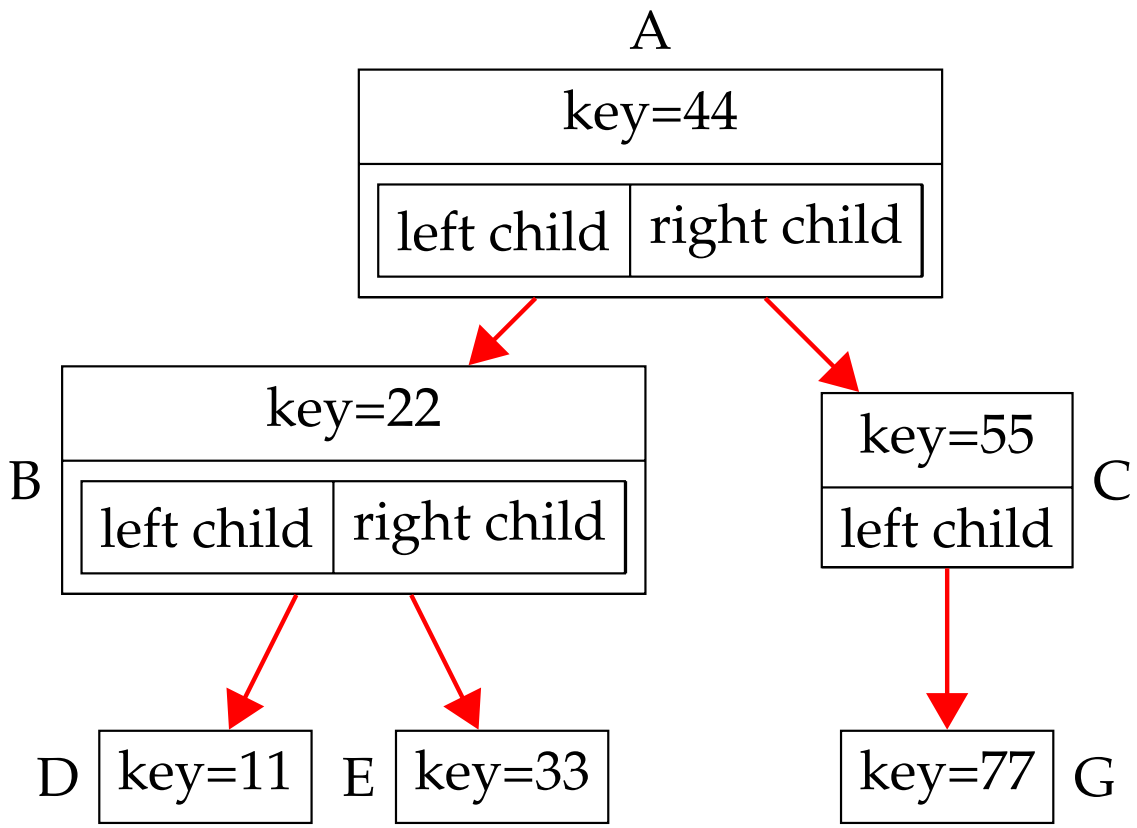


- *arity* of a tree: binary trees, ternary trees, k-ary trees, etc.
- *root* of a tree
- *leaf* of a tree
- *child* of a node
- *parent* of a node
- *ancestor* of a node
- *descendant* of a node
- *sibling* of a node

Trees as a linked structure



Binary Trees as a linked structure

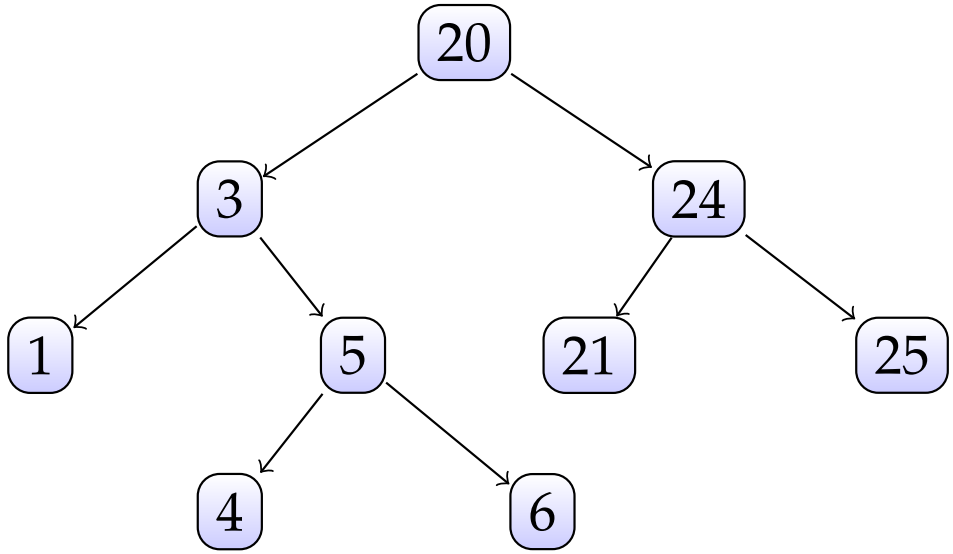


- *left sub-tree* of a node
- *right sub-tree* of a node

Trees

Binary Search Trees

Binary Trees



Properties: If x and y are nodes, and

1. y is in the left sub-tree of x, then

$$y.key < x.key$$

2. y is in the right sub-tree of x, then

$$y.key \geq x.key$$