

# Chap 5. Trees

# Terminology

- Figure 5.1
- Tree
  - Definition // § 5.1.1
- Figure 5.2
- terminology

# Representation of trees

- List representation
  - Figure 5.3
  - Figure 5.4
- Left child-right sibling representation
  - Figure 5.5
  - Figure 5.6
- Representation of degree-two tree
  - Figure 5.7
  - Figure 5.8
  - Binary tree

# Binary trees

- Definition // § 5.2.1
- ADT 5.1
- Figure 5.9
- Figure 5.10
- Lemma 5.2 and 5.3
- Full binary tree
  - Definition // § 5.2.2
  - Figure 5.11
- Complete binary tree
  - Definition // § 5.2.2

# Binary tree representations

- Array representation
  - Figure 5.12
  - Lemma 5.4
- Linked representation
  - Declarations // § 5.2.3.2
  - Figure 5.13
  - Figure 5.14

# Binary tree traversals

- Figure 5.16
- Program 5.1: inorder traversal of a binary tree
  - Figure 5.17
- Program 5.2: preorder traversal of a binary tree
- Program 5.3: postorder traversal of a binary tree
- Program 5.4: iterative inorder traversal
- Program 5.5: level-order traversal of a binary tree

# Additional binary tree operations

- Program 5.6: copying a binary tree
- Program 5.7: testing for equality of binary trees

# Threaded binary trees

- Figure 5.21
- Declarations // § 5.5.1
  - Figure 5.22
- Figure 5.23
- Program 5.10: finding the inorder successor of a node
- Program 5.11: inorder traversal of a threaded binary tree



# Heaps

- Priority queue
  - Max
  - Min
- ADT 5.2
- Definition // § 5.6.2
  - Max(min) tree
  - Max (min) heap
- Figure 5.25 and 5.26
- Figure 5.27
- Declarations // § 5.6.3
- Program 5.13
- Figure 5.28
- Program 5.14

# Heap sort

- Example 7.7
- Figure 7.7 and 7.8
- Program 7.12 and 7.13

# Binary search trees

- Dictionary
- ADT 5.3
- Binary search tree
  - Definition // § 5.7.1
- Figure 5.29
- Program 5.15 and 5.16
- Figure 5.30
- Program 5.17

# Selection trees

- Winner tree
  - Figure 5.32
  - Figure 5.33
- Loser tree
  - Figure 5.34

# Forest

- Figure 5.35
- Figure 5.36

# Disjoint set

- Union and find
- Figure 5.37 and 5.38
- Figure 5.39
- Figure 5.40
- Program 5.19