

# I-APG1, Lektion 7

## Bent Bruun Kristensen

### Balanced Binary Search Trees

- Ch. 16:
  - Oplæg: 16.1
  - Opgave: 1, 5

# Balanced Binary Search Trees

- height is  $O(\log n)$ , where  $n$  is the number of elements in the tree
- AVL (Adelson-Velsky and Landis) trees
- red-black trees
- *get*, *put*, and *remove* take  $O(\log n)$  time

# AVL Tree

- binary tree
- for every node  $x$ , define its balance factor
  - balance factor of  $x =$  height of left subtree of  $x$ 
    - height of right subtree of  $x$
- balance factor of every node  $x$  is  $-1, 0,$  or  $1$