

# Outline

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- Midterm pitfalls
- Assignment 3 discussion

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O(n) usually denotes the worst case in an algorithm analysis

The time complexity of an unsuccessful search in a binary search tree is:
 O(n)

#### • Pseudo code:

- Not writing a description of the program
- Not a description of the implementation
- Need to declare functions, variables, assignments, etc.
- Simplified form of loops
- Uses indentations to denote each block of code

#### • Pseudo code for a breath first traversal:

Function BFS(s): initialize container Lo to contain vertex s i = 0while Li is not empty do create container Li+1 to initially be empty for each vertex v in Li do for each edge e incident on v do if edge e is unexplored then let w be the other endpoint of e if vertex w is unexplored then label e as a discovery edge insert w into Li+1 else label e as a cross edge i = i + 1End function

#### • Height of a binary tree:

o The height level of the longest branch
o Minimum log(n+1)−1, max: (n − 1)/2

int treeheight(node T) Input: root node Output: integer denotes height of the tree

int treeheight(node T)

if T is external return o return max(1+treeheight(leftchild(T)), 1+treeheight(rightchild(T))

End treeheight

### Assignment 3

- Build a binary expression tree from a fully parenthesized expression
- Operands are stored in the leaves
- Start from a simple case
- Eg. (A + B)
- Eg. ((A+B)-C)

