Phill-DS-1213

Tree 的名詞與概念

Node 節點 → data field, 資料欄位

Link, edge, branch 分支 → 連接兩個節點的線

degree 分支度

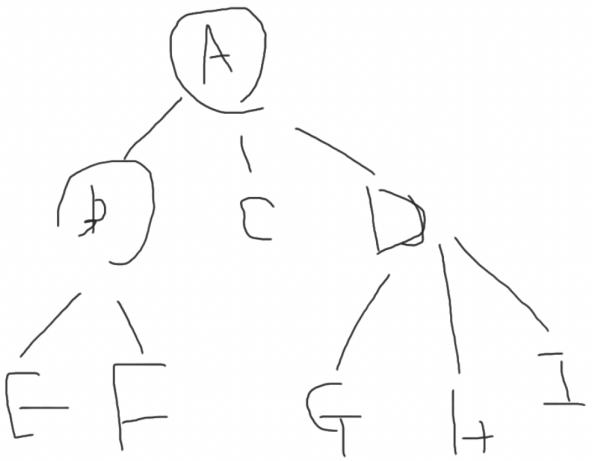
- 某一個node : 多少個 subtrees → 跟多少個 nodes 相連 → $T_1, T_2, \ldots, T_N$ = N
- 一棵樹 degree → all nodes 最大 degree
- leaf node → degree =0
- non-leaf node → degree <> 0

hierarchical relationship

- child (children) → children of a node → roots of subtrees → X’s children
- parent → children’s parent → owns your subtree
- sibling → sibling nodes → parent node 相同
- ancestors → from root ~ X → path 包含的所有的 nodes → ancestors
- level : root level =1, children of root level=2, X level =N → X’s children level =N+1
- level of tree → height, depth → all nodes , maximum level

height=3

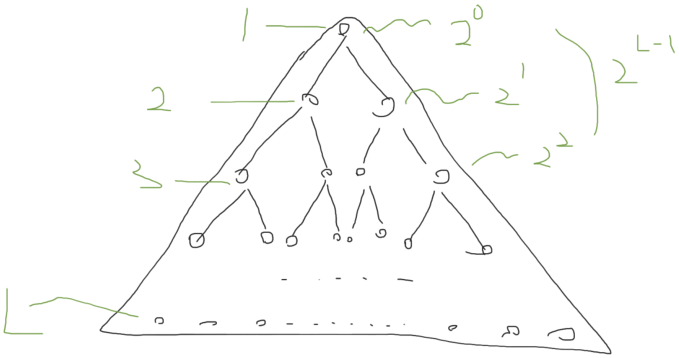
root = A
node #= 9
A's degree=3
leaf nodes = EFGHI
GHI parent =D
H siblings = GI
I ancestors = AD



x = y+z;

Nodes and edges 的計算

- 每一個 node 都一定有一個 edge → root 例外
- 任何一棵樹 → Node # N 跟 edge # B 有何關係 → N = B + 1
- 二元樹 binary tree
  - level-L 節點個數最多是多少? 2^{L-1}



  - depth K binary tree , nodes # = $2^K - 1$