ILLINOIS

Tree Practice

Learning Objectives

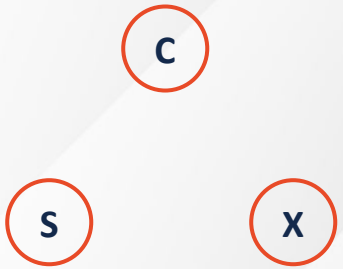
1. Apply tree definitions to solve problems

Recap

1. General Trees
2. Binary Trees - nodes have at most 2 children
    a. Full (Strict) -> each node has 2 or 0 children
    b. Perfect -> All leaves on same level
    c. Complete -> Perfect but “pushed left”

General Trees

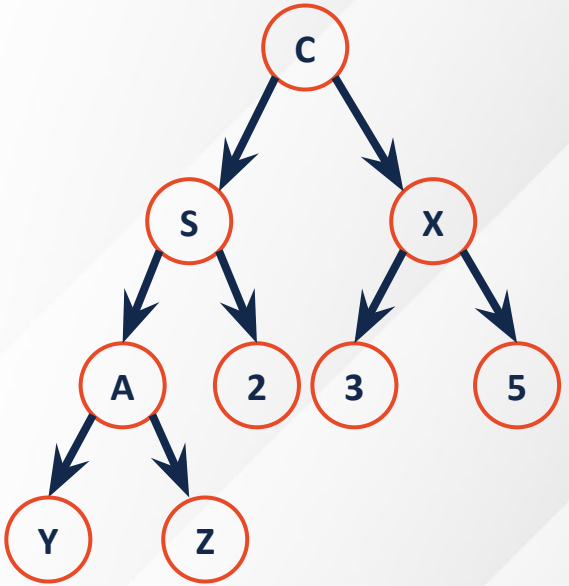
How many unique trees can be made with 3 nodes?



Tree Property: complete

Is every **full** tree **complete**?

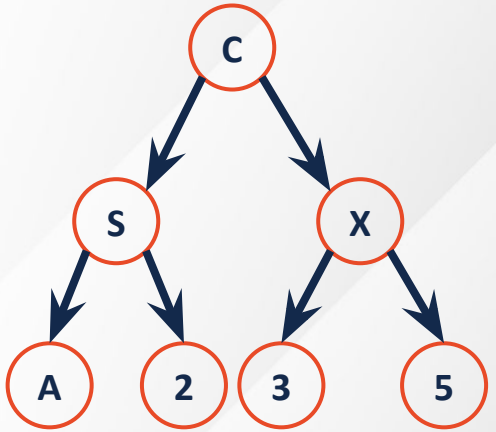
If every **complete** tree **full**?



Perfect Trees

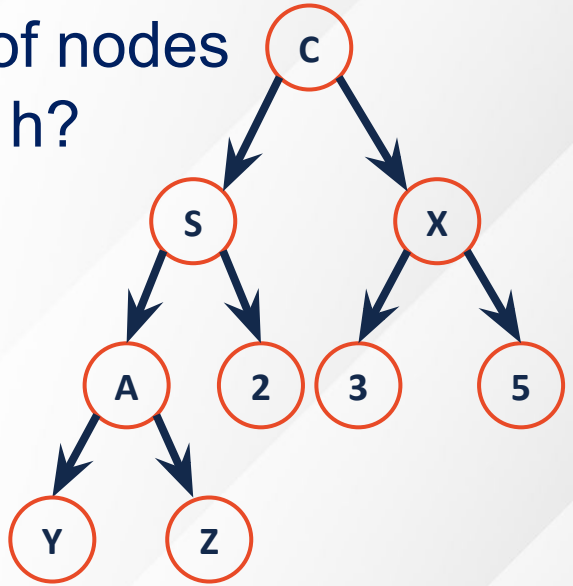
How many nodes in total?

How many leaf nodes?



Complete Trees

What is the range of number of nodes in a complete tree with height h?



General Trees

If a tree has n_1 nodes with 1 child,

n_2 nodes with 2 children,

…

n_m nodes with m children,

then how many leaf nodes are there?

General Trees

Wasted Pointers in a binary tree?