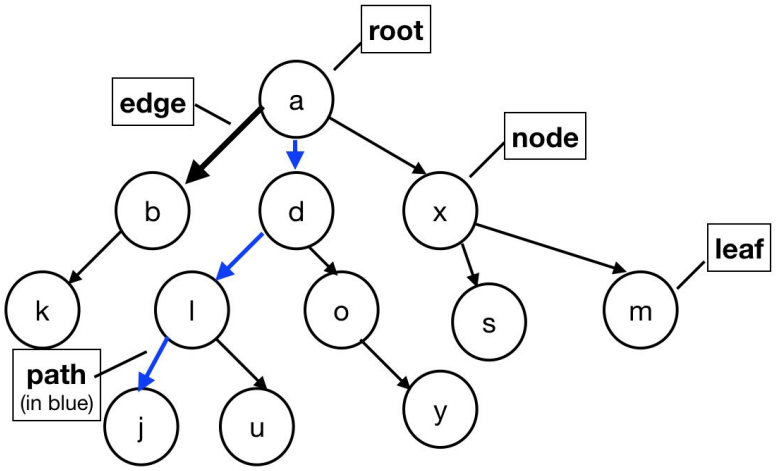
CS 225 Spring 2019 :: TA Lecture Notes
2/13 Tree Intro

By Wenjie

"The most important non-linear data structure in computer science."
- David Knuth, The Art of Computer Programming, Vol. 1

- **Trees**
  - *Rooted* : every node can be reached via a path from the root
  - *Acyclic* : without cycles
  - Vertex: "nodes"
  - Edge: a connection between two vertices
  - Path: sequence of edges
  - Parents: Node **b, d, x** have Node **a** as their parent
  - Children: **b, d, x,** are the children of **a**
  - Siblings: **b, d, x,** are siblings of each other
  - Ancestors: **u** has ancestors **l, d, a**
  - Descendants: **x** has **s, m** as its descendants
  - Leaves: Vertices with no children



- **Binary Trees**
  - Each node has *at most two children*: left child and right child
  - Each node has a left and a right subtree (can be empty)

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