CSC3001: graph theory **Fall 2020**

Lecture 5: Nov 13

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Definition 5.1 (Circuit-free Graph) *A graph is said to be circuit-free iff it has no circuits.*

Definition 5.2 (Tree) *A graph is called a tree iff it is circuit-free and connected.*

Definition 5.3 (Trivial Tree) *A trivial tree is a graph that consists of a single vertex.*

Definition 5.4 (Forest) *A graph is called a forest if, and only if, it is circuit-free and not connected.*

Example 5.5 (Taxonomy Tree) *Taxonomy tree is a father set of decision tree.*

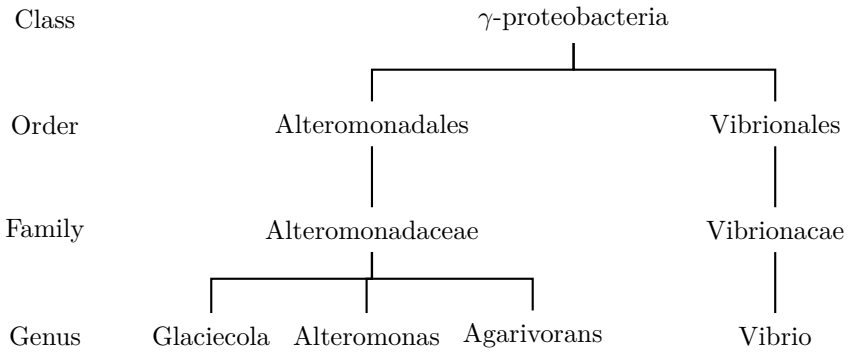

Figura 5.1: A taxonomy tree

Example 5.6 (Decision Tree) *Nodes represent different decision point. Edges represent different decision results.*

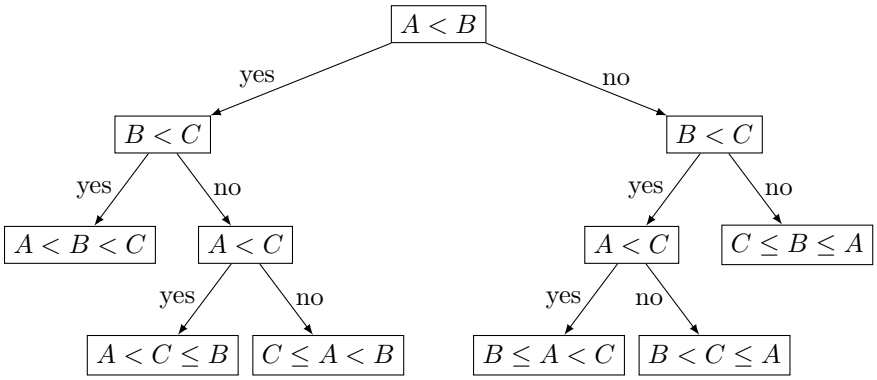

Figura 5.2: A decision tree for sorting three values.

Example 5.7 (Parse Tree) *This work has proved useful in constructing compilers for high- level computer languages. In the study of grammars, trees are often used to show the derivation of grammatically correct sentences from certain basic rules. Such trees are called syntactic derivation trees or parse trees.*