Trees

1 Why

Tree branches split and do not recombine. We formalize this property in the language of graphs.

2 Definition

A *tree* is a connected acyclic graph.

2.1 Notation

We denote trees by T, a mnemonic for "tree." Let u, v be two vertices connected in T. We denote that the edge between u and v exists by writing $\{u, v\} \in T$.

3 Properties

Proposition 1. *There is only one path between any two vertices in a tree.*

Proof. Suppose to the contrary that there were two paths from vertex u to vertex v, then by combining these paths we obtain a cycle. But the tree has no cycles, so there must not be two paths between any two vertices. □