A connected undirected graph with no simple circuits

The property that each of their connected component is a tree

An undirected graph is a tree if and only if there is a unique simple path between any two of its vertices.

A tree in which one vertex has been designated as the rot and every edge is directed away from the root.

If v is a vertex in t other than the root, the parent of v is the unique vertex u such that there is a directed edge from u to v.

Vertices are u and v. When u is the parent of v, v is called a child of u.

Vertices with the same parent are called siblings.

The ancestors of a vertex other than the root are the vertices in the path from the root to this vertex.

The descendants of a vertex v are those vertices that have v as an ancestor.

A vertex of a rooted tree if it has no children.

Vertices that have children.

When every internal vertex has no more than m children.

When every internal vertex has exactly m children.

A rooted tree where the children of each internal vertex are ordered

If an internal vertex has two children

First child of a binary tree

Second child of a binary tree

Tree rooted at the left child

Tree rooted at the right child

A tree with n vertices has n-1 edges

A full m-ary tree with i internal vertices contains n = mi + 1 vertices.

A full m-ary tree with (i ) n vertices has i = (n − 1)/m internal vertices and l = [(m − 1)n + 1]/m leaves, (ii ) i internal vertices has n = mi + 1 vertices and l = (m − 1)i + 1 leaves, (iii ) l leaves has n = (ml − 1)/(m − 1) vertices and i = (l − 1)/(m − 1) internal vertices.

A rooted m-ary tree of height h is balanced if all leaves are at levels h or h − 1.

There are at most mh leaves in an m-ary tree of height h.

Binary tree in which each child of a vertex is designated as a right or left child, no vertex has more than one right child or left child, and each vertex is labeled with a key, which is one of the items.

A rooted tree in which each internal vertex corresponds to a decision, with a subtree at these vertices for each possible outcome of the decision.

A sorting algorithm based on binary comparisons requires at least upper bound(log n!) Comparisons.

The average number of comparisons used by a sorting algorithm to sort n elements based on binary comparisons is (omega)(n log n).

An algorithm that takes as input the frequencies (which are the probabilities of occurrences) of symbols in a string and produces as output a prefix code that encodes the string using the fewest possible bits, among all possible binary prefix codes for these symbols.

At the start of a game there are a number of piles of stones. Two players take turns making moves; a legal move consists of removing one or more stones from one of the piles, without removing all the stones left.a player without a legal move loses.

The strategy where the first player moves to a position represented by a child with maximum value and the second player moves to a position of a child with minimum value

The value of a vertex of a game tree tells us the payoff to the first player if both players follow the minmax strategy and play starts from the position represented by this vertex

A vertex v at level n, for n ≥ 1, is labeled x1.x2. . . . .xn, where the  
unique path from the root to v goes through the x1st vertex at level 1, the x2nd vertex at level 2,  
and so on.

Procedures for systematically visiting every vertex of an ordered rooted tree.

To make such expressions unambiguous it is necessary to include parentheses in the inorder traversal whenever we encounter an operation.

Obtain the prefix form of an expression when we traverse its rooted tree in preorder.

Expressions written in prefix form.

We obtain the postfix form of an expression by traversing its binary tree in postorder.

Expressions written in postfix form.

Let g be a simple graph. A spanning tree of g is a subgraph of g that is a tree containing every vertex of g.

Depth first search.

Producing a spanning tree of using a simple graph. A rooted tree will be constructed, and the underlying undirected graph of this rooted tree forms the spanning tree.

A spanning tree so that the sum of the weights of the edges of the tree is minimized.

Begin by choosing any edge with smallest weight, putting it into the spanning tree. Successively add to the tree edges of minimum weight that are incident to a vertex already in the tree, never forming a simple circuit with those edges already in the tree. Stop when n − 1 edges have been added.

Choose an edge in the graph with minimum weight. Successively add edges with minimum weight that do not form a simple circuit with those edges already chosen. Stop after n - 1 edges have been selected.