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Period 2

APCS

Kuszmaul

Vocabulary 9

Definitions:

Graph: A diagram representing a system of connections or interrelations among two or more edges or nodes.[1]

lowest common ancestor: Given nodes a and b, the lowest (deepest) node that has both a and b as descendants is the lowest common ancestor.[2]

acyclic graph: A directed graph with no directed cycles.[3]

partition (graph): To split a graph into two or more parts by removing a node.[4]

leaf (graph): A node that cannot reach any other nodes in a tree.[5]

root (graph): A node that can reach another node in a tree.

search (tree): 2 main types → Depth - first order: To search by going as deep into the tree as possible until you reach a leaf, then return to the nearest root and move one branch to the right. Breadth - first order: To search by going down the levels of a tree.[6]

Sentences:

1. (graph - lowest common ancestor): A lowest common ancestor can be located in a graph by finding the root node.
2. (graph - acyclic graph): The difference between a graph and an acyclic graph is that a graph has a cycle, whereas an acyclic graph does not, meaning that one cannot go from one node back to another node.

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[1] "Graph (mathematics) - Wikipedia, the free encyclopedia." 2011. 26 Oct. 2015 <https://en.wikipedia.org/wiki/Graph_(mathematics)>

[2] "Lowest Common Ancestor in a Binary Tree | Set 1 ..." 2014. 26 Oct. 2015 <http://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>

[3] "Testing whether a graph is acyclic." 2015. 26 Oct. 2015 <https://www.cs.hmc.edu/~keller/courses/cs60/s98/examples/acyclic/>

[4] Mr. Kuzmaul's informational lecture on the process of partitioning.

[5] Mr. Kuzmaul's informational lecture on the root and leaf of a tree by using cities as analogies to nodes in order to provide a clear and understandable explanation.

[6] Mr. Kuzmaul's informational lecture on the difference ways of searching through a tree.

3. (graph - partition): One can partition a graph into two or more parts by removing the root node.
4. (graph - leaf) The leaf in a graph is a node that cannot reach any other nodes.
5. (graph - root) The root in a graph is a node that can reach another node.
6. (graph - search) There are many ways to search a graph, but the two main types of searching are depth-first order and breadth-first order.
7. (lowest common ancestor - acyclic graph) Although an acyclic graph has no cycle, it can still have a node that the lowest common ancestor of two other nodes.
8. (lowest common ancestor - partition) One can partition a tree into a certain number of parts by removing a lowest common ancestor.
9. (lowest common ancestor - leaf) A leaf cannot be the lowest common ancestor since it doesn't reach any other nodes in the tree.
10. (lowest common ancestor - root) A root can be the lowest common ancestor since it does reach other nodes in the tree.
11. (lowest common ancestor - search) We can start the search at the lowest common ancestor to find two nodes that share a common ancestor.
12. (acyclic graph - partition) Partitioning an acyclic graph will not give it a cycle. It will split the graph into a certain number of parts.
13. (acyclic graph - leaf) The leaf of an acyclic graph can neither reach another node nor go back to the last node.
14. (acyclic graph - root) The root of an acyclic graph can reach other nodes deeper in the tree.
15. (acyclic graph - search) Searching a acyclic graph is the same as searching a normal graph.
16. (partition - leaf) It is not possible to partition a tree from the leaf because it does not reach any other nodes.
17. (partition - root) Because the root can reach other nodes, it is a good place to start the partition of a tree.
18. (partition - search): If one partitions a tree, then they can no longer search the tree.

19. (leaf - root) A root is a node that can reach another node, but a leaf cannot reach any other nodes in a tree.
20. (leaf - search) In a depth-first order search, the program searches by going as deep into the tree as possible until it reaches a leaf, then returns to the nearest root and moves one branch to the right.
21. (root - search) A search of a tree will almost always start at the root node.