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CISP - 430

Assignment 12
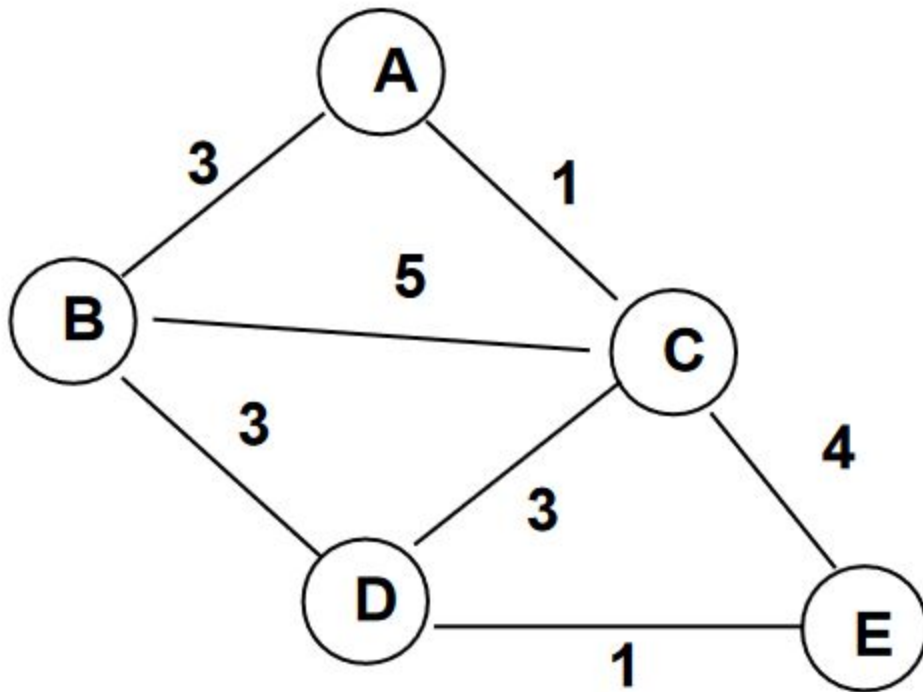
5/10/2018

Part 0 - Prim's Algorithm Hand Execution.

Description:
The goal for this section of the assignment was to determine the minimum spanning tree for both graph 1 and 2 using Prim's algorithm. Prim's algorithm starts at a predetermined node (in this case A) and figures out the cheapest routes to create the cheapest tree. The algorithm does this by comparing different links and choosing the cheapest one. This algorithm is known as a greedy algorithm because it always chooses the cheapest option.
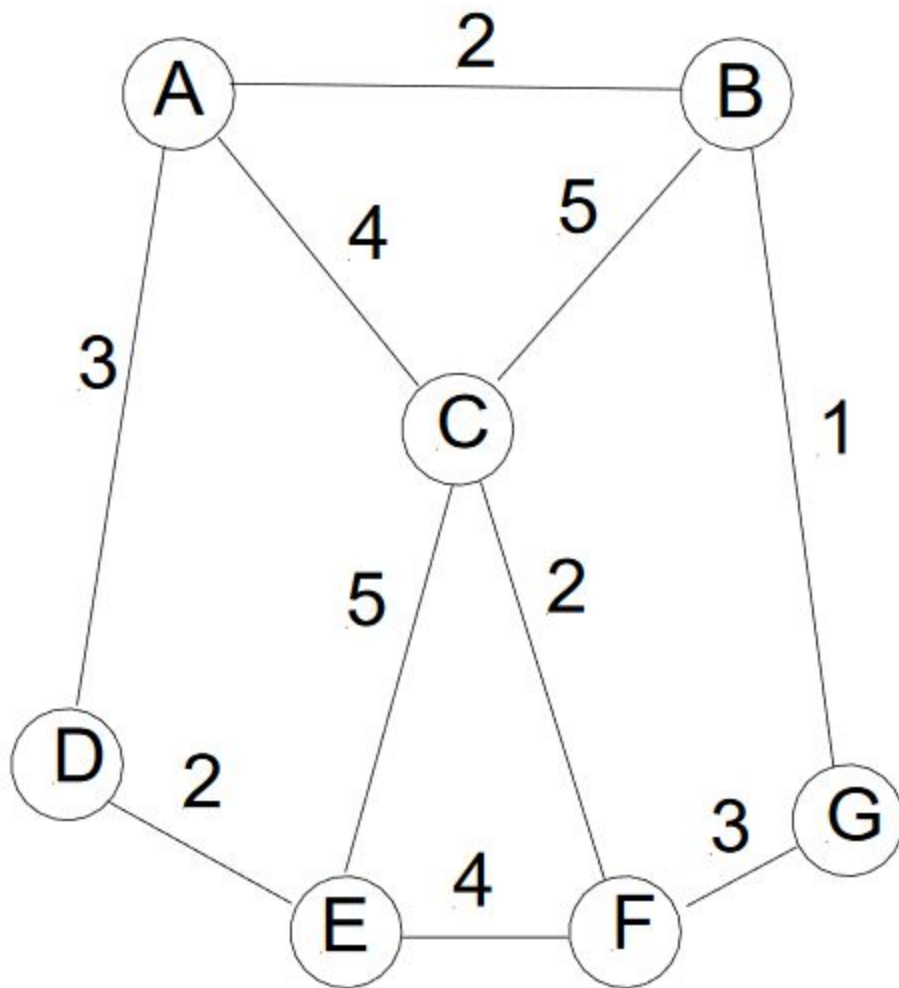
Graph 1:

Graph 1 Hand Execution:
Note: Due to the large size of this diagram it will take up the next two pages.

Graph 2:

Graph 2 Hand Execution:
Note: Due to the large size of this diagram it will take up the next two pages.

Part 1 - Dijkstra's Algorithm Hand Execution.

Description:

The goal for this section of the assignment was to determine the routing table for both graph 1 and 2 using Dijkstra's algorithm. Dijkstra's algorithm creates a routing table for the node that is passed and is not global. This routing table uses the cheapest options available and represents the cheapest route from the originating node to any node in the graph. The algorithm does this by comparing different links and choosing the cheapest one. This algorithm is known as a greedy algorithm because it always chooses the cheapest option.

Note:

The graphs on which this algorithm is used are the same ones listed above. If you wish to see the original graphs please refer to those.

Graph 1 Hand Execution:

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Graph 2 Hand Execution:

Note: Due to the large size of this diagram it will take up the next two pages.

Part 2 - Distance Vector (RIP) Hand Execution.

Description:

The goal for this section of the assignment was to determine the global routing table for both graph 1 and 2 using the RIP algorithm. This algorithm creates a global routing table for the graph. This global routing table uses the cheapest options available and represents the cheapest routes from any originating node to any node in the graph. The algorithm does this by comparing different links and choosing the cheapest one. Unlike Dijkstra's algorithm, the data that each node starts with only refers to those directly connected to each other. The way this algorithm creates the global table is by essentially sharing data between each node and determining the cheapest routes.

Note:

The graphs on which this algorithm is used are the same ones listed above. If you wish to see the original graphs please refer to those.

Graph 1 Hand Execution:

Note: Due to the large size of this diagram it will take up the next two pages.

Graph 2 Hand Execution:

Note: Due to the large size of this diagram it will take up the next five pages.

Conclusion

The algorithms that we learned for this assignment are interesting. I can personally see their uses in programming and why they are important. I found outlining and diagramming them by hand to be useful in understanding how they worked in greater detail. Looking forward to learning more in CISP 440!