Names: _____

CS Logins: _____

Worksheet #14

Shortest Paths in Graphs

As always, sit with a partner and work through these together.

Activity 1: BFT

Node distance 0 from A: __A__

Nodes distance 1 from A: _____

Nodes distance 2 from A: _____

Nodes distance 3 from A: _____

Shortest Path from A to E: _____

Activity 2: Fill in the Table

Goal Node	Shortest Path	Shortest Distance
B		
C	[A, C]	2
D		
E		

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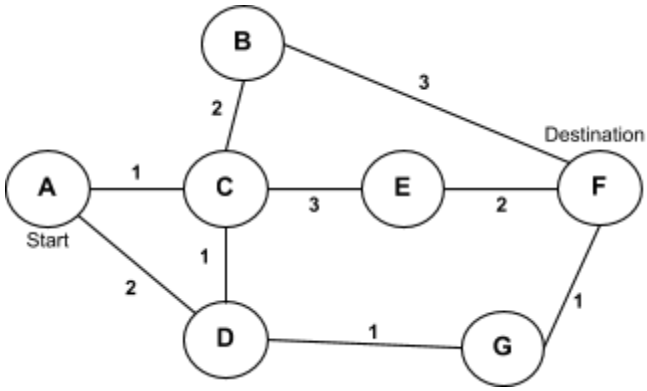
Activity 3: Simulate Dijkstra's

Decorate each vertex with the (changing) distance from the start vertex A. Put the distance directly above each node. Cross out visited nodes. List the order that Dijkstra's algorithm would visit the nodes in.

Order of visiting nodes: _A, C, _____

Shortest path from A to F: _____

Length of path: _____



Activity 4: Runtime of Dijkstra's

1. O(_____) **2. O(_____)**

3. O(_____) **4. O(_____)**

5. O(_____) **6. O(_____)**

7. O(_____)

Activity 5: Dijkstra's on Graph with Negative Edges

Try to use Dijkstra's algorithm for the graph on the slides. What problems do you find while doing so?

Activity 3: Simulate Dijkstra's

Decorate each vertex with the (changing) distance from the start vertex A. Put the distance directly above each node. Cross out visited nodes. List the order that Dijkstra's algorithm would visit the nodes in.

Order of visiting nodes: _A, C, _____

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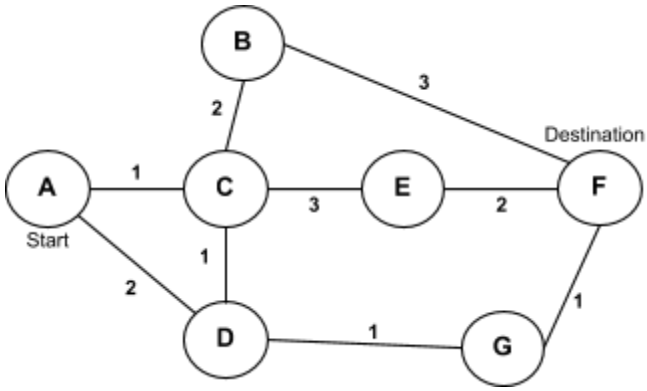

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