Week 8 Review Quiz

Due May 24 at 12:30pm **Points** 7 **Questions** 7
Available until May 24 at 12:30pm **Time Limit** None

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	103 minutes	4 out of 7

ⓘ Correct answers will be available on May 24 at 12:30pm.

Score for this quiz: **4** out of 7
Submitted May 24 at 10:48am
This attempt took 103 minutes.

Question 1 — 1 / 1 pts

Select all true statement(s) about MapReduce operations

- [x] Map can be executed in parallel for each key/value pair
- [ ] Shuffle can be executed in parallel for each key
- [x] Reduce can be executed in parallel for each key

Question 2 — 1 / 1 pts

If you want to compute distributed sum with n^(1/5) machines each with n^(4/5) memory like we did in class, how many rounds do you need?

- 1
- 2
- 3
- 4
- 5

Incorrect

Question 3

0 / 1 pts

If you want to compute distributed sum with n^(4/5) machines each with n^(1/5) memory like we did in class, how many rounds do you need?

- 1
- 2
- 3
- 4
- 5

Incorrect

Question 4

0 / 1 pts

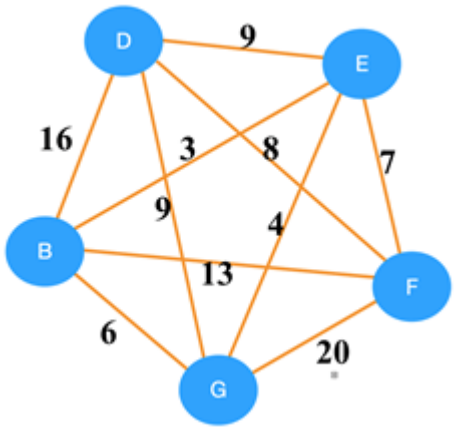
I have an algorithm to solve a problem of size n which needs O(n^2) machines each with O(1) memory. Is this a valid MapReduce algorithm, given how we set up our definitions?

- (●) Yes
- ( ) No

Question 5

1 / 1 pts

Which of the following edges form the minimum spanning tree Kruskal's algorithm produces for the given graph? (Weights: BD-16, DE-9, EF-7, FG-20, BG-6, BE-3, BF-13, GE-4, GD-9, DF-8)



- (●) (B-E)(G-E)(E-F)(D-F)
- ( ) (B-E)(G-E)(E-F)(B-G)(D-F)
- ( ) (B-E)(G-E)(E-F)(D-E)
- ( ) (B-E)(G-E)(E-F)(D-F)(D-G)

Question 6

1 / 1 pts

Say you have a graph partitioned into vertices S and V-S, with a set F of edges between them. Which of the following is always true? Select all that are correct.

- [ ] The maximum-weight edge in F must **not** be in the minimum spanning tree, regardless of conditions.
- [x] The minimum-weight edge in F must be in the graph's minimum spanning tree, regardless of conditions.
- [x] If there is a cycle including multiple edges in F, the heaviest of those edges must **not** be in the graph's minimum spanning tree.
- [ ] At most one edge in F can be part of the graph's minimum spanning tree.

Incorrect

Question 7

0 / 1 pts

Say we wanted to use a reduction besides Kruskal's Algorithm in the edge distributing minimum spanning tree MapReduce. Call that Reduce algorithm A, taking some set of edges E to another set A(E). Which of the following properties would it need to have for the proof of correctness we used in class to work?

- [x] A(E) has at most |E|^(1-ε) edges in it.
- [ ] Any edge in A(E) will be in the minimum spanning tree of the original graph.

Any edge in E which is not in A(E) will not be in the minimum spanning tree for the overall graph.

A(E) is always a minimum spanning tree for some subset of the initial graph, but possibly only a subset of the vertices rather than the whole thing.

Quiz Score: **4** out of 7