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Master	Worker 1	Worker 2	Worker 3	Worker 4	Description
	P1, P2	P1, P2	P3	P2, P3	**Initial Contents**
	P2	P1	P3		**Start Map** — Master tells worker servers to start the map phase, providing the map function.
	mapResult	mapResult	mapResult	mapResult	**Workers Perform Map** — Workers execute the map task and store their results in the mapResult file. Then, they inform the master server that the map task has been completed. If a worker server is not used, leave the box blank.
	Mine 1 Mine 1 Mean 1	Red 1 Mean 1 TwoTwo 1	Red 1 TwoTwo 1 Mean 1		
					Start Shuffle — Master tells worker servers to start the shuffle phase.

Master tells Worker1 to use P2

Master tells Worker2 to use P1

Master tells Worker3 to use P3

Each worker tells the master that they finished the map task

Map tells each worker to start the shuffle phase

- Worker 1 sends two copies of Mine 1 to Worker 4
- Worker 1 sends Mean 1 to Worker 2

- Worker 2 sends Red 1 to Worker 1
- Worker 2 sends Mean 1 to Worker 2
- Worker 2 sends TwoTwo 1 to Worker 3

- Worker 3 sends Red 1 to Worker 1
- Worker 3 sends TwoTwo 1 to Worker 3
- Worker 3 sends Mean 1 to Worker 2

Workers Perform Shuffle

Workers send the map results to each other, based on the hashcode of the key. Workers store these results in another file. Then, they inform the master server when they are done.

If a worker server is not used, leave the box blank.

shuffleResult	shuffleResult	shuffleResult	shuffleResult
Red 1 Red 1	Mean 1 Mean 1 Mean 1	TwoTwo 1 TwoTwo 1	Mine 1 Mine 1

Each worker server tells the Master server that they are done shuffling

Start Reduce

Master tells worker servers to start the reduce phase, providing the reduce function.

Master Server tells each Worker Server to reduce

finalResult	finalResult	finalResult	finalResult
Red 2	Mean 3	TwoTwo 2	Mine 2

Workers Perform Reduce

Workers execute the reduce task, creating a new file with the final results of the map-reduce task.

Then, they inform the master server they are done, providing the file location of the result.

In this case, the file location is always the same for simplicity.

Each Worker Server tells the Master Server that they are done reducing

Note that Worker 4 is not used in the map part of the algorithm because there are 3 partitions and 4 workers. In this diagram I am assuming that none of the worker servers fail.