

1. True or False (1 pt each)

- a. **T / ~~F~~**: A mapper can output at most one key value pair per key value pair given as input.
- b. **~~T~~ / F**: The shuffle phase cannot group key value pairs in such a way as to send (a,7) and (a,4) to separate instances of reduce in one round of map-reduce.
- c. **~~T~~ / F**: Assuming there is more than one worker, a map-reduce job can successfully complete even if one of the workers fails.
- d. **~~T~~ / F**: Both the map and reduce tasks can run on multiple machines to exploit parallelism.
- e. **T / ~~F~~**: SIMD is an example of data level parallelism that performs different operations on a single input data value to produce multiple output data values.
- f. **~~T~~ / F**: The amount of parallelism achieved by a single SSE intrinsic is limited by the width of registers.