

Name: \_\_\_\_\_

ID: \_\_\_\_\_

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- This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the entire width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the paper.

- [illegible]

3. We want to compute the number of occurrences of each word in a file. Write two different solutions to compute word frequencies.

- (a) (5 points) Pseudocod using the **MapReduce** framework. Include both **Map** and **Reduce** functions.

[illegible]

- (b) (5 points) Java program using Apache Spark. Write only the core component of the main program starting from the following program.

```
SparkSession spark =
    SparkSession.builder().appName("WordCount").getOrCreate();
```

```
spark.stop();
```

```
spark.stop();
```