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QUESTION 1

When can a reduce class also serve as a combiner without affecting the output of a MapReduce program?

- A. When the types of the reduce operation's input key and input value match the types of the reducer's output key and output value and when the reduce operation is both communicative and associative.
- B. When the signature of the reduce method matches the signature of the combine method.
- C. Always. Code can be reused in Java since it is a polymorphic object-oriented programming language.
- D. Always. The point of a combiner is to serve as a mini-reducer directly after the map phase to increase performance.
- E. Never. Combiners and reducers must be implemented separately because they serve different purposes.

Correct Answer: A

You can use your reducer code as a combiner if the operation performed is commutative and associative.

Reference: 24 Interview Questions and Answers for Hadoop MapReduce developers, What are combiners? When should I use a combiner in my MapReduce Job?

QUESTION 2

You have a directory named jobdata in HDFS that contains four files: _first.txt, second.txt, .third.txt and #data.txt. How many files will be processed by the FileInputFormat.setInputPaths () command when it's given a path object representing this directory?

- A. Four, all files will be processed
- B. Three, the pound sign is an invalid character for HDFS file names
- C. Two, file names with a leading period or underscore are ignored
- D. None, the directory cannot be named jobdata
- E. One, no special characters can prefix the name of an input file

Correct Answer: C

Files starting with '_' are considered 'hidden' like unix files starting with '.'.

characters are allowed in HDFS file names.

QUESTION 3

Assuming default settings, which best describes the order of data provided to a reducer's reduce method:

- A. The keys given to a reducer aren't in a predictable order, but the values associated with those keys always are.
- B. Both the keys and values passed to a reducer always appear in sorted order.



C. Neither keys nor values are in any predictable order.

D. The keys given to a reducer are in sorted order but the values associated with each key are in no predictable order

Correct Answer: D

Reducer has 3 primary phases:

1.

Shuffle

The Reducer copies the sorted output from each Mapper using HTTP across the network.

2.

Sort

The framework merge sorts Reducer inputs by keys (since different Mappers may have output the same key).

The shuffle and sort phases occur simultaneously i.e. while outputs are being fetched they are merged.

SecondarySort

To achieve a secondary sort on the values returned by the value iterator, the application should extend the key with the secondary key and define a grouping comparator. The keys will be sorted using the entire key, but will be grouped using the grouping comparator to decide which keys and values are sent in the same call to reduce.

3. Reduce

In this phase the `reduce(Object, Iterable, Context)` method is called for each in the sorted inputs.

The output of the reduce task is typically written to a `RecordWriter` via `TaskInputOutputContext.write (Object, Object)`.

The output of the Reducer is not re-sorted.

Reference: `org.apache.hadoop.mapreduce, Class Reducer`

QUESTION 4

In a MapReduce job, the reducer receives all values associated with same key. Which statement best describes the ordering of these values?

A. The values are in sorted order.

B. The values are arbitrarily ordered, and the ordering may vary from run to run of the same MapReduce job.

C. The values are arbitrary ordered, but multiple runs of the same MapReduce job will always have the same ordering.

D. Since the values come from mapper outputs, the reducers will receive contiguous sections of sorted values.

Correct Answer: B

Note:



*

Input to the Reducer is the sorted output of the mappers.

*

The framework calls the application's Reduce function once for each unique key in the sorted order.

*

Example:

For the given sample input the first map emits:

The second map emits:

QUESTION 5

Which project gives you a distributed, Scalable, data store that allows you random, realtime read/write access to hundreds of terabytes of data?

- A. HBase
- B. Hue
- C. Pig
- D. Hive
- E. Oozie
- F. Flume
- G. Sqoop

Correct Answer: A

Use Apache HBase when you need random, realtime read/write access to your Big Data. Note: This project's goal is the hosting of very large tables -- billions of rows X millions of columns -- atop clusters of commodity hardware. Apache



HBase is an open-source, distributed, versioned, column- oriented store modeled after Google's Bigtable: A Distributed Storage System for Structured Data by Chang et al. Just as Bigtable leverages the distributed data storage provided by the Google File System, Apache HBase provides Bigtable-like capabilities on top of Hadoop and HDFS.

Features

Linear and modular scalability.

Strictly consistent reads and writes.

Automatic and configurable sharding of tables

Automatic failover support between RegionServers.

Convenient base classes for backing Hadoop MapReduce jobs with Apache HBase tables.

Easy to use Java API for client access.

Block cache and Bloom Filters for real-time queries.

Query predicate push down via server side Filters

Thrift gateway and a REST-ful Web service that supports XML, Protobuf, and binary data encoding options

Extensible jrubby-based (JIRB) shell

Support for exporting metrics via the Hadoop metrics subsystem to files or Ganglia; or via JMX

Reference: <http://hbase.apache.org/> (when would I use HBase? First sentence)

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