**1. Why Map Reduce program is needed in Pig Programming?**

Pig latin makes use of map reduce since it allows users to describe how data should be processed and then stored to one or more outputs in parallel.

Pig latin program are converted to map and reduce task so that they can achieve the parallel processing.

**2.What are advantages of Pig over Map Reduce?**

Apache Pig is a high-level procedural language for querying large semi-structured data sets using Hadoop and the Map Reduce Platform.

It allows users to describe how data from one or more inputs should be read, processed, and then stored to one or more outputs in parallel.

Pig Latin provides all of the standard data-processing operations, such as join, filter, group by, order by, union, etc.

It uses Pig Latin language, which aims at Data Flow operations instead of control flow operations, hence more focus is on data analysis.

It uses simple syntax and in-built features/operators to reduce development effort and lines of codes involved

Map Reduce requires programmers:

Programmers must think in terms of map and reduce functions.

Most probably Java programmers are required.

In Pig Latin joins and ordering codes comprise of 8-9 lines of code and take few minutes to write and debug. The same code in Map Reduce will span hundred lines of code and takes hours to develop.

Pig Latin queries are converted to Map and Reduce jobs and hence they take advantage of parallel processing.

It has the ability to perform computations which can not be done by MapReduce

**3.What is Pig engine and what is its importance?**

Initially the Pig Scripts are handled by the Parser. It checks the syntax of the script, does type checking, and other miscellaneous checks.

The logical plan (DAG) is passed to the logical optimizer, which carries out the logical optimizations such as projection and pushdown.

The compiler compiles the optimized logical plan into a series of MapReduce jobs.

Finally the MapReduce jobs are submitted to Hadoop in a sorted order. These MapReduce jobs are executed on Hadoop producing the desired results.

It is mainly used for parsing,optimizing,compiling and also execute the jobs automatically.

**4.What are the modes of Pig execution?**

You can run Pig in two modes:

1. **MapReduce/Hadoop Mode:**

Here Pig jobs run as a series of MapReduce jobs picking the input and output paths from HDFS. Input file has to be copied in HDFS in case of Map reduce mode. Type the command pig or pig –x mapreduce to run Pig in MapReduce Mode.

1. **Local Mode:**

Here the entire Pig job runs as a single JVM picking the local Unix path for execution.Input file has to be kept in local file system in case of local mode. Type the command pig or pig -x local to run Pig in Local Mode.

**5. What is Grunt Shell in Pig?**

Interactive Shell for executing Pig Commands.

Used when script file is not provided.

Can execute scripts from Grunt via run or exec commands.

**6. What are the features of Pig Latin language?**

It provides many operators to perform operations like join, sort, filer, etc.

Pig Latin is similar to SQL and it is easy to write a Pig script if you are good at SQL.

The tasks in Apache Pig optimize their execution automatically, so the programmers need to focus only on semantics of the language.

Using the existing operators, users can develop their own functions to read, process, and write data.

 Apache Pig analyzes all kinds of data, both structured as well as unstructured. It stores the results in HDFS.

**7. Is Pig Latin commands case sensitive?**

No, pig latin commands not case sensitive.

for example, LOAD is equivalent to load . But relation and field names are. So A = load 'foo' ; is not equivalent to a = load 'foo' ; .

User defined function names are also case sensitive, thus COUNT is not the same User defined function as count .

**8. What is a data flow language?**

Dataflow programming is a programming paradigm that models a program as a directed graph of the data flowing between operations, thus implementing dataflow principles and architecture.