

Insert Title

IN4355 - Functional Programming

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1 Introduction

waar gaat dit artikel over?

2 Map-Reduce

MapReduce is a (functional) programming model for processing large amounts of data over a distributed network of nodes. Probably the most known implementation of MapReduce is Hadoop [?]. Data can be manipulated by defining a map and reduce function. A map function transforms data from one form into another and a reduce function combines multiple data entries into a single entry. MapReduce essentially works by splitting the potentially huge input data up into several partitions. Each partition is then sent off to a different worker in the network, which in turn applies the map function on the data partition. This is called the map phase. The result of the map operation is usually stored temporarily on disk. Once all the partitions have been processed by the nodes in the network, the reduce phase is started. The nodes all read a specific range of the output from the map phase, and then apply the reduce function on that data. The resulting data is sent to an output file. An overview is given in figure 1. Once the framework which implements MapReduce has completed both phases the result can be read. This programming model allows developers to solve problems quickly while leveraging a cluster of computers, which with a single computer would take significantly longer. Obviously there is a penalty for having to use the network, but this is offset by the fact that the map-reduce cluster is capable of solving problems with very large input sets.

3 Grid computing

waar gaat dit artikel over?

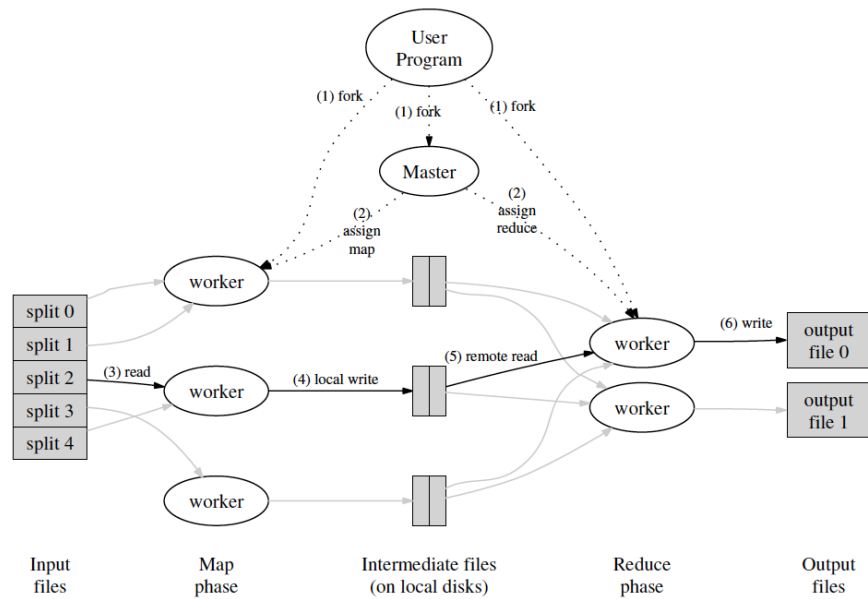


Figure 1: Image from: MapReduce: Simplified Data Processing on Large Clusters, 2004, by Jeffrey Dean and Sanjay Ghemawat

4 So we heard you like platforms.

¡browsers zijn awesome!¿

5 Fay: Fay ain't javascript

6 Distributed sort

7 Scala

References

8 Appendix A: Analysis of Game of Thrones word count