Aspect-combining functions for modular MapReduce solutions

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MapReduce represents a programming framework for modular Big Data computation that uses a function map to identify and target intermediate data in the mapping phase, and a function reduce to summarize the output of the map function and give a final result. Because inputs for the reduce function depend on the map function's output to decrease the communication traffic of the output of map functions to the input of reduce functions, MapReduce permits defining combining function for local aggregation in the mapping phase. MapReduce Hadoop solutions do not warrant the combining functioning application. Even though there exist proposals for warranting the combining function execution, they break the modular nature of MapReduce solutions. Because Aspect-Oriented Programming (AOP) is a programming paradigm that looks for the modular software production, this article proposes and apply Aspect- Combining function, an AOP combining function, to look for a modular MapReduce solution. The Aspect-Combining application results on MapReduce Hadoop experiments highlight computing performance and modularity improvements and a warranted execution of the combining function using an AOP framework like AspectJ as a mandatory requisite. © 2018, International Journal of Advanced Computer Science and Applications.

AOP