

ABSTRACT

METHOD AND APPARATUS FOR AVOIDING WRITEBACK CONFLICTS BETWEEN EXECUTION UNITS SHARING A COMMON WRITEBACK PATH

Pipeline lengthening in functional units likely to be involved in a writeback conflict is implemented to avoid conflicts. Logic circuitry is provided for comparing the depths of two concurrently executing execution unit pipelines to determine if a conflict will develop. When it appears that two execution units will attempt to write back at the same time, the execution unit having a shorter pipeline will be instructed to add a stage to its pipeline, storing its result in a delaying buffer for one clock cycle. After the conflict has been resolved, the instruction to lengthen the pipeline of a given functional unit will be rescinded. Multi-stage execution units are designed to signal a reservation station to delay the dispatch of various instructions to avoid conflicts between execution units.

(Fig. 3)