Abstract

Microprocessors are designed with very tiny microchips and heat induced due to operation makes the chip deteriorate their performance in many extents. Heat causes a portion of chip-area to get beyond tolerable temperature range which can degrade performance of many applications in chip-level. This work addresses many issues in this range. The main contribution of the work lies in reconsidering the heat transition among chips, or inside a chip in order to decrease heat inside a microprocessor. With this end in view, a renewed design architecture in circuit-level has been considered. To design the total work inside microprocessor in response to dynamic temperature change a different level of operation-mechanism has been proposed. To watch the applications running in pipeline, and then by utilizing slack time in hardware level this work wants to improve performance of the processor.

In brief, total work proposes two new heat-control mechanisms, one is at operation-level and the other is at architectural-level. At operation-level, this work proposes a prediction mechanism to predict the useful operations inside the microprocessor that performs as a sink for heat
dissipation. At architectural-level, this work proposes a drain system. This work has simulated the proposed system using Matlab and observed that the system works perfectly well. A comparison with existing mechanism has been devised which shows the proposed work increases performance of running application.

References


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Index Terms

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Keywords

Heat detection, watcher, application, circuit, logical operation, logic-gates