CS5363: Advanced Computer Architecture

2nd Class Test

Date: 25-09-2024 Time: 9.10 AM to 9.55 AM

Total questions: 2 Total marks: 10

Q1 [5 Marks]

The partitioning technique UCP is discussed in class. The replacement policy considered for UCP is LRU. Consider that the LLC needs to be partitioned among two cores C1 and C2. Explain the modifications done in the LRU replacement policy to maintain the LLC partition (x,y) where x+y is the associativity of the LLC. The modifications must handle any partition change automatically. **Explain step-by-step. Do Not write a long paragraph.**

Q2 [3 Marks]

Suppose you need to implement UCP on top of DIP. Explain the **step-by-step procedure** to maintain the LLC partition as mentioned in Q1.

Q3 [2 Marks]

A replacement policy has three parts: Insertion, Promotion, and Eviction. Explain the eviction policy of LRU, BIP, and DIP. ***I am expecting a short answer of maximum 3 lines. Please do not write a long paragraph.***

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3rd Class Test

Date: 08-11-2024 Time: 5.30 PM to 6.15 PM

Total questions: 3 Total marks: 10

Q1 [5 Marks]

Why does CEASER reduce system performance, and how can its performance be improved without compromising security?. **Explain step-by-step. Do Not write a long paragraph.**

Q2 [3 Marks]

Does increasing the remapping rate of a randomized cache have a positive or negative impact? Discuss in terms of performance and security.

Q3 [2 Marks]

Based on your understanding of Mirage, explain what SAE (Set-Associative Eviction) is and how it works