Summary
An Analysis of Database Workload Performance on SMT processors

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March 7, 2005

1 To be completed before class

What are the problems solved by this paper? (50 words)
Database applications suffer due to lack of performance due to high memory latencies. SMT processors have multiple threads competing for the same resources during execution. Both the Instruction and Data cache performance are a major concern as useful data is replaced leading to high cache miss rate. This paper studies this problem with regard to database applications.

What are the approaches attempted by this paper? (50 words)
The authors recommend to use SMT processors to execute multiple processes of the database application. The authors instrument Oracle applications to find the data miss rate and reusability. The authors suggest to use software mapping techniques to map the Virtual addresses of different processes to distinct locations so as to reduce the cache conflicts. The techniques employed are bin mapping, page coloring and application offsetting.

What are the main conclusions of this paper? (50 words)
The critical working set of large database applications is cacheable. Software based mapping techniques can be employed to improve the memory performance of SMT processors. The throughput of Oracle workloads can be improved by 1.5 to 3 times by employing SMT processors over superscalars.

2 To be completed after class

Did this paper address an important issue? Explain. (100 words)

Are the proposed approaches valid? Describe its strength and weakness. (100 words)

Do the results support the conclusions? Explain. (100 words)

Describe the potential future works? (100 words)