Summary
An Analysis of Database Workload Performance on Simultaneous Multithreaded Processors

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March 7, 2005

1 To be completed before class

What are the problems solved by this paper? (50 words)

SMT technique has been found very useful for scientific applications. Its applicability to
database applications is not well understood. Database applications are typically
characterized by very high cache miss ratio. The SMT can potentially make the cache effect
much worse because in an SMT different contexts share the same cache.

What are the approaches attempted by this paper? (50 words)
The paper first studies the database application behavior by simulating the traces collected from Oracle
on a dealthed simulator. It is found that the OLTP queries have a very large footprint and hence
suffer from large cache misses. But it is found that there are some critical blocks which suffer the
most misses. In DSS the cache miss is not as bad as in OLTP. Then the interference due to SMT
like execution was studied. Then some techniques like page-mapping policies and application level
offsetting were studied.

What are the main conclusions of this paper? (50 words)
The main conclusion is that though the database applications have very large data footprint, there is
a small critical working set which is cacheable. With some simple techniques the interference due to
SMT can be eliminated. It has been found that there can be 3 fold improvement for OLTP applications
and 1.5 fold improvement for DSS applications.

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)