NOVA SCHOOL OF SCIENCE & TECHNOLOGY

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MSC IN COMPUTER SCIENCE

HOW DO COMMON OPEN-SOURCE DBMSS PERFORM UNDER TPROC-C WITH FIXED WORKLOADS

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DATABASES SYSTEMS

MAY 25, 2025

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1   Introduction

2   Overview of HammerDB

HammerDB is a free, open-source tool for benchmarking the performance of relational databases [1].

It supports popular databases like Oracle, SQL Server, PostgreSQL, MySQL, and more. HammerDB uses industry-standard workloads such as TPROC-C and TPROC-H to simulate real-world database activity.

It offers both a graphical interface and command-line options, making it suitable for developers, DBAs, and system administrators to test, compare, and tune database performance.

2.1   Overview of TPROC-C

TPROC-C is a benchmark designed to evaluate the performance of database management systems (DBMS) using a transactional workload. It simulates a typical online transaction processing (OLTP) environment, focusing on operations like inserts, updates, and deletes across multiple tables.

2.2   TPROC-C vs TPROC-H

TPROC-H is a benchmark designed for data warehousing and analytical workloads, while TPROC-C is focused on transactional processing. TPROC-H emphasizes complex queries and large data sets, whereas TPROC-C simulates real-time transactions with a focus on insert, update, and delete operations.

3   Problem & DBMS Summary

4   Benchmark Description

5   Methodology

5.1 Hardware and Software Setup

PC	1	2	3
OS	Windows 11	Windows 11	Linux (Unraid)
CPU	Intel i7-13700H	AMD Ryzen 5 3600	Intel i3-10100F
Cores	14 (6P 8E)	6	4
Threads	20	12	8
RAM	16GB	16GB	32GB
Disk	SSD M.2 NVMe	SSD M.2 NVMe	
Read	3500 MB/s	2500 MB/s	
Write	2700 MB/s	2100 MB/s	

Table 1: Hardware used in the benchmarks

On the first PC, the HammerDB server was running on a Ubuntu 22.04 virtual machine with 4 cores and 12GB of RAM. All databases were installed on docker containers on the host machine.

On the third PC, all databases including the HammerDB server were running on docker containers on the host machine.

6 Results

7 Discussion

8 Conclusions

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Bibliography

[1] Wikipedia contributors. *HammerDB — Wikipedia, The Free Encyclopedia*. [Online; accessed 25-May-2025]. 2025. URL: https://en.wikipedia.org/w/index.php?title=HammerDB&oldid=1275860580.