



NOVA SCHOOL OF
SCIENCE & TECHNOLOGY

NOVA UNIVERSITY OF LISBON

MSC IN COMPUTER SCIENCE

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

José Costa (62637)
Rodrigo Albuquerque (70294)
Rodrigo Silva (70567)

DATABASES SYSTEMS

MAY 31, 2025

Contents

1	Introduction	1
2	Overview of HammerDB	1
2.1	Overview of TPROC-C	1
2.2	TPROC-C vs TPROC-H	1
3	Problem & DBMS Summary	1
4	Benchmark Description	1
5	Methodology	1
5.1	Hardware and Software Setup	2
6	Results	2
7	Discussion	2
8	Conclusions	2

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	4
OS	Windows 11	Windows 11	Linux (Unraid)	MacOS Sequoia
CPU	i7-13700H	Ryzen 5 3600	i3-10100F	M1
Cores	14 (6P 8E)	6	4	8
Threads	20	12	8	8
RAM	16GB	16GB	32GB	16GB
Disk	SSD M.2 NVMe	SSD M.2 NVMe	SSD M.2 NVMe	SSD M.2 NVMe
Read	3500 MB/s	2500 MB/s	3500 MB/s	3400 MB/s
Write	2700 MB/s	2100 MB/s	3300 MB/s	2800 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

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>.