

Exercise 1

Architecture of Database Systems

Questions

Within the lecture, Storage Class Memory (NVRAM, etc.) was introduced as a novel storage medium. While we will discuss the impact on database systems with the different layers, the current paper targets the need of novel/additional software testing mechanisms. Within this exercise, we want to understand, what the challenges of testing SCM-based software are, what different error scenarios are, which first ideas exist, and why this topic in general is critical for database systems.

Download the paper at: <http://dl.acm.org/citation.cfm?doid=2933349.2933354>

On Testing Persistent-Memory-Based Software

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Please try to answer the following questions:

- What does SCM solve? What challenges does it introduce?
- Why is there a need for a new testing paradigm? What complexity comes along with use of NVRAM?
- What is behind the concept of persistent pointers? What are they good for?
- What are the examples of bugs given in the paper?
- How does the Test- and Resume principle work?
- Why is there a need for a nested Test- and Resume approach
- Does Single-threaded crash-safety + concurrency correctness result in Multi-threaded crash-safety? If not, please provide an example.
- What is the main drawback of the competition (Yat)
- What are the core strategies to speed-up the testing process. What is the drawback?