

# Resettable Encoded Vector Clock

## IN4391 Project Report

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## Introduction

A fundamental challenge in distributed systems is tracking the order of events occurring. In order to track ordering and causality relations, several ideas have been put forward by the scientific community over the years, such as Lamport's *happened-before* relation and logical clocks [1].

Logical clocks and especially *vector clocks* have since become essential in the design of distributed systems. However, they have an important limitation. Researchers, building upon the vector clock have proposed different variations to tackle these limitations, one of which is the Resettable Encoded Vector Clock (REVC) [2].

In this work, we present the REVC, and proceed afterwards to create an implementation of it and measure its properties in comparison to other types of vector clocks.

## The Resettable Encoded Vector Clock

## Implementation

## Experimental evaluation

## Discussion

## Conclusion

## References

- [1] L. Lamport, "Time, clocks, and the ordering of events in a distributed system," in *Concurrency: The works of leslie lamport*, 2019, pp. 179–196.
- [2] T. Pozzetti and A. D. Kshemkalyani, "Resettable encoded vector clock for causality analysis with an application to dynamic race detection," *IEEE Transactions on Parallel and Distributed Systems*, vol. 32, no. 4, pp. 772–785, 2021, doi: [10.1109/TPDS.2020.3032293](https://doi.org/10.1109/TPDS.2020.3032293).