

## ABSTRACT

Diah Nur Khasanah. 51418862

### **IMPLEMENTATION OF MICROSERVICE ARCHITECTURE DESIGN IN FULLTEXT-BASED WEB SEARCH SYSTEM WITH MYSQL RELATIONAL DATABASE INTEGRATION AND NOSQL ELASTICSEARCH DATABASE.**

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Microservices architecture breaks down service functionality into their respective functions without having to use the same programming language platform or database. Microservices architecture communicates through APIs, unlike monolith applications, which communicate with procedure calling code or function code combined in a single application, which generally only uses one database for the entire process. Fulltext search is an ideal search technique for processing data in large databases containing millions of records. The increasing amount of data in the MySQL database affects the search feature so that it processes data very slowly because the relational database searches data from the beginning to the destination data. Elasticsearch database is a non-relational database that is used specifically to be able to search data very quickly on large amounts of data (Big Data). However, select operations tend to be faster than insert and update operations on the Elasticsearch database. This is a further consideration where the Elasticsearch database cannot be used for the main database to replace the MySQL relational database because this database has these shortcomings or is not suitable for use in relational database query functions such as adding data, deleting data, and updating data in real-time. Therefore, it is necessary to design to build a website microservices architecture that has a large database of records (Big Data) on its product services where the product in this study is in the form of book data, so it takes a book data inventory service that is connected to a fulltext book data search system on the service. the search. This study succeeded in implementing a fulltext-based search website microservice architecture with integration between MYSQL relational database storage and Elasticsearch non-relational database for two million data records. This study proves that the use of the Elasticsearch database can save search time from the test results against time where the Elasticsearch database is 4 times faster than the MySQL database.

Bibliography (2006 – 2022)