CHAPTER 1
INTRODUCTION

1.1. Background

In this modern era, the requirement for digitalized systems increasing rapidly. With the Covid-19 Pandemic happening, many major living aspects tend to be online. Government and companies attempt to cope with the change of lifestyle by providing the online system and or application. This leads developers to create a high-performance system that is capable to serve the demand. One of the most common answers used by developers is web application. Web applications demanded to be agile, fast, and capable of handling such traffic.

When it comes to building or developing an online system, developers need to choose what kind of architecture will be used for the system. When facing the challenge, a developer needs the most suitable architecture that most fit the case whether uses microservices or monolithic architecture. Both architectures offer different benefits. Microservice recently become popular because many large companies start migrating from monolith to microservices but on the other hand. many organizations are still unfamiliar with microservices. Despite microservice providing many benefits, it also has challenges. With that being said, it is common that many organizations choose to stick with monolithic architecture since it was easier to maintain, develop, and deploy.

In this research, microservices and monolithic performance are compared in a different scenario. Both microservices and monolithic architecture build identical and contain identical services. Even though both architectures use Go-Language as the programming language, the framework used is different since the monolith use Echo as the framework and the microservice uses Go-Kit as a microservice toolkit.

1.2. Problem Formulation

1. How does architecture affect application performance?
2. How does test design affect test result?
3. Which architecture performs better?

1.3. Scope

This project started from building both monolithic and microservice architecture to serve services such as user services, merchant services, and transaction services. These services will be accessible through API. For testing the performance of both architectures, Apache Jmeter was used to conduct the test scenarios. The data from the Jmeter test result is used for objective comparison.

1.4. Objective

The main objective of this research is to compare the performance between microservices architecture and monolithic architecture in different scenarios. On the other hand, this research aims to help developers decide which architecture is most suitable to the case faced.