

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

In the E-Ticketing System, a high enough performance is needed to overcome many visitors in a tourist spot. However, the system must also pay attention to using existing computer resources, so an efficient system is needed to avoid long queues of visitors and make system performance heavy. In this case, the author conducted a study to reduce the computer's performance and speed up the system process by using Message Broker as middleware to transmit data. Message Broker itself can run asynchronously. Data transmission will be faster because there is no need to wait until the previous process is complete.

In this study, a message broker will be used to send ticket codes to reduce system response time. In addition, this study will use two different message brokers, namely Redis and RabbitMQ. Redis stands for Remote Dictionary Server, which uses memory as a database, cache and message broker. While RabbitMQ is a message broker based on Queue. This study will compare the results of the performance of the two message brokers in terms of CPU usage, memory usage, and latency speed.

The results of the performance data will be stored in the database. Moreover, the testing process will be carried out with several classifications based on the amount of data sent in one second during a certain period. After getting the performance results from the two message brokers, the results will be searched for the average value based on the classification of the amount of data sent. These averages will be compared with each other and determine which message broker is the most suitable for use in the E-Ticketing System.

## **1.2 Problem Formulation**

The problem formula in this study is based on the above background. These problems will be discussed later in this study. The problem of the formula is:

1. Which message broker is faster in sending data?
2. Which message broker is more efficient in using computer resources?

## **1.3 Scope**

In conducting this research, there are some limitations. This limitation is intended that the purpose of this study do not spread to other topics. These limitations include:

1. Analyze the comparison of the use of cpu resources and memory usage of the two message brokers.
2. Analyze the latency between the two message brokers

## **1.4 Objective**

This research aims to determine which message broker is the most suitable for use in the E-Ticketing System. The results of this study will be determined from 3 things, namely Latency (ms), CPU Usage (%), and Memory Usage (%). In addition, this research will also determine which message broker will be more suitable according to the conditions of the E-Ticketing System.