Project Deliverable 3: Optimization, Scaling and Final Evaluation.

Abstract

In this report I have documented how an inventory management system was optimized and scaled for a POC. Originally developed in Python with a hash map data model for Inventory Management System, the system has evolved a lot to handle big data. The capabilities of caching, indexing, high-performance data structures and exhaustive testing were also included for scalability. The project is explained in this pdf and contains web interface integration as well as with pages of category management, product and inventory tracking, and user authentication. Phase 2 development added hash map data structures and intense unit testing. It also discusses the advantages, disadvantages, and improvements to be made.

# 1. Introduction

The main objective of this project is to design and optimize an inventory management system that is capable of managing large datasets efficiently. In the initial developed as a POC using python HashMap data structure, the system was designed to handle essential inventory operations and later scaled for enhanced functionality and performance. The purpose of this part is to deliver an intuitive web-based solution for managing inventory that supports CRUD operations and robust data handling for enterprises.