CAN THO UNIVERSITY
COLLEGE OF INFORMATION AND
COMMUNICATION TECHNOLOGY

PROJECT - SPECIALIZED REPORT
INFORMATION TECHNOLOGY
(HIGH-QUALITY PROGRAM)

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SOUVENIR APPLICATION WITH ASP.NET MICROSERVICES WEB API AND FLUTTER

Student:
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Cohort: K46

Cantho, 09/2023

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Abstract

This project aims to develop an online souvenir shop application using ASP.NET microservices and Flutter. The application will serve as an online store selling various physical products like t-shirts and coffee mugs, providing a familiar experience for those who have shopped online before.

The development process will utilize the microservices architecture with ASP.NET for the backend API, and Flutter for the frontend mobile application. This approach allows for a scalable and maintainable system, while also providing a rich, user-friendly interface.

The scope of the project is focused on creating a small application that satisfies the minimum requirements of an e-shop application. This includes features such as product listing, shopping cart functionality, and order processing.

The expected outcomes of this project include gaining a deeper understanding of microservices architecture, application development using Flutter and ASP.NET, and the business aspects of running an e-shop. The project serves as a practical application of these technologies and concepts, demonstrating their effectiveness in a real-world scenario.

Tóm tắt nội dung

Dự án này nhằm mục đích phát triển một ứng dụng cửa hàng lưu niệm trực tuyến sử dụng ASP.NET microservices và Flutter. Ứng dụng sẽ phục vụ như một cửa hàng trực tuyến bán các sản phẩm vật lý đa dạng như áo phông và cốc cà phê, mang lại trải nghiệm quen thuộc cho những người đã từng mua sắm trực tuyến.

Quá trình phát triển sẽ sử dụng kiến trúc microservices với ASP.NET cho API backend, và Flutter cho ứng dụng di động frontend. Phương pháp này cho phép một hệ thống có thể mở rộng và dễ bảo dưỡng, đồng thời cung cấp giao diện phong phú, thân thiện với người dùng.

Phạm vi của dự án tập trung vào việc tạo ra một ứng dụng nhỏ đáp ứng các yêu cầu tối thiểu của một ứng dụng e-shop. Điều này bao gồm các tính năng như liệt kê sản phẩm, chức năng giỏ hàng, và xử lý đơn hàng.

Kết quả mong đợi của dự án này bao gồm việc hiểu sâu hơn về kiến trúc microservices, phát triển ứng dụng sử dụng Flutter và ASP.NET, và các khía cạnh kinh doanh của việc chạy một e-shop. Dự án phục vụ như một ứng dụng thực tế của các công nghệ và khái niệm này, minh họa hiệu quả của chúng trong một tình huống thực tế.

Chapter 1

Introduction

1.1 Background

The rapid development of information technology has revolutionized various fields, including business operations. To enhance management quality and increase revenue, businesses are increasingly integrating software applications into their sales operations. However, selecting a suitable software application and platform can be challenging, especially for small and medium-sized enterprises.

Monolithic architecture is a traditional model of software design that is built as a unified unit, self-contained, and independent from other applications. It can be convenient early on in a project's life for ease of code management, cognitive overhead, and deployment. However, as the size of the application increases, its start-up and deployment time also increases.

Other way to address the challenges of selecting a software application and platform is to adopt microservices architecture. Microservices architecture is a software design approach that breaks down an application into a collection of small, independent services. Each microservice has its own business logic and database, and it can be deployed and scaled independently.

Souvenir e-shops can use microservices architecture by breaking their e-shop application into smaller services. They could have separate services for managing products, inventory, orders, and payments. This would make it easier to add new features, scale their e-shop as needed, and make their system more reliable.

1.2 Problem statement

The traditional monolithic architecture, while convenient early on, becomes less efficient as the application grows in size. To address these challenges, the e-shop needs to adopt microservices architecture.

The objective is to break down the e-shop application into smaller, independent services such as product management, inventory management, order processing, and payment

processing.

By adopting microservices architecture, the souvenir e-shop aims to achieve the following goals:

- Develop and deploy new features more easily.
- Scale the e-shop as needed.
- Improve overall reliability of the system.

1.3 Research Objectives

The objectives of this study are to:

- Research and build a microservices-based e-commerce application model using ASP.NET and Clean Architecture.
- Develop a minimum viable product (MVP) of an e-commerce application for a souvenir shop using the proposed model.
- Evaluate the MVP and identify areas for improvement.

1.4 Research Scope

This study is limited to the development of an MVP of an e-commerce application for a souvenir shop using Microservices and Clean Architecture. Additional features and functionality may be added in the future.

1.5 Solution approach

The following steps will be taken to implement the proposed solution:

1. Conduct a literature review to learn about existing approaches to e-commerce application development.
2. Design a microservices-based e-commerce application model using ASP.NET and Clean Architecture.
3. Develop an MVP of an e-commerce application for a souvenir shop using the proposed model.
4. Evaluate the MVP and identify areas for improvement.

1.6 Report structure

Chapter 1. Introduction: Introduction to the general overview of the , also the current chapter. In this chapter, it will give a general overview of the topic, its potential and practical applications in the future.

Chapter 2. Literature review This section provides a summary of relevant research on the topic and the foundational knowledge necessary to develop a microservices model using ASP.NET and build an MVP application using the Clean Architecture model in Flutter.

Chapter 3. System design and implementation This section presents the approach to the problem. It discusses the details of the implementation approach, including the tools used.

Chapter 4. Testing and evaluation. This chapter presents the testing plan and management, testing scenarios for the main functions of the system.

Chapter 5. Conclusion.This section presents the results achieved, the remaining limitations, and the system's further development.

Chapter 2

Literature reiview

2.1 Microservices Architecture

2.1.1 Overview of Microservices Architecture

2.1.2 ASP.NET Microservices

2.2 Clean Architecture

2.2.1 Fundamentals of Clean Architecture

2.2.2 Clean Architecture with Flutter

Chapter 3

System design and implementation

Chapter 4

Testing and evaluation.

Chapter 5

Conclusion