VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY
UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING

Programming Integration Project (CO3103)

Project Report: Phase 1

Online Shopping Website

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1 Topic

This project focuses on creating a web-based application that allows users or customers to browse and make transactions. The specific genre of product is phone, primarily smart mobile device.

This e-commerce application is analogous to real life phone selling retailers that require a more convenient and efficient way for customers to interact with their products. Because of that, the requirements and features will mainly focus on practical demands as if it was proposed to solve the problem.

2 Proposed Features

Name	Descriptions
Get news & offers	Display current news and offers
View catalog	Display list of products
Place orders	Customers can add items to their cart
Member account authentication	Login with username and password, (optional: SSO)
Member account balance & points	Save purchases to calculate points
Create coupons	Validate coupons when checking out
Display statistics	Monthly sales of reports (Optional)

3 Technologies

We decided to make the backend serve a RESTful API, so that we can decouple the server and client as well as ensuring ease of scale should that ever happen. With that said, we chose to demonstrate this project as a web application.

a. Frontend: **React**

   React (React.js or ReactJS) is a free and open-source front-end JavaScript library for building user interfaces or UI components. Developed at Facebook and released in 2013, it can be said that React has been the most influential UI library of recent years.

   We use React to build components that represent logical reusable parts of the UI. The beauty of React is that the simplicity of building a component has been brought down to its theoretical minimum: a Javascript function. The return value from these functions is the HTML or UI, which is written in a special syntax called JSX, allowing easy combination of Javascript with Html markup.

   The main reason we want to use React is not the library itself but the massive ecosystem surrounding it. React itself does not care about routing state management, animation or anything like that. Instead, it lets those concerns evolve naturally within the open-source community. No matter what we are trying to do, there is a good chance that a good supporting library to help us get it done has already existed.

b. Backend: **NestJS**

NestJS is a Node.js framework for building scalable server-side applications with Typescript. It comes with a ton of built-in modules to work with databases, handle security, implement streaming and anything else you can imagine doing in a server-side application.

Using the NestJS CLI, you can scaffold out a new project with a code base pre-configured with Jest for testing and set up with Typescript to write more readable and reliable code.

c. Database: **PostgreSQL**

PostgreSQL is a powerful, open source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads.

With more than 30 years of active development on the core platform, PostgreSQL has earned a strong reputation for its proven architecture, reliability, data integrity and more.