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**COIT20273&COIT13230**

**Software Design and Development Project**

**Term 1, 2024**

**Assessment 1**

**Project Proposal on Online Shopping (Elecspectra)**

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# Project Background

Elecspectra is a dynamic, recently established participant in the online retail market and is becoming well-known in the electronics and technology industry. Elecspectra has rapidly established itself as a reliable source for a wide variety of electrical equipment, gadgets, and accessories because of its innovative approach and dedication to providing cutting-edge products together with outstanding customer support. Elecspectra, driven by a love for innovation, is committed to staying ahead of market trends and adapting to the times to better serve its clients' ever-changing demands.

# Project Objective

## Overview

Experience a new kind of shopping with Elecspectra online shop, our newest effort that aims to revolutionize the way consumers interact with and buy electronics and technology. Elecspectra is pleased to provide this newly developed web application in response to the increasing need for quick and easy online purchasing experiences. Elecspectra designed to satisfy the various demands of gadget aficionados, tech enthusiasts, and regular customers, is evidence of our dedication to modern retail.

## Key features and objectives

* Divide clear user roles into consumers and administrators to limit acceptable services and functions and provide appropriate interfaces.
* Users can search for products based on keywords and efficiently search for products by applying brand, price, and category filters.
* It is accessible throughout Australia and all users, regardless of their role, will be granted access to the website.
* Through reviews written based on user experience as well as details of the product, users can share their experience of the products and evaluate the value of the products to various consumers.
* By providing a seamless experience across various devices and screen sizes that it can open websites such as mobile and tablet PCs etc, it provides friendly interfaces to various devices.
* Real-time updates and feedback on the product will keep it up to date with trends.
* Any information about the process that occurs after purchase will be sent to the automated user's email address.
* The website provides consumer users with new information about their products by displaying prices, specifications, and detailed descriptions of all available electronics.
* Users who want to purchase products on the website can add products to their shopping cart and provide information on their budget by displaying the quantity and total price of the selected products.
* The website provides convenience by providing AI chatbots, allowing users to ask for necessary information, such as search products, price comparisons etc, and provide appropriate solutions.

# High-Level User Requirement

## User Registration and Authentication

* All users can create accounts with unique passwords and usernames (or email addresses).
* When creating an account, users are divided into administrator and consumer roles.
* All users use special symbols and unique passwords to generate passwords.

## User Evaluations and Stars

* Customer users can create, save, and modify product reviews and star ratings.
* Admin users can create, save, modify, and delete product reviews and star ratings.
* All users can see reviews and ratings to help them make decisions.

## Management of User Accounts

* All users can change their own account passwords and edit profiles that represent their personal information.
* Administrators can add, modify, delete, and store new and existing products.
* Administrators must have access to analytics and sales reports for effective management.
* Consumer users are able to save the latest products.

## Features of a Shopping Cart

* Consumer users can modify the quantity of products added to the shopping cart or delete the products from the shopping cart.
* Consumer users can add the products they want to purchase to their shopping cart.

## AI Chatbot

* Users are able to ask and obtain the solutions from the AI chatbot.

# Hardware and Software Requirements

## Server Hardware Configuration

* Processor: A multi-core CPU (2 to 4 cores or more) is required to handle multiple requests at once.
* Memory (RAM): For optimal server performance, a minimum of 8 GB is needed.
* Storage: Enough space (1TB), ideally SSD, for storing application files, databases, and other types of data.

## Server Software Configuration

* Web Server: Express is used to handle HTTP requests on Node.js.
* Database Server: MongoDB is the database server used to store user and product information as well as order details.
* Application Server: Node.js is the application server used to execute server-side application logic.

## User device requirement

* Operating Systems: Windows, Linux, MacOS, Android, and iOS
* Web Browser: Modern versions of widely used browsers, including Microsoft Edge, Mozilla Firefox, Safari, and Google Chrome.
* Device Compatibility: responsive design for a range of gadgets, including smartphones, tablets, laptops, and desktop computers.
* Internet connection: a dependable and steady high-speed connection that allows for easy online shopping and payments.

## Developer Tools

* Code Editor: For effective code development, use a code editor such as Atom, Sublime Text, or Visual Studio Code.
* Version Control: Git facilitates collaboration and version control.
* Package Manager: To manage project dependencies, use npm (Node Package Manager).
* Debugging Tools: Integrated tools for finding and resolving problems.

# Risk Management and Quality Assurance Plans

## Risk management:

|  |  |  |
| --- | --- | --- |
| **Risk item** | **Likelihood of occurrence (High/medium/low)** | **Mitigation strategy** |
| API Development | High | Most bugs happen at the time of API development so we can solve problems using POSTMAN tools because it has its own server that provides all of the methods like GET, POST, PUT, and PATCH, therefore we can test our API so that monitoring the data interaction. |
| Delay in the task | Medium | Sometimes we are not able to finish tasks as per the estimated time, Agile methodologies can solve the problem of on-time task management. |
| Bugs and errors occupation | Medium | Use debugging tools installed in the Interface Development Environment (IDE) or use tools such as sources, networks, etc. from the inspection options provided by the browser. |
| Communication issue | Medium | Poor communication between stakeholders and users can lead the problems in the project. Accordingly, the problems can be solved by using GIT the project members are able to keep uploading their tasks and online Zoom meetings. |
| UX development | Medium | At the time of development, we must take a review of users thus we can improve user experience in it. |

## Quality Assurance plans

### Requirement

* It's crucial to define clear and quantifiable metrics for various aspects like functionality, performance, usability, and security. These metrics should be derived from the project specifications, user stories, and established industry standards.

### Documentation

* Having thorough instructions available throughout development is crucial. This includes details about the system's design, notes embedded within the code (comments), strategies for testing, and guides for users.

### Planning

* Throughout the project lifecycle, implement various testing approaches like unit testing (focusing on individual components), integration testing (checking how components work together), system testing (evaluating the entire system), and user acceptance testing (ensuring the system meets user needs).

### Tools and Techniques

* Leverage tools such as Git to keep a log of code modifications, store past iterations for reference, and allow us to revert to earlier versions if needed.
* Implement **proactive measures like static analysis to catch coding mistakes and potential security exploits early on.**

### Report and corrective action

* Create **summaries highlighting test findings, discovered issues, and their current fix state.**

### Testing

* Integrate security testing throughout the development lifecycle to identify and address potential vulnerabilities**.**
* **Testing how the application behaves under different usage levels (high, low) to guarantee it responds within the set timeframe.**