TITLE

Ryan Coon

CST-451 Capstone Project Proposal

Grand Canyon University

Instructor: Professor Amr Elchouemi

Revision: 1

Date: March 3, 2024

**ABSTRACT**

The company, with its rich history in the trade of medieval weapons, is seeking to expand its reach to customers globally through an online platform. The company has been in business for hundreds of years, offering medieval weapons for both defensive and offensive combat. Over the years, it has built a reputation for quality and authenticity. However, with changing times and the rise of digital commerce, the company has found it increasingly difficult to reach customers.

The proposed web application will allow users to view items, read weapon descriptions, and see the prices of the items. It will also offer an online shopping cart where customers can add, remove, and edit the quantity of products. This digital transformation aims to make shopping more convenient for customers and expand the company’s customer base. By addressing these needs, the company hopes to continue its tradition of excellence while adapting to the modern marketplace.

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| History and Signoff Sheet |

**Change Record**

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| --- | --- | --- |
| **Date** | **Author** | **Revision Notes** |
| 3/3/2024 | Ryan Coon | Initial draft for review/discussion |
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| **Overall Instructor Feedback/Comments** |

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| **Overall Instructor Feedback/Comments** |

**Integrated Instructor Feedback into Project Documentation**

Yes  No

**Project Approval**

Professor Amr Elchouemi

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Project Overview and Project Objectives

**State the Problem and Background**

A previous project from a prior documentation class that was nowhere near being completed will be used, as it was mainly documentation. I will take this documentation and adjust it to write a full stack ecommerce page. The application will be built using React, JavaScript, HTML, and CSS for the frontend, ensuring a user-friendly interface and seamless user experience. The backend will be powered by Spring Boot and Spring Boot Security, providing robust, secure, and scalable server-side operations. MySQL will be used for database management, ensuring efficient data storage and retrieval. The purpose of this project is to expand the reach of a fictional company to its customers globally, adapting to the shopping habits of its customers in the digital age.

The company has been in business for hundreds of years, offering medieval weapons for both defensive and offensive combat. Over the years, it has built a reputation for quality and authenticity. However, with changing times and the rise of digital commerce, the company has found it increasingly difficult to reach customers.

The proposed web application will allow users to view items, read weapon descriptions, and see the prices of the items. It will also offer an online shopping cart where customers can add, remove, and edit the quantity of products. This digital transformation aims to make shopping more convenient for customers and expand the company’s customer base.

By addressing these needs, the company hopes to continue its tradition of excellence while adapting to the modern marketplace.

**Christian Worldview**

The Christian worldview I see in this project is the aim to protect the user’s data. There are despicable people who prey on websites users to gain access and get their information. I want to create a secure website that can alleviate the users’ concerns from getting their data stolen.

Isaiah 54:17

#23

17 no weapon forged against you will prevail, and you will refute every tongue that accuses you. This is the heritage of the servants of the LORD, and this is their vindication from me," declares the LORD.

**Project Objectives**

For this Ecommerce web ap to be able to be deployed successfully in working condition, the following user stories must be addressed:

As a user, I want to be able to login with admin privilege in order to add, update, or delete products.

As a user, I want to be able to view a list of products so I can see what products are offered/available.

As an admin, I want to be able to create a new product so I can add new products into the inventory.

As an admin, I want to be able to edit an existing product in the inventory so that I can keep the product information up to date.

As an admin, I want to be able to delete a product so that I can remove items that are no longer available.

As a user, I want to be able to view a list of categories so that I can see how the products are organized.

As a user, I want to be able to create a new category so that I can group products based on their similarities and characteristics.

As a user, I want to be able to edit an existing category so that I can edit its properties if needed.

As a user, I want to be able to delete a category if no longer needed.

As a user, I want to be able to view the product details, including the properties and associated category.

As a user, I want to be able to view details of the categories including its properties and the list of associated products.

**Challenges**

* Effectively getting the two frameworks to work together seamlessly.
* Saving customers cart for a later time.
* Saving the product information effectively.
* Designing a rich and user friendly UI.

**Benefits and Opportunities**

Increased Reach: The web application will allow the company to reach a global audience, increasing its customer base.

Improved Customer Experience: With features like detailed product descriptions, a shopping cart, and secure online transactions, customers will have a convenient and enjoyable shopping experience.

Efficient Operations: The use of Spring Boot and MySQL will ensure efficient and reliable backend operations.

Project Scope

1. Give a clear, concise statement that states the scope of the project. This should also include items that are to be out of scope.

The project to be built is an online Medieval arms and armor store, with the added ability of purchasing the items in which the users have selected. The website will include pages for each of these core details/features: home/root, about us, registration, login, profile, products browsing, favorites managing, and checkout. Users will sign up for an account using a basic email/password authentication scheme, after which they will be allowed to use the full site’s functionality. Users may browse for records on a dedicated page (/arms), then either add an item to a Favorites tab (just a collection of items they like and want to buy in the future) and a shopping cart. Users view their profile information and update their personal data, even deleting their account if they’d like. Users can have as many items in their favorites for their account as they’d like, then add them to their cart whenever they’d like. I’ll have to design the data scheme to account for this kind of scalable nature.

1. Use the template to list all known stakeholders and contacts, if applicable, including self (for some projects self may be the only name listed)

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| --- | --- | --- |
| Stakeholder Name | Role(s) | Responsibilities |
| Ryan Coon | Full Stack Developer | Create and manage full stack website development/maintenance |
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1. List the work breakdown required to satisfy the project objectives. Identify teams and other resources that may be required to successfully complete the project.

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| Work Breakdown Structure | | | | | | | | | | |
| ID | Task | Dependencies | Status | Effort Hours | Cost | Start Date | Planned Completion | Estimate to Completion | Actual Completion | Resource |
| 1 | Complete Project Proposal | Project Idea | Complete | 6 | $0.00 | 02/29/2024 | 03/03/2024 | 03/03/2024 | 03/03/2024 | Microsoft Word |
| 2 | Complete Requirements | 1 | Not Started | 6 | $0.00 | 03/05/2024 | 03/10/2024 | 03/10/2024 | n/a | Microsoft Word |
| 3 | Complete Final Architecture Plan | 2 | Not Started | 8 | $0.00 | 03/12/2024 | 03/17/2024 | 03/17/2024 | n/a | Microsoft Word, Draw.io |
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Project Success Measures

1. Describe what measures will be used to calculate project success.
2. Use the template to list the project completion criteria.

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| Project Completion Criteria |
| 1 -Backend data storage |
| 2 – API’s created |
| 3 – Frontend visuals done with JavaScript and react |
| 4 – Frontend and Backend working together |
| 5 – User functions working |
| 6 – Admins functions working |
| 7 – Cart working |
| 8 – Checkout and payment working |

1. Use the template to list the project assumptions and constraints, if applicable. An assumption is an educated guess that a likely condition or circumstance is presumed to be true. A constraint is a limiting condition or circumstance that defines the project boundaries. Assumptions allow the project to succeed. Constraints restrict or limit the project execution.

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| Assumptions and Constraints | | | | | |
| ID | Description | Comments | Type | Status | Date Entered |
| 1 | React can handle an interactive UI | Weather or not the correct framework was selected to perform the project | Assumption | In Progress | 03/02/2024 |
| 2 | Can React and Springboot work together | Whether or not these two frameworks can work together to perform the project | Assumption | In Progress | 03/02/2024 |
| 3 | Lack of assets from customer | Assets for products will either need to be made or sourced from the customer | Constraint | In Progress | 03/02/2024 |
| 4 |  |  |  |  | 03/02/2024 |

Project High-Level Solution

**Introduction**

The project scope is to develop a web application for the company to sell its medieval weapons to online customers. This application will address the business need of reaching a wider customer base and adapting to the changing shopping habits of customers.

**Solution**

The web application will have the following features:

Product Display: The application will display a variety of medieval weapons. Each item will have a detailed description and price.

Shopping Cart: Customers will be able to add, remove, and edit the quantity of products in their shopping cart. This feature will provide customers with a flexible and convenient shopping experience.

User-Friendly Interface: The application will have an intuitive and easy-to-navigate interface, making it easy for customers to browse products and make purchases.

Secure Payment Gateway: The application will integrate a secure payment gateway for safe and secure transactions.

This solution aims to bring the company’s hundreds of years of business into the digital age, making its unique products easily accessible to customers around the globe. By doing so, it hopes to continue its tradition of excellence while adapting to modern market demands.

Initial Context Diagram:

A diagram of a flowchart

Description automatically generated

Process Flow Diagram:

A diagram of a company

Description automatically generated

Initial Sitemap:

A diagram of a diagram

Description automatically generated

Initial Database ER Diagram:

A diagram of a company

Description automatically generated with medium confidence

Project Controls

1. Use the template to define the risk and list the steps to prevent the risk from occurring or the steps to minimize the chances of it happening. The contingency plan describes alternative solutions to reduce the impact of the risk. An example of a contingency plan is to provide the customer a temporary web server if there are delays in delivery/completion. If the risk has already happened then provide an entry in the issue log.

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| Risk Management | | | | |
|  | **Risk Probability** | **Risk Impact** |  |  |
| **Event Risk** | **(high, medium, low)** | **Risk Mitigation** | **Contingency Plan** |
| What is the risk? | What is the probability? | What is the impact if the risk occurs? | What can be done to minimize the risk? | What can be done to minimize the impact of the risk? |
| 3rd party integration | Medium | Some functions of the website may not work | Check with compatibility of 3rd party components before deployment | Test multiple times before full deployment to users |
| Security | High | Webapp may be at risk of hacking | Integrate salting and hashing of sensitive users information in database | Integration of encryption to ensure users data remains safe. |
| Performance | High | Under high traffic, application not perform optimally. | Ensure that it can handle a large amount of traffic. | Test with many people over and over to ensure it remains efficient. |
| Compliance | High | Users data and privacy may be put at risk. | Ensure that the website adheres to all laws and regulations including data protection and privacy. | Double and triple check laws and regulations to remain compliant. |
| Users will not find UI appealing | High | This will cause users to lose interest of using the customers website. | Deploy multiple versions for testing to ensure that there is at least one that is visually appealing. | Keep the design of the website as close as the design documents and within the customers scope. |

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| Issues Log | | | | | | | | |
| **ID** | **Description** | **Project Impact** | **Action Plan/Resolution** | **Owner** | **Importance** | **Date Entered** | **Date to Review** | **Date Resolved** |
| 1 | What is the issue? | How will this impact scope, schedule & cost? | How do you intend to deal with this issue? | Who manages this issue? |  |  |  |  |
| 2 | No asset images for products | Without images, users will not be able to see what they are purchasing | Get images from the customer | Ryan | Top | 3/03/2024 | n/a | n/a |
| 3 |  |  |  |  |  |  |  |  |

1. All projects have either anticipated and planned or unexpected changes. Describe any issues in management or change management due to the anticipated and planned or unexpected changes. Use the template to list anticipated and planned or unexpected changes.

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| Change Control Log | | | | | | | | | |
| **ID** | **Change Description** | **Priority** | **Originator** | **Date Entered** | **Date Assigned** | **Evaluator** | **Status** | **Date of Decision** | **Included in Rev. #** |
| 1 | Addition of new features | 2 | Ryan | 03/03/2024 | 03/03/2024 | Ryan | Not Started | n/a | 1.0.0 |
| 2 | Implementation for application to work on web browsers on pc and mobile devices | 1 | Ryan | 03/03/2024 | 03/03/2024 | Ryan | Not Started | n/a | 1.0.0 |

1. Use the template to describe how the end user is involved in the software development, if applicable. Include relevant information about meetings, reviews, presentations, etc.

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| Roles and Responsibilities | | | |
| Name | Team | Project Role | Responsibility |
| Ryan | Frontend, Backend, IoT Site security, Database developer, GUI Developer | Lead | - Developing backend with MySql accessibility  - Developing a secure structure to protect user information  - Developing Frontend with user friendly UI  - Testing functionality between frontend and backend  - Deployment to webhost |
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Project Cost and Schedule

1. The project will not require any cost calculations in the current and foreseeable stages of development.
2. Create a project schedule after all project tasks have been defined and prioritized.

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| **Week 1-2** | **Create backend using Springboot and spring security** |
| **Week 3-4** | **Create frontend using React and JavaScript** |
| **Week 5-6** | **Add customers product data to database** |
| **Week 6-8** | **Run webapp on localhost and test all features (register new user, user login, admin login, add update and remove products.)** |
| **Week 8-10** | **Test 3rd party programs (payment methods)** |
| **Week 10-12** | **Deploy to test with small market** |
| **Week 12-14** | **Bug and issue fixes** |
| **Week 14** | **Deploy and test again with a larger market** |
| **Week 15** | **Fully deploy for customer business** |

Appendix A – References

Isaiah 54:17 NIV - - Bible Gateway. (n.d.). Www.biblegateway.com. Retrieved March 1, 2024, from https://www.biblegateway.com/passage/?search=Isaiah%2054%3A17&version=NIV

Appendix B – Copyright Compliance

For each external technical tool or code used, provide a reference to its copyright policy, clearly showing your right to use it. For each external technical tool or code used, detail how you used it, how you adapted it, how you modified it (if permitted), and why did you use it as opposed to write your own. Only a small portion of your project may rely on external code. When code libraries/packages are used, explain why this was necessary/required/recommended. Seek instructor approval for using external resources prior to beginning to work on the project.

Integrated Development Environment (IDE): An IDE like Visual Studio Code, Sublime Text, or Atom for writing and managing code.

Version Control System: Git for version control to track changes.

Frontend Development: JavaScript, HTML, and CSS for creating the user interface. You might also use libraries or frameworks like React to simplify the development process.

Backend Development: Spring Boot and Spring Boot Security for server-side operations.

Database Management System: MySQL Workbench for managing application data.