Project Plan

Comfyshop

Date	**:**	**03-03-2023**
Version	**:**	**0.1**
State	**:**	**Draft**
Author	**:**	**Alaa Tarakji**

Version history

Version	Date	Author(s)	Changes	State
0.2	19-03-2023	Alaa	Implement sprint 1 feedback	

Distribution

Version	Date	Receivers

Contents

1. Project assignment

1.1 Context

For the third semester of the English Stream ICT & Software Engineering, it is required to create an individual task. This task will be done to show corresponding learning outcomes of this semester are fulfilled.
The project aims to build a full-stack web application that serves as an e-commerce platform. The application will provide a user-friendly interface to customers to browse, search, and purchase products online.

1.2 Goal of the project

The goal of this project is to develop a full-stack web application “ComfyShop” that will enable customers to browse, search, and purchase products from different categories online. Customers will be able to add products to their cart, view their order history.
Additionally, the application will provide the company with access to manage product listings, update prices and descriptions.

1.3 Scope and Technologies

Inside scope:	**Outside scope:**
1 Design and development of e-commerce platform using React.js for front-end, java, Spring Boot and MySQL for back-end, and ORM tool for database interaction.	1 Integration of third-party payment gateways or shipping providers.
2 Implementation for password hashing, input validation, and JWTs for security purposes.	2 Customization of user interfaces beyond the defined requirements.

1- React.je is a popular front-end library that enables building user interfaces for web applications.
2- Java is widely used programming language that is known for stability, reliability, and scalability.
3- Spring Boot is a popular framework for building applications in Java. It provides a number of features that help to simplify development, such as auto configuration.
4- MySQL is a popular and widely used relational database management system. It is known for its reliability, scalability, and ease of use.

1.4 Strategy

The strategy for the project is Agile approach, specifically the Scrum framework with some adaptation that are suited for an individual project.
I’m going to break down the project into small tasks and features that can be completed in one sprint, which takes 3 weeks.
First, I'll plan out what I will do in the next sprint and prioritize them based on their importance and complexity. Then, I'll work on these tasks and features, making sure they meet the requirements and testing them.
After each sprint, I'll review the completed tasks or features with my teachers.

1.5 Research questions and methodology

The purpose of research is to give a better understanding of JWTs and how can we use it in a secure way for web applications. Nowadays, it is crucial for every application to have well-done security, as the IT industry is developing quit fast, comparing to how it was, for example in the 90's. Over the last few decades, developers had to come up with solutions to strength up the security to avoid hackers attack and to protect each user's personal data, since most of the data is stored in databases. Therefore, a secure way of using JWTs needs to be found in order to improve the security of the application, this being the main question of this research document. To answer this, 3 sub questions have been added to understand the basic knowledge about JWTs, following ways on how to store it and test it, and my recommendations on what would be the most secure way of using JWTs in the fastest way.

Main Question:

What are the security implications and best practice for using JSON Web Tokens (JWTs) for web applications?

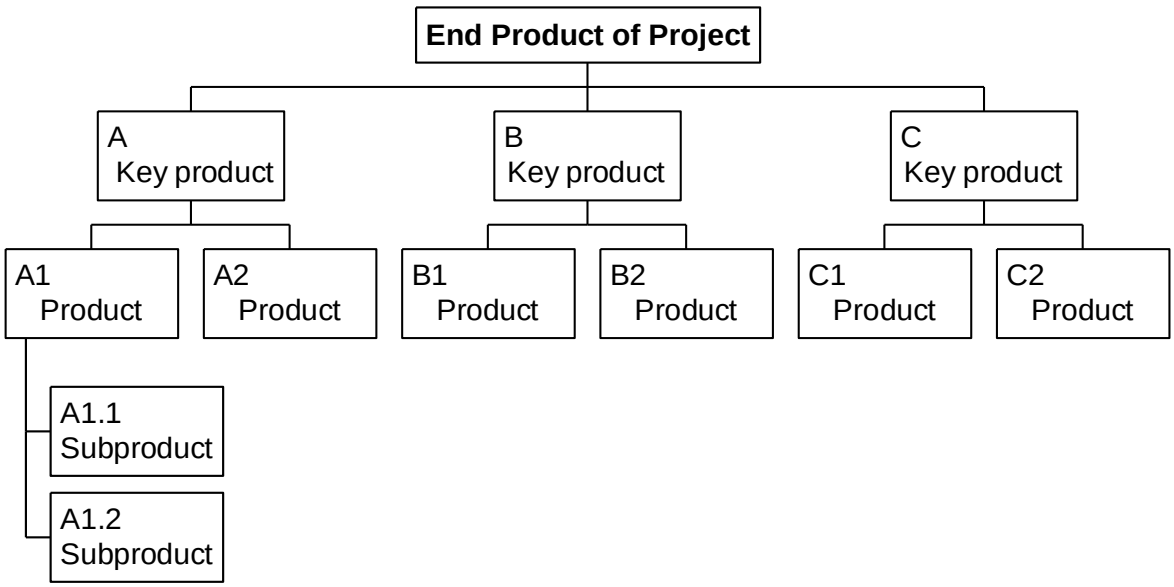
Sub Questions:

1- What are JWTs and how do they work?
2- What are the most common security tasks associated with JWTs?
3- What are the best practices for using JWTs in a secure way for back-end and front-end application?

1.6 End products

<< A Product Breakdown Structure (PBS) lists the end products that you realize, including a description of each product. In software engineering, the products are more than just the project plan and the application itself. E.g., requirements documents, architecture documents, research reports and test reports are all end products. These are all important products that are required for effective handover. They are also necessary for further maintenance and follow up-projects. The PBS can change during the course of the project.>>

Project Breakdown Structure (PBS)



2. Project organisation

2.1 Stakeholders and team members

Clients :
Coenen, Frank F.W.J. : f.coenen@fontys.nl
Paixão Dantas, Márcio M. : m.paixaodantas@fontys.nl

Teams :
Only me, you can contact me via my email a.tarakji@student.fontys.nl

2.2 Communication

Regular meetings will be held to discuss progress and address any issues in Fontys building. Getting feedback and applied during next spring, moreover, discussing tasks or features that will be implemented for next spring.

3. Activities and time plan

3.1 Phases of the project

The project is split into 6 sprints. In each sprint, different deliverables will be delivered, having a close contact with the stakeholders and weekly updates will be sent for feedback.

- *Sprint 1 (06-02-2023/ 03-03-202)*
  - Project Plan.
  - Initial product backlog and user stories.
  - Start of RESTful API. (Layering, dependency injection using Spring boot.
  - Continuous integration with git should be prepared.

- *Sprint 2 (04-03-2023/24-03-2023)*
  - The 1st version of the design document and prototype should be finished.
  - The design document must be including high level architecture, C4 architecture diagrams, design decisions and UML class diagram.
  - With the prototype, a front-end & back-end connectivity should be added.

- *Sprint 3 (25-03-2023/14-04-2023)*
  - Update 2nd version of the design document.
    - Level 4 (Code) diagram with context explanation: UML Class Diagram.
  - Initial Backend to Database setup.
    - Unit testing business layer mocking the persistence layer with Mockito.
    - Database versioning with Flyway use is recommended, but optional.
    - Partial integration tests on the persistence layer are recommended, but optional.
  - Research document
    - Problem statement or opportunity
    - Main question
    - Sub questions
    - (Multiple) Chosen methods per sub question and reasoning for these choices
    - Results
    - Conclusion and recommendation References and citations in APA style.

- *Sprint 4 (15-04-2023/12-05-2023)*
  - Update 3nd version of the design document.
  - Authentication and authorization implementation using JWT
  - Frontend:
    - Login feature implemented and connected to backend.
    - Storing token in-memory, session storage or local storage
    - Sub questions
    - One feature at least calling a secured service in the backend
    - Results
  - Continuous Integration and SonarQube

- *Sprint 5 (13-05-2023/02-06-2023)*

  - Final design document

  - Security report detailing how your application deals (or does not deal) with the OWASP top 10 security risks.

  - WebSocket feature.
  - Minimum viable product (MVP) features implemented
  - Continuous Integration and Sonarqube

- *Sprint 6 (03-06-2023/23-06-2023)*

  - Final UX feedback report (feedback from 2 different users) and resulting improvements on your UI

  - Final individual track product with minimum viable product (MVP) features implemented.
  - Continuous Integration and SonarQube.
  - Continuous delivery.

4. Testing strategy

4.1 Testing strategy

For testing the e-commerce platform, I will use a combination of unit, integration testing.
Unit testing will be done on individual components to ensure that functions are working as expected.
Integration testing will be done to ensure that components work well together.

4.2 Test environment and required resources and testing strategy

For the test environment, I will make use of CI/CD (Continuous Integration/Continuous Deployment) approach to ensure that changes are completely tested before being deployed to the production environment. This approach will involve setting up a pipeline that builds, tests, and deploys changes automatically. For unit testing, I will be using the Moq library for unit testing, which helps to simulate different situations and check if code working as it should be.

4.3 Configuration management

For version management, I will be using GitLab as the tool of choice for this e-commerce management. To ensure that changes is managed well, I will create a new branch for each feature or task I will implement. This will help to keep changes separate and test them before merging back into the main branch. Also, I will use issues in GitLab to keep track of everything that need to be done in this project.

5. Finances and risk

5.1 Risk and mitigation

Risk	Prevention activities	Mitigation activities
1 Technology stack: the use of new and unfamiliar technologies may result in technical difficulties and delayed delivery.	Conducting thorough research on the chosen technology stack before starting development. This include reading documentation, tutorials and doing all the assignments in Canvas.	Seeking help from teachers, classmates
2 Inadequate testing leading to bugs in the application	Create a comprehensive test plan that covers all aspects of the ComfyShop web application.	
3 Insufficient security measures leading to vulnerabilities in the application	Input validation Secure password storage Authentication and authorization	