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1.1 Introduction

Welcome to the documentation for a Demo Software Solution based on Products and their Categories. This document serves as a comprehensive guide to understanding the design, functionality, and implementation details of the Demo as per the technical requirements provided. It is intended for developers, stakeholders, and any other interested parties.

1.2 Project Overview

This Demo is structured as a .NET Core solution consisting of three projects:

API: This project provides endpoints for managing products (Create, Read, Update, Delete), categories (Create, Read, Update only), and user Authentication and Authorization (Registration and Login).

Client: The web client facilitates user registration, login, and interaction with the API endpoints for managing products and categories.

Model: Used to define the required classes for the products, categories and others.

1.3 Objectives

The main objectives of this Demo are:

- To provide a robust API for managing products and categories.
- To offer seamless user authentication and authorization.
- To ensure data integrity and security through proper validation and logging mechanisms.

1.4 Purpose of Documentation

This documentation aims to provide a comprehensive understanding of the project's design, architecture, and functionality. It includes various diagrams, such as Class Responsibility Collaborator (CRC) cards, Enhanced Entity Relationship Diagram (EERD), Context Diagram, Data Flow Diagram (DFD), Use Case Diagram, and Class Diagrams. Additionally, it outlines the database design and provides insights into the relationships between different components of the system.

1.5 Audience

This documentation is intended for:

- Developers involved in the implementation and maintenance of the project.
- Project stakeholders seeking a deeper understanding of the project's architecture and functionality.

- Quality assurance teams involved in testing and validation processes. Any other individuals interested.
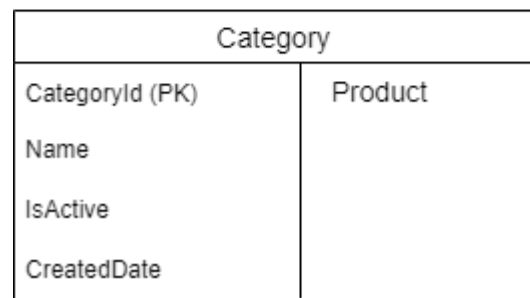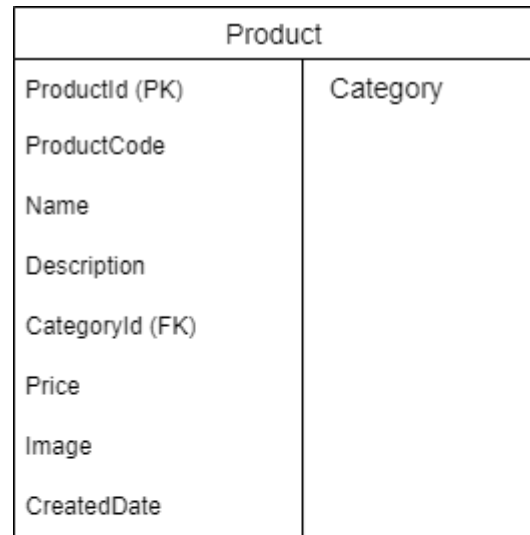
1.6   Functional Requirements

These functional requirements outline the key features and behaviours expected from the software. They serve as a guideline for the development to implement the desired functionality effectively.
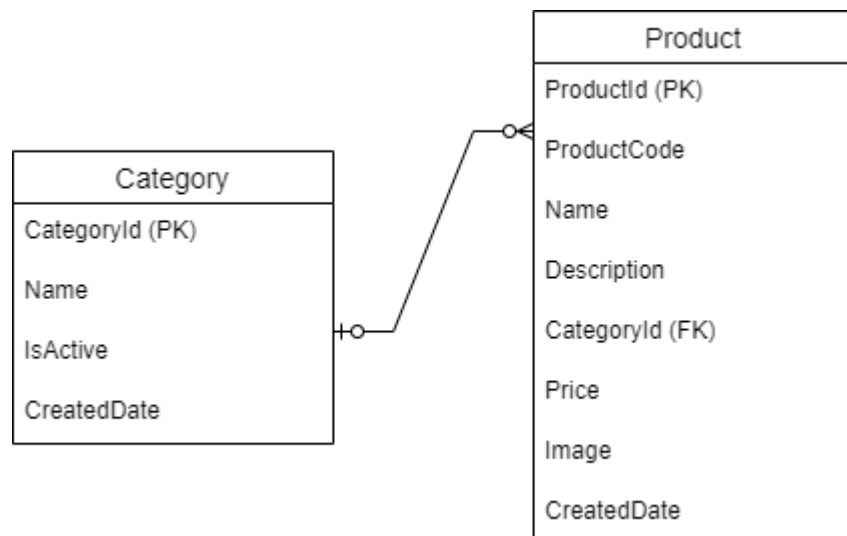
- **User Registration:** Users can register on the web application using their email and password.
- **User Login:** Registered users can log in using their email address and password.
- **Category Management:** Users can view, add, and edit categories.
- **Category Code Validation:** When adding or editing a category, the user must enter a unique category code containing three alphabetic letters followed by three numeric characters (e.g., ABC123).
- The system validates the category code format and displays an error message if it is incorrect.
- **Product Management:** Users can view, add, edit, and delete products.
- Product display is paginated with a page size of 10 items.
- **Category Assignment:** When adding or editing a product, users can select a category for the product from the available categories.
- **Product Code Generation:** Each product is assigned a unique product code generated based on the year, month, and a sequential code (e.g., yyyyMM-###). For example, 202105-023.
- **Image Attachment:** Users can add an image against each product.
- **Excel Spreadsheet Upload and Download:** Users should be able to upload an Excel spreadsheet containing product data. Users should be able to download an Excel spreadsheet containing product information.
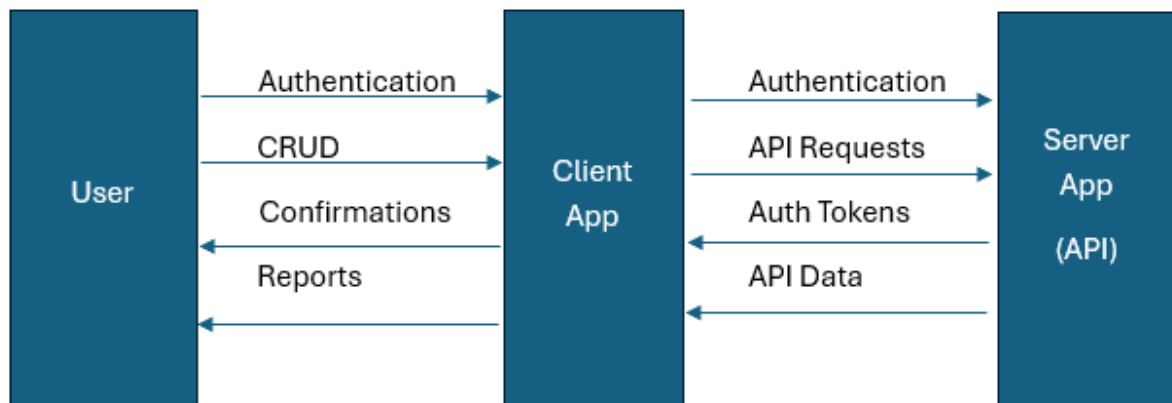
2.1   Designing

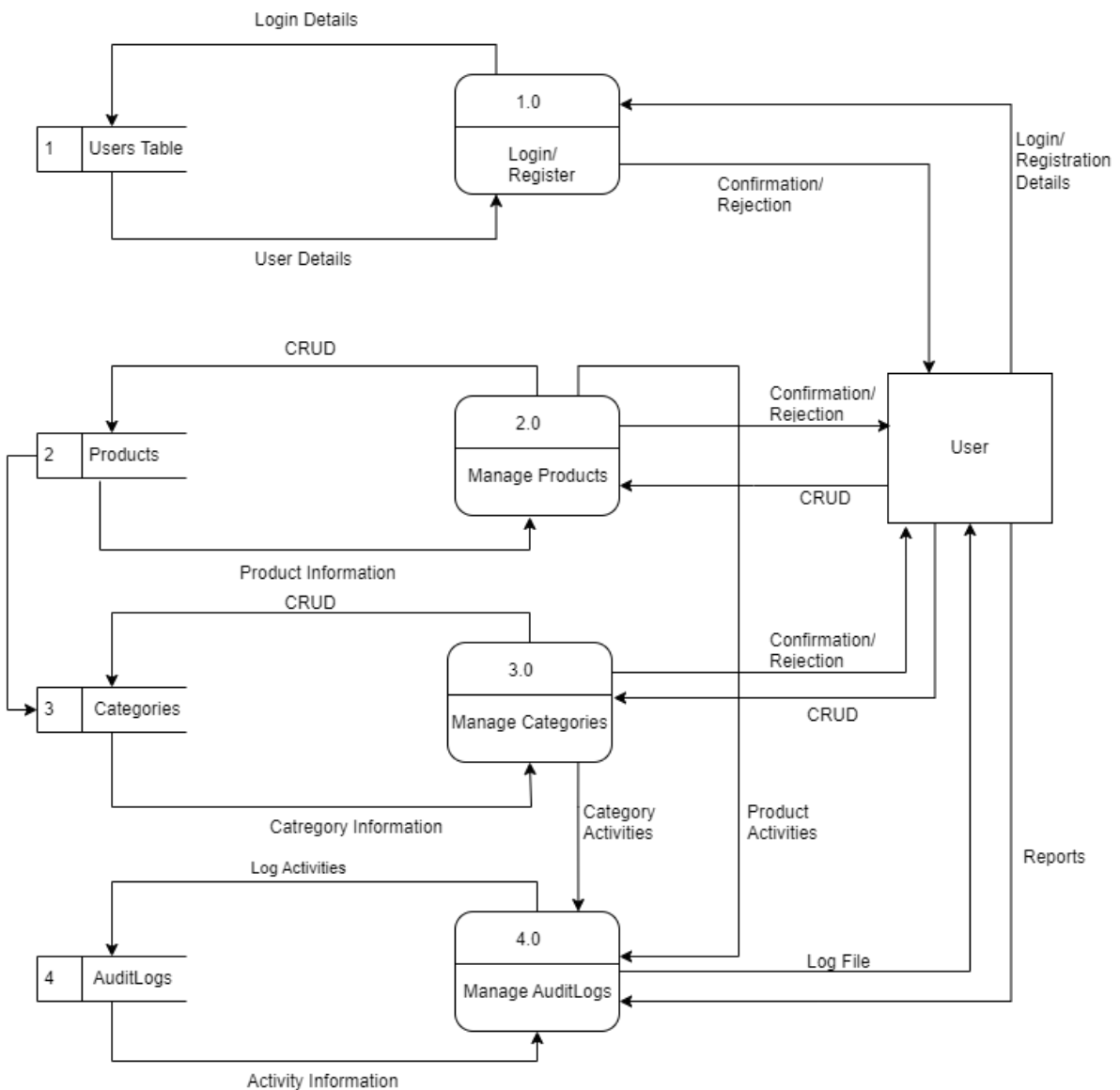### 2.1.1   Class Responsibility Collaborator (CRC) Cards

Product	
ProductId (PK)	Category
ProductCode	
Name	
Description	
CategoryId (FK)	
Price	
Image	
CreatedDate	

Category	
CategoryId (PK)	Product
Name	
IsActive	
CreatedDate	

2.1.2   Enhanced Entity Relationship Diagram

Category		Product	
CategoryId (PK)		ProductId (PK)	
Name		ProductCode	
IsActive		Name	
CreatedDate		Description	
		CategoryId (FK)	
		Price	
		Image	
		CreatedDate	

2.1.3 Context Diagram

2.1.4 Data Flow Diagram

2.1.5 Use Cases

2.1.6 Data Base Design

3.1 System Initial Setup

3.1.1 Install .NET Core SDK:

- Visit the official .NET Core website (https://dotnet.microsoft.com/download)
- to download and install the .NET Core SDK for your platform (Windows, macOS, or Linux).
- Follow the installation instructions provided on the website to complete the installation process.

3.1.2 Choose an Integrated Development Environment (IDE):

- Select an IDE for .NET Core development. Popular options include Visual Studio, Visual Studio Code, and JetBrains Rider.
- Download and install the chosen IDE from their respective websites.
- You are recommended to use Visual Studio

3.1.3 Database Management System Installation:

- This project is based on the MS SQL Server database management system.
- You can download and install SQL Server 2022 from the official website (https://www.microsoft.com/en-us/sql-server)
- Alternatively, you can opt for the MySQL Database Management System (https://www.mysql.com/)

3.1.4. Running the System

- Download the Master project file from the github link provided or use the one emailed.
- Unzip the project and save it preferably in C://Projects or any other location of your choice.
- Open Visual Studio, and select the path to where you saved the project.
- Make sure that the solution is set to <Multiple Startup Projects> by setting the API and Web projects at the startup projects, with the API starting up first as shown below:
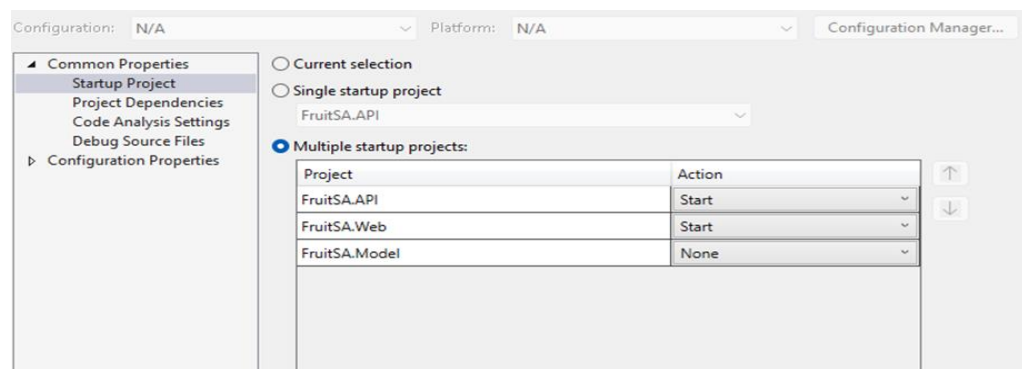

Figure 3.1 Source: Z. Taruvinga

3.1.5 Database Setup

- Depending on your database management system as specified on section **3.1.3 above,** setup you Connection String in the **appsettings.json** file of the API Project.
- You can manually create your database using the provided .bak file or run the Update-Database command from the Package Manager Console.

Once you have the system and the database configure, you can run the system and move on to the user-manual section below:

4.1   User Manual

Welcome to the user manual for the Demo System. This manual serves as a comprehensive guide to assist users in understanding and effectively utilizing the features and functionalities of our software system. Whether you're a new user looking to get started or an experienced user seeking advanced insights, this manual provides the necessary information to maximize your experience.

4.1.1   How to Use This Manual

This manual is organized into sections, each focusing on specific. Users can navigate through the manual using the table of contents or by directly accessing relevant sections based on their specific needs or interests. Additionally, the manual includes illustrations, screenshots, and examples to facilitate understanding and enhance the user experience**.**

4.1.2   User Registration

- Click on the registration link on the Navigation and complete the form that follow.
- Provide a valid email address and strong password that meets the following:
  i.   must have at least one digit 0 - 9
  ii.   must have at least one uppercase A - Z
  iii.   must have at least one lowercase a – z
  iv.   must have at least one special character.

REGISTER

Email address

Password

Confirm Password

Register

You have an account? Login

REGISTER

Email address

The Email field is required.

Password

The Password field is required.

Confirm Password

The ConfirmPassword field is required.

Register
You have an account? Login

4.1.3   User Login

- Click on the Login option on the Navigation and login with your email address and password:

LOGIN

Email address

zivanaitaruvinga@yahoo.co.uk

Password

••••••••••••

Login
Don't have an account? Register

4.1.4 User Dashboard and Navigation

- When you login successfully, the following dashboard will be displayed where you can Add, Update, Display and Delete Products and Categories(can not delete categories).
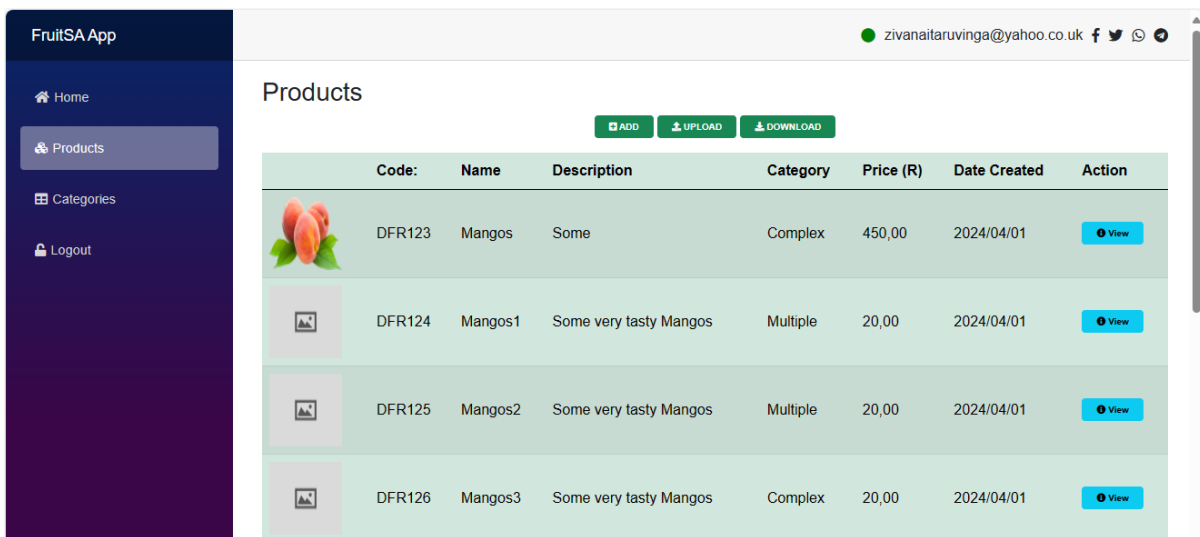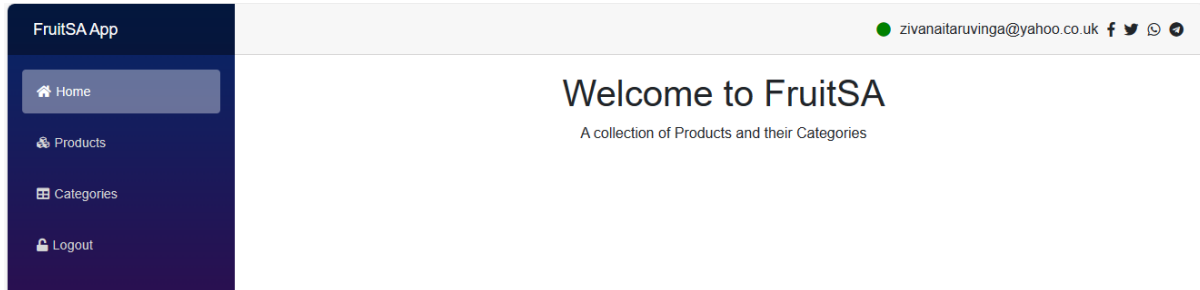
Add Product

Product Code:

202404-006

Name:

Description:

Category:

Select Category

Price (R):

0

Upload Image: Choose File | No file chosen

➕ Add Product

Upload Excel Files

Choose File | No file chosen

⬆ Upload File

Mangos

Some

Category: Complex

Code: DFR123

Price (R): 450,00

Edit Delete

Mangos1

Some very tasty Mangos

Category: Multiple

Code: DFR124

Price (R): 20,00

Edit Delete

Edit

Product Code:

DFR123

Name:

The Name field is required.

Description:

Category:

Single

Price (R):

The Price field must be a number.

Upload Image: Choose File | No file chosen

[✔ Save Product] [🗑 Delete]

[➕ ADD] [⬆ UPLOAD] [⬇ DOWNLOAD]

[« Previous] Page 2 of 2 [Next »]

FruitSA App

🟢 zivanaitaruvinga@yahoo.co.uk f 🐦 © ◐

- 🏠 Home
- 🛒 Products
- ▦ Categories
- 🔒 Logout

Categories

[➕ ADD]

Code:	Name	IsActive	Date Created	Action
BND512	Multiple	Yes	2024/04/01	[✏ Edit]
BND451	Complex	Yes	2024/04/01	[✏ Edit]
SIN458	Single	Yes	2024/04/01	[✏ Edit]

[➕ ADD]

Add Catecory

Category Code:

Name:

IsActive:

No

➕ Add Category

Add Catecory

Category Code:

BND4512

Category Code is required in the format ABC123.

Name:

Complex

IsActive:

No

➕ Add Category

Edit Multiple

Category Code:

BND512

Name:

Multiple

IsActive:

Yes

[✎ Save Category]

4.2   Tools Used

The following tools were used in the development of the system:

- Microsoft Visual Studio 20222
- MS SQL Server 2022
- ASP.Net Core
- Blazor
- C#
- HTML 5
- CSS
- JavaScript
- Bootstrap
- Fontawesome
- Nuget Package Manager and Packages.

4.3   Conclusion

We hope that this manual has provided you with valuable insights and guidance on how to effectively use the demo software to meet your needs and achieve your goals.

We value your feedback and suggestions for improvement. If you have any ideas for enhancing the system or if there are features you would like to see added in future releases, please let us know. Your input helps us continually enhance and refine our software to better serve your needs and preferences.

Online References:

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b. Microsoft. (2021). .NET Core Guide. Microsoft Docs. Available at: https://docs.microsoft.com/en-us/dotnet/core/

c. Freeman, A. (2017). Pro ASP.NET Core MVC 2. Apress. Available at: https://www.apress.com/gp/book/9781484231494

d. Rajput, P. (2020). Mastering .NET Core 3.1: Become proficient in .NET Core, Entity Framework Core, and ASP.NET Core 3.1 using C#. Packt Publishing. Available at: https://www.packtpub.com/product/mastering-net-core-3-1/9781789619768

e. Koprowicz, T., and Cieślak, J. (2020). ASP.NET Core 3.1 MVC and Razor Pages for Beginners: How to Build a Website. Independently Published. Available at: https://www.amazon.com/ASP-NET-Core-Razor-Pages-Beginners-ebook/dp/B083ZY6HMM

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h. Siahaan, T. P. (2020). ASP.NET Core 3.1 MVC For Beginners: How to Build a Website. Independently Published.

i. Liberty, J., & MacDonald, B. (2020). .NET Core in Action. Manning Publications.

j. Nesteruk, D. (2018). Pro .NET Memory Management: For Better Code, Performance, and Scalability. Apress.