Software Design Description for

Saleh Ahmed, Yusuf Mohamed, Zeynat Ghallab,Arwa Faisal,Shahd Ashraf
Supervised by: Dr. Essam Eliwa, Eng. Omar

May 19, 2023

Table 1: Document version history

Version	Date	Reason for Change
1.0	12-May-2023	SDD first version's description are defined.
1.1	14-May-2023	Added Sequence Diagram.
1.3	16-May-2023	Requirement Matrix updated.

GitHub: GitHub repository

Contents

Abstract

Pmico el captain is a company that is specified in importing and exporting production requirements such as cutting tools that is required for producing any product in any factory on CNC machine and laser cutter.They are specified in 5 types of cutting tools which are end mills, ball noses, tool holders, carbide burrs, carbide inserts. The company isn't satisfied by their distribution on factories only but they also sell to the small workshops and traders in El Gomhouria street which is the most famous street for tools trading in Egypt.

1 Introduction

1.1 Document Purpose

The SDD document tracks the necessary information required to effectively define architecture and system design in order to give the development team guidance on the architecture of the system to be developed. Design documents are incrementally and iteratively produced during the system development life cycle, based on the particular circumstances of the information technology (IT) project and the system development methodology used for developing the system.

1.2 Document Scope

This document is intended to give a detailed technical description of our software project. It contains information of our system developing part ,used frameworks,programming languages,and system architecture.However,It mentions the main functions,classes their relations which were used to build the backend of the project .Also,it describes stakeholders who are affected by the system somehow with detailed diagrams descriptions .

1.3 Intended audience

The intended audience for the SDD is the project manager, project team, and the future development team. The audience or users for this system design document include the following:

- Project Management Team
- Information Technology Team
- Future application development team

1.4 Reference Material

- our srs document:www.overleaf.com/project/643c2fa45c564eddd16c9639 .
- https://senior.ceng.metu.edu.tr/2014/such/documents/SDD.pdf
- https://www.bellevuecollege.edu/wp-content/uploads/sites/135/2019/04/SDD$_{R}oadTrip.pdf$

2 System Overview

Pmico is company of production and manufacturing tools Relaibility and effectiveness are main aim for the system. it should be able to creat accounts for users and allow them to view product, add and remove from cart then performing the purchase process.

2.1 System Scope

The required functions are:

- Client needs online store to display all of his products to customers.
- The availability of product search by the customer.
- The logo should appear in every page.
- Add to cart.
- Payment by different ways (cash on delivery , visa/mastercard and fawry).
- The option of delivery and pick-up.
- Admin page to facilitate the adding and deleting of products or services.
- All products sales and display the revenue.
- Displaying the sizes of the products to prevent wrong purchases.
- Home page displaying the new products , the offers, about us , contact us and location.

Guidelines for applying the functional and non-functional requirements:

- All the products will be displayed in the product page.
- The product page will have a feature that the user to search for a specific product.
- The Logo of pmico store should appear on the nav bar in each webpage.
- A cart feature that enable the user to choose more than one product and pay at the end.
- When the user reach for the last step which is the payment, he will have the option to pay cash on delivery or Visa/mastercard or Fawry.
- The user can choose to pickup his shipment instead of delivering it.
- The client will have his own interface webages "Admin Webpages" that allows him to add and delete products and other things to control the website.
- The website will get a web page that displays his sales and revenue with every product that get sold.

- As the store is selling workshops equipment and tools, every tool has multiple sizes, so each tool will be displayed only one time and will have a list of its diffrent sizes.
- The Home page of the website will display the latest products, offers, about us , contact us and location.

The final deliverables are:

- Online store website.
- Software Requirements Specification (SRS).
- Testing Document.
- Software Design Document (SDD).

The involved stakeholders:

- The client who is a business man.
- The client's employees.
- Their clients that will use the website to buy the product.

Guideline for the project schedule:
We started working on this project 8 weeks ago and finished the proposal document, 90% of the frontend, 20% of the SRS document and 20% of the backend. We are planning to finish the implementation in the next 3 weeks to start testing.

2.2 System objectives

- The admin shall be able to update the available products and their prices.
- The admin shall view clients' order history.
- The client shall be able to view product and its full details including price, availability in the market and description.
- The client shall choose the payment method.
- The client shall add products to the cart.
- The client shall login/register to reserve a product.
- The system shall analyze the company's sales per month.
- The system shall allow the client to add products to cart and reserve them to buy at the store later
- The system shall allow the client to search for specific product in the search bar.

- The system shall allow the client to rate the product and give comment during and after the purchase process.
- The system shall allow communication between the client and the admin through message box.

2.3 Project Timeline

This section provides the latest version of the project plan between SRS and Technical Phase:

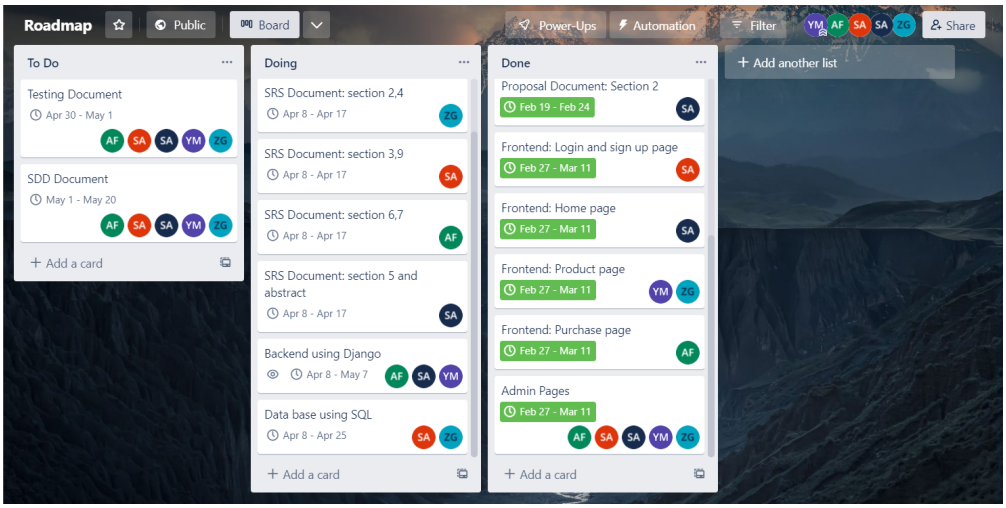

Figure 1: Project time plan

3 Design viewpoints

3.1 Context viewpoint

As explained in the SRS targets of this project are to design a system which is easy for people to use and inhance our business . We will try to give the most accurate result in a most feasible time. For this purpose we will create this software in a model and we will use different libraries to make sure everything is designed properly and fast. These libraries are explained later. This system is affected by different stakeholders and users, in the first place the users of the system who are the managers and people who are responsible for the sales,another stakeholders who are customers who can signup,login,view system products,buy an order.This software can be extended to facilitate for customers to buy the products, but at the moment we will focus on the database operations according to the users choices and the statistical examination of the results.

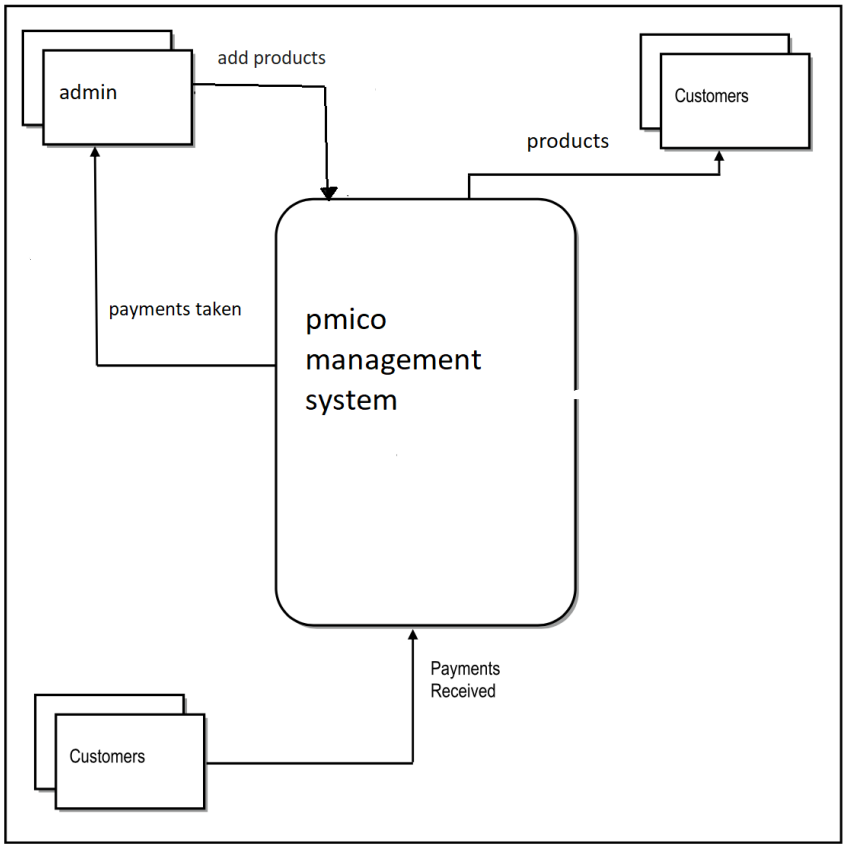

Figure 2: Context Diagram for pmico Management System

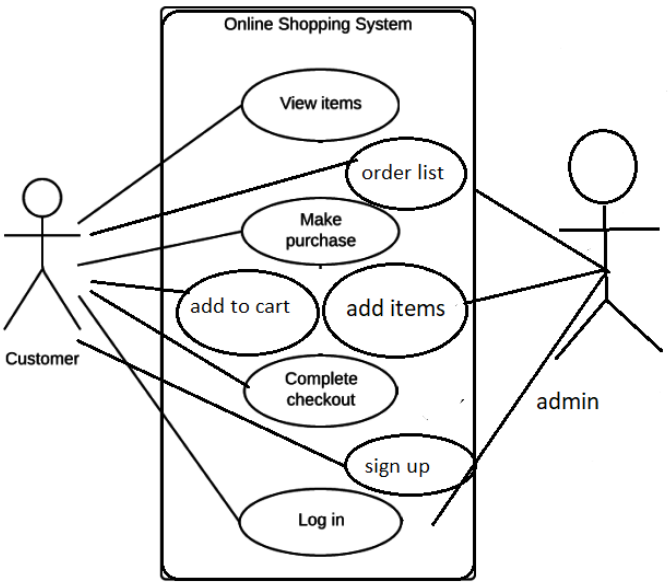

Figure 3: Use Case Diagram Example

3.2 Composition viewpoint

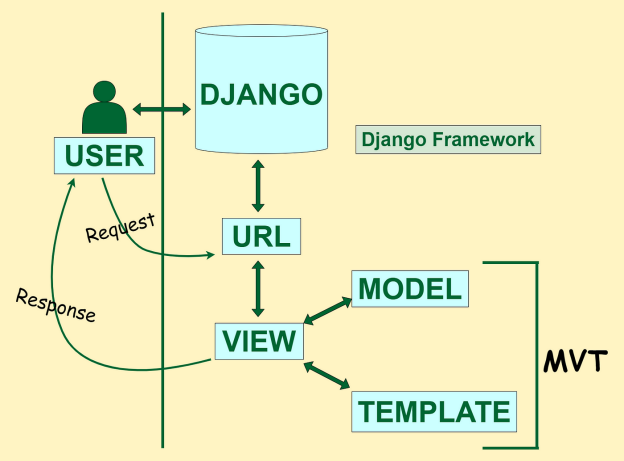

Figure 4: MVT Pattern

3.2.1 Design Rationale

Design choices are created with reference to the precise requirements mentioned in SRS document and other significant features in order that system can respond the specified scenarios with specified cases. It are often updated consistent with changing requirements of the stakeholders and therefore the users.

3.3 Logical viewpoint

Table 2: User

Abstract or Concrete:	concrete
Superclasses	–
Subclasses	–
Purpose	save customers and admins accounts
Collaborations	–
Attributes	first name,last name,email,date join,password,phone number
Operations	SetFirst name(),SetLast name(),SetEmail(),SetPhone()

Table 3: Items

Abstract or Concrete:	concrete
Superclasses	–
Subclasses	–
Purpose	save items
Collaborations	category class
Attributes	name,description,email,price,image,sold,created by
Operations	SetName,SetPrice,SetDescription,SetCategory,SetImage,SetSold

Table 4: ORDER

Abstract or Concrete:	concrete
Superclasses	–
Subclasses	–
Purpose	save order from card
Collaborations	–
Attributes	name and quantity
Operations	String:setOrder()

Table 5: category

Abstract or Concrete:	concrete
Superclasses	–
Subclasses	–
Purpose	save the category
Collaborations	–
Attributes	name
Operations	String:setCategory()

3.4 Patterns use viewpoint

The MVT pattern is used to separate the different components of the application into three distinct layers: the Model, the View, and the Template.

- The Model component represents the application's data and business logic. In our project, models are defined using Python classes that inherit from Django's Model class. The Model class provides a set of methods for interacting with the database, making it easy to create, read, update, and delete data.
- The View component is responsible for processing user requests and generating responses. In our project, views are implemented as Python functions or classes that take requests as input and return responses. Views can interact with models to retrieve or manipulate data, and they can use templates to generate HTML or other output formats.
- The Template component defines the structure and layout of the application's user interface. In our project, templates are defined using HTML with embedded Django template tags. Template tags allow for dynamic content to be included in the HTML, such as data from the database or user input.

3.5 Algorithm viewpoint

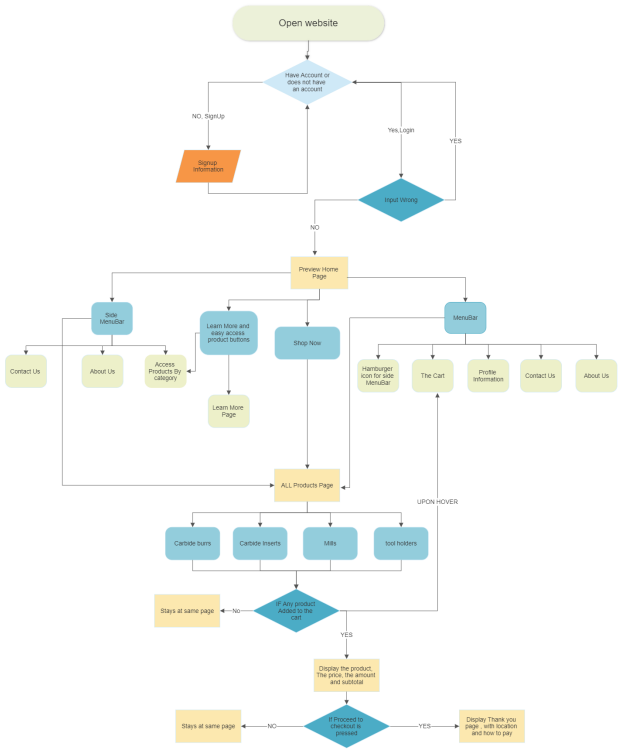

Figure 5: Project Algorithm

3.6 Interaction viewpoint

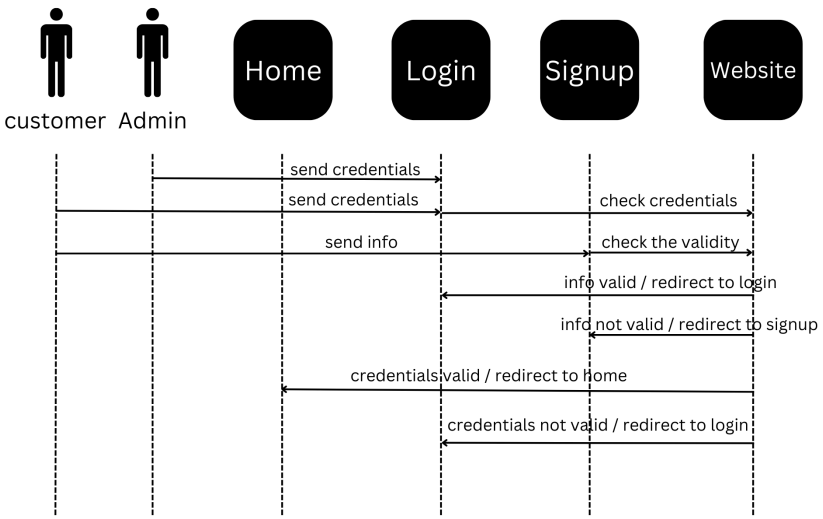

Figure 6: Sequence diagram

3.7 Interface viewpoint

- Framework used in this system:

- Django

4 Data Design

4.1 Data Description

pmico's internal structure is divided into two parts: admin side and client side

On the client side, data will reside locally in memory and will be organized based on the classes defined later in this document. Since the pmico program may be considered data-centric, the classes that handle the data will be isolated.

The server will be implemented using Python. Permanent storage of user information will be accomplished using Django models for database.

5 Human Interface Design

5.1 User Interface

Each menu will consist of various GUI components, such as buttons, labels, text fields, and list objects. These components will be arranged in such a way that the user will be able to quickly grasp the purpose of each menu and perform whatever task it is designed for efficiently. A detailed

description of these menus and their interactions with each other will be described in section. it will be user friendly to facilitate dealing with the various website functions.

5.2 Screen Images

the following shows the website interface design for different pages:

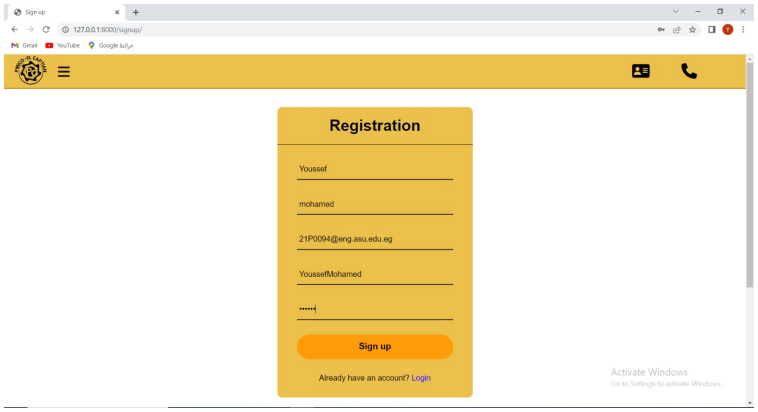

Figure 7: registration page

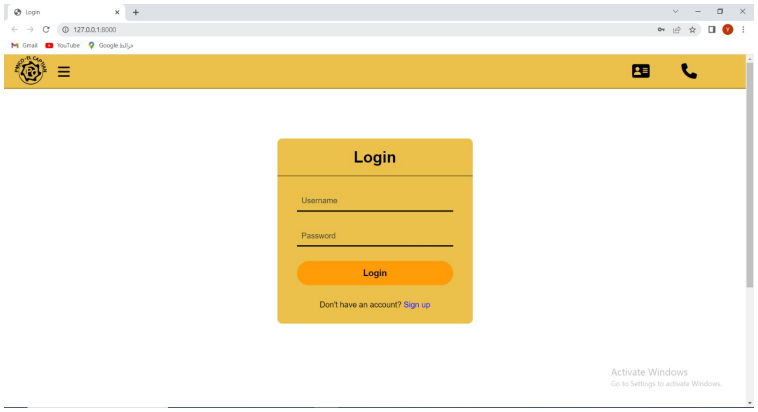

Figure 8: login page

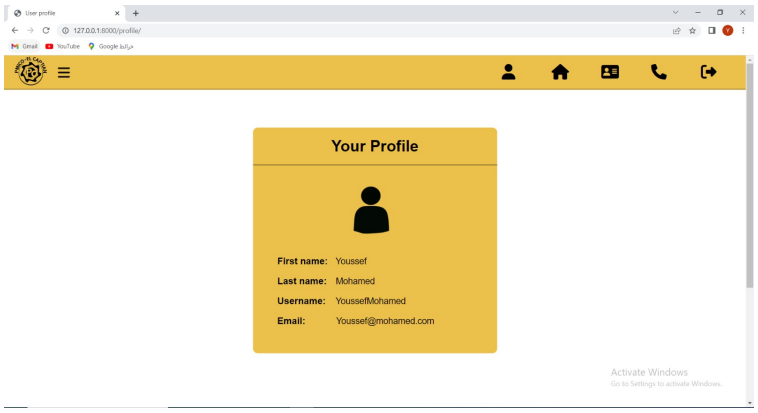

Figure 9: profile page

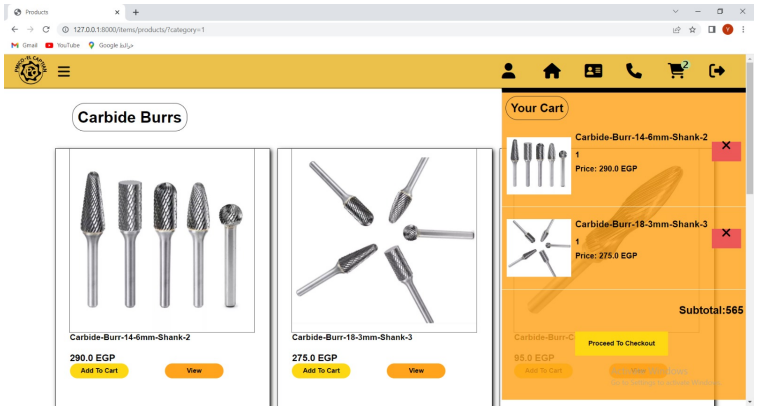

Figure 10: products and cart

6 Requirements Matrix

Provide a cross reference that traces components and data structures to the requirements in your SRS document.

Table 6: Requirements Ratrix

Req. ID	Req Desc	Class	Test Cases ID	Status
FR02	login	user,admin		Developed
FR02	signup	user		Developed
FR01	search product	user		In Progress
FR02	logo appearence	user		Developed
FR02	add to cart	user		Developed
FR02	payments	user		in progress
FR02	delivery	user		in progress
FR02	admin page	admin		Developed
FR02	home page	user		Developed
FR02	display revenue	user		in progress
FR02	display size	user		Developed

7 APPENDICES

7.1 Github

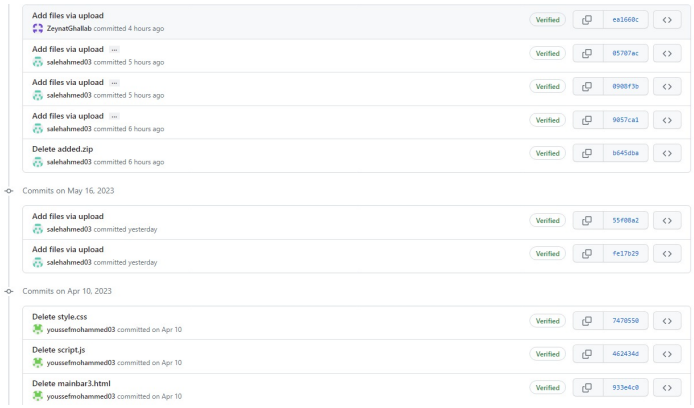

Figure 11: GitHub respository

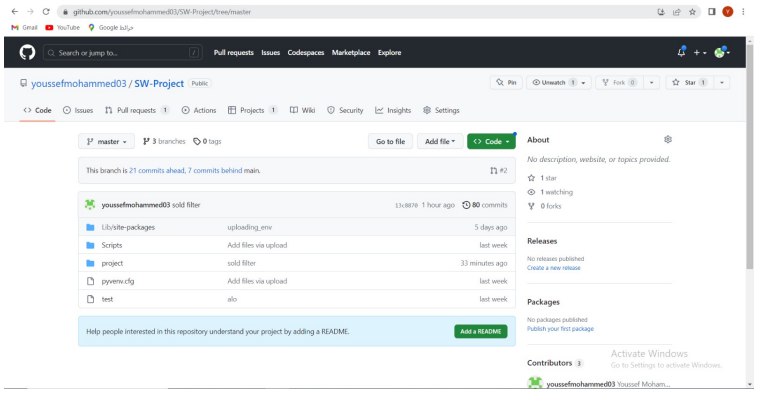

Figure 12: Backend Branch