Profit Tracker App Project Documentation

Group 9

APT2080 Introduction to Software Engineering

Fall 2024

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1.0 Project Description

The Profit Tracker is a comprehensive application designed to manage users, products, and transactions within a business environment. It provides a graphical user interface (GUI) built using Tkinter, allowing users to perform various operations such as creating, viewing, updating, and deleting records related to users, products, and transactions. The application uses SQLite databases to store and manage data.

2.0 Project Overview

Profit Tracker

Key Features:

1. User Management:

2. Product Management:

3. Transaction Management:

4. Login System:

5. Database Initialization:

Technologies Used:

Python: The primary programming language used for developing the application.

Tkinter: A standard GUI library for Python, used to create the graphical user interface.

SQLite: A lightweight, disk-based database used to store user, product, and transaction data.

NanoId: A library used for generating unique ID; for products, users, and transactions

Matplotlib: A library used for creating graphs to visualise data.

File Structure:

user.py: Contains the `User` class and methods for managing user data.

product.py: Contains the `Product` class and methods for managing product data.

transaction.py: Contains the `Transaction` class and methods for managing transaction data.

main.py: The main entry point of the application, handling the GUI and integrating the different modules.

3.0 Project Objectives

The primary objectives of the Profit Tracker project are to develop a comprehensive profit tracking application that efficiently manages users, products, and transactions within a small business environment. The key objectives include:

i. User Management

Create and Manage Users Enable administrators to add, view, update, and delete user records, ensuring that all relevant user information is accurately maintained.

User Authentication Implement a secure login system to authenticate users and control access to the application.

ii. Product Management

Inventory Control Allow users to add, view, update, and delete product records, ensuring that the inventory is accurately tracked.

Product Information Store detailed information about each product, including images, to facilitate easy identification and management.

iii. Transaction Management

Record Transactions Enable users to record new transactions, including details such as employee ID, product ID, quantity, price, and timestamp.

Transaction History Provide a comprehensive view of all transactions, allowing users to track sales and generate reports.

iv. Data Integrity and Security

Data Storage Use SQLite databases to store user, product, and transaction data securely.

Data Encryption Implement encryption for sensitive data, such as passwords and image file names, to ensure data security.

v. User-friendly Interface

Intuitive Design Develop a user-friendly graphical user interface (GUI) using Tkinter, making it easy for users to navigate and perform various operations.

Usability Ensure that the application is accessible and usable by all intended users, including those with varying levels of technical expertise.

4.0 Project Scope

Scope Covered

The scope of the Profit Tracker project includes the development, implementation, and maintenance of a comprehensive application for managing users, products, and transactions. The project will cover the following areas.

i. User Management Module

Features

Create, view, update, and delete user records.

Secure user authentication and authorization.

Components

User interface for user management.

Database for storing user information.

Authentication mechanisms.

ii. Product Management Module

Features

Create, view, update, and delete product records.

Store detailed product information, including images.

Components

User interface for product management.

Database for storing product information.

Image storage and management.

iii. Transaction Management Module

Features

Create, view, update, and delete transaction records.

Generate reports and summaries of transactions.

Components

User interface for transaction management.

Database for storing transaction information.

Reporting tools.

iv. Database Management

Features

Uses SQLite databases to store user, product, and transaction data.

Components

Database schema design.

v. User Interface Design

Features

Develop a user-friendly GUI using Tkinter.

Ensures intuitive navigation and usability.

Components

Wireframes and mock-ups of the user interface.

User interface components (buttons, text fields, list boxes, etc.).

Out of Scope

The following areas are considered out of scope for the Profit Tracker project

i. Advanced Reporting and Analytics
ii. Integration with External Systems

The project will not include integration with external systems, such as ERP systems or third-party applications.

iii. Mobile Application

The project will not include the development of a mobile application. The focus will be on the desktop application using Tkinter.

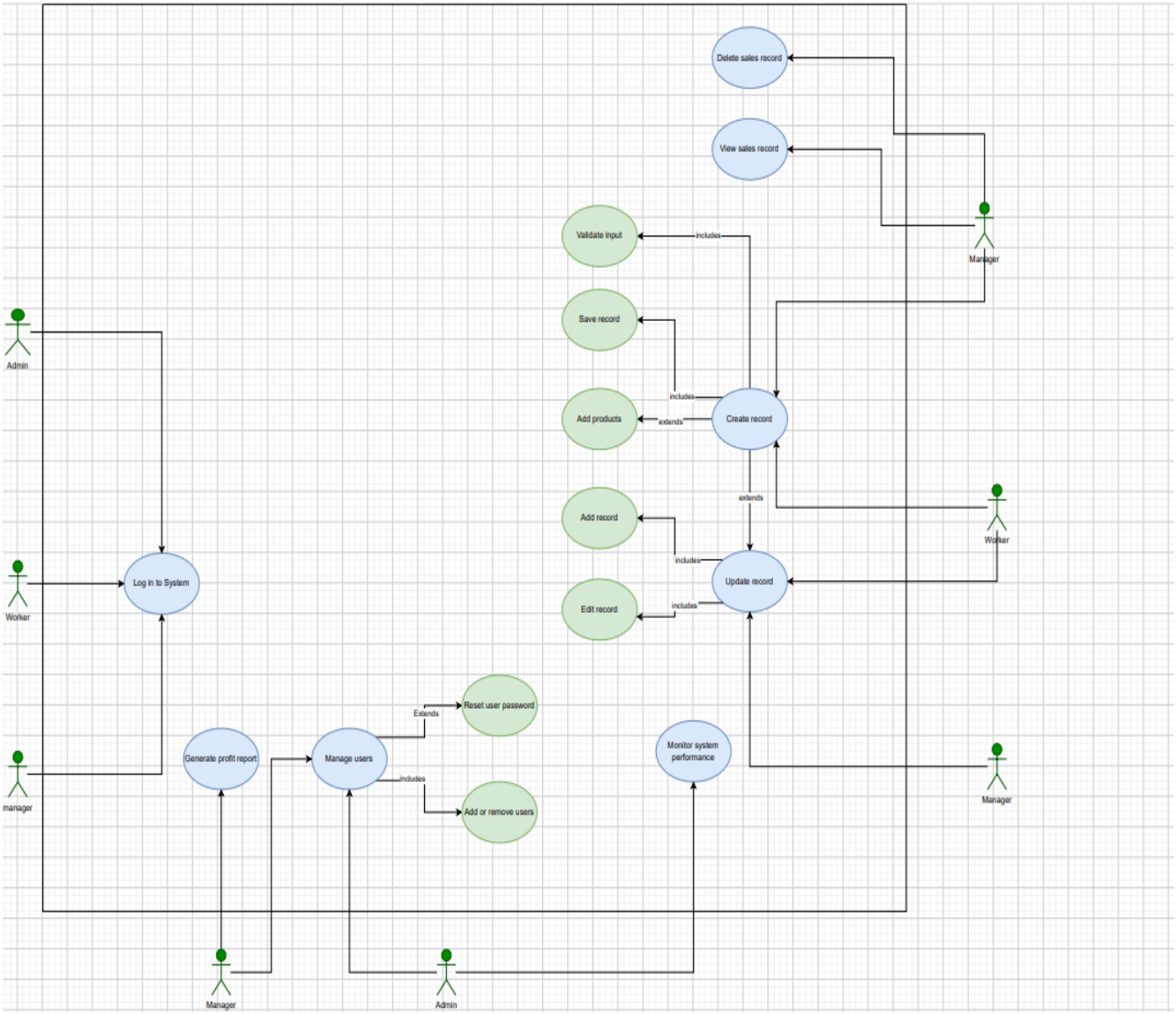
iv. Ecommerce Functionality

The project will not include ecommerce functionality, such as online ordering or payment processing.

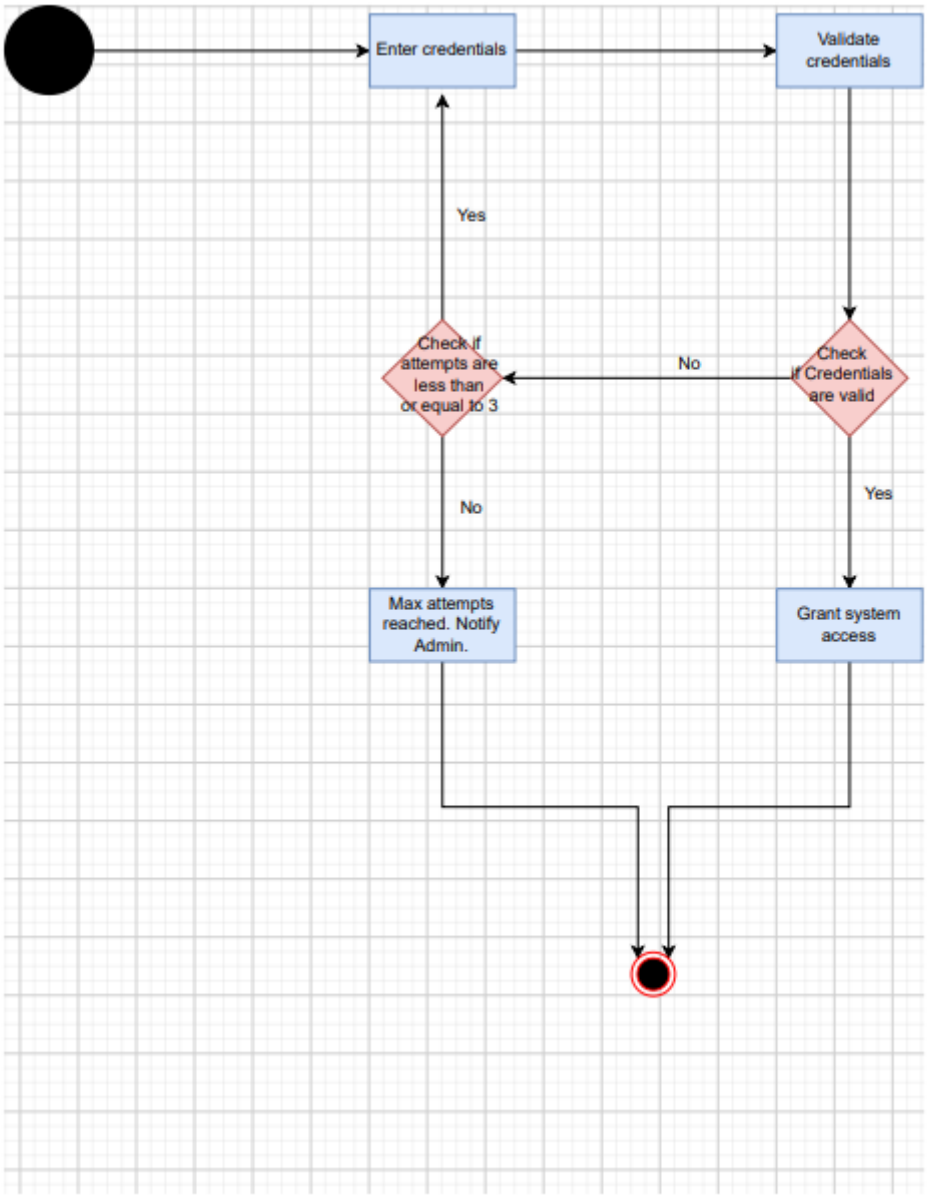
5.0 System

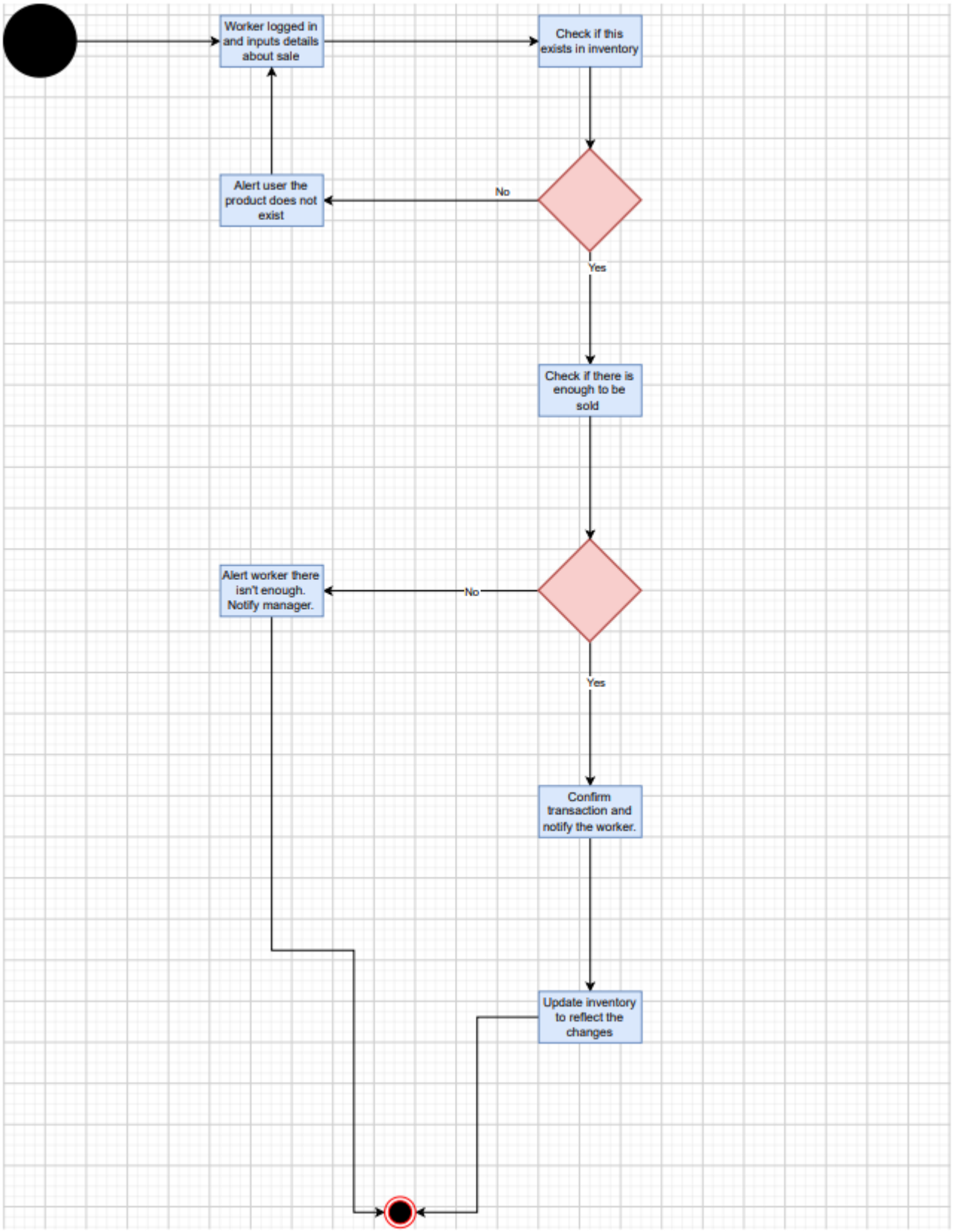
5.1 Project UML Diagrams

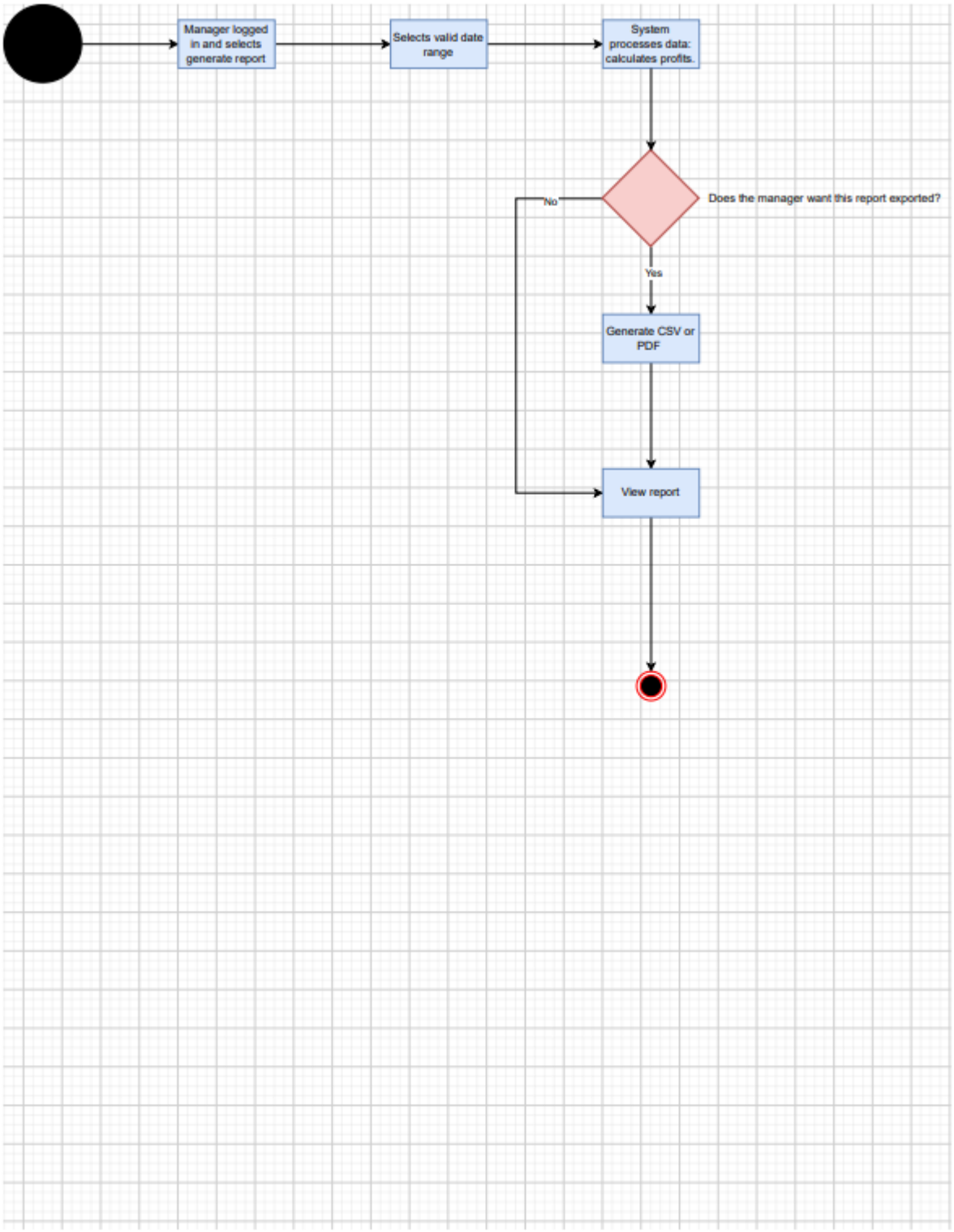
Use case Diagram

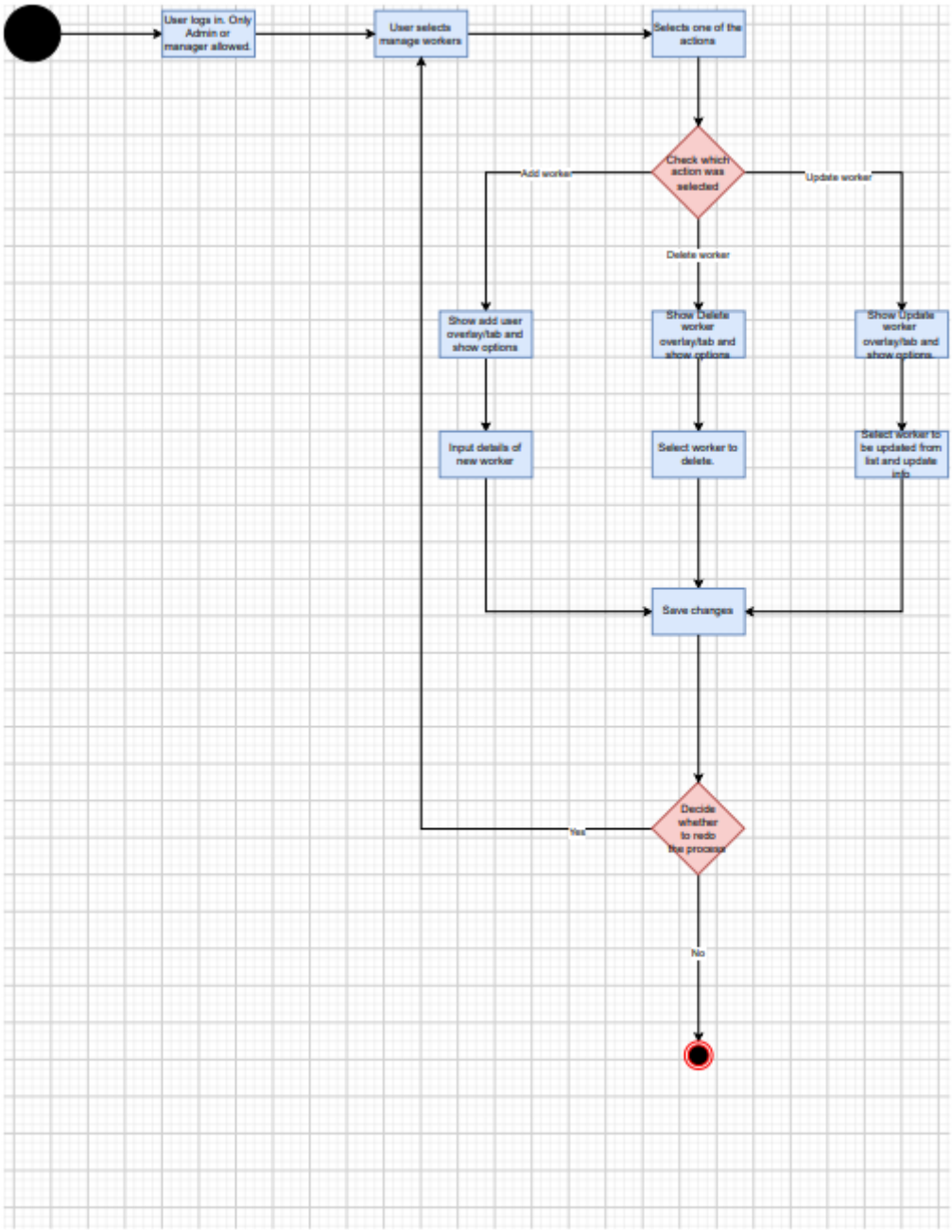


Activity Diagrams

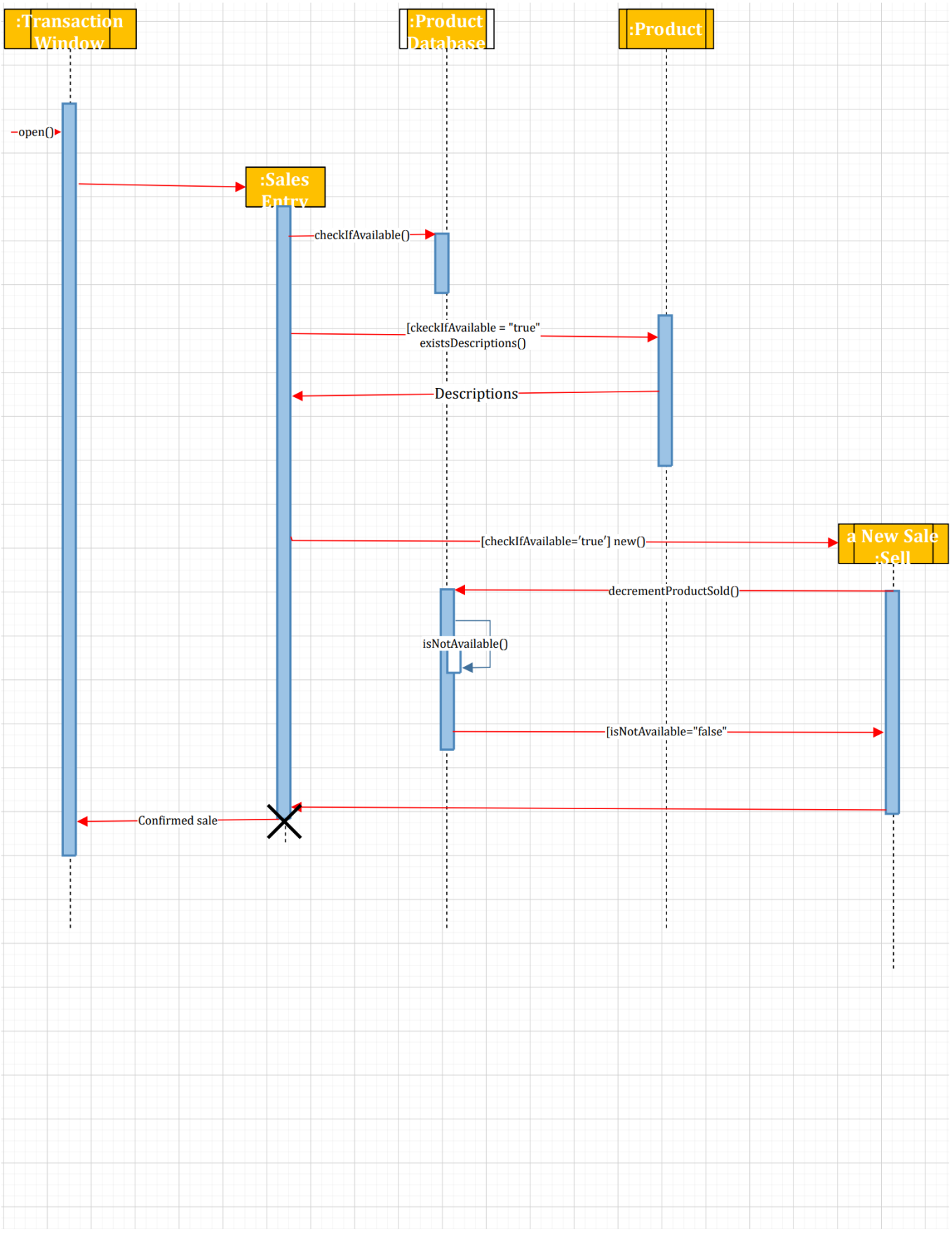



Worker logged in and inputs details about sale
Check if this exists in inventory
Alert user the product does not exist
No
Yes
Check if there is enough to be sold
Alert worker there isn't enough. Notify manager.
No
Yes
Confirm transaction and notify the worker.
Update inventory to reflect the changes

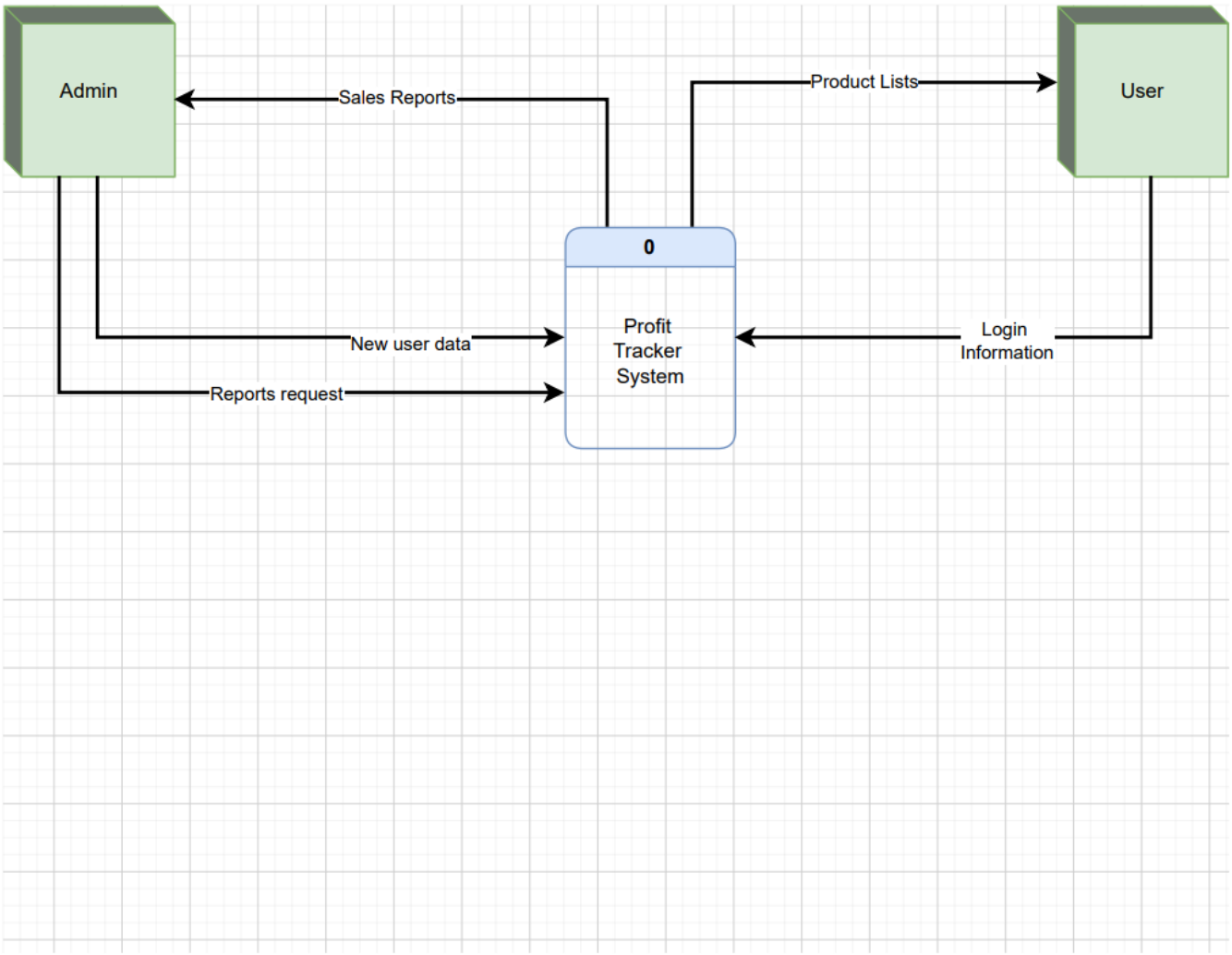

Manager logged in and selects generate report
Selects valid date range
System processes data: calculates profits.
Does the manager want this report exported?
No
Yes
Generate CSV or PDF
View report

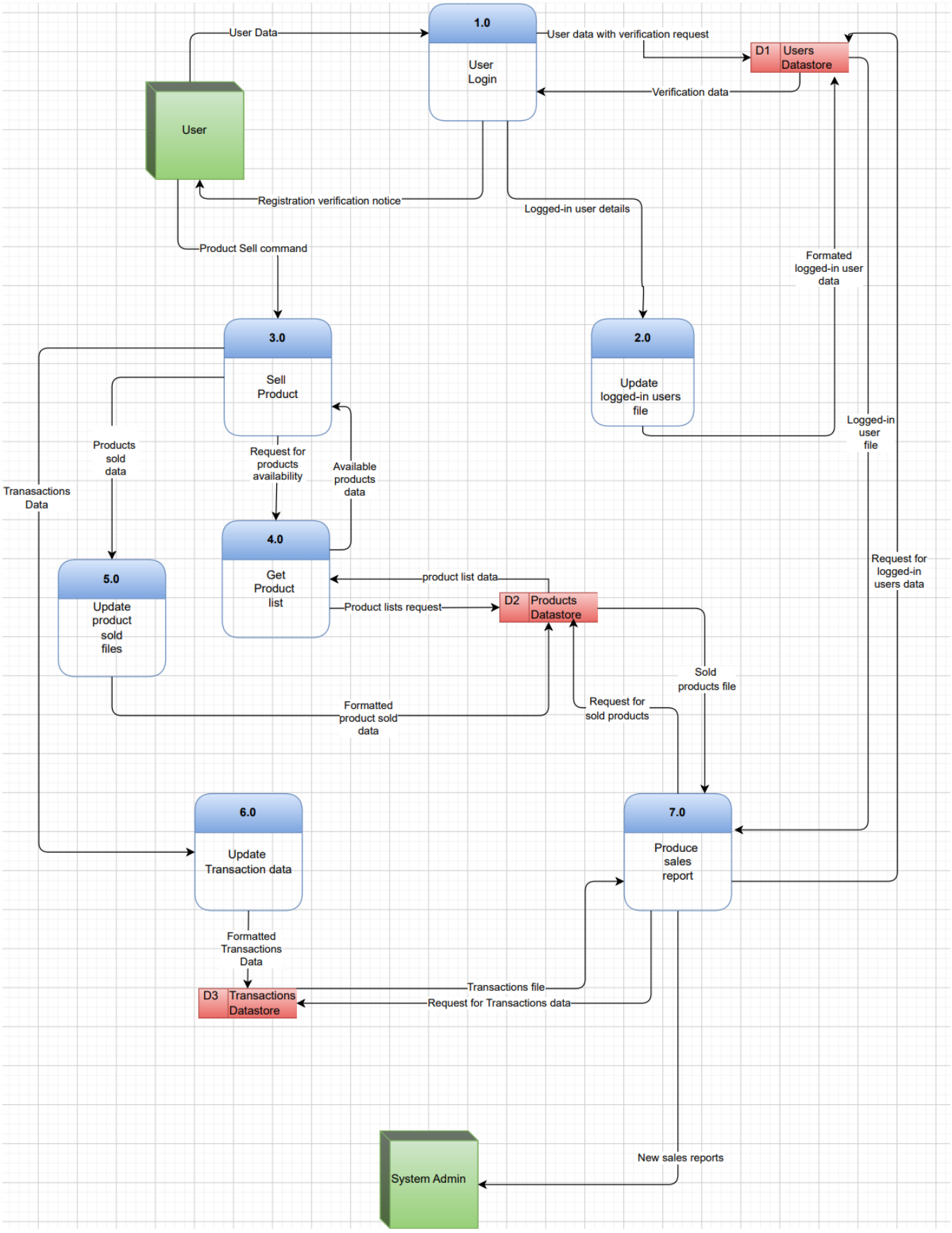

User logs in. Only Admin or manager allowed.
User selects manage workers
Selects one of the actions
Check which action was selected
Add worker
Update worker
Delete worker
Show add user overlay/tab and show options
Show Delete worker overlay/tab and show options
Show Update worker overlay/tab and show options
Input details of new worker
Select worker to delete.
Select worker to be updated from list and update info
Save changes
Decide whether to redo the process
Yes
No

Sequence Diagram

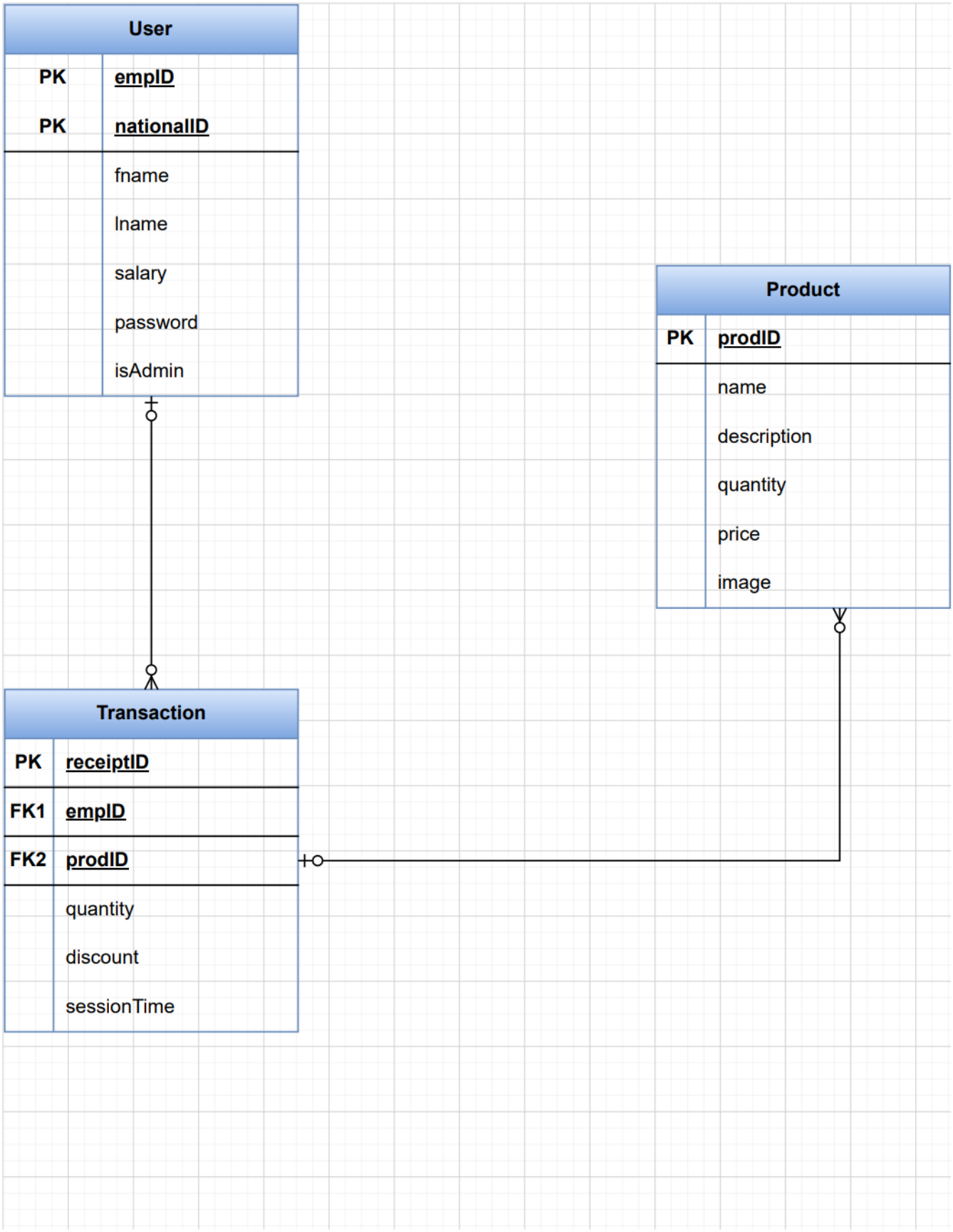


Data Flow Diagrams

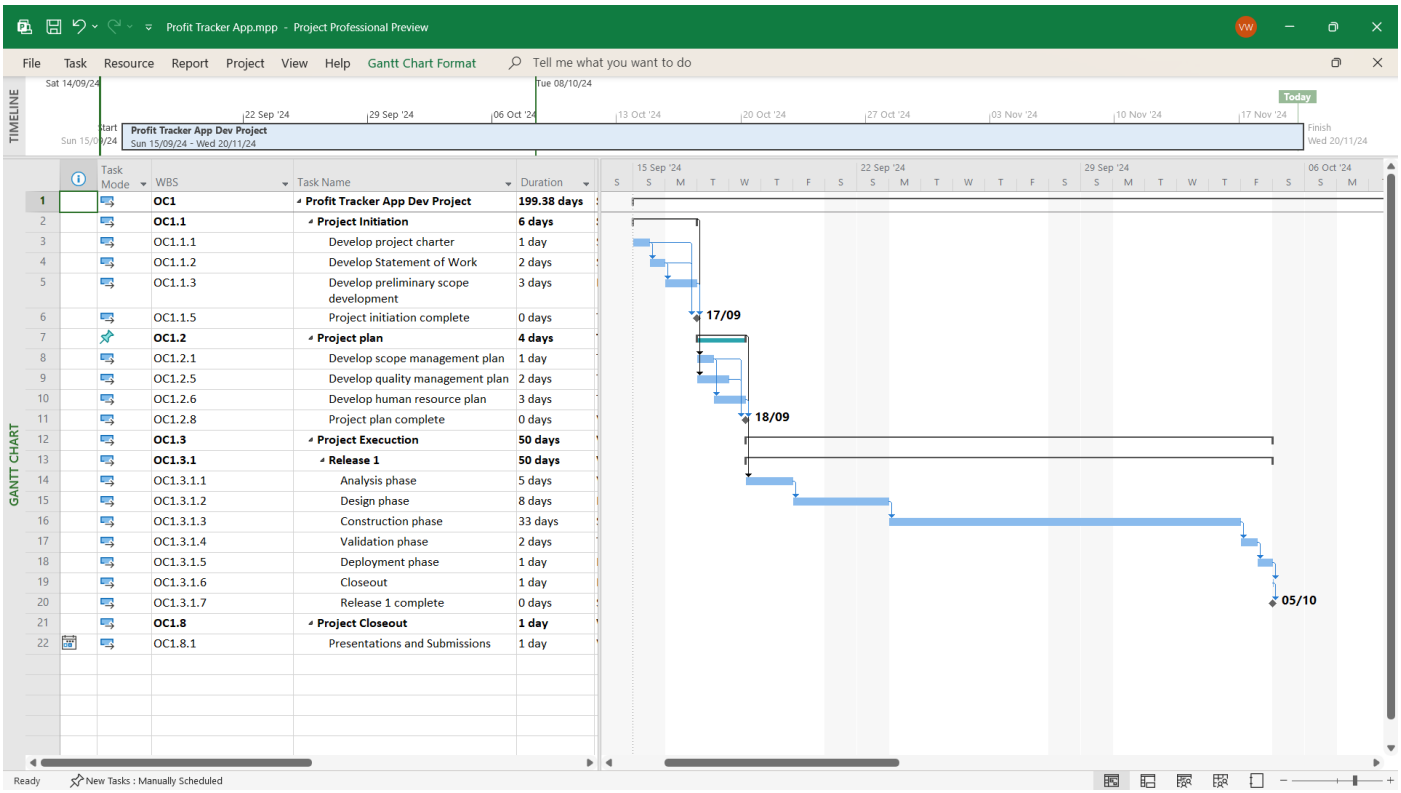



1.0
User Login
User Data
User data with verification request
D1 Users Datastore
Verification data
User
Registration verification notice
Logged-in user details
Product Sell command
Formated logged-in user data
3.0
Sell Product
2.0
Update logged-in users file
Logged-in user file
Products sold data
Request for products availability
Available products data
Tranasactions Data
4.0
Get Product list
5.0
Update product sold files
product list data
Product lists request
D2 Products Datastore
Request for logged-in users data
Sold products file
Formatted product sold data
Request for sold products
6.0
Update Transaction data
7.0
Produce sales report
Formatted Transactions Data
Transactions file
D3 Transactions Datastore
Request for Transactions data
System Admin
New sales reports

Entity Relationship Diagram

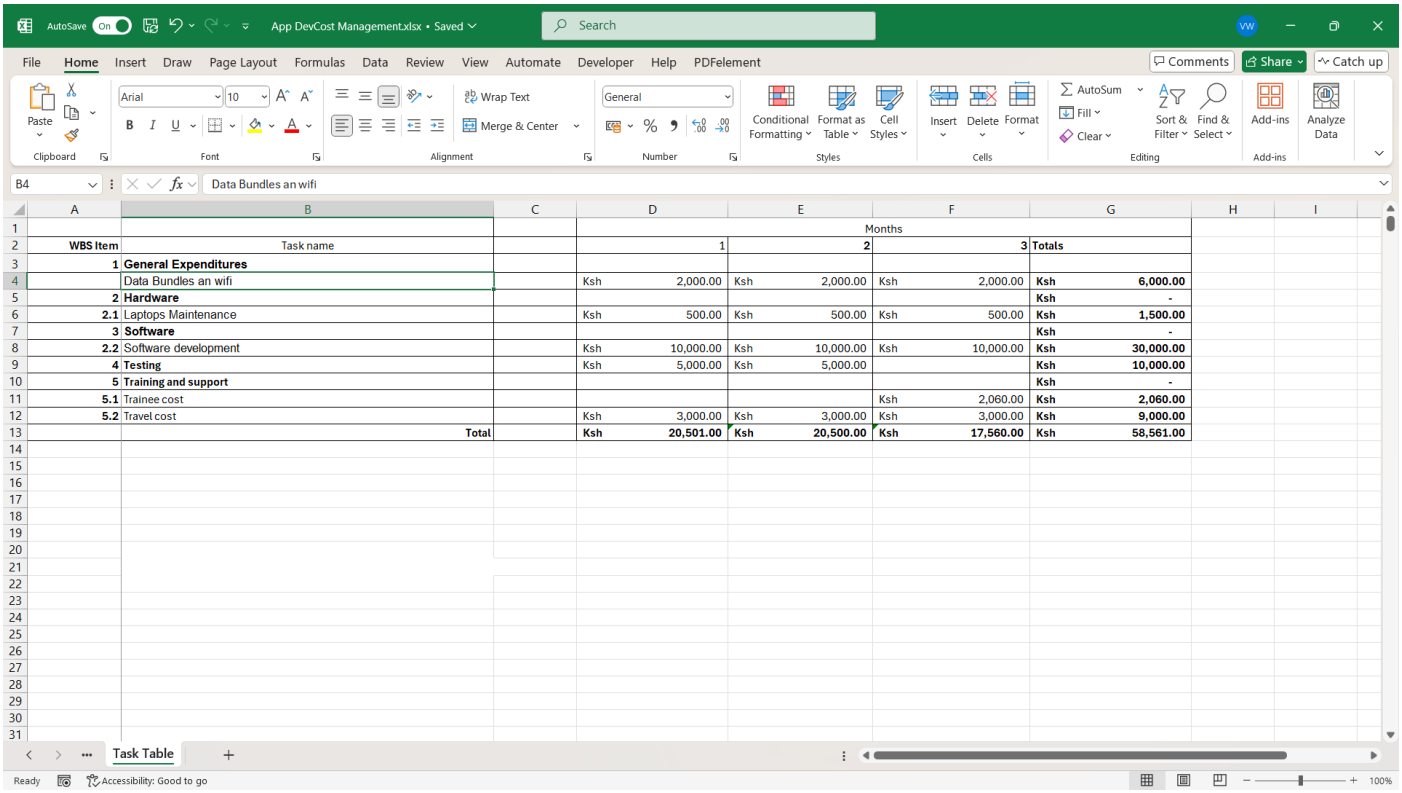


5.2 Work Break Down Structure



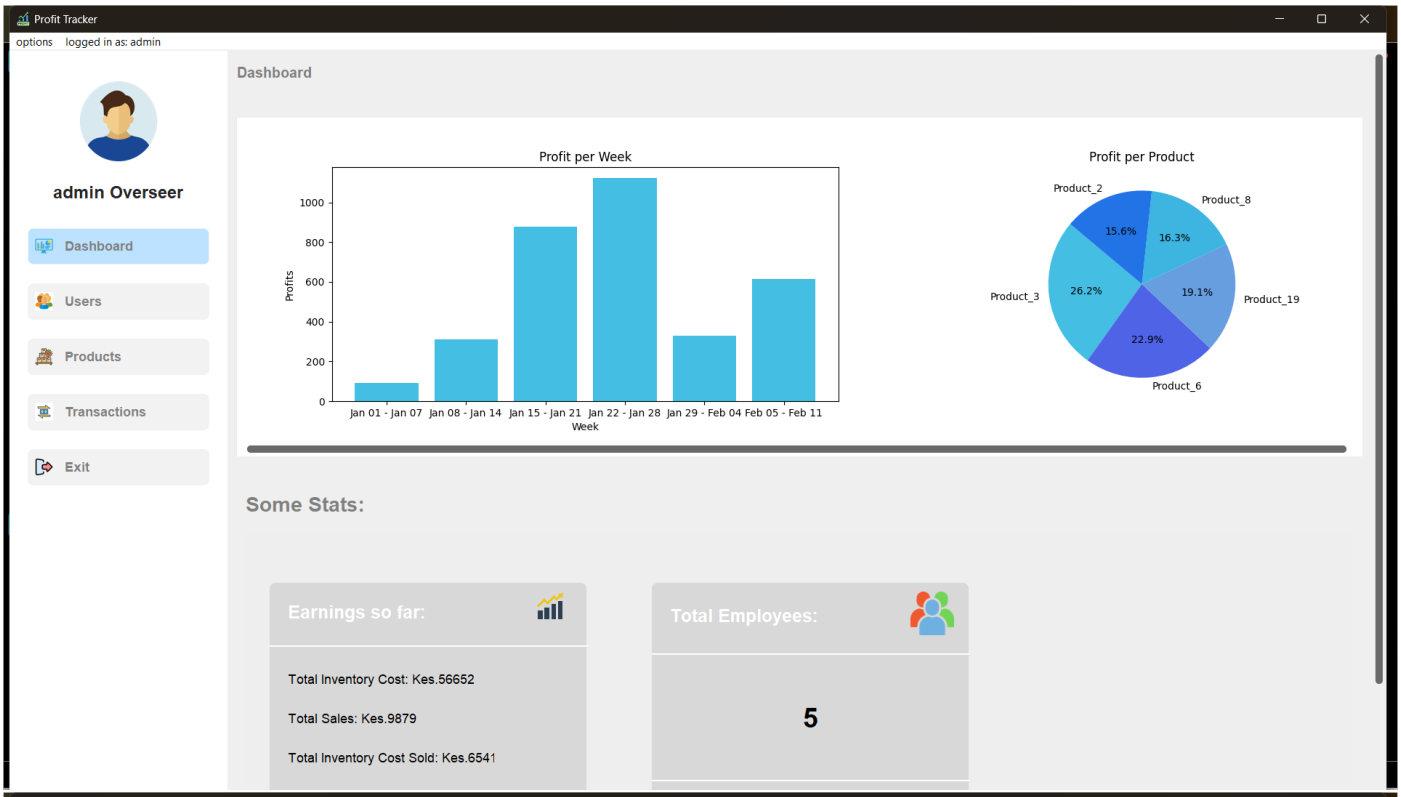
	Task Mode	WBS	Task Name	Duration
1		**OC1**	**Profit Tracker App Dev Project**	**199.38 days**
2		**OC1.1**	**Project Initiation**	**6 days**
3		OC1.1.1	Develop project charter	1 day
4		OC1.1.2	Develop Statement of Work	2 days
5		OC1.1.3	Develop preliminary scope development	3 days
6		OC1.1.5	Project initiation complete	0 days
7		**OC1.2**	**Project plan**	**4 days**
8		OC1.2.1	Develop scope management plan	1 day
9		OC1.2.5	Develop quality management plan	2 days
10		OC1.2.6	Develop human resource plan	3 days
11		OC1.2.8	Project plan complete	0 days
12		**OC1.3**	**Project Execution**	**50 days**
13		**OC1.3.1**	**Release 1**	**50 days**
14		OC1.3.1.1	Analysis phase	5 days
15		OC1.3.1.2	Design phase	8 days
16		OC1.3.1.3	Construction phase	33 days
17		OC1.3.1.4	Validation phase	2 days
18		OC1.3.1.5	Deployment phase	1 day
19		OC1.3.1.6	Closeout	1 day
20		OC1.3.1.7	Release 1 complete	0 days
21		**OC1.8**	**Project Closeout**	**1 day**
22		OC1.8.1	Presentations and Submissions	1 day

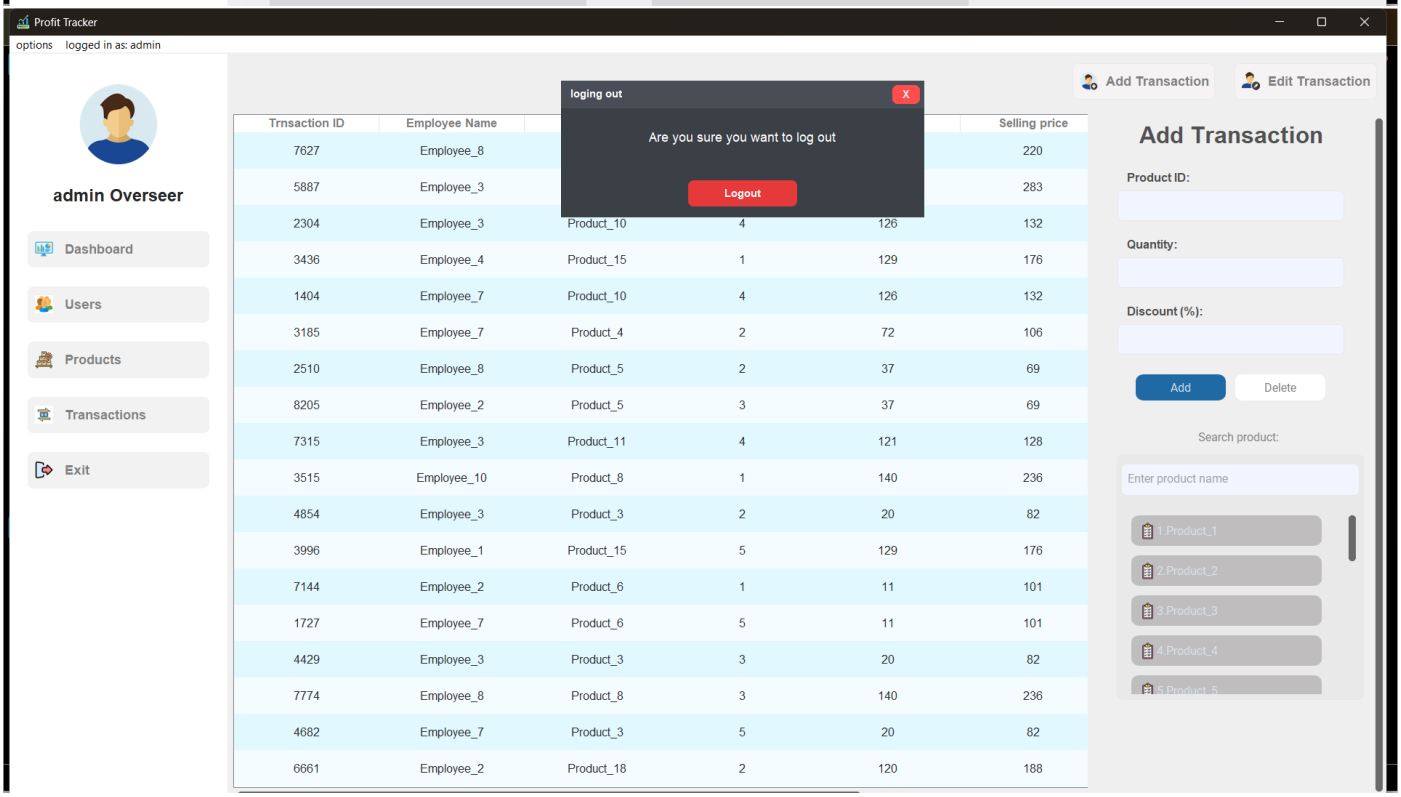
5.3 Project Budget and Estimations

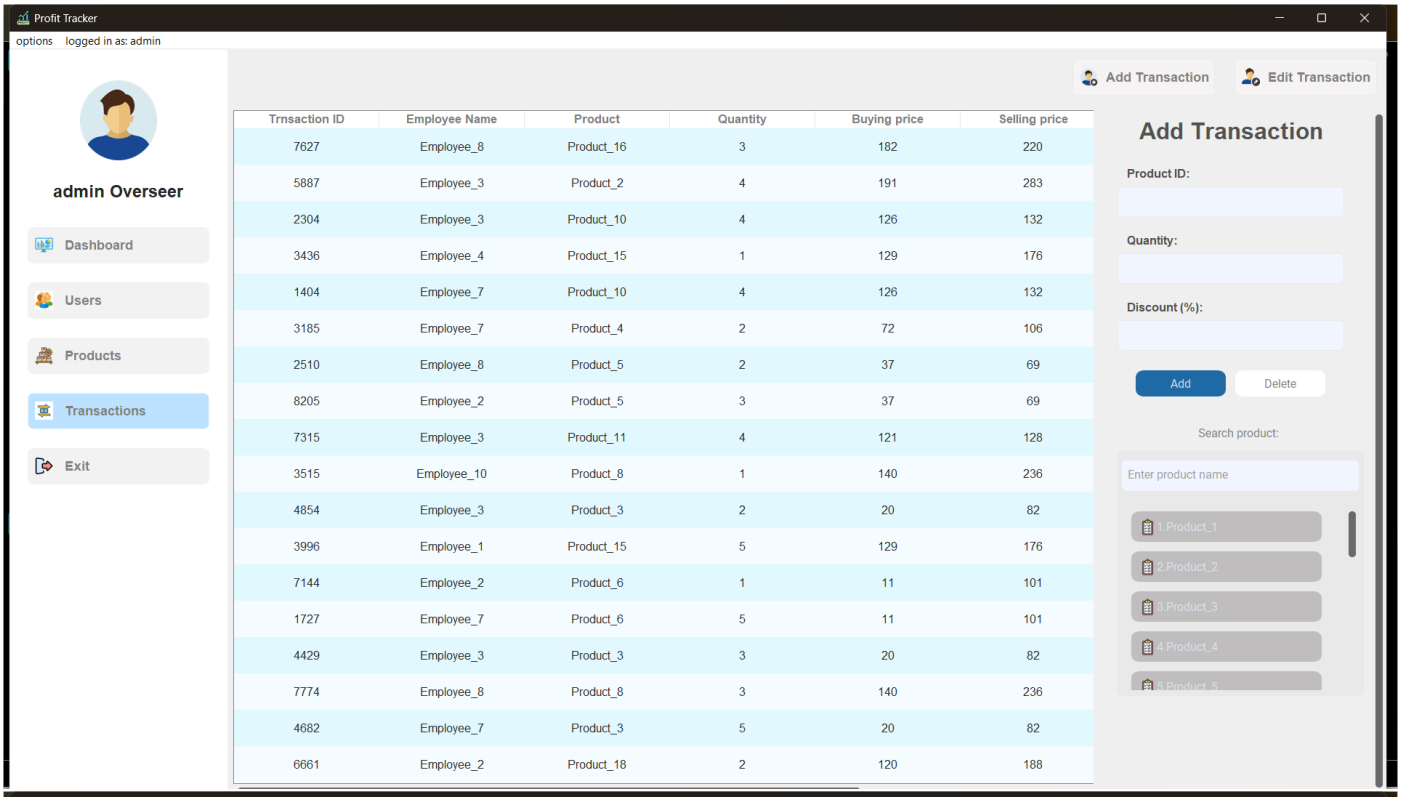


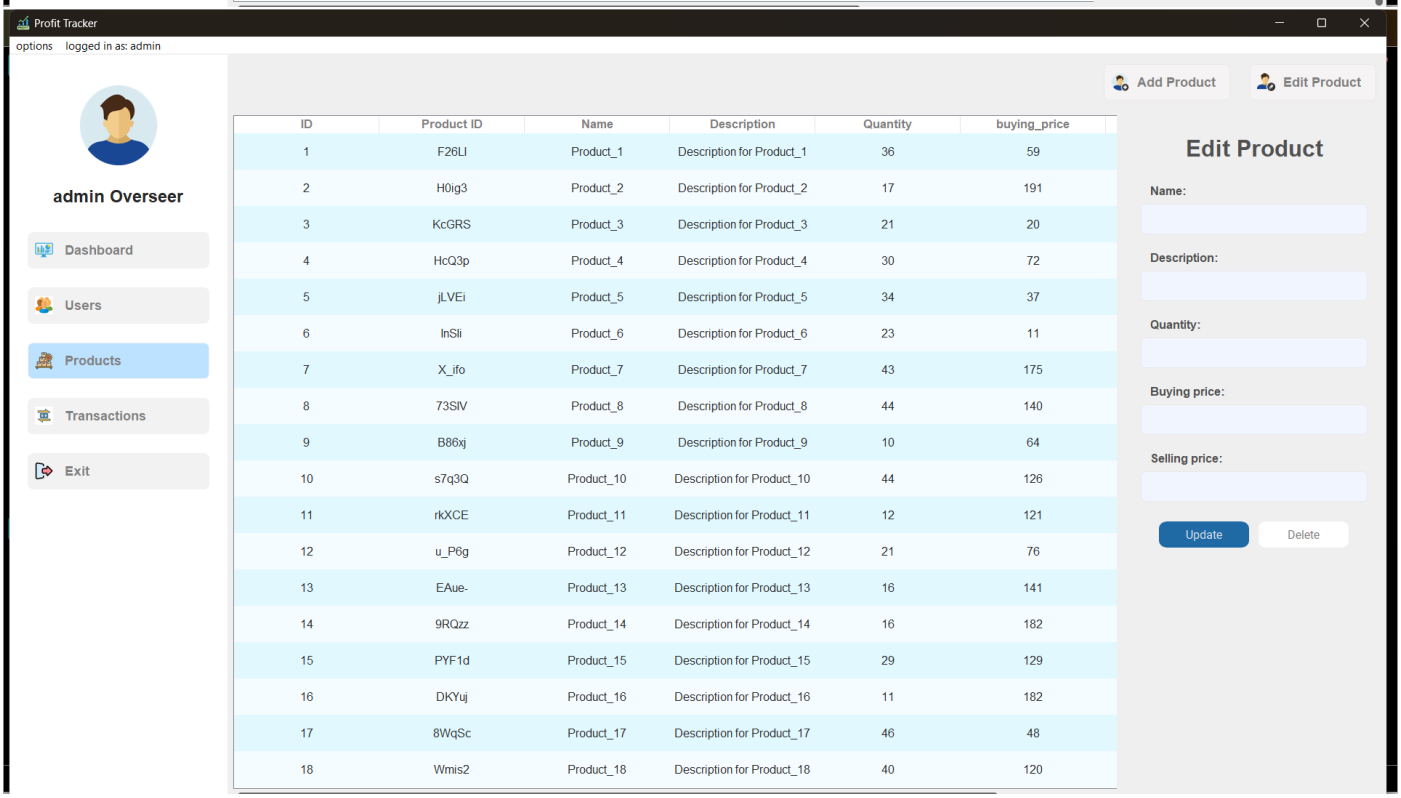
WBS Item	Task name		Months 1		2		3	Totals
1	**General Expenditures**							
	Data Bundles an wifi	Ksh	2,000.00	Ksh	2,000.00	Ksh	2,000.00	**Ksh 6,000.00**
2	**Hardware**							**Ksh -**
2.1	Laptops Maintenance	Ksh	500.00	Ksh	500.00	Ksh	500.00	**Ksh 1,500.00**
3	**Software**							**Ksh -**
2.2	Software development	Ksh	10,000.00	Ksh	10,000.00	Ksh	10,000.00	**Ksh 30,000.00**
4	**Testing**	Ksh	5,000.00	Ksh	5,000.00			**Ksh 10,000.00**
5	**Training and support**							**Ksh -**
5.1	Trainee cost					Ksh	2,060.00	**Ksh 2,060.00**
5.2	Travel cost	Ksh	3,000.00	Ksh	3,000.00	Ksh	3,000.00	**Ksh 9,000.00**
	Total	**Ksh**	**20,501.00**	**Ksh**	**20,500.00**	**Ksh**	**17,560.00**	**Ksh 58,561.00**

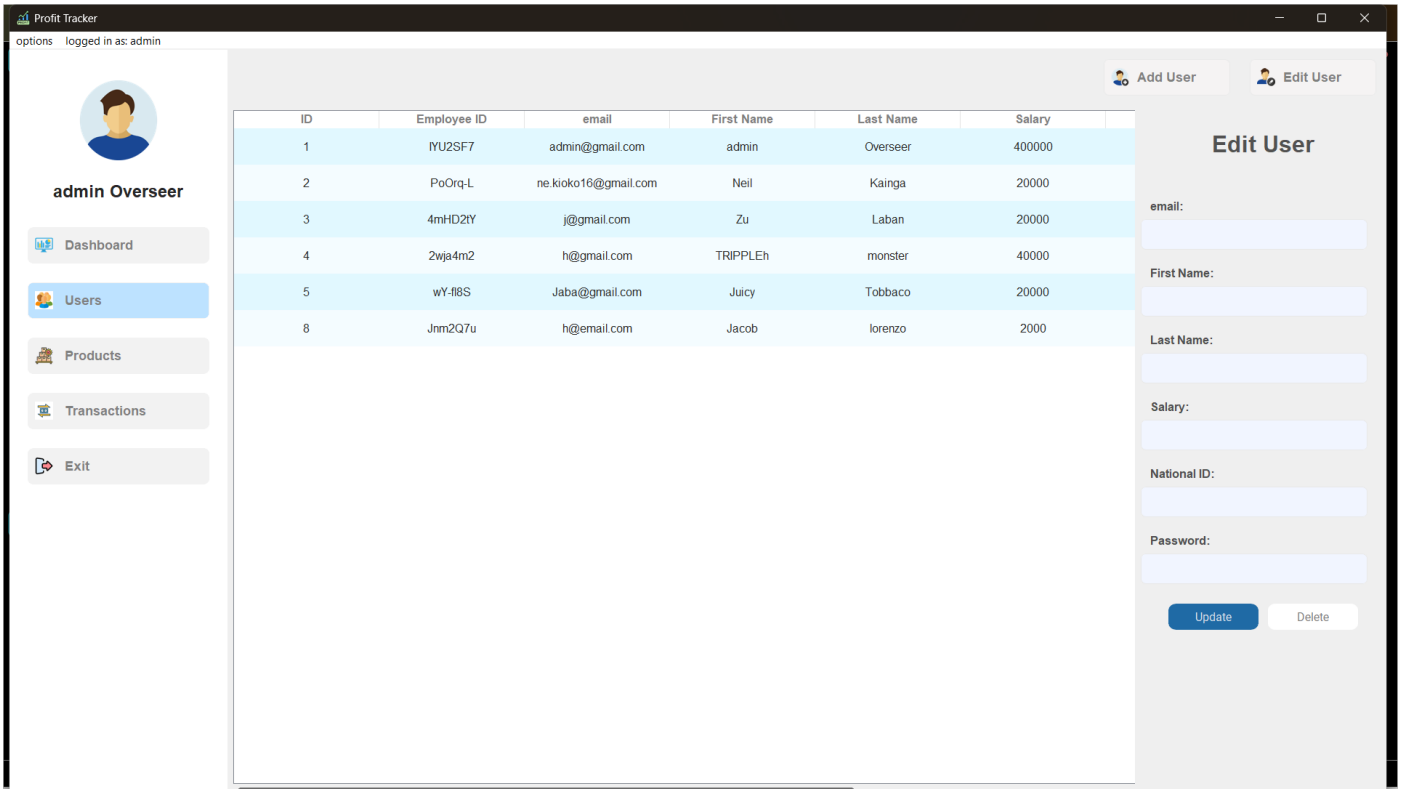
5.4 Project Sample Screenshots






Profit Tracker
options
logged in as: admin
admin Overseer
Dashboard
Users
Products
Transactions
Exit
Add Transaction
Edit Transaction
Trnsaction ID | Employee Name | Product | Quantity | Buying price | Selling price
7627 | Employee_8 | Product_16 | 3 | 182 | 220
5887 | Employee_3 | Product_2 | 4 | 191 | 283
2304 | Employee_3 | Product_10 | 4 | 126 | 132
3436 | Employee_4 | Product_15 | 1 | 129 | 176
1404 | Employee_7 | Product_10 | 4 | 126 | 132
3185 | Employee_7 | Product_4 | 2 | 72 | 106
2510 | Employee_8 | Product_5 | 2 | 37 | 69
8205 | Employee_2 | Product_5 | 3 | 37 | 69
7315 | Employee_3 | Product_11 | 4 | 121 | 128
3515 | Employee_10 | Product_8 | 1 | 140 | 236
4854 | Employee_3 | Product_3 | 2 | 20 | 82
3996 | Employee_1 | Product_15 | 5 | 129 | 176
7144 | Employee_2 | Product_6 | 1 | 11 | 101
1727 | Employee_7 | Product_6 | 5 | 11 | 101
4429 | Employee_3 | Product_3 | 3 | 20 | 82
7774 | Employee_8 | Product_8 | 3 | 140 | 236
4682 | Employee_7 | Product_3 | 5 | 20 | 82
6661 | Employee_2 | Product_18 | 2 | 120 | 188
Add Transaction
Product ID:
Quantity:
Discount (%):
Add
Delete
Search product:
Enter product name
1.Product_1
2.Product_2
3.Product_3
4.Product_4


Profit Tracker
options
logged in as: admin
admin Overseer
Dashboard
Users
Products
Transactions
Exit
Add Product
Edit Product
ID | Product ID | Name | Description | Quantity | buying_price
1 | F26LI | Product_1 | Description for Product_1 | 36 | 59
2 | H0ig3 | Product_2 | Description for Product_2 | 17 | 191
3 | KcGRS | Product_3 | Description for Product_3 | 21 | 20
4 | HcQ3p | Product_4 | Description for Product_4 | 30 | 72
5 | jLVEi | Product_5 | Description for Product_5 | 34 | 37
6 | InSli | Product_6 | Description for Product_6 | 23 | 11
7 | X_ifo | Product_7 | Description for Product_7 | 43 | 175
8 | 73SIV | Product_8 | Description for Product_8 | 44 | 140
9 | B86xj | Product_9 | Description for Product_9 | 10 | 64
10 | s7q3Q | Product_10 | Description for Product_10 | 44 | 126
11 | rkXCE | Product_11 | Description for Product_11 | 12 | 121
12 | u_P6g | Product_12 | Description for Product_12 | 21 | 76
13 | EAue- | Product_13 | Description for Product_13 | 16 | 141
14 | 9RQzz | Product_14 | Description for Product_14 | 16 | 182
15 | PYF1d | Product_15 | Description for Product_15 | 29 | 129
16 | DKYuj | Product_16 | Description for Product_16 | 11 | 182
17 | 8WqSc | Product_17 | Description for Product_17 | 46 | 48
18 | Wmis2 | Product_18 | Description for Product_18 | 40 | 120
Edit Product
Name:
Description:
Quantity:
Buying price:
Selling price:
Update
Delete


Profit Tracker
options
logged in as: admin
admin Overseer
Dashboard
Users
Products
Transactions
Exit
Add User
Edit User
ID
Employee ID
email
First Name
Last Name
Salary
1 IYU2SF7 admin@gmail.com admin Overseer 400000
2 PoOrq-L ne.kioko16@gmail.com Neil Kainga 20000
3 4mHD2tY j@gmail.com Zu Laban 20000
4 2wja4m2 h@gmail.com TRIPPLEh monster 40000
5 wY-fl8S Jaba@gmail.com Juicy Tobbaco 20000
8 Jnm2Q7u h@email.com Jacob lorenzo 2000
Edit User
email:
First Name:
Last Name:
Salary:
National ID:
Password:
Update
Delete