Petrol Pump Management System (PPMS)

Department of Computer Science and Engineering

Bangladesh University of Business and Technology

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Petrol Pump Management System

(PPMS)

A report

submitted to the department of Computer Science and Engineering
in partial fulfillment of the requirements
for the degree of

Bachelor of Science in Computer Science and Engineering

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ABSTRACT

Petroleum is the mainstay of modern civilization. It is one of nature's rare and valuable creations. Its formation takes millions of years and thus, it is necessary that its proper utilization must take place. In the current scenario, petrol pumps are operated manually, consisting of a controlling unit to perform various tasks. These petrol pumps are time consuming, require more man power, prone to malpractices and also there exists a probability of many human errors. Also, it is not possible to place petrol pumps in distant areas. In Petrol pump management System use to maintain their sales detail, employee detail in files and folders. They used to keep the record of petrol and diesel sold, inventry, Customers, etc in a register. A daily register is maintained to keep track of sales. Preparing a report is a very time consuming and tedious task. For searching a single record, the whole register is to be searched which is a very time consuming task. The main goal of this system is computerized and has been developed using advanced language, therefore it gives more facilities than the present system. It provides quick access to any data. In this system users have to enter the data only once and then it gets linked with all files. This reduces the workload of users and it is also a time saving process. The information about any Subscriber can be easily retrieved. The system maintains all records easily.

DECLARATION

We declare that this thesis and the work presented in it are our own and has been generated by us as the result of our own original research

We confirm that:

- This Work is done wholly or mainly while in candidature for a research degree at this University;
- This report work has not been previously submitted for any degree at this university or any other educational institutes;
- We have quoted from the work of others; the source is always given. With the exception of such quotations, this thesis is entire our own work;

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CERTIFICATE

This is to certify that Momin Ali, Arifur Rahman Kawser and Shakil Ahmed students of B.Sc. in CSE have completed their report work titled “Petrol Pump Management System” satisfactorily in partial fulfillment for the requirement of B.Sc.in CSE. Bangladesh University of Business and Technology in the year 2021.

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DEDICATION

Dedicated to our parents for all their love and inspiration.

ACKNOWLEDGEMENTS

First of all, we are thankful and expressing our gratefulness to Almighty Allah who offers us His divine blessing, patience, mental and physical strength to complete this project work.

We are deeply indebted to our project supervisor Shovon Roy, Lecturer, Department of Computer Science and Engineering (CSE), Bangladesh University of Business and Technology (BUBT). His scholarly guidance, important suggestions, work for going through our drafts and correcting them, and generating courage from the beginning to the end of the research work has made the completion of this project possible.

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A very special gratitude goes out to all our friends for their support and help to implement our works. The discussions with them on various topics of our works have been very helpful for us to enrich our knowledge and conception regarding the work.

Last but not the least; we are highly grateful to our parents and family members for supporting us spiritually throughout writing this report and our life in general.

APPROVAL

This project report "**Petrol Pump Management System"** Submitted by **Momin Ali, Arifur Rahman Kawser** and **Shakil Ahmed** ID NO: **17182103011**, **17182103012** and **17182103010** Department of Computer Science and Engineering (CSE), Bangladesh University of Business and Technology (BUBT) under the supervision of Shovon Roy, Lecturer, Department of Computer Science and Engineering has been accepted as satisfactory for the partial fulfillment of the requirement for the degree of Bachelor of Science (B.Sc. Eng.) in Computer Science and Engineering and approved as to its style and contents.

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Abbreviations

Synonyms and Acronyms	Descriptions
PPMS	Petrol Pump Management System

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Chapter 01

Introduction

1.1 Introduction

Petrol pump management system is developed to manage daily records of petrol pumps. Using this system admin can check the employee attendance, quantity of petrol and diesel sold in any day, week or month. Using the sales module admin can check which employee sold how much diesel or petrol. Admin can also check total oil purchase by the petrol pump. Using this system admin can also find full details of an employee like his address, phone number etc. Admin can also check the salary of any employee. Admin can also check what is the amount of petrol, diesel, oil an employee has sold. Admin can also check the timing of employees. Users can generate reports easily from this petrol pump management system.

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Chapter 02

Project Review

2.1 Problem Statement

Nowadays all the companies are developing with the help of software. First there were not many software companies in the country but as the world is progressing many software engineers are also being developed. Due to this software industry all work is done easily by the help of computers. There is no need to maintain a file record; all the records can be saved on the computer. In petrol pump management systems are used to maintain their sales detail, employee detail in files and folders. They used to keep the record of petrol and diesel sold, inventry, Customers, etc in a register. A daily register is maintained to keep track of sales. Preparing a report is a very time consuming and tedious task. For searching a single record, the whole register is to be searched which is a very time consuming task.

2.2 Objective of this Project

The main objective of the Petrol Pump Management System is to manage the details of Sales, Inventory, Stocks, Tankers, Meter Readings. It manages all the information about Sales, Fules, Meter Readings, Sales. The project is totally built at the administrative end and thus only the administrator is guaranteed access. The purpose of the project is to build an application program to reduce the manual work for managing the Sales, Inventory, Fules, Stocks. It tracks all the details about the Stocks, Tankers, Meter Readings.

2.2.1 Primary Objective

The Petrol Pump Management System is to manage the details of Sales, Inventory, Stocks, Tankers, Meter Readings. It manages all the information about Sales, Fules, Meter Readings, Sales.

2.2.2 Secondary Objective

The purpose of the project is to build an application program to reduce the manual work for managing the Sales, Inventory, Fules, Stocks. It tracks all the details about the Stocks, Tankers, Meter Readings.

2.3 Feature of this project

Features of Petrol Pump Management System:

- Search module has been implemented to search Fules, Sales, Tankers, Stocks
- Petrol Pump Management System is an online web based application, from which user can easily manage Sales details, Meter Readings details, Inventory details from browser
- Admin user will be able to track all the information of Sales, Fules, Meter Readings ect
- Admin has rights to edit, add, delete and update the records of Inventory, Tankers, Stocks
- Web Interface has been provided for managing Meter Readings, Tankers, Sales.

Chapter 03

Technologies

3.1 Software

Software, in its most general sense, is a set of instructions or programs instructing a computer to do specific tasks.

Software is a generic term used to describe computer programs that run on PCs, mobile phones, tablets, or other smart devices.

Software is often used to describe all the functional aspects of a computer that do not refer to its physical components (hardware). Scripts, applications, programs and a set of instructions are all terms often used to describe software.

Everything that “runs” on a computer, from an operating system, to a diagnostic tool, video game, or app can be defined as software.

For our project we use

- Microsoft Visual Studio
- MS Access Database.

Those are programming software. Programming software is software which helps the programmer in developing other software. Compilers, assemblers, debuggers, interpreters etc. Programming software is also known as a programming tool or **software development tool**.

3.1.1 Visual Studio IDE

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code.

Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring. The integrated debugger works both as a source-level debugger and a machine-level debugger. Other built-in tools include a code profiler, designer for building GUI applications, web designer, class designer, and database schema designer. It accepts plug-ins that expand the functionality at almost every level—including adding support for source control systems (like Subversion and Git) and adding new tool sets like editors and visual designers for domain-specific languages or toolsets for other aspects of the software development lifecycle (like the Azure DevOps client: Team Explorer).

Visual Studio supports 36 different programming languages and allows the code editor and debugger to support (to varying degrees) nearly any programming language, provided a language-specific service exists. Built-in languages include C,[7] C++, C++/CLI, Visual Basic .NET, C#, F#,[8] JavaScript, TypeScript, XML, XSLT, HTML, and CSS. Support for other languages such as Python,[9] Ruby, Node.js, and M among others is available via plug-ins. Java (and J#) were supported in the past.

The most basic edition of Visual Studio, the Community edition, is available free of charge. The slogan for Visual Studio Community edition is "Free, fully-featured IDE for students, open-source and individual developers".

3.1.2 MS Access Database

Microsoft Access is a Database Management System (DBMS) from Microsoft that combines the relational Microsoft Jet Database Engine with a graphical user interface and software development tools. It is a member of the Microsoft Office suite of applications, included in the professional and higher editions.

- Microsoft Access is just one part of Microsoft's overall data management product strategy.
- It stores data in its own format based on the Access Jet Database Engine.
- Like relational databases, Microsoft Access also allows you to link related information easily. For example, customer and order data. However, Access 2013 also complements other database products because it has several powerful connectivity features.
- It can also import or link directly to data stored in other applications and databases.
- As its name implies, Access can work directly with data from other sources, including many popular PC database programs, with many SQL (Structured Query Language) databases on the desktop, on servers, on minicomputers, or on mainframes, and with data stored on Internet or intranet web servers.
- Access can also understand and use a wide variety of other data formats, including many other database file structures.
- You can export data to and import data from word processing files, spreadsheets, or database files directly.
- Access can work with most popular databases that support the Open Database Connectivity (ODBC) standard, including SQL Server, Oracle, and DB2.
- Software developers can use Microsoft Access to develop application software.

Microsoft Access stores information which is called a database. To use MS Access, you will need to follow these four steps −

- Database Creation − Create your Microsoft Access database and specify what kind of data you will be storing.
- Data Input − After your database is created, the data of every business day can be entered into the Access database.
- Query − This is a fancy term to basically describe the process of retrieving information from the database.
- Report (optional) − Information from the database is organized in a nice presentation that can be printed in an Access Report.

3.2 Programming Language

In this project we did the work using the CSharp programming language. C# (pronounced "See Sharp") is a modern, object-oriented, and type-safe programming language. C# enables developers to build many types of secure and robust applications that run in the .NET ecosystem. C# has its roots in the C family of languages and will be immediately familiar to C, C++, Java, and JavaScript programmers. This tour provides an overview of the major components of the language in C# 8 and earlier. If you want to explore the language through interactive examples, try the introduction to C# tutorials.

C# is an object-oriented, component-oriented programming language. C# provides language constructs to directly support these concepts, making C# a natural language in which to create and use software components. Since its origin, C# has added features to support new workloads and emerging software design practices.

Several C# features help create robust and durable applications. Garbage collection automatically reclaims memory occupied by unreachable unused objects. Nullable types guard against variables that don't refer to allocated objects. Exception handling provides a structured and extensible approach to error detection and recovery. Lambda expressions support functional programming techniques. Language Integrated Query (LINQ) syntax creates a common pattern for working with data from any source. Language support for asynchronous operations provides syntax for building distributed systems. C# has a unified type system. All C# types, including primitive types such as int and double, inherit from a single root object type. All types share a set of common operations. Values of any type can be stored, transported, and operated upon in a consistent manner. Furthermore, C# supports both user-defined reference types and value types. C# allows dynamic allocation of objects and in-line storage of lightweight structures. C# supports generic methods and types, which provide increased type safety and performance. C# provides iterators, which enable implementers of collection classes to define custom behaviors for client code.

C# emphasizes versioning to ensure programs and libraries can evolve over time in a compatible manner. Aspects of C#designs that were directly influenced by versioning considerations include the separate virtual and override modifiers, the rules for method overload resolution, and support for explicit interface member declarations.

3.3 Software Framework

.NET architecture framework is used in this project
C# programs run on .NET, a virtual execution system called the common language runtime (CLR) and a set of class libraries. The CLR is the implementation by Microsoft of the common language infrastructure (CLI), an international standard. The CLI is the basis for creating execution and development environments in which languages and libraries work together seamlessly.
Source code written in C# is compiled into an intermediate language (IL) that conforms to the CLI specification. The IL code and resources, such as bitmaps and strings, are stored in an assembly, typically with an extension of .dll. An assembly contains a manifest that provides information about the assembly's types, version, and culture.
When the C# program is executed, the assembly is loaded into the CLR. The CLR performs Just-In-Time (JIT) compilation to convert the IL code to native machine instructions. The CLR provides other services related to automatic garbage collection, exception handling, and resource management. Code that's executed by the CLR is sometimes referred to as "managed code," in contrast to "unmanaged code," which is compiled into native machine language that targets a specific platform.
Language interoperability is a key feature of .NET. IL code produced by the C# compiler conforms to the Common Type Specification (CTS). IL code generated from C# can interact with code that was generated from the .NET versions of F#, Visual Basic, C++, or any of more than 20 other CTS-compliant languages. A single assembly may contain multiple modules written in different .NET languages, and the types can reference each other as if they were written in the same language.
In addition to the run time services, .NET also includes extensive libraries. These libraries support many different workloads. They're organized into namespaces that provide a wide variety of useful functionality for everything from file input and output to string manipulation to XML parsing, to web application frameworks to Windows Forms controls. The typical C# application uses the .NET class library extensively to handle common "plumbing" chores.
For more information about .NET, see Overview of .NET.

Chapter 04

System Analysis and Architectural Design

4.1 System User Analysis

The Current System is the manual one, hence is not speedy, accurate, efficient as well as time consuming. An essential part of the system analysis, which enables the developer to understand & the system correctly. It is undertaken to obtain details of the system. To understand the physical flow of the information through the current system. Collect various information through various fact finding techniques. Identify the procedural difficulties experienced by the user. Study the bottlenecks and find out the redundant work being performed in the system. Analysis is a detailed description of the various operations performed by the system and the relationship between the system. In our project we analysed the relationship that we will be using in our project. In analysment we also decided how many modules we will be including in our project. Also the brief overview of how our project will look like was done in the analysment.

In our system there are few modules which are relevant to few users. In this chapter we explain those user modules.

4.1.1 Login

Before entering the main menu, the user should pass through the login system to get access. From where the user can add/edit bank account details, customer account details, supplier account, employee details, supplier withdrawal pump account details, customer deposit pump account detail, lubricant detail, ledger detail, maintain daily sales, product order details, stock details, daily product stock and customer bill.

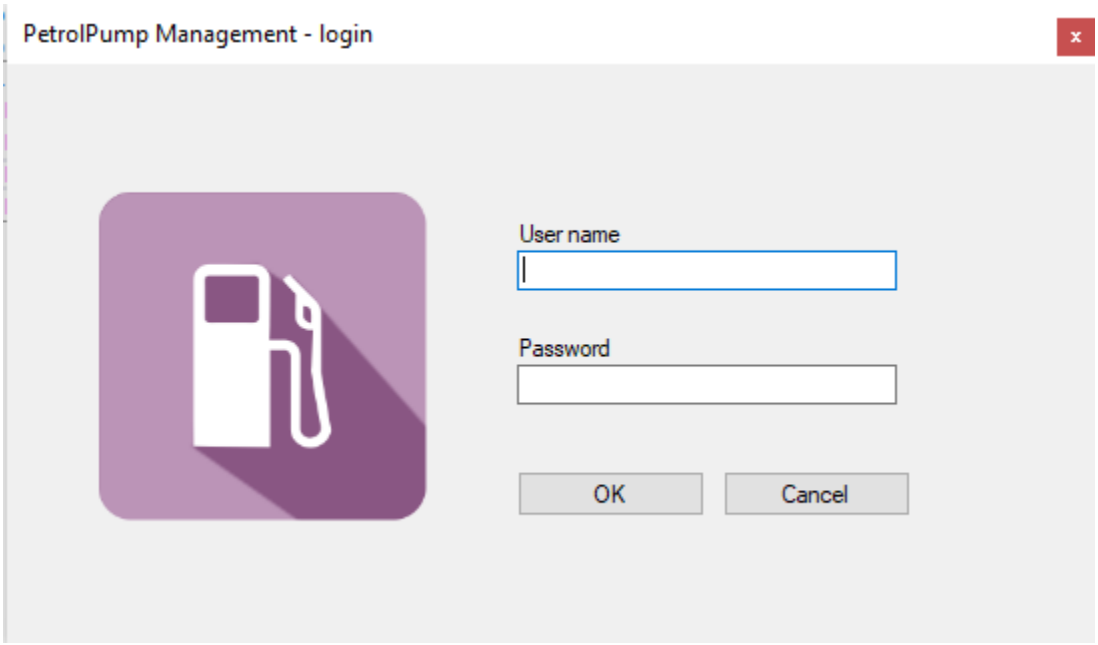

Figure 1.1 Login Interface

4.1.2 Bank Account

While entering a bank account details, the user has to provide, Bank account number, transaction date, bank name, credit amount, and debt amount.

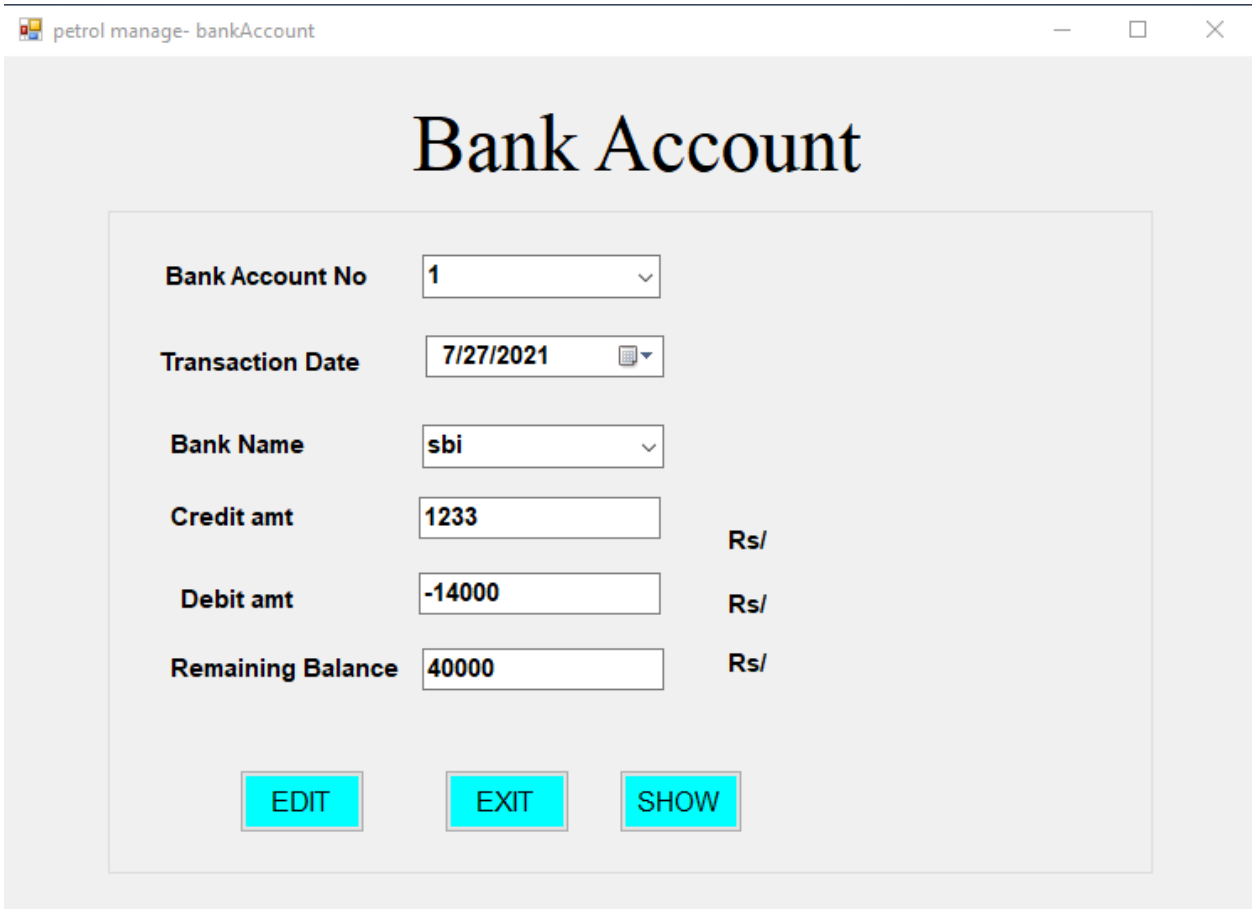

Figure 1.2 Bank Account

4.1.3 Customer Account Details

In order to enter a customer account, he/she has to provide the customer account number, name, product, product rate, quantity, total amount, mode of payment, cheque number, balance number, transaction date, and amount.

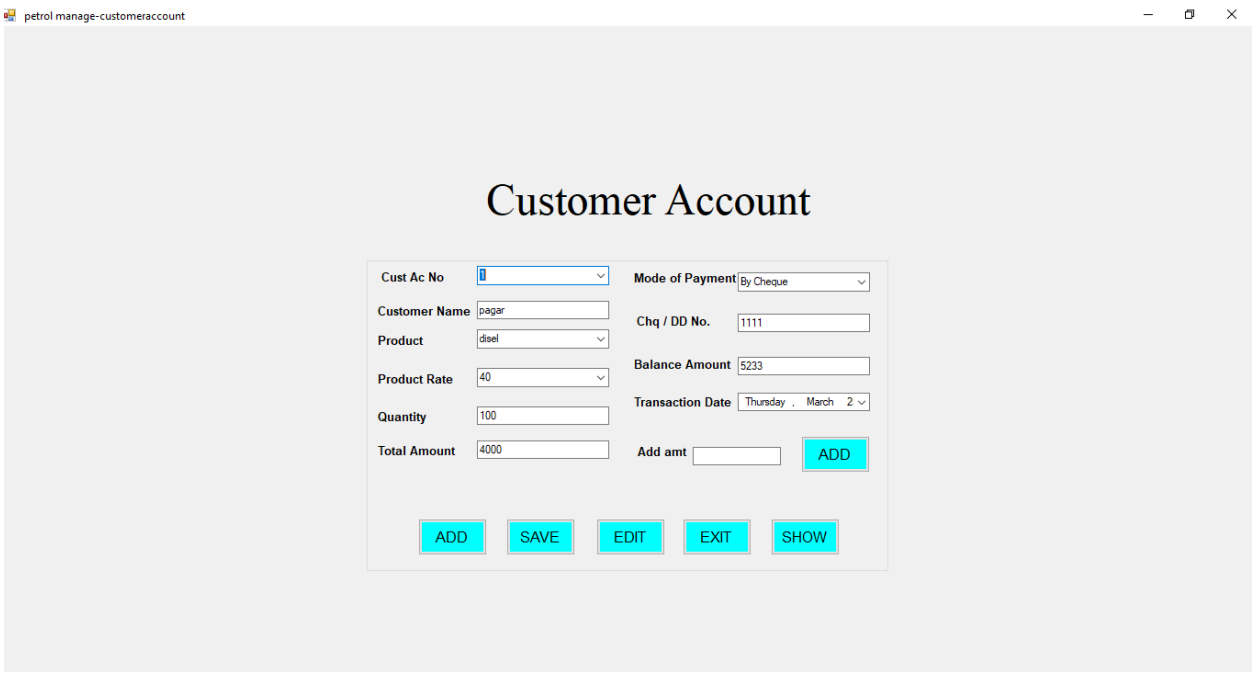

Figure 1.3 Customer Details

4.1.4 Supplier Account

Similarly, to enter a supplier account, he/she has to have a supplier account number, supplier name, product name, product rate, quantity, total amount, paid amount, mode of payment, mode of payment, cheque number, previously paid amount, the balance amount, transaction date and withdraw the amount.

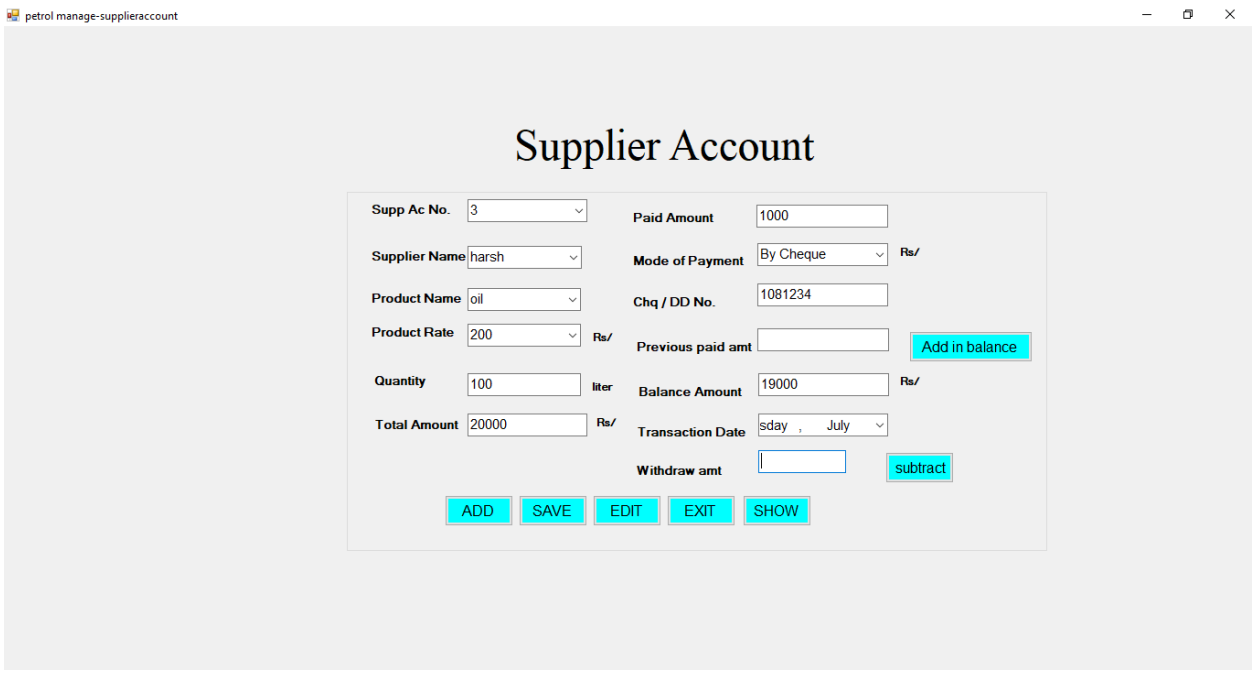

Figure 1.4 Supplier Account

4.1.5 Supplier Withdraw Pump Account Details

In this module, Suppliers can see their withdrawal amount from their bank account.

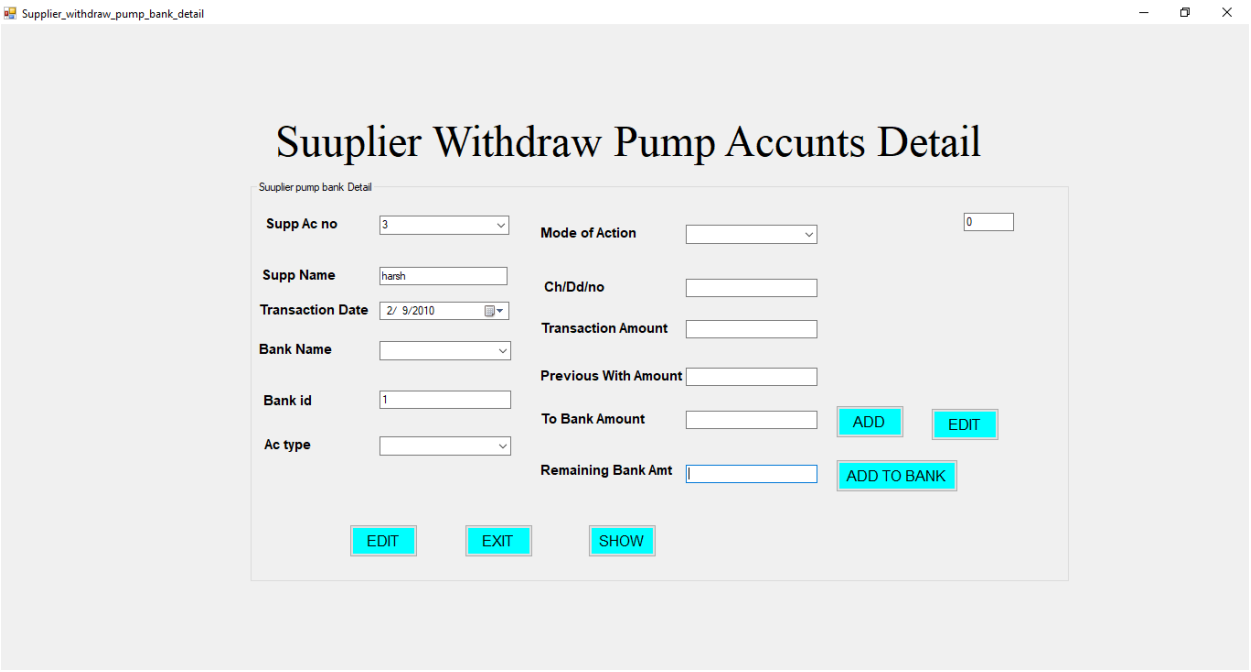

Figure 1.5 Supplier Withdraw Pump Account Details

4.1.6 Customer Deposit Pump Account Details

In this module, Customers can see their deposit in the pump account.

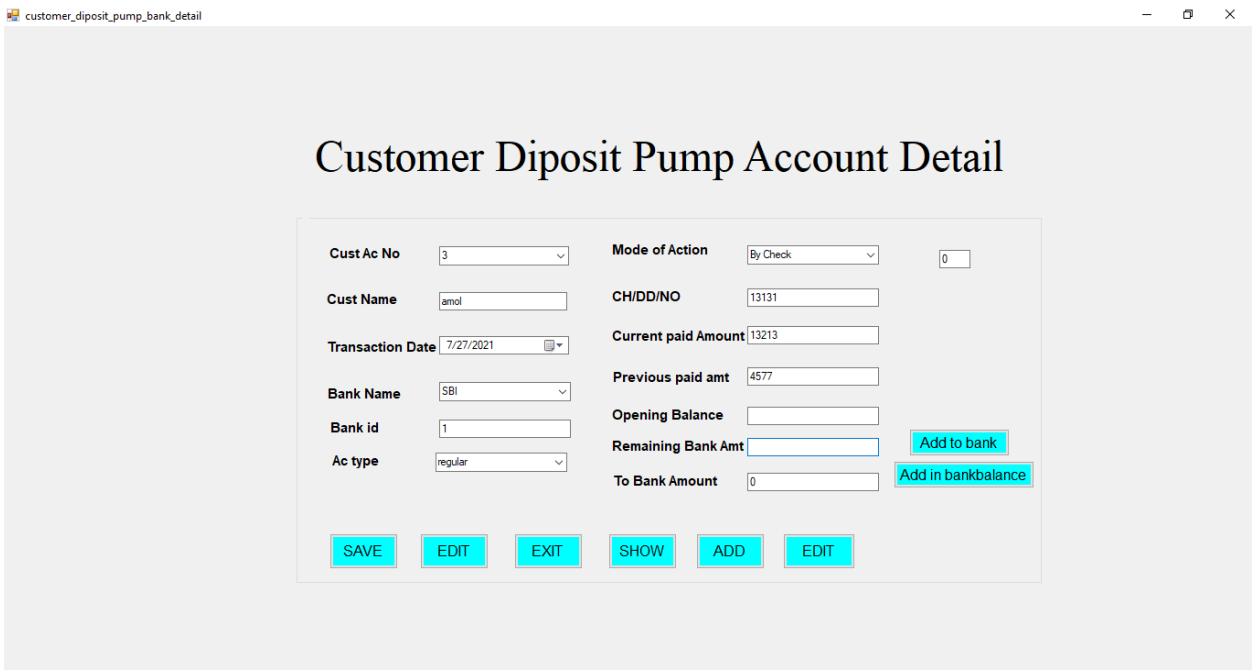

Figure 1.6 Customer Deposit Pump Account Details

4.1.7 Employee Details

Likewise in order to enter employee details employee id, name, address, city, state, pin code, phone number, D.O.B, department, designation, salary and joining date respectively.

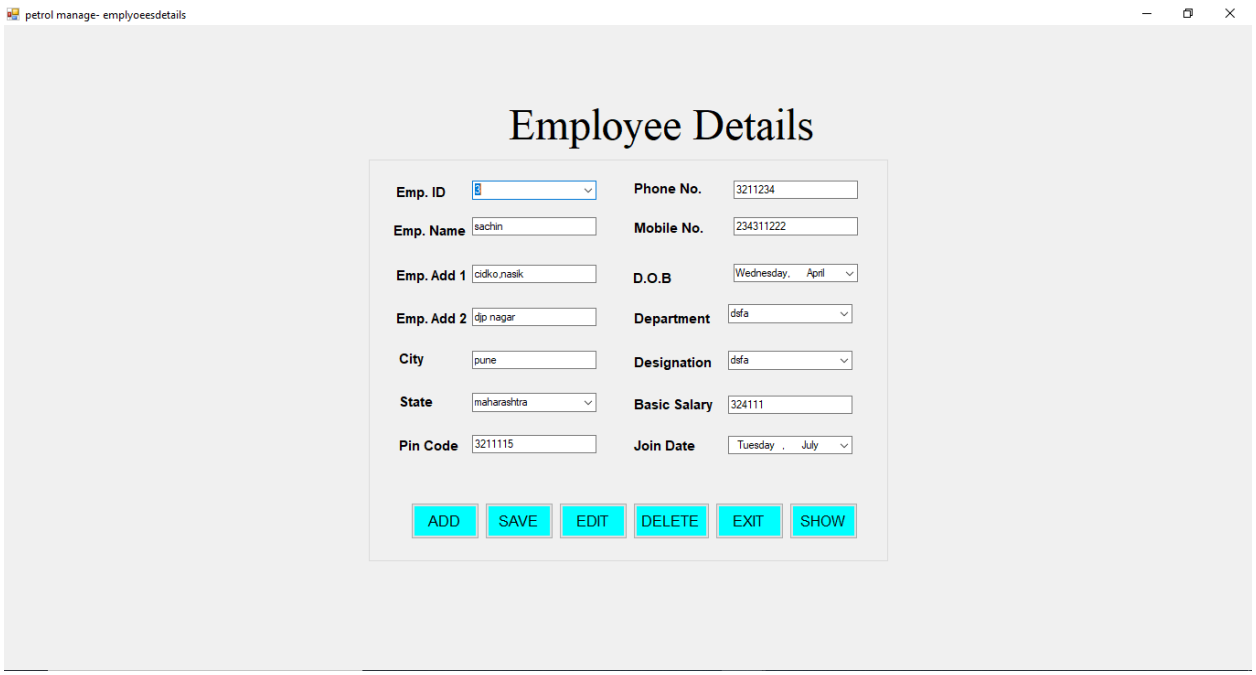

Figure 1.7 Employee Details

4.1.8 Product Details

The other feature includes product details, the user has to enter product id, name, description, rate, unit of measurement, maximum quality, minimum quality, order level, and quantity per liter.

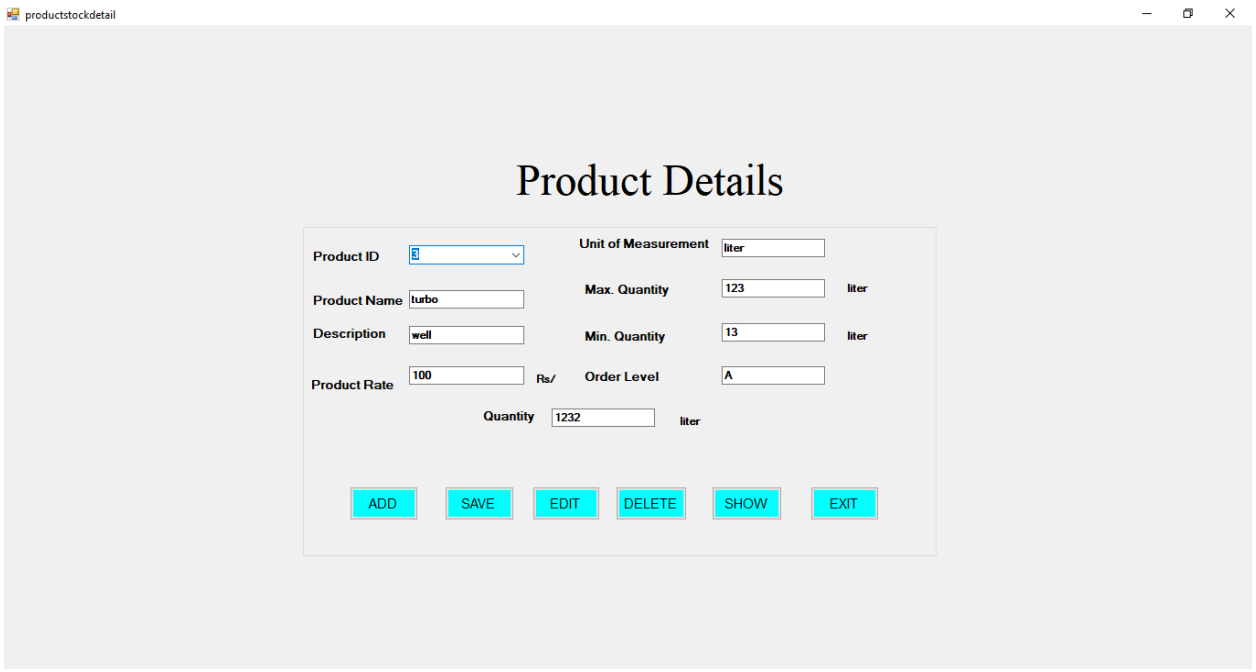

Figure 1.8 Product Details

4.1.9 Lubricant Details

In this Module, employee can see lubricant details

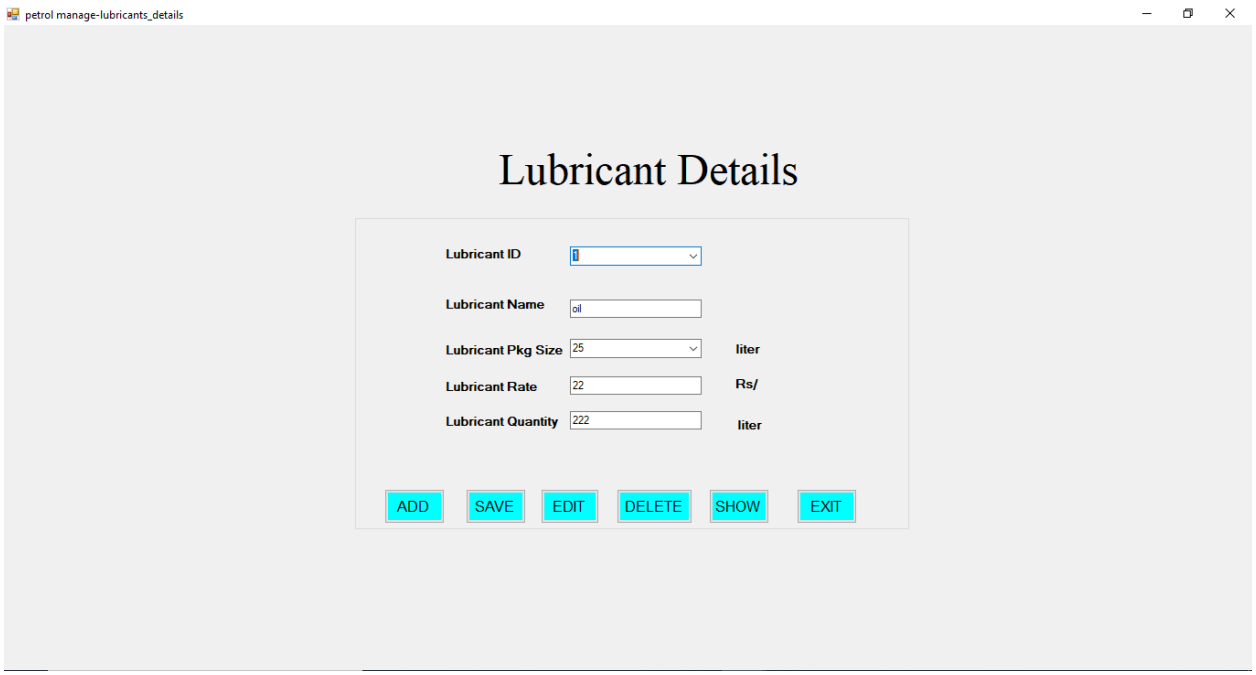

Figure 1.9 Lubricant Details

4.1.10 Ledger Details

Here, employee can see ledger details

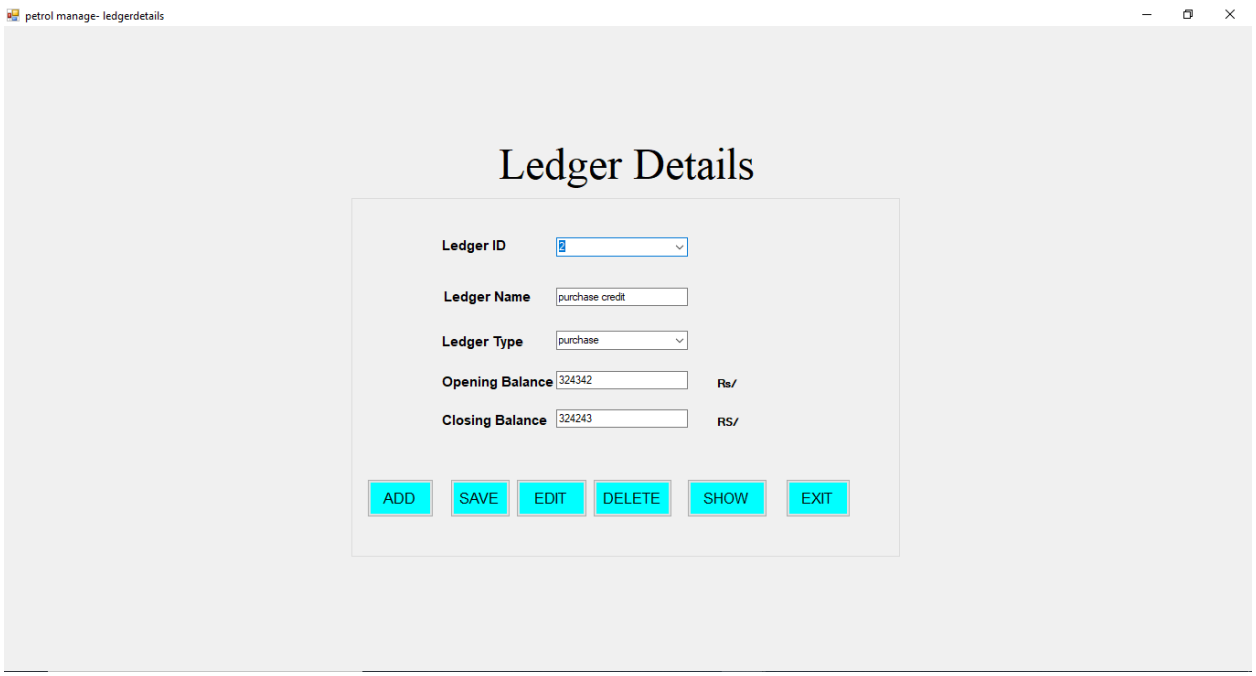

Figure 1.10 Ledger Details

4.1.11 Daily Sales

From the system, the user can maintain a daily sales report easily which contains opening and closing meter, stock, sold quantity, product rate, closing stock, actual dip stock, variation in reading and product amount.

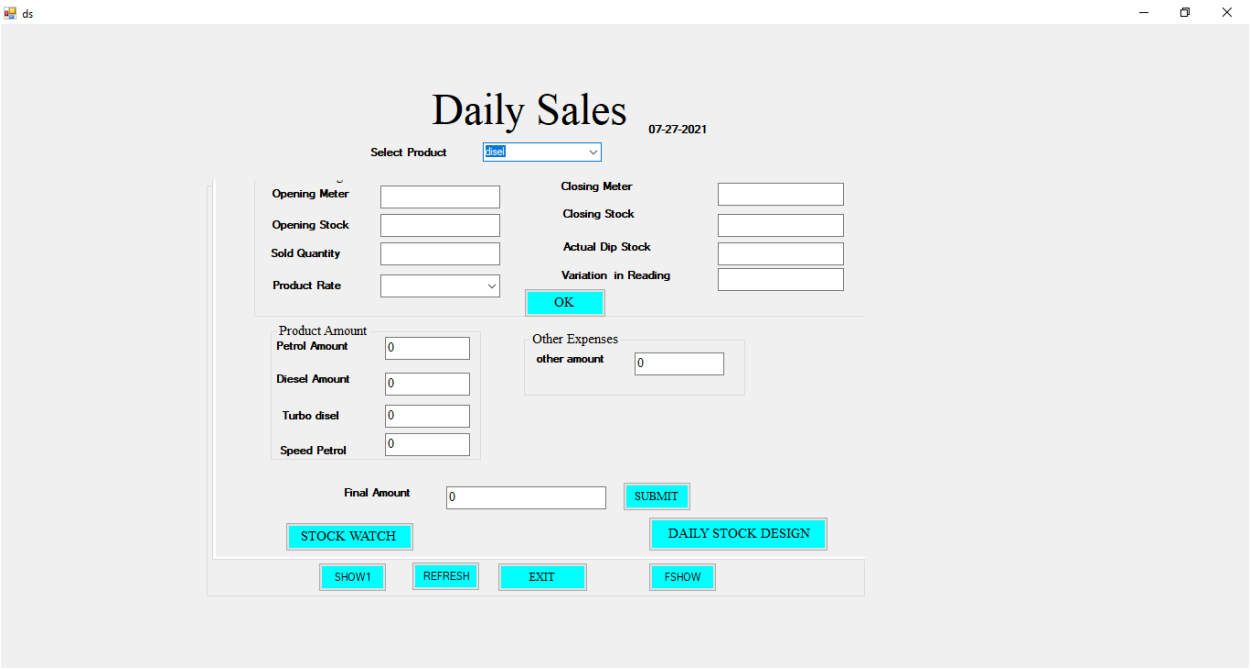

Figure 1.11 Daily sales

4.1.12 Product Order Details

Here, user can see product order details

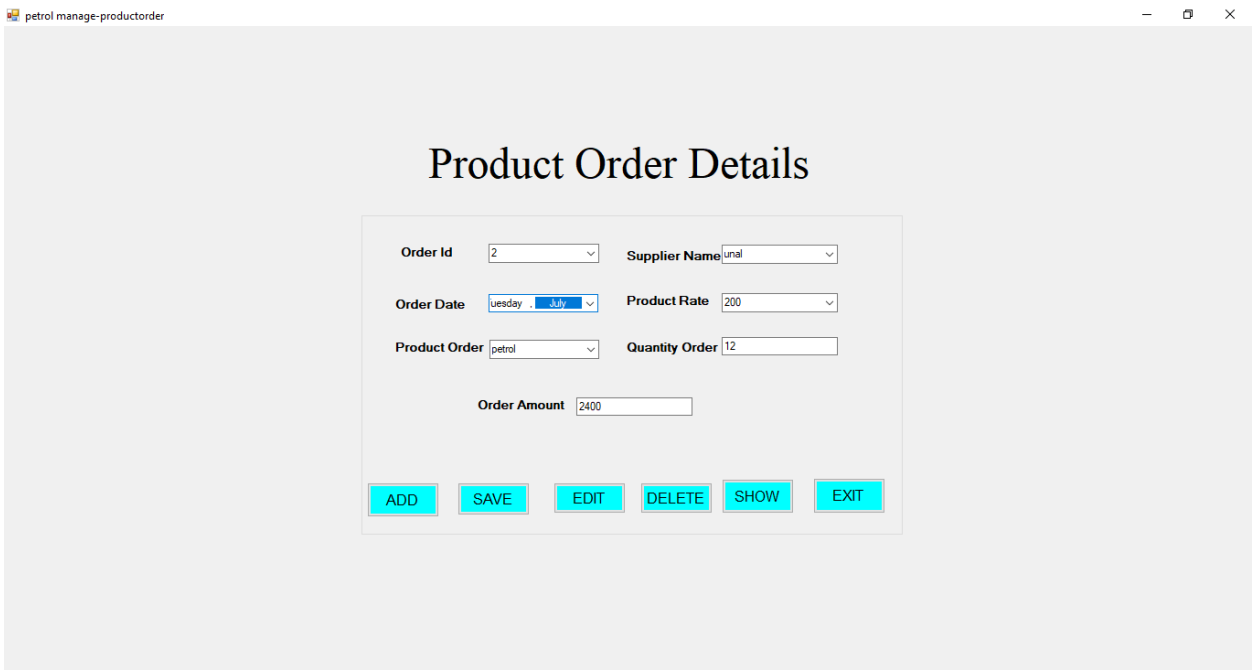

Figure 1.12 Product Order Details

4.1.13 Stock Details

The stock details can also be mentioned here and the main essential feature is about billing which is available in this project.

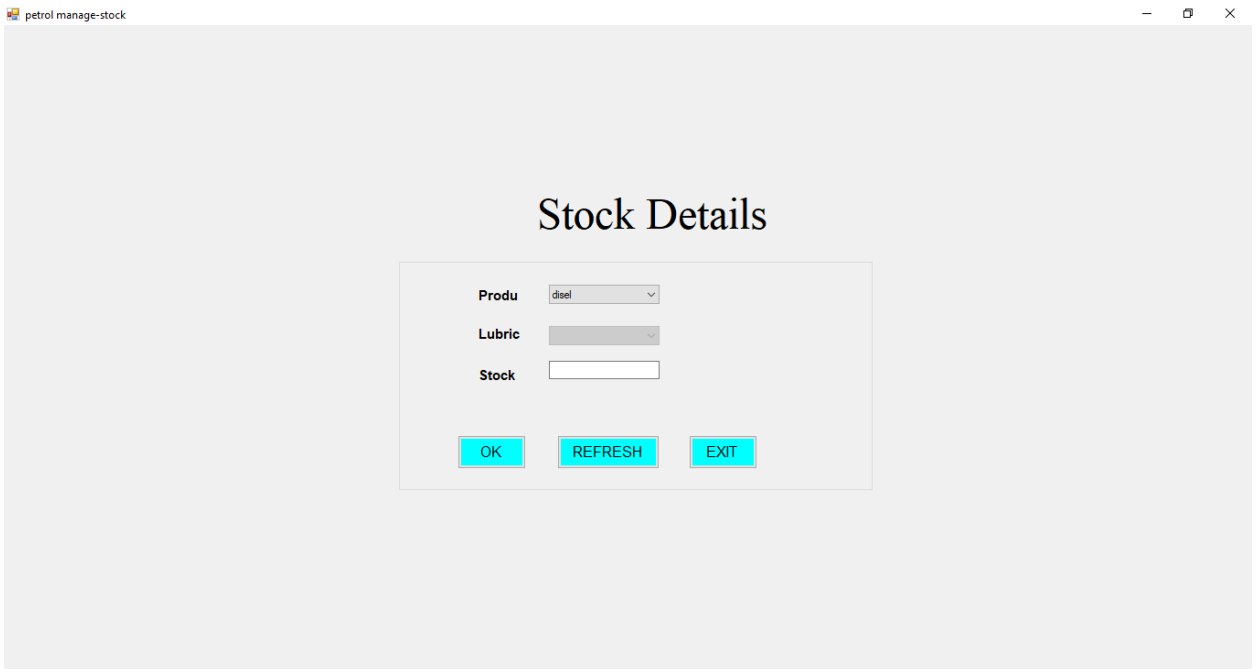

Figure 1.13 Stock Details

4.1.14 Daily Product Stock

In this module, users can see daily product stock.

Figure 1.14 Daily Product Stock

4.1.15 Generate Customer Bill

In order to generate a customer bill, the user has to provide Employee id, vehicle number, quantity, product name, rate then the system displays total amount.

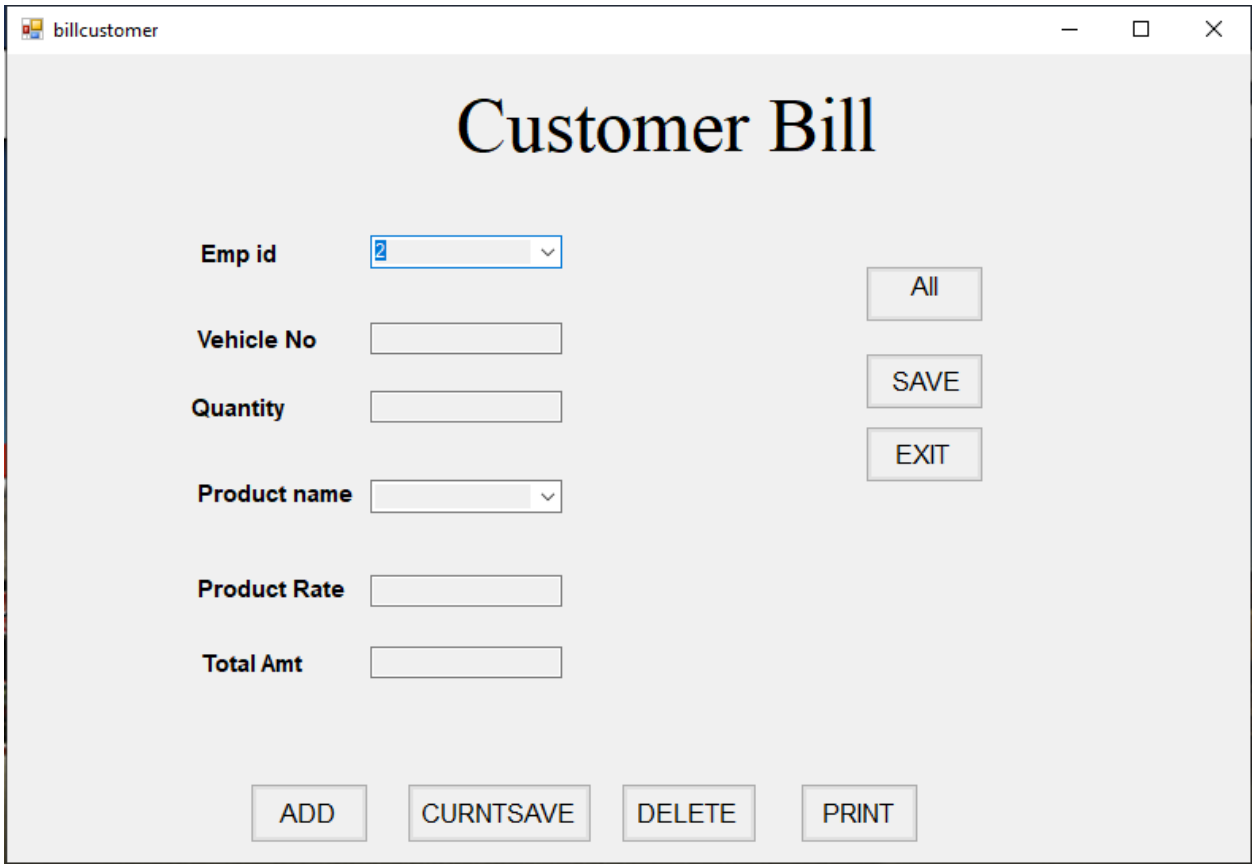

Figure 1.15 Customer Bill

Chapter 05

Conclusion

5.1 Conclusions

This project uses an MS Access database. Information stored on the database is retrieved easily with each and every detail. All the daily reports can also be generated from the system. Petrol Pump Management System project helps in the management of a petrol pump transaction and their products within a short period of time. This project is easy to operate and understood by the users. It is very user friendly and easy to handle.

5.2 Future work

Some of the future scopes that can be done to this system are:

1. Add chat option for employee to customer, supplier. It will be an effective and very groundbreaking feature.
2. Create a website based on these apps. It will help to know about any petrol pump company.
3. Real Time location direction of that company's petrol pump branches.
4. Updated price list of products.