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Super Market Billing Management System

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Abstract

Staff or admin might benefit from this software when it comes to billing products and managing product details. Only administrators and personnel have access to this application. It is inaccessible to members directly. In order to learn more about the Supermarket Billing System, this project is highly recommended. Various records pertaining to Products, Employees, Sales, etc. are kept by this programme. New product or employee details can be entered, and existing product or employee details can be retrieved, from the System. Customers' bills can be generated by us. We may also keep track of client information and the GST computation for each product in this project. The government has the authority to impose GST on all products based on the categories they have specified. This project can also keep total sales at a constant level. During this internship, I have learned what I need to know about the Supermarket Billing System.

Keywords: Super Market, Billing, GST, Management.

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Introduction

The supermarket is the location where people go to buy the things they use every day and pay for them. Consequently, it is necessary to determine the total number of products sold and to create the customer's invoice. "Supermarket Billing System" is an ongoing software development project with the goal of making everyday operations like order taking and bill calculation easier for businesses like supermarkets and shopping malls.

Eliminating paperwork, saving time, and improving customer service are all benefits of this project's primary automated system, which replaces all the labor-intensive and error-prone manual processes [1]. The system streamlines a number of operations, making life easier for both employees and consumers, including adding and removing products from the menu, editing item descriptions, and calculating invoices. Making the right choices in programming language and platform during project development is crucial [2]. An internship to oversee the filing of bills in a large company is the goal of this programme. Users can submit their bills online and see where they stand in the billing process using this technology.

We have two users in this system. The first is the client, who can either buy the available things or pay for them. A second type of administrator is in charge of product discounts and has access to all reports. For this project, the data is managed using the SQL and VBA languages [3]. It has a tonne of features that are necessary for a project, like easy data maintenance and file handling. With the system's help, you may see every item's pricing and any applicable discounts. At last, every client will receive their own invoice. The database will store this information. It is possible to access any archived documents at any moment [4]. Compared to a manual system, which requires the user to write it down, which is a lengthy procedure, this one will eventually save users time and effort in the calculation, allowing them to spend more time monitoring the supermarket and less time on paperwork.

A systems study is an analysis of a process or organisation with the aim of determining its aims and developing methods to efficiently attain them [5]. As a problem-solving tool, system analysis dissects a system into its constituent parts to investigate their interdependencies and individual strengths and weaknesses in carrying out the system's intended function.

Literature Review

Arifin and Setyaudhi et. al [6] The purpose of this study is to create an integrated system that will oversee the XYZ Shipping Agency's travel planning and ship ticket sales processes. With this method, we conduct an initial study to identify the most important requirements, create a workable system concept, and use simulations to test the final model. Based on the research findings, the integrated system has the potential to improve the shipping agency's operational efficiency, lower the risk of errors, and offer better customer service. The evaluation results offer a positive outlook on the integrated system's potential to improve the agency's performance, even though there are still implementation challenges in the real world.

Ng et.al [7] The study investigates the use of anaerobic digestion and gasification technologies in partially and fully decentralized configurations to valorize source-segregated food waste and mixed waste from supermarkets and households into fuels for transportation and electricity. According to this study, a single supermarket could cut its electricity costs and greenhouse gas emissions by 12% by implementing a partially decentralized anaerobic digestion strategy for food waste and fully substituting net surplus renewable electricity generation through complete decentralization of mixed waste gasification for fossil fuel-based electricity. Since waste management can benefit the local community in a greater number of socio-economic and environmental ways, it is imperative that a more integrated, circular, and technologically advanced approach be used. This is especially true in the UK.

Kumar et.al [8] Industrial automation is the best way to address these problems facing the food industry. Algorithms for deep learning, machine learning, or artificial intelligence (AI) form the foundation of automation. The processes involved in food production and delivery can be handled effectively and operational competence can be increased by utilizing the AI-based system. This essay will describe how artificial intelligence (AI) is being used in the food business to minimize human error and suggest significant capital savings while optimizing resource utilization. By increasing production and using various fitting algorithms for sales prediction, artificial intelligence combined with data science can enhance the quality of dining establishments such as restaurants, cafes, online food delivery chains, hotels, and food outlets. AI has the potential to greatly enhance food safety by creating a more transparent supply chain management system, extending shelf life, combining AI algorithms with the menu, and packaging. Drones, robotic farming, and smart farming will be the mainstays of the food industry of the future thanks to AI and ML.

Purwanto et.al [9] This study set out to ascertain how the integrated management system's implementation affected quality performance. 144 employees from 12 packaging industry companies that have been using the Integration Management System for at least five years made up the respondents for this study, which was carried out across several packaging industries in the province of Banten. Research on ISO 9001: 2015 and ISO 22000: 2018 is lacking, which forms the study's background. Data was gathered through the distribution of questionnaires, and Linear Structural Model (LISREL) version 8.70 was used for data analysis using the Structural Equation Model (SEM). The application of the Integration Management System, certified under ISO 9001: 2015 and ISO 22000: 2018, was found to have a significant impact on quality performance, as evidenced by improvements in the customer satisfaction index, a decrease in customer complaints, a reduction in defects, a decrease in product returns, and a decrease in quality costs.

Katsikouli et.al [10] The quality of the final product and the health of the participating businesses are impacted by the management culture chosen for food supply chains. In this paper, we primarily address the application of distributed ledgers, and specifically blockchain technology, to supply chain management in the food and agriculture industries. We examine the problems that conventional management systems face, including food fraud, food safety, and ineffective procedures. We also look at ethical issues, such as fair trade, animal welfare, and the effect of food production on the environment. Utilizing blockchain-based supply chain management systems has several advantages, including faster and more accurate traceability. We show that small and medium-sized businesses (SMEs) in Denmark could gain from blockchain-based solutions that promote fair trade and authenticity documentation, reveal best practices, and cut down on administrative expenses. Unfortunately, its widespread adoption is currently in its infancy due to a lack of crucial regulations and standards as well as a limited knowledge of the technology itself.

Proposed Methodology

1. Modules in the Systems

The modules of the systems are:

- Admin
- File
- Account
- Inventory
- Tools
- Extras
- Quit.

Admin

The admin has the unique login and password which completely controls the working. Admin will verify and mange customer details and sales.

File

It is are used to store the details of the product items.

Accounts

It is used to managed the company balances and stored the balances in the day book.

Inventory

An essential part of the supply chain is inventory management, which entails following products as they move from producers to storage facilities and finally to retailers. Ensuring the timely and accurate placement of all products is the fundamental objective of inventory management.

Tools

The file is used to manage the company details, and changer username also including in the systems. The tools are used to create a new user and password in the tools options. The main tools is barcade it is used to scan the product and find the rate of the product.

Extras

Extras is show in the backup data stage, In the extras using the shrink database, The Shrink Database task reduces the size of SQL Server database data and log files. By using the Shrink Database task, a package can shrink files for a single database or multiple databases.

Quit

Quit is used for log out options.

2. Current System

In order to convert data intake, processing, output, storage, and control, the current system was examined and analysed in terms of its usage of hardware, software, networks, and human resources. That which unifies and coordinates all of a company's operational processes. Purchasing, sales, material, payroll, and other such functions are essential for every company, no matter how big or little. The goal of enterprise resource planning (ERP) software is to centralise data management for an organization's many operations into a single database. All users will be able to write to or read from a single database, which will make it easier to show the combined information of different functions. The ability to provide a comprehensive overview of your company is made possible by the integration and management of all functions in a single database.

The important functions of ERP systems.

1. **Production Management:** Production capacity, parts, components, and material resources can all be better planned and optimised with the help of enterprise resource planning (ERP) systems by taking demand and consumption patterns into account.
2. **Purchasing Management:** Here, enterprise resource planning (ERP) solutions simplify the acquisition of inventory and other materials.
3. **Inventory Management:** Optimal inventory management is one of the primary functions of the ERP system in this context.
4. **Sales Management:** Streamlining the order management system from order to invoice to cash will increase process efficiency.
5. **Finance and Accounting Management:** When it comes to financial management, ERP plays a major part in ensuring sure all financial statements are available for confident decisions that can be made on time.
6. **Human Resource Management (HR):** Taking charge of employee payroll and benefits administration.

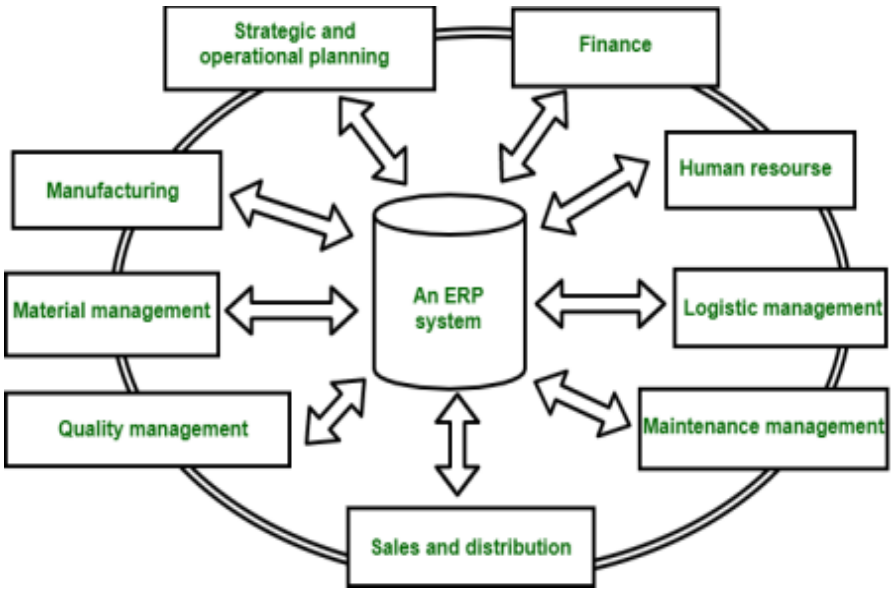


Fig. 1: ERP System Data Base

The fig 1, show the details of Subsequently, an ERP system is implemented to centralise the management of departmental datasets. All of the system's databases are tracked by it. Here, an employee from one division has access to data that pertains to another division.



Fig. 2: ERP Working Tools

The fig 2 shows the details of Software programmes used for managing enterprise data are known as enterprise resource planning (ERP) solutions. Manufacturing planning, inventory control, financial reporting, human resource administration, and supply chain management are just a few of the numerous business processes that ERP systems facilitate.

Data Flow Diagram

Data flow diagrams are useful for understanding how data moves through a system or process. It comprises data storage, data inputs and outputs, and the numerous subprocesses that the data goes through. The classic graphical depiction of how data moves through a system is called a data flow diagram (DFD).

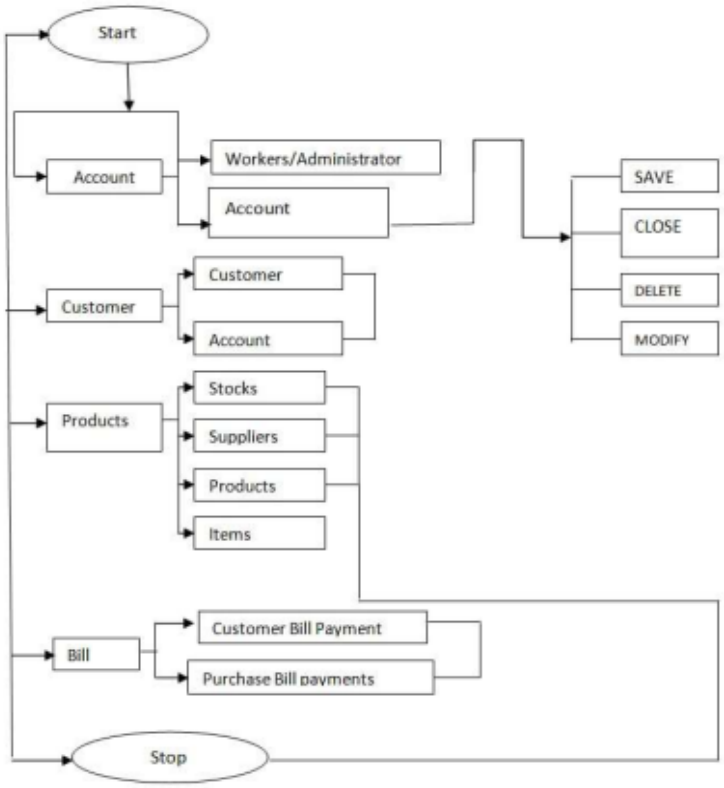


Fig. 3: Data Flow Diagram for Billing Software Level 1

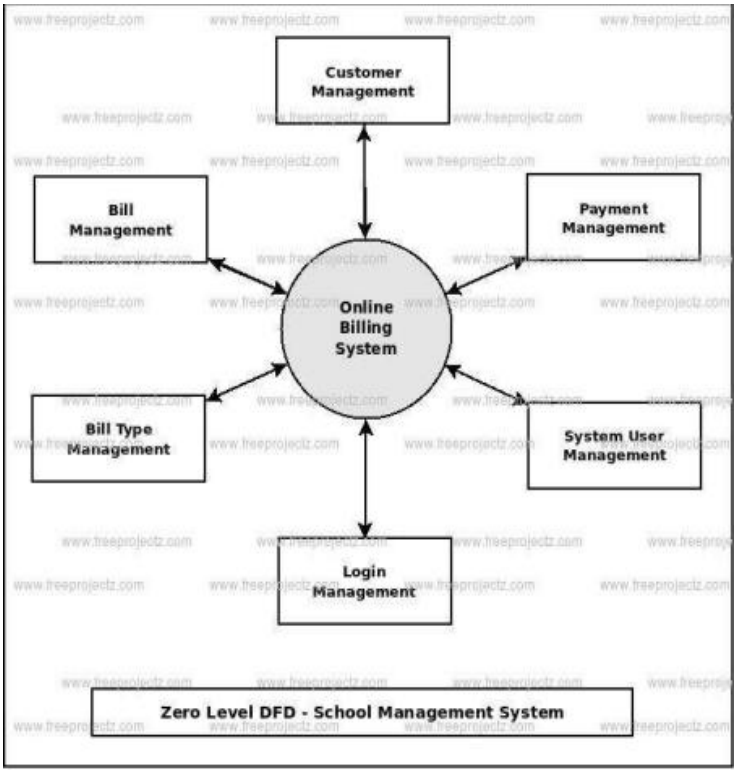


Fig. 4: Data Flow Diagram for a Billing Software Level 2

System Specification

Frontend Feature

This document's goal is to serve as a guide for you when you move your applications from Microsoft SQL Server to another database. Problems with database compatibility are the most common cause of application migration failures to SQL Server databases.

- SQL Server Security
- Login Authentication
- Windows Authentication
- SQL Server Authentication
- SQL Features
- It Supports Client/Server model
- Integrity rules keep data consistent
- Operating System Compatibility
- Multiple Protocol Compatibility

Backend Feature

Basic for Windows. The advent of the Internet and its object-oriented, event-driven approach to software creation has completely altered the way Windows programming is done. The VB.Net programme serves as the database's frontend.

- VB.NET uses XML to transfer data between the various layers in the DNA Architecture i.e. data are passed as simple text strings.
- The CLR takes care of garbage collection i.e. the CLR releases resources as soon as an object is no more in use. This relieves the developer from thinking of ways to manage memory. CLR does this for them.
- It uses drop and drag elements to create web forms in.NET applications. However, a Visual Basic.NET allows to connect one application to another application that created in the same language to run on the.NET framework.

Research and Discussion

1. System Design

The goal of systems design is to define the data, architecture, components, and their interfaces as well as the system's modules in accordance with the requirements. Systematic approach to identifying, researching, and creating solutions that meet the unique demands of an enterprise.

2. Input Design

The input of an information system is the initial data set that undergoes processing in order to generate the output. The developers need to think about input devices like PCs, MICRs, OMRs, etc., while they are designing the input. Thus, the output quality of a system is directly proportional to the input quality. When it comes to input forms and screens, well-designed ones have certain characteristics:-

- It should serve specific purpose effectively such as storing, recording, and retrieving the information.
- It ensures proper completion with accuracy.
- It should be easy to fill and straightforward.
- It should focus on user's attention, consistency, and simplicity.

Input Form 1

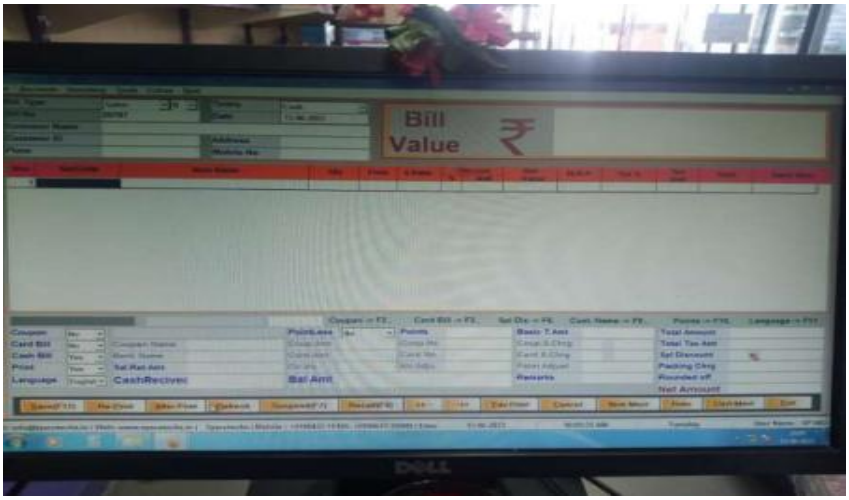


Fig. 5: Start-up Screen

The fig 5 shows the details of this is the start-up screen this appears when the application is started first from this screen we can launch whatever module we are interested in if it I s for a new sale for a customer who would like to purchase item you can go to sales screen or if this store want to see some reports the report modules can be launch or if new product to be added it can be done. Customer that is too added to the system can be done.

Input Form 2

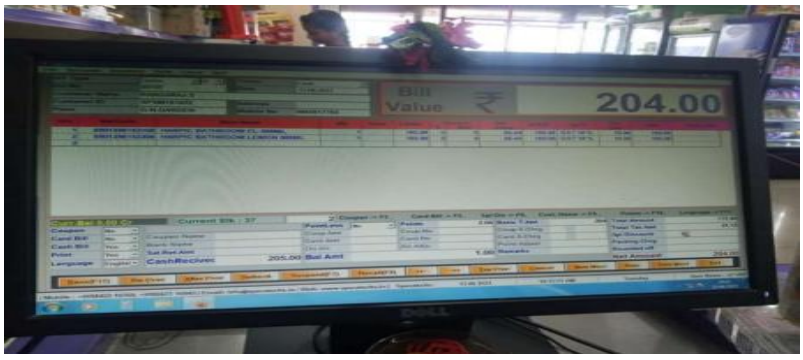


Fig. 6: Billing Module Screen

The fig 6 shows the details of this was the Screen the billing module can action. when the customer is visiting the store who selecting the items that he/she would like to purchase the items that selected are entered in the screen it has the capability to pick up the product description from the products table and price information from the pricing table and also if the customer is already stored based on the customer choice the customer detail s can be fetched and the final amount of particular bill is displayed on the bottom and bill is confirmed and the bill is printed.

Input Form 3

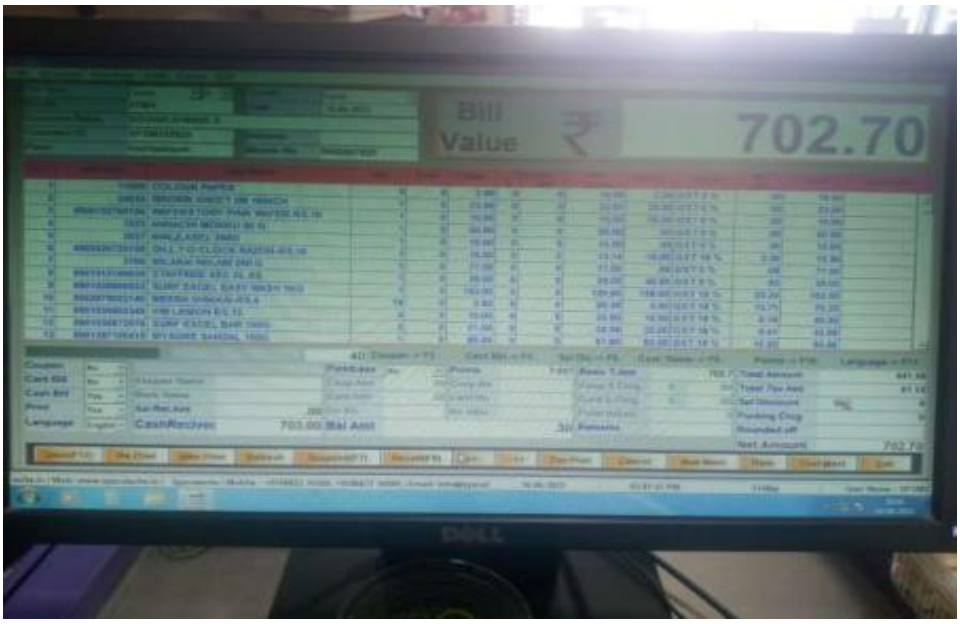


Fig. 7: Product and Services Screen

The fig 7 shows the details ofthis screen indicates that we can enter new products and new services to add new product in a system this particular screen will help the customer or shopkeeper to add product to the system. This products will link the various other tables like billing systems, reporty system and inventory system.

Input Form 4

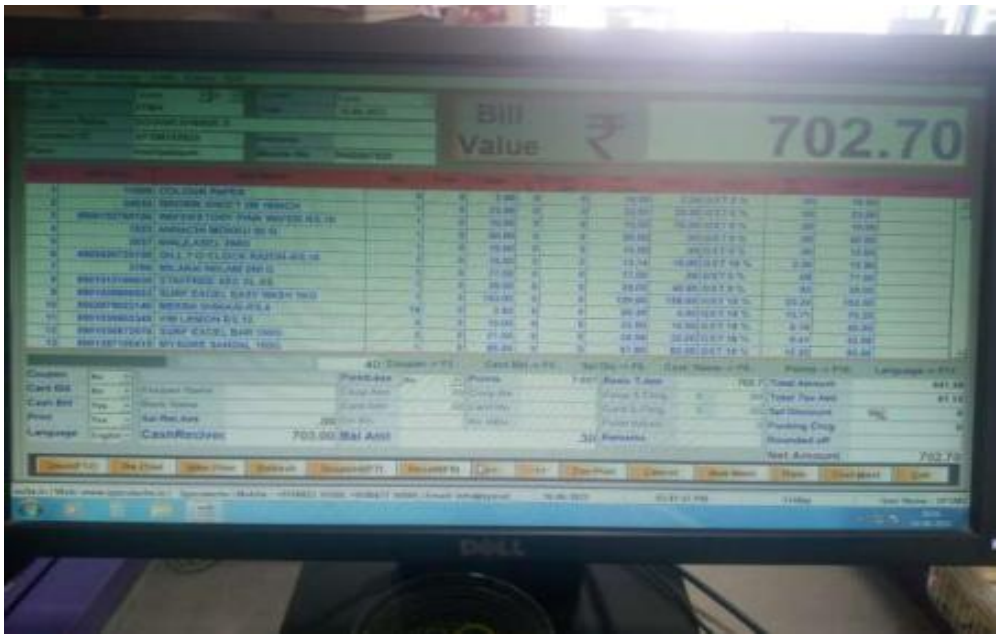


Fig. 8: Report Module Screen

The fig 8 shows the details of this screen is a report modules it shows a simple report that showing the total sales for a given day. It is used to generate different types of reports and describe about the data enter in given day is saved according to the module.

Input Form 5



Fig. 9: Backend Configuration

The fig 9 shows the details of the above Screen show backend database configuration details using software. Software uses SQL Express as its backend database and DB Connected parameters are displayed in the screen suppose the password is changed the management screen is used to update the entries.

Input Form 6

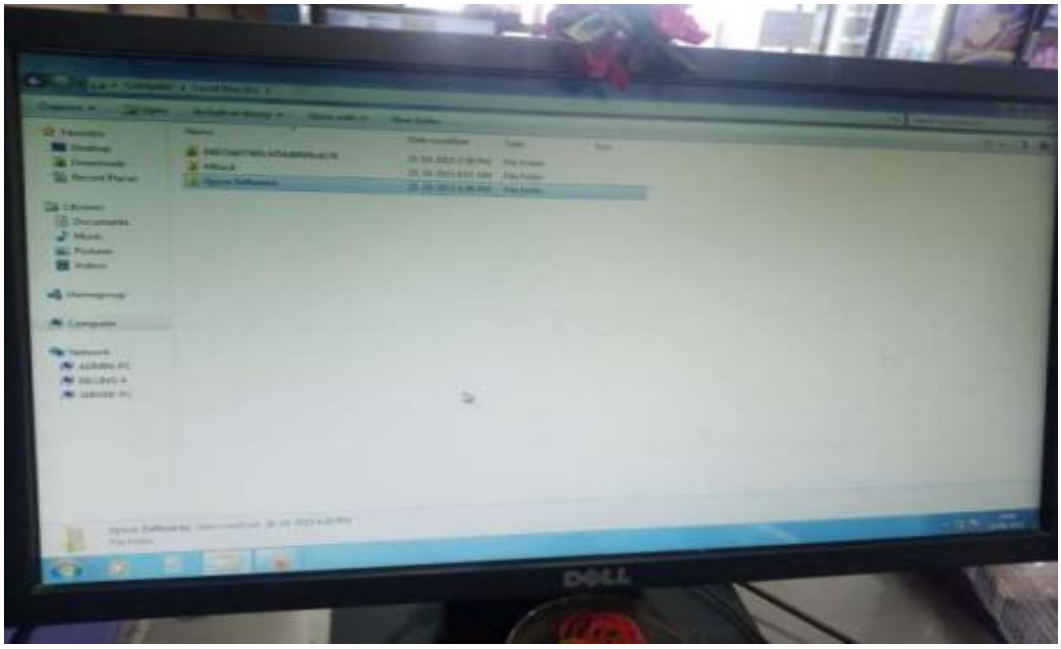


Fig. 10: Physical Location of SQL Express

The fig 10 shows the details of this Screen shows the physical location of SQL Express Database the database folder contains several entries that are maintained by the SQL Express Software these are all collectively used by the package for storing various details that utilized by the software for running the systems.

3. Table Design

A Well-structured Database

- Saves disk space by eliminating redundant data.
- Maintains data accuracy and integrity.
- Provides access to the data in useful ways.

Designing an efficient, useful database is a matter of following the proper process, including these phases.

- Requirements analysis, or identifying the purpose of your database.
- Organizing data into tables.
- Specifying primary keys and analyzing relationships.
- Normalizing to standardize the table.

Common Data Types Include

- CHAR - a specific length of text
- VARCHAR - text of variable lengths
- TEXT - large amounts of text
- INT - positive or negative whole number
- FLOAT, DOUBLE - can also store floating point numbers
- BLOB - binary data

Table 1: Customer Table

Field name	Data type	Constraints	description
C_id	Int	Primary key	Customer id
Name	Varchar		Customer name
Contant_no	Int		Customer name
Address	Char		Address
Emai	Varcha		Mail ids

4. Output Design

The most crucial and immediate source of information for the user is the computer's output. The user will only accept the system if its output is of high quality. The user is inclined to disregard the system if the output is of low quality. Consequently, the primary factor determining the system's overall quality is an effective output design. A few of the goals of the output design are:

- Designing output to serve the intended purpose.
- Designing output to fit the user.
- Delivering the appropriate quantity of output.
- Making sure the output is where it is needed.
- Providing the output on time.
- Choosing the right output method.

Conclusion

By this report and training I have attended the internship in the mentioned company which helped me to improve my skills and its functions performed in the company. I undergone the training and learnt about the ERP billing Software developed by Sycotech software using VB.Net and its usage. I learnt about the existing system, its features. I hereby conclude in a nutshell thanking our institution and the company that provided me hostage teaching the skills for my improvement.

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