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A Project Proposal
on
"Variety"

[Code No: ENGG 102]

(For partial fulfillment of I Year/ II Semester in Computer Science)

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Abstract

Our project titled "Variety" is a supermarket billing system. It is a desktop application and we intend to help small businesses and big stores alike by providing them with a billing system so that they can track their profits and make changes accordingly. Since many traditional billing systems only help businesses by helping them make a bill, our application tends to provide other features as well. The main objective of this project is to create a desktop application via which small businesses and supermarkets can create a bill, get an insight of the items in their inventory and provide membership services to their customers. We will be using C++ as the programming language and Qt as the framework. By this project we aim to increase the use of digital billing systems in many convenience and retail stores around the country.

Keywords: *C++, Qt*

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Acronyms/Abbreviations

The list of all abbreviations used in the documentation is included in this section. See the example below:

GST   Goods and Services Tax

ERP   Enterprise Resource Planning

OOP   Object Oriented Programming

Chapter 1　　Introduction

1.1　Background

Supermarkets and departmental stores have been taking over a bigger and bigger share of the retail and grocery market. As we emerge from the global pandemic, the retail market is growing faster than ever. Technology is one of the most important factors responsible for this growth in organized retailing and will continue to do so for a long time. Ever since the pandemic the retail sector has seen newer consumer behavior and business practices. Despite incomes shrinking significantly, shopping volumes have increased. Many have used their spare time due to the pandemic-induced lockdown to renovate and redecorate homes, embrace new hobbies and change their shopping habits. Retail stores that catered to these needs thrived, especially the ones with a strong digital system in place.

In the current context of Nepal most retail stores have little to no integration of digital systems, the ones that have integrated technology in their businesses lack a robust system in place and have many drawbacks. Most transactions are still done via a physical notebook, which is prone to human error and is not the most effective way to carry out transactions. With this project we aim to solve this problem with a robust digital system in place to help carry out transactions smoothly. This application aims to give the person behind the counter or the administrator more control over the system, with this the administrator can create a bill, check out the sales, check the inventory and provide membership services to the client.

1.2　Objectives

- Allow people to take membership.
- To reduce the time for organization.
- To reduce large amounts of paperwork.

- To reduce pressure on the labor and relieving man power from repetitive and dull jobs.

1.3 Motivation and Significance

Once when we were visiting a supermarket to buy some products for our friend's new room, there was no billing system in that market and they didn't even print a bill for us. At that very moment we came up with an idea of making a Supermarket Billing System. After so many ideas for the project we finally made sure to make this application. Our application does the same work as other billing systems i.e., calculating the bill, giving it to the customer and maintaining a proper database. A new concept is also added in the billing system is that they also maintain relationships with the customers who purchase more products from the store regularly. We can give membership to those types of customers. Not only that, we will also add Inventory in our application which will show the overall profit and profit on a particular product and give reports on which items are required and which have crossed their expiry date.

1.4 Expected Outcomes

Through this project we expect to solve the problem of having to do calculations of a supermarket on paper and instead digitize the process for easy searching, sorting and recovery.

Chapter 2   Related Works/ Existing Works

There are a lot of applications related to our project. Even though these applications include almost everything a billing system may need, they are usually complex to use and require a trained person to operate. We want to create a simple software that can be used by anyone who knows how to use a computer. Some of the key billing and inventory management software are listed below.

2.1   Vyapar - Accounting & Invoicing

Vyapar [1] is a desktop and android application that claims to be India's No.1 Billing Software. It is a GST compatible invoicing and accounting solution for small businesses. You can use it to create GST bills, fulfill orders, generate GSTR reports, track payments/expenses, and manage your inventory. Besides, you can use it to customize invoices and collect payments online. It aims to digitally upgrade small business accounting by eliminating paper bills.

Figure 2.1.1 Vyapar

Features:

- Become GST compatible.
- Manage all parties in one single place and market business much easily.
- View how business is performing instantly.
- Create, print/share customized invoices.

- Set up "Auto Backup" and secure business accounting data against accidental data loss.
- Track and control individual units of an item by their expiry dates, batch no to pick right ones for upcoming sale.
- Set automatic payment reminders.
- Do business accounting offline without internet.

2.2 Horizon ERP

Horizon ERP [3] is a ready to use GST billing and accounting software for small businesses. It is simple and easy to use. Simple user interface enables easy execution of tasks. It is easier for the user to adapt.
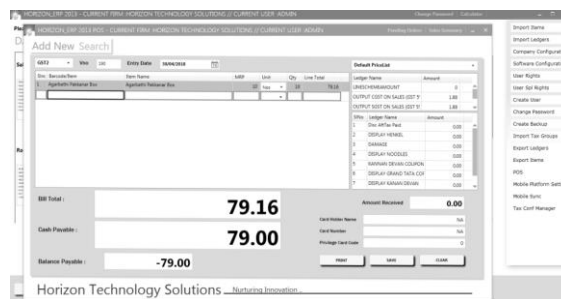

Figure 2.2.1 Horizon ERP

Features:

- Receivables and Payables
- Multilevel classification of items
- Sales & Purchase invoicing
- Multiple pricelist
- Discount & Scheme management
- Credit note & Debit note management
- Auto Backup
- User wise access control
- Exporting & Importing data (in Excel & PDF)

4

- MRP wise stock display
- View item Purchase & Billing history
- Maintain Batch wise stock.

2.3   NetSuite ERP

NetSuite ERP [2] is an all-in-one cloud business management solution that helps organizations operate more effectively by automating core processes and providing real-time visibility into operational and financial performance. With a single, integrated suite of applications for managing accounting, order processing, inventory management, production, supply chain and warehouse operations, NetSuite ERP gives companies clear visibility into their data and tighter control over their businesses.
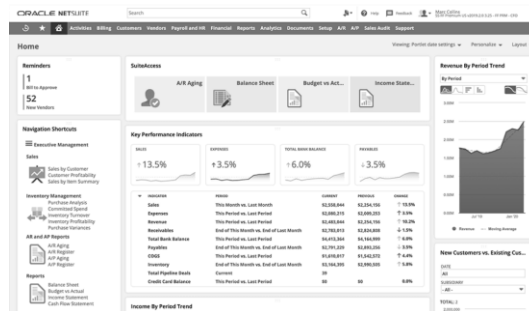

Figure 2.3.1 NetSuite ERP

Features:

- Get a complete view of cash flow and financial performance.
- Get a complete, real-time view of your business's financial performance, from a consolidated level down to individual transactions.
- Manage global operations, including multiple currencies, taxation rules and reporting requirements, across geographies and subsidiaries, all while providing real-time financial consolidation and visibility.
- Delivers tools for tracking inventory in multiple locations, determining reorder points, managing replenishment and optimizing safety stock.

- Streamline order processing by eliminating manual bottlenecks, preventing errors and establishing a smooth flow from sales quote to order fulfillment resulting in timely invoicing and payment.
- Eases the process of moving goods or materials through an extended supply chain.
- Optimize warehouse operations with RF-device-directed putaway and picking tasks, driven by customized, user-defined strategies and advanced capabilities like wave management, cartonization, cycle count planning, real-time inventory updates and shipping system integrations.

Chapter 3　　Procedure and Methods

We have decided to go through the following procedure in order to complete the making of the application.

1. Plan and design the application.
2. Develop simple billing application with the help of MySQL and Qt.
3. Add option for customer membership and inventory management.
4. Test and debug the application.
5. Make the application installable.

The programming language that we will make this project with is C++ through the use of OOP.
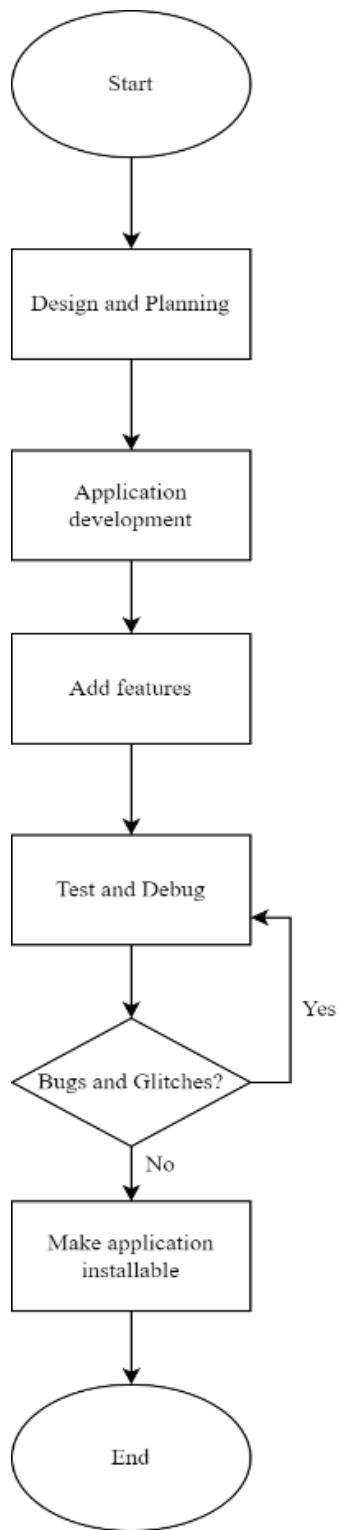
Figure 2.3.1 Flowchart

Chapter 4 System Requirement Specifications

4.1 Software Specifications

4.1.1 Front End Tools

Qt

4.1.2 Back End Tools

MySQL

4.2 Hardware Specifications

Any PC having Windows 10 1809 64bit or above

Chapter 5   Project Planning and Scheduling

We are planning to finish the project in 12 weeks. Every individual in our group has their task divided according to their strengths. We have divided different aspects of the project to be completed within the dedicated time. The Gannt chart below shows a detailed time distribution for the project.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Planning and Preparation	■											
Work division	■											
Coding		■	■	■	■	■	■	■				
Merging									■			
Debugging										■	■	
Beta testing												■

Figure 5.1 Gantt Chart

5.1   Tasks

1.   Planning and Preparation
2.   Work division
3.   Coding
4.   Merging
5.   Debugging
6.   Beta testing

References

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