Specification of software requirements

Billing control system for PYMES

Review

Revision history

Date	Review	Description	Author
dd / mm / yyyy	1.0	"Interface Requirements"	<name>

Document validated by the parties on date:

For the client	By the supplying company
Signed. Mr. / Mrs.	Signed. Mr / Mrs

Content

1 Introduction

This report is the result of the research project "Inventory and billing system" for the mini-market called San Juan. This will be developed during the period from November 2020 to April 2021, by the team of "CrSystem" programmers.

Technological tools have become one of the fundamental reasons for a giant or small company to be able to direct in the trade, one of them is the good management of its documentation, since these are used daily for the management of its data and its scope in order to mechanize services and reduce busy times by improving the quality of interest.

It is very important to take into account that the company needs to improve its economic solidity because the benefits are quite high but the administration that is implemented is not correct due to the disorganization of the information from which a number of problems are broken down. The invoicing that has been used is a manual process without a reliable database, which produces human errors and document waste, in addition to the loss of information. Therefore, it is not possible to have accurate and timely information on the sales that have been made, signifying a stagnation of operations.

1.1 Purpose

The purpose of this project is to create and implement a billing system with which we can help people who are owners of small and medium-sized businesses to have control of their inventory and information about their respective products. We also need to keep a record of earnings and expenses, issuing an invoice as appropriate, for each purchase made inside and outside the company.

The objective of the document is to document the correct development of the project in question, several techniques have been selected for data collection and the use of the Software Requirements Specification (ERS) format according to the latest version of the standard. IEEE 830.

The target audience for this project is the San Juan minimarket business, in which it is intended to automate inventory control and billing through the design of an information system for inventory management and billing.

1.2 Scope

The billing system will minimize the risks of any loss of company data, reduce the rate of unnecessary hours when counting records for the month, and fully manage the control and record of each work activity for the day. As for the invoicing systems in SMEs, it represents the savings in resources much more feasible since leaving the invoices online avoids the use of paper, ink and time. Saving time is important in SMEs, so that staff save time in a process, this will allow the company to be more productive.
The billing system will be called CrSystem.

This project aims to offer a business solution to improve the management of the San Juan business, a mini-market located in the city of Quito.

This solution is developed at the request of business owners, who want to make changes in the administration of their business in order to have information in a timely manner about the status of the store's products.

The implementation of the system will make the company acquire more speed and fluidity when processing an order, since it will be an important piece at the time of billing for the client.

In the “San Juan” minimarket, there was no proper control of purchases, sales, inventory management or the main processes that a company of this nature should have; Faced with this problem, we have taken the following investigations as a reference:

Invoicing and inventory system for the tax control of purchase and sale in the VPC Corporation of the Technical University of Ambato. [1]

Prototype of an automatic billing system with RFID technology and an Android application to speed up the payment process at the checkouts of a supermarket of the Israel University [2]

Procedure design to control the billing process of the supermercado ricardito jr of the instituto superior tecnológico bolivariano de tecnología. [3]

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1.4 Definitions, acronyms and abbreviations

DEFINITIONS

Update.- Insert, delete, modify user records (Teachers). Storage.- In relation to computers or computers, any device capable of storing information from a computer

System. Backup.- The purpose of backup copies in a computer system is to maintain a certain capacity to recover information from possible losses. This ability can be very important, even critical, for companies. There have been cases of companies that have disappeared due to the impossibility of recovering their systems to the state before a serious security incident took place.

Database.- Any set of data organized for storage in the memory of a computer or computer, designed to facilitate its maintenance and access in a standard way. The information is organized into fields and records. A field refers to a type or attribute of information, and a record refers to all information about an individual.

Button.- It is a tangible object that performs an event after its activation.

Connection.- Communication between two entities that have similar communication characteristics.

Interface.- Means that allows communication between the user and the system.

Internet.- interconnection of computer networks that allows computers or connected computers to communicate directly, that is, each computer on the network can connect to any other computer on the network. The term usually refers to a particular interconnection, of a planetary nature and open to the public, that connects computer networks of official, educational and business organizations.

Login.- Name or alias that is given to a person to allow access to the system as long as they are registered.

PASSWORD.- Password or key to authenticate the entrance to a place or site.

Peripheral.- In computing, a term used for devices, such as disk drives, printers, modems that are connected to a computer and are controlled by its microprocessor.

Protocol.- Signal by which it is recognized that communication or information transfer can take place.

Server.- Computer connected to a network that makes its resources available to the rest of the members of the network. It is often used to maintain centralized data or to manage shared resources.

File server.- File storage device on a local area network, or on the Internet, which the different users of the network can access, depending on the privileges that have been given to them by the administrator.

Operating System.- Basic software that controls a computer. The operating system has three main functions: it coordinates and manipulates the hardware of the computer or computer, such as memory, printers, disk drives, keyboard or mouse; organizes files on various storage devices, such as floppy disks, hard drives, compact disks, or magnetic tapes, and manages hardware errors and data loss.

Website.- It is channeled through the URL or unique identifier of each content page. This system allows users to initiate a request for processing and Drinking Water officials to attend to requests and enter data from the inspections carried out.

POSTGRESQL- Structured query language, in computing, a language used in databases to query, update and manage relational databases.

Table.- Entity that has secondary primary physical fields

ACRONYMS

DBA.- It is the person who has central control of the database system.

DBMS.- Database Administration System, The software that allows the creation, administration and implementation of the database.
SYSBALANCE.- "BALANCED DOSAGE" System
GUI or acronym for Graphical User Interface.- In computing, type of environment that allows the user to choose commands, start programs, view lists of files and other options using visual representations (icons) and lists of menu items. The selections can be activated either via the keyboard or with the mouse.
ODBC.- Tool that connects the database with the interface.
SRS.- Acronym of Software Requeriments Specifications (Specification of Software Requirements)
TCP / IP.- Acronym for Transmission Control Protocol / Internet Protocol, protocols used to control transmission on the Internet. It allows different types of computers or computers to communicate over heterogeneous networks.
URL.- A URL is a string of characters that identifies the type of document, the computer, the directory and the subdirectories where the document is located and its name.

ABBREVIATIONS

- **HW:** Hardware
- **SW:** Software
- Mr sir
- Mrs. Mrs.
- Engineer Engineer Dr. Doctor

1.5 References

Reference	Title	Route	Date	Author
[1]	Invoicing and inventory system for the tax control of purchase and sale in the VPC Corporation of the Technical University of Ambato. [1]	TECHNICAL UNIVERSITY OF AMBATO FACULTY OF SYSTEMS ENGINEERING, ELECTRONICS AND INDUSTRIAL	Abril 2012	Franklin Ricardo Barrionuevo Caiza
[2]	Prototype of an automatic billing system with RFID technology and an Android application to speed up the payment process at the checkouts of a supermarket of the Israel University [2]	ISRAEL TECHNOLOGICAL UNIVERSITY	August 2018	CORELLA TITUAÑA MARCELA CRISTINA
[3]	Procedure design to control the billing process of the supermercado ricardito jr of the instituto superior tecnológico bolivariano de tecnología. [3]	INSTITUTO SUPERIOR TECNOLÒGICO BOLIVARIANO OF TECHNOLOGY	June 2018	MINA CASTRO RONALD ELEUETIO

1.6 Summary

Invoicing and inventory system for the tax control of purchase and sale in the VPC Corporation of the Technical University of Ambato. [1]

he lack of a billing and inventory control system in the Corporation is the main drawback that this system does not generate an invoice, so it is necessary to invoice it, at the same time affecting the inventory both when making sales and when
make purchases. The research is developed within the corporation to better understand the current state of the software, hardware and data network infrastructure.

Mass communication guides the majority of applications are developed in a web environment, one of the main advantages being accessibility, allowing system users to access it from anywhere in the world regardless of the operating platform that is running.
This is the basis for applying a methodology of analysis and design of our system, with which it is intended to provide a solution to the Billing and Inventory processes that will allow the creation of a tool that supports the activities of said company.

Prototype of an automatic billing system with RFID technology and an Android application to speed up the payment process at the checkouts of a supermarket of the Israel University [2].

The invoice automation system has been made thinking of cutting the time that customers spend in supermarkets in billing the products purchased.

The invoicing control for purchases and sales in supermarkets is carried out manually and the invoices file is also carried out in the same way, which are used at the end of each accounting period for the completion of financial statements. By doing this in the supermarket billing process, some errors are made in the billing of products. The errors that occur frequently are those related to fractured items and not delivered to the customer, item codes wrong or items without code.

The system to be implemented aims to solve the problems that are currently occurring in terms of better optimization of billing time in supermarkets, to better control thefts that occur within these places.

Procedure design to control the billing process of the supermercado ricardito jr of the instituto superior tecnológico bolivariano de tecnología. [3]

Technology is important to facilitate the effort ongoing efforts by companies to reduce the number of paper documents. The process can be simplified through the use of formats, or key forms for standard documents that accelerate the adoption of electronic data interchange of invoice documents.

The Ricardito Jr. Supermarket presented the need to improve the billing process in order to have better control of inventories, the purpose of this research was to propose improvement to the billing process procedures for inventory control.

The traditional billing process always it has been part of a broader set of business processes. At trading include placing and accepting an order, processing of the order, the delivery of the merchandise and the final payment

The main problem with such manual processing is that paper remains deeply embedded in billing processes between entities of all sizes.

In the case of the Ricardito Jr. Supermarket, there is a need to improve the billing process that it currently carries out and with this, better control its inventories.

2 General description

Despite the owner's efforts to have control of the structured information, this is not enough since none of these files is digitized and there is only one copy at present, therefore, the loss of information and the inappropriate manipulation of the files. bills is imminent.
Since the main problem is the lack of automation, it is proposed to develop a billing system in which the different processes can be integrated, which can systematize the information and optimize the functions performed at the time of making the invoice records.
After evaluating the problems in the business, the needs and gaps in the workplace could be visualized. Hence, the requirement arises to improve billing services.
The record on which the business is based is clearly written, so it is very easy for an invoice to be lost at any time in the course of the storage process, also, consulting a document is a huge waste of time. This can be automated for higher throughput and ease of processes. Therefore, the purpose is to create various modules that allow the storage and organization of information.

2.1 Product perspective

The model of this system that was developed has the consequence of facilitating the search for billing and work orders, among these there will be different modules for the entry of information, which will allow generating invoices in a better way.

2.2 Product functionality

The billing system must have a wide scope so that it can be implemented in taxpayers who do not yet use it.
It must be simple to facilitate compliance with the obligations of taxpayers and the accounting process. It must be secure so as to guarantee non-repudiation of the operation and that it be a valid document for all purposes.

The billing system will minimize the risks of any loss of company data, reduce the rate of unnecessary hours when counting the month's records and will be in charge of keeping track and recording each work activity of the day.
The implementation of the billing system will make the company more fluid when it comes to processing an order, as it will be an important piece when billing the client and reporting work orders such as payment to employees, number of hours, labor and warranties.
Definition of requirements.
They are the characteristics that a software must have to be able to support and / or execute an application; These can be functional or non-functional.

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Functional Requirements
The billing process will include the following steps:
Order entry billing collection.

Non-Functional Requirements
The programming language must be java.
Very fast and efficient data processing. User
friendly graphical interface.

2.3 User characteristics

Type of user	aquí el texto]
Training	aquí el texto]
Skills	aquí el texto]
Activities	aquí el texto]

2.4 Restrictions

One of the restrictions that we may have is that we do not have a user-friendly interface, since this interface will be used by the manager, cashier, etc. So it has been decided to use the following programming tool

NetBeans IDE is a development environment - a tool for programmers to write, compile, debug, and run programs. It is written in Java - but it can be used for any other programming language. There are also a significant number of modules to extend the NetBeans IDE. NetBeans IDE is a free and open product with no use restrictions. "

Therefore, it is concluded that NetBeans is an open source program, accessible to all and with a large number of modules. NetBeans is a very complete IDE to program in different languages that gives the possibility of carrying out different activities such as: Edit code, compile it, execute it, debug it.

NetBeans has been chosen for the development of this project due to its friendly environment and easy use, since it is nothing more than a directory with a special organization.

2.5 Assumptions and dependencies

The factors that can affect it is in part knowledge since it is true that currently the economically active population with technology is undoubtedly a point in favor for the implementation of the electronic invoicing system, however, it cannot be forgotten that there is a trade of character informal where people of low cultural level intervene who to a certain extent may be afraid of the change to the application of the electronic invoicing system this as a result of the scarce or null technological knowledge, thus having the tax administration the mandatory intervention with training so that taxpayers may know and adhere to this system.

Another factor may be the difficulty of small and medium-sized companies to adapt to the change in the billing system.
Another factor that can affect the system is the network or directly the lack of access to it.

2.6 Predictable evolution of the system

The improvements to the invoicing system of the CrSystem group will depend on a successful experience and application in the small business that we will implement the system, the invoicing software could also be improved making it more user-friendly, with greater accessibility to taxpayers with low technological knowledge, seeking to suppress the filling of forms, if possible the elimination of complex processes that do not have an importance real. All these updates will be taken into account once the billing system is finalized and implemented.

3 Specific requirements

- A1: Allow user authentication.
- R2: Allow the management (create, modify, delete) of users, customers and partners.
- A3: Open savings books.

3.1 Common interface requirements

3.1.1 User interfaces

User interfaces are related to screens, windows (forms) that the user must manipulate to perform a certain operation. The user will do this mandipulation by means of the keyboard and the mouse

It is important to mention that the user interfaces also include the corresponding aids in each of the processes carried out by the system.

User interfaces will help the end user working in an environment, so these interfaces will include:
Buttons
Peel-off menus
Informational messages
Error messages
Dialog boxes
Forms for entering, modifying, updating and deleting data. As well as for the operations and the aids mentioned above.
Others

3.1.2 Hardware interfaces

The monitor screen.- the software must display information to the user through the monitor screen.

- Mouse.- the software must interact with the movement of the mouse and the mouse buttons. The mouse will activate the data entry areas, command buttons and select options from the menus.
- Keyboard.- the software must interact with the keystrokes. The data entry keyboard in the active area of the database.
- Printer.- the software will print the reports on the installed printer

3.1.3 Software interfaces

None

3.1.4 Communication interfaces

The communication interface between the PostgreSQL database server and the application developed in JAVA

3.2 Functional requirements

3.2.1 Functional requirement 1

Requirement number	RF1
Requirement name	Allow user authentication.
Type	☐ Requirement ☐ Restriction
Requirement source	BD Table: User Fields: user and password
Requirement priority	☐ High / Essential ☐ Average / Desired ☐ Low / Optional

INTRODUCTION

- The system must allow the entry of the user's name and password to perform the different functions that each one will have.

TICKETS

- Cedula, Names, Surnames, Password, User Type (Technician, Cashier, Manager).

PROCESSES

- The system will ask for the corresponding administrator identification. We go to the Manage part of the main menu and choose User. The system will ask for the corresponding data of the new user then it will verify that there are no blank spaces, in the case of any error it will save the new user's data.

DEPARTURES

- The outputs are directed to: Administrator (Manager).
- Error message in the case of not having filled any field.
- Error message in the case of entering an existing identification number in the database
- Error message in cases of entering the data incorrectly, that is, the data format is incorrect.

3.2.2 Functional requirement 2

Requirement number	RF2
Requirement name	Allow the management (create, modify, delete) of users, clients and partners.
Type	☐ Requirement ☐ Restriction
Requirement source	BD Table: User, Clients, Partners
Requirement priority	☐ High / Essential ☐ Average / Desired ☐ Low / Optional

INTRODUCTION

- The system must allow managing, that is, creating, modifying and deleting user, customer and partner accounts.

TICKETS

- Cedula, Names, Surnames, User Type (Technician, Cashier, Manager), Address, Telephone.

PROCESSES

- To comply with this requirement, you will be presented with a single screen where the system will ask for the corresponding identification as administrator. We are located in the Manage part of the main menu and choose User. The system will ask for the corresponding data of the new user, client or partner then it will verify that there are no blank spaces, in the case of any error it will save the data of the new user. In this same form you can create, modify and save.

DEPARTURES

- The outputs are directed to: Administrator (Manager).
- Error message in the case of not having filled any field.
- Error message in the case of entering an existing identification number or incorrectly entered in the database.
- Error message in cases of entering the data incorrectly, that is, the data format is incorrect.
- Error message when deleting an account as cascading deletions are not allowed.

3.2.3 Functional requirement 3

INTRODUCTION

- The system must allow managing savings books, that is, creating, modifying and eliminating savings accounts.

TICKETS

- Account number, Cedula, Names, Surnames, Address, Telephone.

PROCESSES

- To comply with this requirement, you will be presented with a single screen where the system will ask for the corresponding identification as administrator to carry out the task. We are located in the part of Manage savings accounts. The system will request the corresponding data from the client or partner to open the book, the same one that will verify the data entered into the database. In the case of modifying the data, you have to do so through the account number. Savings accounts cannot be eliminated, simply in case you wish to do so, the savings account will go into an inactive state.

DEPARTURES

- The outputs are directed to: Administrator (Manager), Cashier.
- Error message in the case of not having filled any field.
- Error message in the case of entering an existing account number or incorrectly entered in the database.
- Error message in cases of entering the data incorrectly, that is, the data format is incorrect.

3.3 Non-functional requirements

3.3.1 Performance requirements

The network infrastructure, as well as its terminals must comply with standards according to the IEEE in the way of connection to the equipment, to have minimum response times.

- Number of terminals to handle:
- There will be a database server in the headquarters of the cooperative.
- Number of simultaneous users:
- The number of users that will interact simultaneously with our system is 3 users.

3.3.2 Security

System security is by:

Use of passwords for each user (administrator, cashier, loan officer). This will allow only authorized people to have access to the system.
System login records.
Creation of roles and assign them to each user depending on their functionality.

3.3.3 Reliability

It is one of the factors that will give confidence to the client, for which the system is controlling all types of transactions and is capable of responding to all types of incidents.

3.3.4 Availability

The system has been developed taking into account the needs, requirements, rules, policy, mission, objectives, etc. From the cooperative, which is why 80% of the time of the day is available taking into account that the day has 24 hours; while 20% of the time is for administrative tasks on the system.

3.3.5 Maintainability

The system has parameterizable characteristics which will allow future maintenance. In other words, every three months a preventive maintenance will be carried out, in charge of doing it are the developers.
Maintenance will be carried out twice without any economic surcharge, after these two reviews will have additional costs.

3.3.6 Portability

One of the advantages of using tools and languages based on free sw is guaranteeing portability. In this way:

- 99.9% of the application is portable for the simple fact of using the JAVA language and platform.

3.4 Other requirements

INTELLECTUAL PROPERTY

The product license cost will be valued by the number of users that connect.

4 Appendices