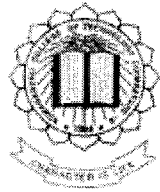




P-1907



MATERIAL MANAGEMENT

By

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Of

**KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE**

A PROJECT REPORT

Submitted to the

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In partial fulfillment of the requirements

for the award of the degree

of

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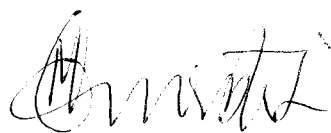
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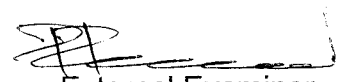
Certified that this project report titled **Material Management** is the bonafide work of **Mr. R.Ramkumar** who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.


Project Guide


Head of the Department

Submitted for the University Examination held on 3-7-2007


Internal Examiner


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Company Certificate



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PROJECT / INPLANT TRAINING / INTERNSHIP CERTIFICATE

This is to certify that Mr. / Ms. R. RAMKUMAR

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" MATERIAL MANAGEMENT "

in our ROOTS INDUSTRIES LIMITED. during

the period from DEC'06 to JUNE'07

During this period his / her conduct was GOOD.


(KAVIDASAN)

GENERAL MANAGER - CORPORATE HRD.

Abstract

ABSTRACT

Materials management is the branch of logistics that deals with the tangible components of a supply chain. Specifically, this covers the acquisition of spare parts and replacements, quality control of purchasing and ordering such parts, and the standards involved in ordering, shipping, and warehousing said parts.

Material Management concerns the flow of inventory to, within and from an organization. It seeks a balance between shortages and excesses under conditions of uncertainty of materials in an organization. Effective management of materials is crucial to the performance of an organization. More over materials costs are usually a firm's largest expenditure .Operating with fewer inventories offers a firm a competitive advantage on the other hand an organization operating with improper material management will suffer heavy losses.

Developed in ASP as Front-end this Project aims at proper management of inventory to the company by providing necessary reports to the management and thus reducing the inventory handling cost, time and effort.

This project **Material Management** is designed to meet the requirements of Roots industries,Coimbatore.

Acknowledgement

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Introduction

CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

Materials management is the branch of logistics that deals with the tangible components of a supply chain. Specifically, this covers the acquisition of spare parts and replacements, quality control of purchasing and ordering such parts, and the standards involved in ordering, shipping, and warehousing said parts.

This project aims at maintaining an efficient way in handling inventory at Roots Industries, Coimbatore. This project maintains information about a product right from raw material to finished goods including quality information and also marketing information.

The reports that are provided by the project help the management by providing timely information about the stock level in the organization.

The users of the system are the administrator and employees of the organization. They should be registered first, after registration the details are furnished to the server. The registered users can directly access the system by giving the login and password details.

1.2 ORGANIZATION PROFILE

Roots Industries Limited has its headquarters at Coimbatore. Its MD MR.K.Ramaswamy has mastered in Automobile Engineering from Lincoln Technical Institute, USA. He is one of the world famous authorities in Electric Horns and has established himself his reputation as a designer, inventor and innovator. The company was started in 1970 and it has been a dominant player for the last 10 years in the Indian market in an uncontested manner.

Roots is a leading supplier to all major vehicle manufacturers like MERCEDES BENZ, MITSUBISHI, TOYOTA, FIAT, LANCER, TELCO, TVS SUZUKI, HONDA etc.

Roots has many credits for its innovation. Roots is the first horn company to get ISI approval for its horns and also ISO 9001. It is the first horn manufacturer in Asia to bag the QS 9000, 1998. Roots is the first company to get E certification from Europe for its products. Its technical collaboration with Robert Bosch in 1995 has helped it further to strengthen its R&D activities and technical competence.

ROOTS GROUP:

- ROOTS INDUSTRIES LIMITED
- ROOTS HORN DIVISION
- ROOTS AUTO PRODUCT
- ROOTS PRECISION PRODUCT
- ROOTS POLYCRAFT
- ROOTS NATURE CURE HOSPITAL

1.3 SYSTEM SPECIFICATION

1.3.1 SOFTWARE SPECIFICATION

Front end	:	ASP.NET
Middle Tier	:	VB
Back end	:	SQL Server 2005
Operating System	:	Windows XP

1.3.2 HARDWARE SPECIFICATION

Processor	:	Pentium IV
RAM	:	512MB
Hard Disk	:	80GB

1.4 DEVELOPMENT ENVIRONMENT

1.4.1 ASP .NET

ASP.NET is more than the next version of Active Server Pages (ASP); it is a unified Web development platform that provides the services necessary for developers to build enterprise-class Web applications. While ASP.NET is largely syntax compatible with ASP, it also provides a new programming model and infrastructure that enables a powerful new class of applications. You can feel free to augment your existing ASP applications by incrementally adding ASP.NET functionality to them.

ASP.NET is a compiled .NET-based environment; you can author applications in any .NET compatible language, including Visual Basic, C# and Jscript.NET. Additionally, the entire .NET Framework platform is available to any ASP.NET application. Developers can easily access the benefits of these technologies, which include a managed Common Language Runtime environment, type safety, inheritance, and so on.

ASP.NET has been designed to work seamlessly with WYSIWYG HTML editors and other programming tools, including Microsoft Visual Studio.NET. Not only does this make Web development easier, but it also provides all the benefits that these tools have to offer, including a GUI that developers can use to drop server controls onto a Web page, as well as fully integrated debugging support.

Developers can choose from the programming models when creating an ASP.NET application, or combine these in any way they see fit.

Web Forms allows us to build powerful forms-based Web pages. When building these pages, we can use Web Forms controls to create common UI

elements and program them for common tasks. These controls allow us to rapidly build up a Web Form out of reusable built-in or custom components, simplifying the code of a page.

A Web service is a way to access server functionality remotely. Using services, business can expose programmatic interfaces to their data or business logic, which in turn can be obtained and manipulated by client and server applications. Web services enable the exchange of data in client-server or server-server scenarios, using standards like HTTP and XML messaging to move data across firewalls. Web services are not tied to a particular component technology or object-calling convention. As a result, programs written in any language, using any component model, and running on any operating system can access Web services.

Both of these options can take full advantage of all ASP.NET features, as well as the power of the .NET Framework and .NET Framework Common Language Runtime.

ASP.NET not only takes advantage of performance enhancements found in the .NET Framework and runtime, it has also been designed to offer significant performance improvements over ASP and other Web development platforms. All ASP.NET code is compiled rather than interpreted, which allows early binding, strong typing, and just-in-time (JIT) compiling to native code, to name only a few of its benefits. ASP.NET is also easily factorable, meaning that developers can remove modules (a session module, for instance) that are not relevant to the application being developed. ASP.NET also provides extensive caching services, both built-in and caching APIs. ASP.NET also ships with Performance Counters that developers and system administrators can monitor to test new applications and gather metrics on existing ones.

ASP.NET configuration settings are stored in XML-based files, which are human readable and writable. Each of your applications can have a distinct configuration file and you can extend the configuration scheme to suit your requirements.

ASP.NET provides easy-to-use Application and Session state facilities that are familiar to ASP developers and are readily compatible with all other .NET Framework APIs.

One of the greatest benefits of ASP.NET is that it reduces the amount of coding that is needed to write an application.

ASP.NET uses compiled code, whereas ASP pages were interpreted every time the page was run, in ASP.NET, the first time a page is run, it is compiled into a .NET class. The class is then stored in a cache and the cached version of the class will be used on any future calls to the page.

The .NET Framework and ASP.NET provide default authorization and authentication schemes for Web applications. These schemas can be easily removed, added to, or replaced depending upon the needs of the application.

HTTPRuntimeSupport accessing databases from ASP.NET applications is an often-used technique for displaying data to Web site visitors. ASP.NET makes it easier than ever to access databases for this purpose - and provides for managing the data in the database.

ASP.NET provides a simple framework that enables Web developers to write logic that runs at the application level. Developers can write this code in either the global.asax text file or in a compiled class deployed as an assembly. This logic can include application-level events, but developers can easily extend this framework to suit the needs of their Web application. ASP application code,

written in the global.asa file, is completely supported in ASP.NET. You can simply rename global.asa to global.asax when upgrading from ASP.

ASP.NET offers complete syntax and processing compatibility with ASP applications. Developers simply need to change file extensions from .asp to .aspx to migrate their files to the ASP.NET framework. They can also easily add

ASP.NET functionality to their applications with ease, sometimes by simply adding just a few lines of code to their ASP files.

1.4.2 SQL SERVER

It is a client/server relational database system. One of the most outstanding systems is Microsoft's SQL server. There are three main reasons why SQL server is the best choice for a broad spectrum of end users and database programmers building business applications.

- SQL Server is the best database system for Windows NT and Windows 95/98, because it is tightly integrated with these two operating systems.
- SQL Server is the easiest database system to use along with well known user-interface. It offers several tools to create database objects, tune database applications and manage system administration tasks and for that it uses dozens of wizards.
- Bundling of two products in one - SQL Server itself and decision support services – will bring the overall system to a winning position. The ability to use one system for operational task as well as for mission-critical applications is all users want and need.

Features of SQL Server:

- Cost of ownership is lower than competitors
- Runs under NT Server and Windows 95/98
- Scalable to meet enterprise-wide needs
- Supports Data Replication
- Supports Data Marts and Datawarehouses
- Online analytical processing now built into SQL Server
- English query makes data more available to casual users
- Data Transformation services enable easy exchange of data
- Supports Distributed transactions
- Network independent
- Built-in fault tolerant
- Supports ANSI-92 SQL and extensions
- Centralized Management
- Visual administration tools and Wizards
- Supports multiple clients
- Internet / Intranet connectivity
- Supports many development tools
- Integrates well with Microsoft Office

Some of the key terms of Relational Databases are,

A table is a collection of data about specific topic. A database might contain many tables, each being further refinement of related data. A table may contain different records and fields. We can set primary key for the fields. The tables can be created in various ways using wizards.

A record is a row from a table, where as a field is a column from a table. The table fields may contain different data type and different property.

Also a table may contain various records. New records can be easily added and updated. Also the deletion of an existing record is quite easy.

A query is a stored set of database record selection commands. The query indicates exactly which data you want to view or edit, based on search criteria that you specify.

We can create relationships between two existing tables. This would be a very useful feature. The primary key is a key specified to a field that should not accept null values, only unique values are accepted. This key is widely used in the creation of the table.

1.4.3 Visual Basic .Net

This Visual Basic.Net includes properties, methods, events, design-time and run-time attributes and integrated documentation using XML. Also the coding for this material management system is done very efficiently and easily using these codes.

It can be embedded in web pages. It has no header files. It has improved extensibility and reusability. Pervasive versioning considerations in all aspects of language design. A set of .NET components collectively known as ADO.NET provides efficient access to relational database and variety of data source. Components are also available to allow access to the file system and to directories.

System Analysis

CHAPTER 2

SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

Material Management in the organization is currently performed using MS-Access as both front end and back end. The drawbacks are listed below:

- MS-Access had to be installed in all the systems separately with the product license.
- This led to increase in cost and time.
- If the implementation of one system changes, then all other components should be recompiled.
- Any user can access the system.
- The main drawback in the existing system is security was less and facilities like authentication were absent.
- Data redundancy.
- Data inconsistency.
- Access and retrieval of relevant information requires considerable overhead.

2.2 PROPOSED SYSTEM

The proposed system is uses ASP.Net as front end and SQL server as backend. ASP. Net is a server side scripting language which is used to create high performance web server applications which makes the proposed system effective.

The features of the proposed system provide the consolidated way of synchronizing the employees by authentication process for logging in. The employees can then visit the site and view the data. Advantages of the proposed system are

- ASP.Net is easy to create because manual linking and compiling of program is not required.
- ASP files ensure that the page is browser independent.
- Completely integrated into HTML files.
- Sql server is designed using relational database model. That supports working in internet, database window and use customized tools.
- Run block of codes selectively and improves compilation performance.



2.3 FEASIBILITY ANALYSIS

Feasibility analysis is the measure of how beneficial or practical the development of Information System will be to the Organization. Once the scope of the problem has been identified and initial analysis of the system has been completed, the feasibility of the project and the software to be developed is put under the test. This is done at this point to basically verify whether the software which is to be developed meets the scope and whether the project is feasible to do. Preliminary investigations would reveal whether the entire project would be possible to carry out in the current environment. The three stages of feasibility analysis are described below.

2.3.1 TECHNICAL FEASIBILITY

Technical Feasibility is the measure of practicality of a specific technical solution and the availability of technical resources and expertise. It centers on the existing computer system (hardware, software, etc.) and to what extent it can support the new addition. The technical issues that have to dealt with in this phase are regarding the technology the system uses and its modifiability. It be verified that the system would be within the state of the art and defects, if any can be reduced to a level matching the application needs. Other considerations include:

- Existing of the necessary technologies.
- Capacity of the proposed system to hold the required data.
- Ability of the system to respond accurately to all inquiries.
- Scope of expandability of the system

- Technical guarantee of accuracy, reliability, ease of access and data security.

When all of the above mentioned features have been considered and the result is found to be positive, then the system development is said to be technically feasible.

2.3.2 OPERATIONAL FEASIBILITY

Operational Feasibility asks if the system will work when it is developed and installed. It checks for the support of the management, the current business methods, user's involvement and their attitude towards the proposed system, etc.

The proposed system is said to be operationally feasible only it meets all the requirements of the client. The proposed system has found encouraging from all type users as the system is said to flexible to the users and its operations are transparent as it the makes use of the loosely coupled architecture called as the service oriented architecture (SOA). The operations performed in the system are transparent as it provides for the supports variety of technologies besides the proper handshaking is followed.

2.3.3 ECONOMIC FEASIBILITY

Economic feasibility is the measure of the cost-effectiveness of the proposed system. The investment to be made in the proposed system must prove a good investment to the organization by returning benefits equal to or exceeding the costs incurred in developing the system.

The proposed benefits of the system will outweigh the costs to be incurred during system developed since the system does not require

procurement of additional hardware facilities it is economically feasible. In addition capability of the system to incorporate future enhancement will improve the performance to suit the future need of the client organization.

System Design And Development

CHAPTER 3

SYSTEM DESIGN AND DEVELOPMENT

3.1 DATAFLOW DIAGRAMS

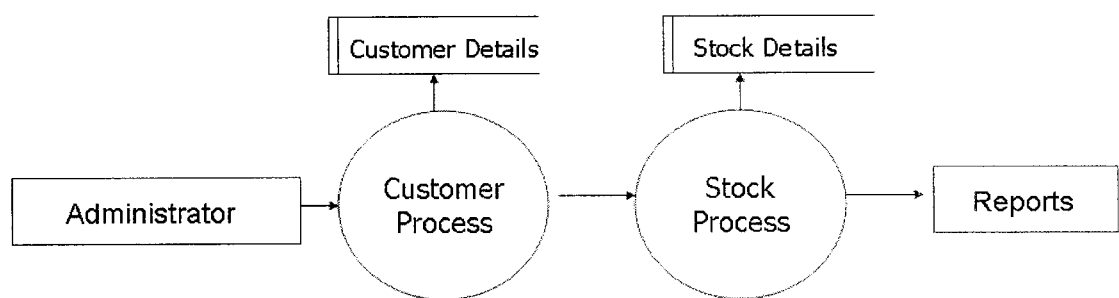
A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. A data flow diagram can also be used for the visualization of data processing (structured design). It is common practice for a designer to draw a context-level DFD first which shows the interaction between the system and outside entities. This context-level DFD is then "exploded" to show more detail of the system being modeled.

These DFDs provide a graphical representation of the information flow in the Material management project.

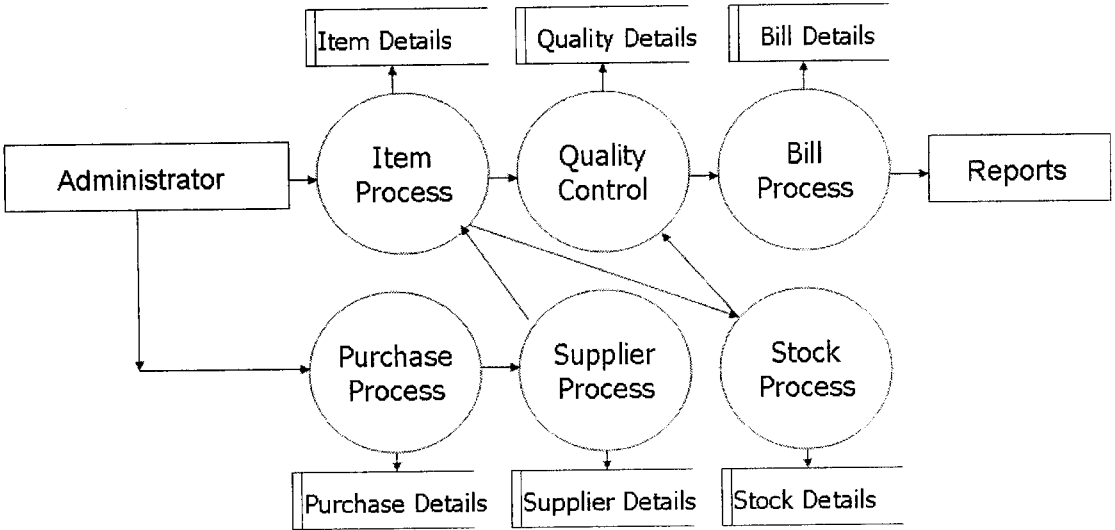
3.1.1 LEVEL 0 DFD



3.1.2 LEVEL 1 DFD



3.1.3 LEVEL 2 DFD



3.2 ELEMENTS OF DESIGN

System Design is the most creative and challenging phase in the development of a software system. Design implies to a description of the final system and the process by which it is developed. The first step is to determine what input data is needed for the system and then to design a database that will meet the requirements of the proposed system. The next step is to determine what outputs are needed from the system and the format of the output to be produced.

During the design of the proposed system some areas where attention is required are:

- What are the inputs required and the outputs produced?
- How should the data be organized?
- What will be the processes involved in the system?
- How should the screen look?

The steps carried out in the design phase are as follows:

- File Design
- Modular Design
- Input Design
- Output Design
- Database Design

Features of a well defined system

In design an efficient and effective system is of great importance to consider the human factor and equipment that these will require to use. System

analyst must evaluate the capabilities and limitations of the personal and corresponding factors of the equipment itself.

The characteristics associated with effective system operation are:

- Accessibility
- Decision making ability
- Economy
- Flexibility
- Reliability
- Simplicity

3.2.1 File Design

Software tools are used to describe, manipulate and manage data. Database files are the key source of information into the system. It is the process of designing database files, which are the key source of information to the system. The files should be properly designed and planned for collection, accumulation, editing and retrieving the required information. The objectives of the file design are to provide effective auxiliary storage and to contribute to the overall efficiency of the computer program component of the system.

3.2.2 Module Description

It is always difficult for any System Development team to grasp a system without breaking it into several smaller systems. These smaller systems will be a part of the original system yet they will be independent in the sense that they will incorporate within them the major functionalities of the proposed system.

A software system is always divided into several subsystems which make it easier to develop and perform tests on the whole system. The subsystems are known as the modules and the process of dividing an entire system into subsystems is known as Decomposition.

The modules identified Material Management are as below:

- Admin module
- Resource Management
 - Item details entry module
 - Customer Details entry Module
 - Purchase & Supplier Details Entry Module
 - Stock Maintenance Module
- Marketing Information Module
- Reporting module

3.2.2.1 Admin Module

A Material management administrator, or sysadmin, is a person employed to maintain, and operate this Material management system. A System Administrator must demonstrate a blend of technical skills and responsibility.

The duties of a system administrator are wide-ranging, and vary widely from one organization to another. Here the Material management Admin is usually charged with installing, supporting, and maintaining servers or other computer systems, and planning for and responding to service outages and other problems. In this Material management system the administrator is responsible for granting and evoking permissions to the users (organization's Employee) to work with the system.

The administrator module gives the following functionality for the admin with the system,

- **Adding and deleting users**

In this phase, the admin sets privileges to the existing users and also create or delete users.

The different types of privileges that are followed are,

- **Normal User** - A normal user is capable of only viewing the information in the system. He is not allowed to edit or enter information in the system. Employees who are authorized to take reports from the existing information are set to this type of privilege.
- **Privileged user**- a privileged user is allowed to make use of the system completely apart from admin's functions. He can add or edit the information related to item, supplier, customer, marketing information. He is not allowed to set privileges and adding or deleting user information which are tasks of admin.

- **Changing Password**

The admin or user can change their own password under their login id. The password change can be done whenever the admin or user feel it is not good to have the same password.

- **Create User**

The administrator has the full privilege such that he is allowed to create a new login id for any new user and also for new administrator's too. Each can have their own login id and password.

- **Marketing Personnel Information entry**

The information related to marketing personnel like the number of items that are sold, area or location, period of sales etc are entered into the system. The admin is also responsible for assigning a unique ID for every sales personnel. This helps the management to get a complete view about the sales in the organization.



Figure 3.1 Admin Home Page

3.2.2.2 Resource Management Module

Resource management is the efficient and effective deployment of an organization's resources when they are needed. Such resources may include financial resources, inventory, human skills, production resources, or information technology (IT).

One resource management technique is resource leveling. It aims at smoothing the stock of resources on hand, reducing both excess inventories and shortages.

In the resource management module, the information that is necessary for the system is entered. This module deals with providing necessary input screens that are used to enter information.

The data that is entered into the system can be categorized as follows,

- Item details
- Customer Details
- Purchase Details
- Supplier Details
- Stock Details

- **Item Details:**

The item details interface has Item ID, item name and type, unit of measure of the item. The unit of measure is given in order to show how the item is measured in terms of its weight. A separate field is used to select the color for the item. Lead time is important as it shows in how many days the item has to be delivered.

In the table that stores the details about the item, the Item ID is maintained as the primary key; with help of this ID an item can be uniquely identified.

- **Customer Details:**

In the Customer details interface¹, the user has to enter Customer details such as Customer ID, Customer Name, Company Name, Address, etc. The details will be updated in the SQL database. The Customer ID is the primary key. Transactions with the employee are done with the help of customer ID.

- **Purchase Details:**

Each purchase is maintained through the purchase details form. The company may purchase one or more items from the same supplier. Each item is distinguished by the item id but the whole transaction has the same purchase id. The form also includes details such as purchase date, quantity of items and total amount.

MATERIAL MANAGEMENT

PURCHASE DETAILS ENTRY FORM

[BACK](#) [HOME](#)

Purchase ID	p002	p002
Purchase Date	2/8/2006	May 2007
Supplier ID	s002	
Supplier Name	murali	
Item ID	002	
Item Name	plastic	
Price	200	
Quantity	10	
Total Amount	2000	

[CUSTOMER DETAILS](#)
[ITEM DETAILS](#)
[SUPPLIER DETAILS](#)
[PURCHASE DETAILS](#)
[MATERIAL PERSON DETAILS](#)
[STOCK DETAILS](#)
[RECEIPT DETAILS](#)
[QUALITY](#)
[USER CREATION](#)
[LOGOUT](#)

Local intranet

figure 3.2 Purchase Details entry form

- **Supplier Details:**

The supplier details interface determines the details of various suppliers of the company. This is used to display the entire details of the supplier who are providing the item. The supplier cannot be contacted directly and contact can be made only through proper channels. The contact person details are obtained from the Supplier Company and acts as a liaison between the two firms.

- **Stock Details**

Stock details of all items are recorded. This page is responsible for holding the minimum, maximum and current stock for every item in the company. This informs the responsible staff about the current stock level for an item. In case if the current stock is less than the minimum level, then a reorder procedure is carried out at the company.

- **Quality Control:**

Quality Control is done in order to check whether the raw materials are manufactured according to the needed specification. Once the raw materials are delivered the quality department checks them and if the materials does not match the specification. If the delivered material specification is less than the required specification it is rejected and if it is more than the required specification they are sent back to be reworked.

The screenshot shows a web browser window displaying a 'QUALITY CONTROL' form under the heading 'MATERIAL MANAGEMENT'. The browser's address bar shows 'Done' and 'Local intranet'. The form has a sidebar on the left with the following menu items: [CUSTOMER DETAILS](#), [ITEM DETAILS](#), [SUPPLIER DETAILS](#), [PURCHASE DETAILS](#), [MARKETING PERSON DETAILS](#), [STOCK DETAILS](#), [RECEIPT DETAILS](#), [QUALITY](#), [USER CREATION](#), and [LOGOUT](#). The main content area contains the following fields and buttons:

- Date (dd/mm/yy):** Select Date (dropdown menu)
- Item Id:** 12
- Item Name:** Blow Horn
- Specification:** 20mm
- Received:** 400
- Accepted:** 376
- Rejected:** 20
- Reworked:** 4
- Buttons:** Submit, Delete, View, Update, New, Report
- Navigation:** << BACK, HOME

figure 3.3 Quality Control Form

3.3 INPUT DESIGN

Input design is the process of converting user-originated inputs to computer-based format. Input data are collected and organized into groups of similar data. Validations are made for each and every data entered in the screens for data accuracy.

The entire project is implemented using ASP.NET. The information such as User Id and Password are given in the input screen, which is verified for correctness and then all the processes are done. All users are registered initially and then logged in. If the input fails, then the user should retry it.

On each click of the controls used the respective screens are opened. Each screen has Textboxes, Label and Buttons. All the screens are interactive with the user in accepting and displaying data requested by the user.

All the data entered are recorded in the respective database table, specified in the SQL statement and stated in the executing system. Each time the data is entered, verifications are done to ensure no errors are committed and to confirm its accuracy.

The first step in design is to design input within predefined guidelines. Inaccurate input data are the most common cause of errors in data processing. Errors entered by data entry operators can be controlled by input design. The following are some of the constraints that were used in input design for input validation,

- Specifying maximum length of each field.
- Specify the format for the data field, which are entered.
- Listing the values, where necessary.

- Formats of same data in different screen are the same.
- Exception handling is properly provided

3.3 OUTPUT DESIGN

Computer output is the most important and direct source of information to the user. Efficient and intelligent output design should improve the system's relationships with the user and help in decision making. A major form of output is a hard copy from the printer.

Printouts should be designed around the output requirements of the user. The output devices are considered depending on factors such as compatibility of the device with the system, response time requirements, expected print quality, and number of copies needed.

The types of output used in the system are internal output, interactive output, turn-around output and data item. The internal outputs are those, whose destination are within the organization and are the user's main interface with the Computer.

The standards for printed output suggest the following:

- Give each output a specific name or title.
- Provide a sample of the output layout, including areas where printing may appear and the location of each field.
- State whether each output field is to include significant zeroes, spaces between fields and alphabetic or any other data.
- Specify the procedure for providing the accuracy of output data.

The output design focuses on to serve the intended purposes, to fit the user, deliver the appropriate quality of output. Based on the need and requirements of the various departments, the outputs were designed with much care and consideration.

3.4 DATABASE DESIGN

A database is a collection of inter-related data stored with minimum redundancy to serve many users quickly and efficiently. The general objective of database design is to make the data access easy, inexpensive and flexible to the user. An elegantly designed database can play a strong foundation for the whole system. The overall objective in the development of database technology has been to treat data as an organizational resource and as an integrated as whole. Database Management System allows data to be protected and organized separately from other resources.

The details about the relevant data for the system are first identified. According to their relationship, tables are designed through the following method.

- The data type for each data item in the table is decided.
- The tables are then normalized.

The tables are normalized so that they can provide better response time, have data integrity, avoid redundancy and be secure. Database management system provides a centralized access to the data from the programs. The main objectives of database design are data integration and data independence.

The tables for the Result Analysis system have been normalized up to the Second Normal Form (2NF). A store of integrated data capable of being directly addressable for multiple users is database. It is organized so that various files can be accessed through a single reference based on the relationship among the records in the file rather than the physical location.

Table Name: Login_detail

Description : To store login details of Administrators and Employees

Column Name	Data Type	Length	
User_name	Varchar	20	
Password	Varchar	20	
User_type	Varchar	10	

Table Name: Item_detail

Description : To store the details of the item or product

Column Name	Data Type	Length	
Item_id	Varchar	10	Primary Key
Item_Name	Varchar	20	
Type	Varchar	20	
Unitofmeasure	Varchar	5	
Mrp	Numeric	6	
Color	Varchar	10	
Leadtime	Numeric	10	

Table Name : Cust_Detail**Description : To store the details of the Customer**

Column Name	Data Type	Length	
Cust_id	Varchar	10	Primary key
Cust_name	Varchar	20	
Company_name	Varchar	20	
Address1	Varchar	40	
Address2	Varchar	40	Allow null
Phone	Numeric	15	
Mobile	Numeric	15	
Email	Varchar	20	
Fax	Numeric	15	

Table Name: Supp_detail**Description : To store the details of the suppliers**

Column Name	Data Type	Length	
Supp_id	Varchar	10	PrimaryKey
Supp_Name	Varchar	20	
Supp_com_name	Varchar	20	
Contact_per_name	Varchar	20	
Address	Varchar	40	
City	Varchar	15	
State	Varchar	15	
Pincode	Numeric	6	
Email	Varchar	20	

Table Name: Purchase_detail**Description : To store the details of the item purchase**

Column Name	Data Type	Length	
Pur_id	Varchar	10	Primary Key
Pur_date	Datetime	8	
Supp_id	Varchar	10	Foreignkey
Supp_name	Varchar	20	
Item_id	Varchar	10	Foreignkey
Item_name	Varchar	20	
Price	Numeric	8	
Qty	Numeric	8	
Tot_amt	Numeric	8	

Table Name: Stock_detail**Description : To store the details of the item stock**

Column Name	Data Type	Length	
Item_id	Varchar	10	
Item_Name	Varchar	20	
Min_stock	Numeric	8	
Max_stock	Numeric	8	
Saf_stock	Numeric	8	

Table Name: Mkt_detail**Description : To store the details of the marketing personnel**

Column Name	Data Type	Length	
Person_id	Varchar	10	Primary Key
Person_Name	Varchar	20	
Address	Varchar	40	
City	Varchar	15	
State	Varchar	15	
Pincode	Numeric	6	
Phone_no	numeric	15	
Mobile_no	Numeric	15	
Email	Varchar	20	
Fax	Numeric	15	

Table Name: Qty_Dts**Description : To store the details of the quality inspection**

Column Name	Data Type	Length	
Qty_Id	Varchar	10	PrimaryKey
Date	Datetime	8	
Item_id	Varchar	10	Foreignkey
Item_name	Varchar	20	
Spec	Varchar	8	
Recd	Numeric	8	
Accepted	Numeric	6	
Rejected	Numeric	6	
Reworked	Numeric	6	

Table Name: Receipt_detail**Description : To store the details of the Receipts**

Column Name	Data Type	Length	
Rece_no	Numeric	10	PrimaryKey
Rece_date	Datetime	8	
Pur_id	Varchar	10	Foreignkey
Supp_id	Varchar	10	Foreignkey
Supp_name	Varchar	20	
Item_id	Varchar	10	Foreignkey
Item_name	Varchar	20	
Rate	Numeric	8	
Qty	Numeric	8	
Tot_amt	Numeric	8	

System Testing and Implementation

CHAPTER 4

SYSTEM TESTING AND IMPLEMENTATION

4.1 SYSTEM TESTING

Testing is a critical element of software quality and assurance and represents the ultimate review of specification design and coding. It is a vital activity that has to be enforced in the development of any system. This could be done in parallel during all the phases of system development. The feedback received from these tests can be used for further enhancement of the system under consideration. The testing phase conducts test using the Software Requirement Specification as a reference and with the goal to see whether the system satisfies the specified requirements.

Standard procedures have been followed in testing Material Management system. Test cases are generated for each screen. These test cases will cover every possibility which could result in both positive and negative results. These test plans are maintained for any further testing done on the system. The test plan stores information such as, the test script/input, expected output, actual output, comments and the name of the tester. This plan will be followed for all types of testing done in the system.

The main types of tests carried out are:

- Unit Test
- Integration Test
- System Test

4.1.1 Unit Testing

Module or Unit Testing is the process of testing all the program units that make up a system. Unit testing focuses on an individual module thus allowing one to uncover all the errors made logically and while coding in the module.

Each page is tested separately as a unit. Initially the flow of control and data through that page is checked. When considering a module as a unit, the flow of data and control through the whole module is tested. The result is stored in the test plan. In a page, each control is further tested in unit testing. The process is done in all the pages of the system. Once the errors are rectified, the testing procedure is repeated with same test cases to ensure this hasn't produced new errors. Hence this is a continuous process.

Test cases were generated to test the control flow of each unit or module. Almost all cases needed for testing control flows have been generated.

4.1.2 Integration Testing

Integration testing tests the process of integrating the various modules to form the completed system. Integration starts with a set of units each individually tested in isolation and ends when the entire application has been built. Integration testing verifies that the combined units function together correctly. It facilitates in finding problem that occur at interface or communication between the individual parts.

In this project top-down integration testing is followed. Modules were linked to the main menu in a sequence as required in the real time operating mode of the system. Menu items were created as and when required for the integration. The same procedure is followed in other modules in the same level

at first. Then the upper level is taken into action. The flow of data through the whole module in the upper level is taken and executed. A change of data made in one screen should have reflected in all other screens.

This process is continued from the page level to module level, finally to the system level. In the final stage, the whole system is taken together and tested for integration. A change in one place should be reflected through out the system. Regression testing is done after each change made into the software. This tests if the change has affected any part negatively after the change was made. The whole set of test cases need to be run again to do the regression testing. Data can be lost across the interfaces; one module may have adverse effect on other. Thus integration testing is a systematic testing for constructing tests to uncover errors within the interface.

In this project each and every module are combined and the program is tested as the whole. Integration testing is for testing the design and construction of the software architecture.

4.1.3 System Testing

System testing is actually a serious of different tests, whose primary purpose is to fully exercise the computer-based system. This helps in verifying that all the system elements have been properly integrated and perform the allocated functions. It verifies the entire product after having integrated all software and hardware components, and validates it according to the original project requirement. The system testing takes into consideration the hardware, and the software. It should be able to be run on the specified hardware for variety of cases. The project is tested against recovery from errors.

Security testing is important in system testing. The system in no way shall be accessible to unauthorized users. Testing is done to ensure that a user with respective rights can only view the various forms and reports presented by the system. If users try to perform something beyond his assigned rights corresponding messages should be displayed. In such cases it redirects the user back to the previous page.

Another security issue involves the sensitive data in the system. The system is highly secure with authentication fixed at various levels of the hierarchy. One more level of security is concerned with user rights. Each user is applied rights module wise. The menus can be configured to roles. Users can also be configured to roles. Menu items are assigned to users dynamically based on the roles assigned to menu items as well as users. A match is done before displaying the menu to the user.

4.1.4 User Acceptance Testing

User acceptance of the system is the key factor of success. The system under consideration is tested for user acceptance by constantly, keeping in touch with the prospective system users at time of developing and making changes whatever required. The input output screen design, online messages to guide the user, menu driven system format of reports are tested.

4.2 SYSTEM IMPLEMENTATION

System Implementation is the part of the software engineering life cycle, where, the design artifacts are converted to a working application. Coding is done in this stage using ASP.NET framework and programming language, which would solve the specific problem the best way. Once the design is coded into a working application, it has to be verified, validated and tested in detail. The tested product if successful is deployed in the user environment. After successful implementation, the change over phase from the existing system to the new system takes place.

Conclusion And Future Enhancements

CHAPTER 5

CONCLUSION & FUTURE ENHANCEMENT

5.1 CONCLUSION

Material Management is designed to help the administrator and employees of the organization in accessing the website to view the process being performed. This helps the organization to a great extent since it enables to view the operations that are done.

The administrator is the sole controller of the project. The administrator can perform the desired operations and he has the authority to assign privileges to the employees.

The system is tested with sample data and was found to be working efficiently. Sample data are tested for invalid Login and the updating of records. The developed system is flexible and changes can be made easily as and when required. The system is efficient so as to facilitate the interactions of customers.

5.2 FUTURE ENHANCEMENTS

This newly developed system is able to meet the requirement of the company. Their requirements may change in the near future. Here are some of the ideas for future enhancements,

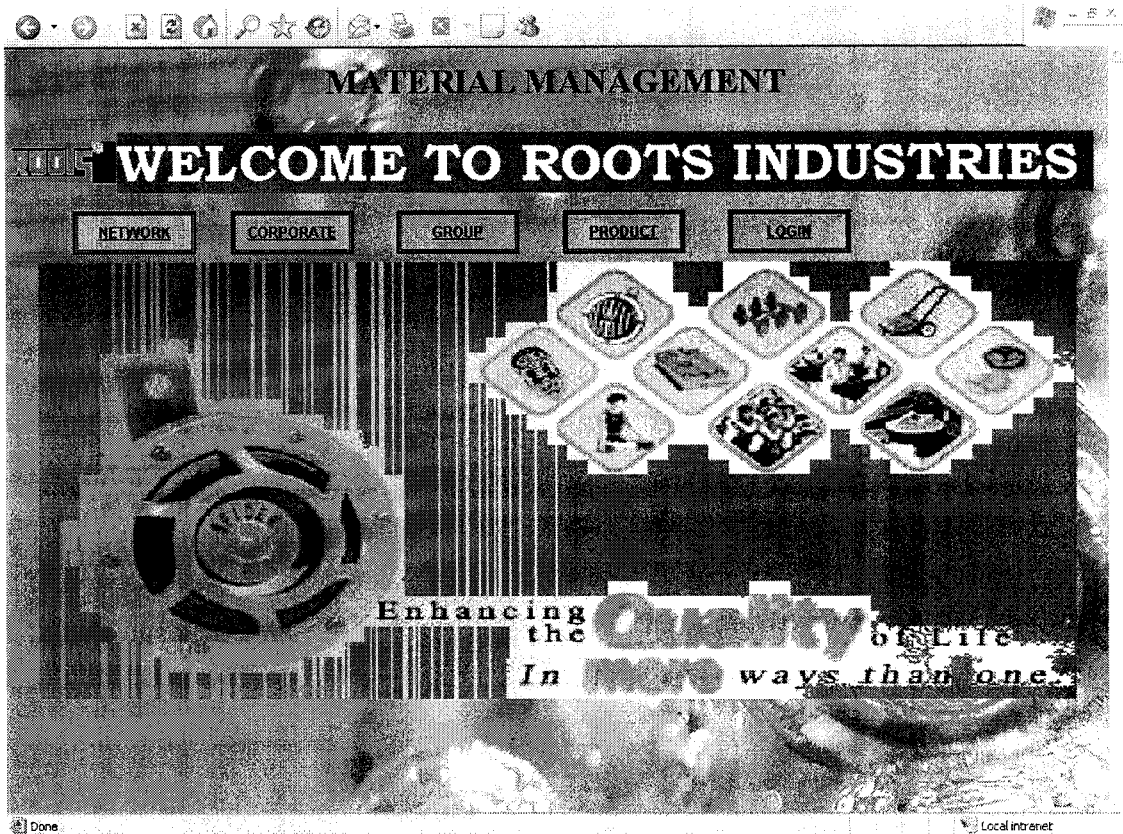
- The system can be linked with the internal mail of the organization so that alert messages like re-order level can be mailed to the respective users or employees.
- RFID systems can be linked with the system to import data into the system.
- The system is now designed to fit in the local area network of the organization, in future it could be transferred to internet.

Appendix

APPENDIX

SCREEN SHOTS

HOME PAGE



LOGIN FORM

The image shows a screenshot of a web browser window. The browser's address bar and toolbar are visible at the top. The main content area displays a login form titled "MATERIAL MANAGEMENT". The form includes a "Back" link in the top right corner. Below the title, there are two input fields: "USER NAME" with the text "admin" and "PASSWORD" with masked characters "•••••". At the bottom of the form, there are two buttons: "LOGIN" and "CANCEL". The browser's status bar at the bottom right shows "Local intranet".

MATERIAL MANAGEMENT

[Back](#)

USER NAME: admin

PASSWORD: •••••

Local intranet

USER FORM

The screenshot shows a web browser window with a toolbar at the top. The main content area has a dark header with the text 'MATERIAL MANAGEMENT' and 'USER FORM' in white. Below the header is a navigation menu with a 'HOME' link. The main content is a table with seven rows, each representing a different category of details. Each row has three columns: 'VIEW', 'REPORT', and 'EDIT'. The table is followed by a large area of text that is mostly illegible due to heavy noise and a small error message: 'Index was outside the bounds of the array.' At the bottom right of the browser window, there is a 'Local intranet' icon.

Category	VIEW	REPORT	EDIT
CUSTOMER DETAILS	VIEW	REPORT	EDIT
ITEM DETAILS	VIEW	REPORT	EDIT
SUPPLIER DETAILS	VIEW	REPORT	EDIT
PURCHASE DETAILS	VIEW	REPORT	EDIT
MARKETING PERSON DETAILS	VIEW	REPORT	EDIT
STOCK DETAILS	VIEW	REPORT	EDIT
RECEIPT DETAILS	VIEW	REPORT	EDIT

Index was outside the bounds of the array.

Local intranet

ADMIN HOME PAGE

The screenshot shows a web browser window with a toolbar at the top. The main content area has a dark header with the text "MATERIAL MANAGEMENT" and "ADMIN HOME PAGE" in white. Below the header is a horizontal navigation bar with buttons for "CHANGE PASSWORD", "CORPORATE", "GROUP", "NETWORK", "PRODUCT", "USERPRIVILEGE", and "HOME". On the left side, there is a vertical menu with the following items: [CUSTOMER DETAILS](#), [ITEM DETAILS](#), [SUPPLIER DETAILS](#), [PURCHASE DETAILS](#), [MARKETING PERSON DETAILS](#), [STOCK DETAILS](#), [RECEIPT DETAILS](#), [QUALITY](#), [USER CREATION](#), and [LOGOUT](#). The central part of the page features a photograph of several industrial drill bits of different sizes and designs. The background of the page has a pattern of water droplets. At the bottom right corner, there is a small icon and the text "Local intranet".

ITEM DETAILS

MATERIAL MANAGEMENT

ITEM DETAILS ENTRY FORM

[<< BACK](#) [HOME](#)

Item ID	13	13
Item Name	Super sonic	
Type	Metal	
Unit of Measure	kg	
MRP	600	
Color	Gold	
Lead Time	3	

CUSTOMER DETAILS
ITEM DETAILS
SUPPLIER DETAILS
PURCHASE DETAILS
MARKETING PERSON DETAILS
STOCK DETAILS
RECEIPT DETAILS
QUALITY
USER CREATION
LOGOUT

Done Local intranet

SUPPLIER DETAILS

MATERIAL MANAGEMENT

SUPPLIER DETAILS ENTRY FORM

Supplier ID: s001 s001 [BASE RESPONSE](#)

Supplier Name: senthil Value Updated

Supplier Company Name: lvs

Contact Person Name: sasi

Address: 12 cvs nagar, Coimbatore.

City: coimbatore

State: tamilnadu

Pincode: 641029

Phone No: 2448565

Email: 9843214455

- [CUSTOMER DETAILS](#)
- [ITEM DETAILS](#)
- [SUPPLIER DETAILS](#)
- [PURCHASE DETAILS](#)
- [MARKETING PERSON DETAILS](#)
- [STOCK DETAILS](#)
- [RECEIPT DETAILS](#)
- [QUALITY](#)
- [USER CREATION](#)
- [LOGOUT](#)

Done Local Intranet

MARKETING PERSON DETAILS

Done Local intranet

MATERIAL MANAGEMENT

MARKETING PERSON ENTRY FORM

[← BACK HOME](#)

CUSTOMER DETAILS ITEM DETAILS SUPPLIER DETAILS PURCHASE DETAILS MARKETING PERSON DETAILS STOCK DETAILS RECEIPT DETAILS QUALITY USER CREATION LOGOUT	MarketingPerson ID	m002	m002
	Name	vjay	Value Updated
	Address	45 skp layout, Kavundampalayam, coimbatore	
	City	coimbatore	
	State	tamilnadu	
	Pincode	641023	
	Phone No	2431245	
	Mobile No	9842234562	
	E-Mail	vjay@gmail.com	
	Fax	65437899	

Submit	Delete	View
Update	Clear	Report

Done Local intranet

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