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Kumaraguru College of Technology
Department of Computer Science and Engineering
Coimbatore– 641006.
APRIL 2003

CUSTOMER RELATIONSHIP MANAGEMENT

Project work done at

SRM SYSTEMS AND SOFTWARE LIMITED
CHENNAI

PROJECT REPORT

Submitted in partial fulfillment of the

Requirements for the award of the degree of

Master of Computer Applications
Bharathiar University, Coimbatore
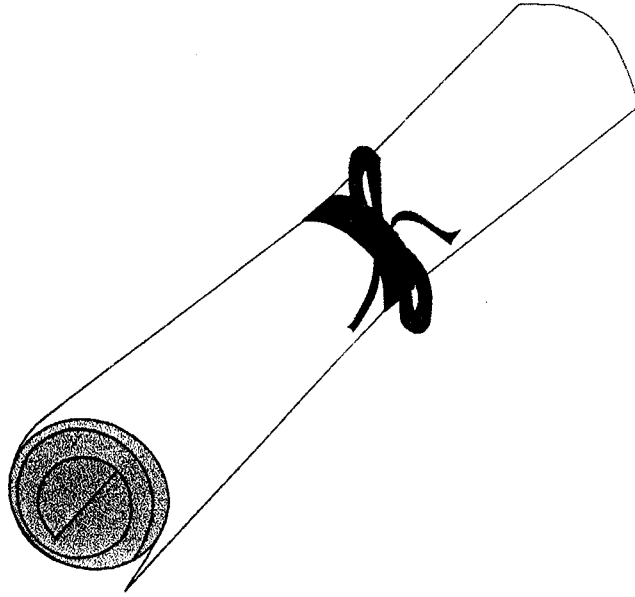
Submitted by

U. MEENAKSHI
Reg. No – 0038M1038

INTERNAL GUIDE

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CERTIFICATE

PROJECT REPORT 2002 - 2003

Certified that this is a bonafide report of

the project work done by

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Mr. Su. Nandakumar, B.E,

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Computer Science & Engineering

Prof. S. Thangasamy, Ph.D.,

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Place: Coimbatore

Date: 16.04.03

Submitted for viva-voce examination held on

16-04.03

Internal Examiner

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SRM
SYSTEMS AND SOFTWARE

08-March-2003

CERTIFICATE

This is to Certify that the Project work entitled **"Customer Relationship Management"** was Analyzed, Designed and Developed by **Ms. U. Meenakshi (Reg. No. 0038M1038)** of **Kumaraguru College of Technology, Coimbatore,** submitted in partial fulfillment of the requirements of degree of **M.C.A.** has been carried out in our organization from December 2002 to March 2003. This project has been developed using **VB.Net & Oracle.**

We wish her success in all future endeavors.

For SRM Systems & Software

Manager - Projects
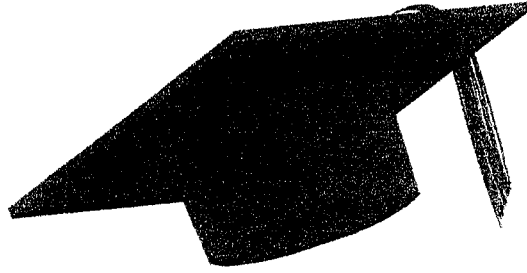
DECLARATION

DECLARATION

I here by declare that the project work entitled

"CUSTOMER RELATIONSHIP MANAGEMENT"

submitted to Kumaraguru College of technology, Coimbatore affiliated to Bharathiar University as the project work of **Master Of Computer Application Degree**, is a record of original work done by me under the supervision and guidance of **Mr. Prakash.K. M.C.A**, SRM Systems and Software Ltd., Chennai and **Mr. Su. Nandakumar, B.E**, CSE Department, Kumaraguru College of Technology, Coimbatore and the project work has not found the basis for the award of any Degree/Diploma/Associateship/Fellowship or similar title to any candidate of any university.
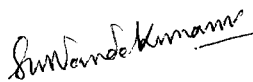
Place: Coimbatore

Date: 16/04/03

(U. MEENAKSHI)

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Countersigned by

(Internal Guide)

Mr. Su. Nandakumar B.E.,

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Coimbatore.

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to a few who have contributed a lot towards the completion of my project.

I express my sincere thanks to **Dr. K.K.Padmanabhan, Ph.D.,** Principal. Kumaraguru College of Technology for extending his kind cooperation.

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I also extend my gratitude to **Mr. K.Prakash,** of **SRM Systems and Software Limited** for allowing me to carry out this project at their organization and guiding me in completing it successfully.

Above all I would like to thank the **LORD Almighty** for all His invaluable blessings and guidance.
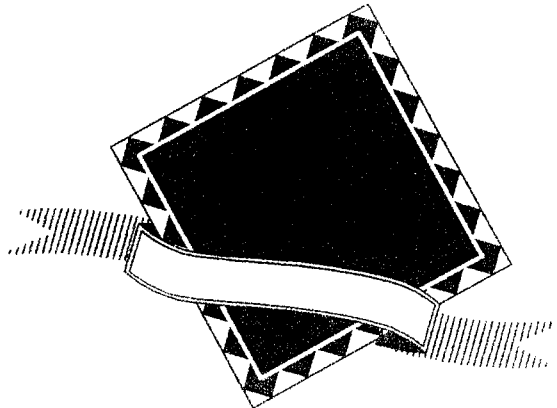
SYNOPSIS

SYNOPSIS

The project entitled **CRM** stands for Customer Relationship Management. It is a strategy used to learn more about customers' needs and behaviors in order to develop stronger relationships with them. After all, good customer relationships are at the heart of business success. The more useful way to think about CRM is as a process that will help bring together lots of pieces of information about customers, sales, marketing effectiveness, responsiveness and market trends.

What is a **CRM** Solution?

- ❖ Software that includes sales, marketing, customer service and customer support automation to exploit cross-functional opportunities for collecting and using information to facilitate selling activities.

- ❖ To realize this solution, a product offering must deliver organizations a seamless, integrated approach to tracking and managing all prospect/customer interactions through the organization to support those collaborative processes that enhance customer interactions through all of the organization's channels.

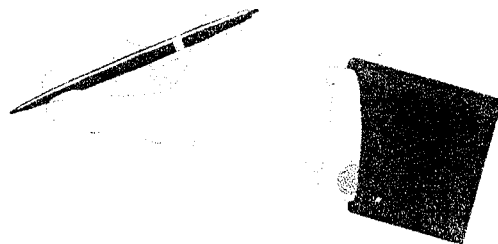The software is developed using "**VB.NET**" as front end and "**ORACLE**" as backend.

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INTRODUCTION

1. INTRODUCTION

1.1 PROBLEM DEFINITION

CRM is a comprehensive solution designed for small to mid sized businesses. The product consists of a suite of fully integrated ready to use applications for managing marketing and campaign management, sales and customer support functions such as helpdesk and general support services. The views are tailored for different types of employees:

> Sales managers
> Sales representatives
> Support managers
> Support representatives

The Customer Relationship Management application is a fully integrated solution for managing marketing and campaign management, sales and customer support functions such as helpdesk and general support services.
The Customer Relationship Management application suite supports the following functional areas

> Marketing Campaigns and Telemarketing Database.
> Contact Management including Accounts, Contacts and History.
> Time Management with a full featured Calendar and To-Do list.
> Sales Force Automation including Opportunity Management, Forecasting and Reporting.
> Customer Support including Service Requests, Tickets and RMA's and a searchable knowledge base.
> Integration with Microsoft office, e-mail and calendar.
> Telephony support and seamless internet integration.

1.2 EXISTING SYSTEM:

The existing system is designed only for marketing and it doesn't concentrate on telemarketing and there is no integration with internet. In the existing system there is no faster and efficient interaction with the clients.

1.3 PROPOSED SYSTEM

The proposed system is designed for both ordinary marketing and telemarketing. One of the primary benefits of CRM is the fact that all the data is stored in a common database whether captured via telephone, fax, email or web. Furthermore the primary goals of developing the product are,

> ➤ Simplify marketing and sales processes
> ➤ Increase customer revenues
> ➤ Cross sell products more effectively
> ➤ Provide better customer service
> ➤ Discover new customers
> ➤ Help sales staff close deals faster

1.4 COMPANY PROFILE:

About the Organization

SRM SYSTEMS AND SOFTWARE LIMITED is a company committed to provide support to small, medium and large corporations in the development and management of software essential to their needs over the entire life cycle of a project or system. All corporations, regardless of size, need to process enormous amount of data in support of the day to day operation of the company and the dependence on a corporate information system and up-grade the existing ones. In seeking efficient and cost-effective approaches to manage change, many companies have found outsourcing to be particularly attractive.

Services

SRM Systems and Software Limited, through its Strategic Business Units offers the following services.

Customized Software Development

SRM can provide complete business turn key solutions to small, medium and large size companies spanning every phase of the software life cycle: System Analysis, Design, Implementation, Testing, Installation and Maintenance. The SRM staff has an accumulated experience of more than 300 man-years in varied application areas. SRM offers software services in the following technology areas:

- ❖ Web Based Applications and e-commerce
- ❖ Client-Server (two-three and n-tier Technology)
- ❖ Group Ware and Workflow
- ❖ Multimedia and Computer Graphics
- ❖ Computer Aided Design and Computer Aided Manufacturing

REQUIREMENT ANALYSIS

2. REQUIREMENT ANALYSIS

2.1 USER REQUIREMENT:

According to a recent article in Harvard Business Review:

> ➤ "On average...US corporations lose half of their customers every five years."

> ➤ "....the longer a customer stays with a company, the more the customer is worth."

> ➤ "....reducing customer defections by as little as five points – from 15% to 10% per year – can double profits."

2.1.1 FUNCTIONAL REQUIREMENTS:

- ❖ Sales – e.g., contact management profiles and history, account management including activities, order entry, proposal generation.

- ❖ Sales management – e.g., pipeline analysis(forecasting , sales cycle analysis, territory alignment and assignment, roll- up and drill-down reporting).

- ❖ Marketing – e.g., campaign management, opportunity management, lead generations/enhancement/tracking.

- ❖ Telemarketing – e.g., call list assembly

- ❖ Customer service and support – e.g., reporting, problem management/resolution, contract management.

2.1.2 COMPONENTS:

These functional components, individually or in combination, are the technological underpinnings to a customer-centric business model. Together they support the core requirements that define a viable CRM solution :

> ➤ - a process that turns prospects into customer, and transforms customers into product/service advocates

> - a construct that allows the organization as a whole to leverage customer information

> - a workflow that supports communication, collaboration and information coordination about, with and from customers

ROLE OF SALES:

❖ The job of Sales is to convert qualified leads into revenue.

❖ Selling successfully depends on detailed account management data captured in the CRM system. What is the contact's role in the buying decision? What has he or she bought before, and what is the current account status? Are there any pending or recently closed service or support issues with the customer?

❖ By capturing all of this information - along with prior communication, correspondence, and proposals – the contact database becomes a vital selling tool.

ROLE OF MARKETING:

❖ Marketing's role is to generate demand. At one level, that means reaching potential customers to make them aware of the company's products and services, following up with requested information, and turning over qualified leads to the Sales organization.

❖ At another level, that means discovering subtle shifts in customer requirements, defining new products and services to meet the need, and positioning them to beat the competition.

CUSTOMER SERVICE ROLE:

- ❖ Enclosing the sale is just the beginning of the customer relationship.
- ❖ Customer Service is responsible for Customer Satisfaction and customer loyalty.

CUSTOMER SUPPORT ROLE:

- ❖ Customer satisfaction and loyalty are largely determined by the responsiveness of customer service and support. A critical element of the customer's experience in a call is the sense that the company knows who the customer is – beginning the moment a customer service agent answers the phone.
- ❖ The agent should be able to see the entire customer's account data, past and pending service and support contacts, and even sales opportunities involving the customer.

Putting it all together...

- ❖ The benefits of CRM go far beyond operational efficient and lowered costs.
- ❖ By fostering increased customer satisfaction and retention, CRM means top-line growth: increased sales, higher win rates, better margins, and greater market share.

2.2 SYSTEM ENVIRONMENT:

2.2.1 Development Environment:

Hardware Specification:

Processor type	:	Intel Pentium IV
RAM	:	128 MB and Above
Hard Disk Space	:	20 GB

Software Specification:

Operating System	:	Windows 2000 Server
Framework	:	Dot Net Framework (SDK)
Tools used	:	Visual Studio Dot Net
Database	:	Oracle 8i

2.2.2 Implementation Environment:

Hardware Specification:

Processor type	:	Intel Pentium IV
RAM	:	128 MB and above
Hard Disk Space	:	20 GB

Software Specification:

Operating System	:	Windows 2000 Server

SYSTEM DESIGN

3. SYSTEM DESIGN

The process of design involves "conceiving and planning out in the mind "and" making a drawing, pattern or sketch of". The design is concerned with identifying software components, the general modular structure of the software, the function provided by each module and the internal data streams and stores that make up the interface between modules.

3.1 MODULAR DESIGN:

The modules in the designed system are,

❖ **Marketing**: This section helps us to setup campaigns, link campaigns to multiple opportunities, calculate returns on campaigns and set up warehouse, where groups of accounts and contacts are still unknown are stored.

❖ **Sales**: This contains limited or filtered view of information. Here we can see only individual contacts, accounts and opportunities.

❖ **Sales Manager**: This contains global view of information. Here we can see all contacts, all accounts, and all opportunities.

❖ **Support**: This contains limited view of information. Here we can see only individual accounts, contacts and tickets.

❖ **Support Manager**: This contains global view of the information. Here we can see all accounts, all contacts and all tickets.

❖ **Telemarketing**: In the Telemarketing section, we can view the call list from the warehouse and can also view the associated campaign for each record.

3.1.1 Marketing and Telemarketing:

The one of sections in the CRM is the Marketing and the Telemarketing Section. The responsibility of the marketing division includes creating new leads. This can be initiated by launching a Campaign. The campaign involves purchasing a list of prospect companies that can use our products. Campaigning can also be done through Telemarketing. In Telemarketing, the telemarketer makes phone calls to the prospective clients. Other ways of campaigning include emails, setting up stalls, newspaper advertising, personally meeting clients etc.

Thus we can create accounts, which contain the entities that we do business. They can be either Leads or Customers. A Lead is an Account that has not yet been fully qualified by the Sales Department. An Opportunity is a chance to get a new business. During the second stage of contact management, a Lead can be converted to an Opportunity. The Calendar graphically represents the events of each day. An appointment is an item on the calendar that has a date, start time and end time. The To – Dos are the lists of activities that has yet to be completed.

3.1.2 Sales and Sales Manager:

The next sections are the Sales and Sales Manager Sections. All opportunities are tracked throughout the sales cycle. Detailed activity logs are maintained to provide an account history of each contact and their role in opportunity, interest level, purchase time frames and required follow up activities. Each time we open an opportunity, the potential and the weighted fields are automatically updated by calculating the gross potential for all the forecasts associated with the opportunity. Expenses can be tracked for an opportunity and can also be attached to an account and contact. A report displays fields from one or more categories in a row column format. They can be viewed in a horizontal or vertical format.

3.1.3 Support and Support Manager:

Support Managers and customer support and service representatives need access to an account's history as soon as the phone rings. Support Application provides completes service and support functionality including call tracking, contract maintenance, problem resolution and knowledge base management. Tickets are used for tracking all support calls that come into a department. The ticket contains information about the source of the call, the inquiry, which the contact is and the resolution.

The History category allows us to track any additional work done on a ticket after the initial call. The History window contains a record of phone calls, letters and emails that have been sent and received. The knowledge is a list of articles that can be used to reference problems and solutions, known defects, procedures, and other support related articles. A contract is a legal agreement between company providing support and the client. The sales and support managers have access to some other views that are not available to other desktops. The different reviews are employee review – contains information about a individual employee, department review – contains information about entire department, Ticket review – to take of the problems / queries faces by the customers.

3.2 PROCESS DESIGN:

3.2.1 Context Diagram:
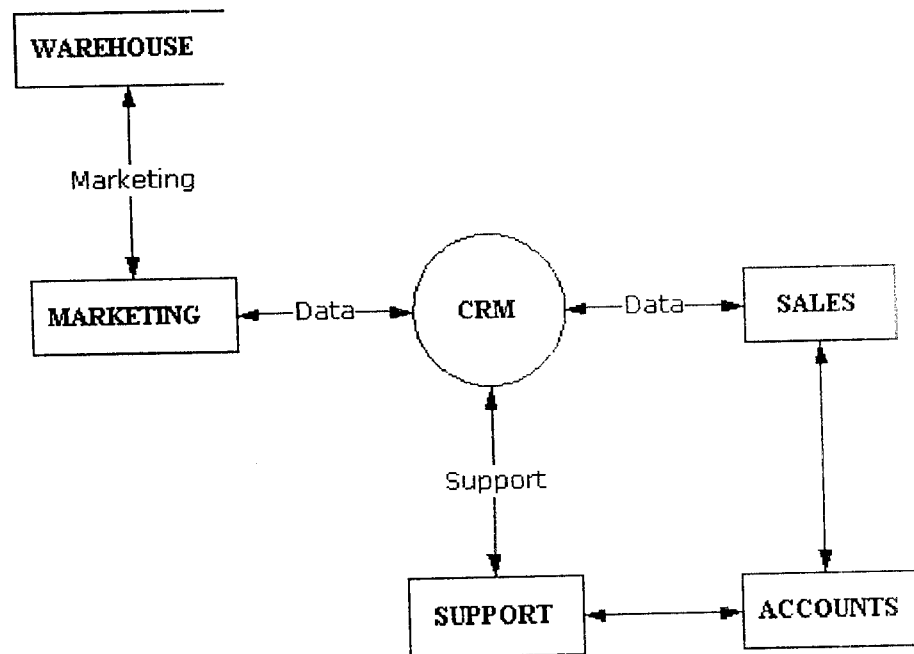
Fig. (i) : Context Diagram of CRM

From the above diagram it is clear that there are three main components for the implementation of the CRM product, namely,

- ❖ Marketing
- ❖ Sales
- ❖ Support

3.2.2 DATA FLOW DIAGRAM:

MARKETING & SALES
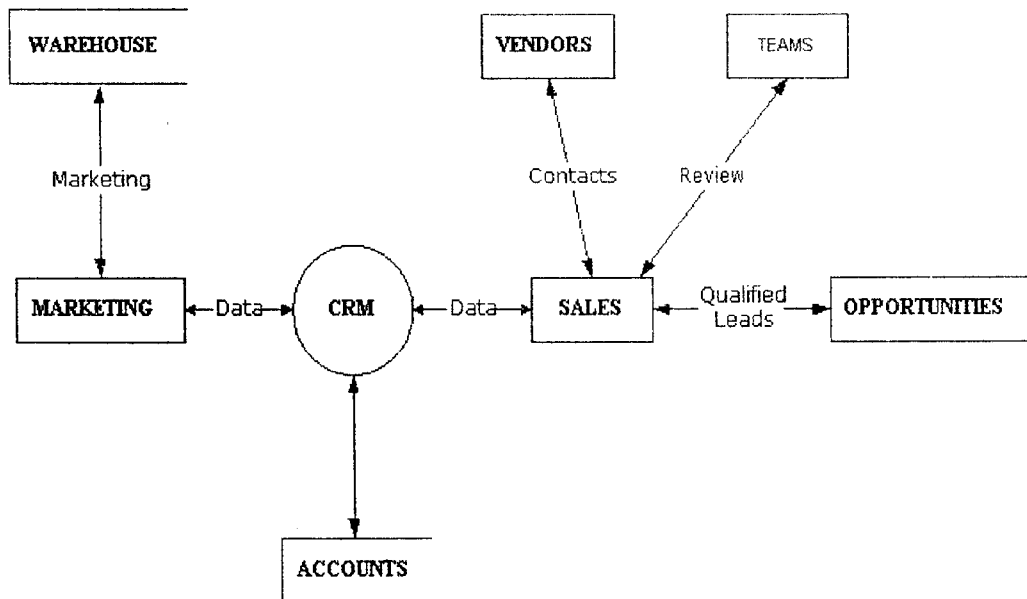
Fig. (ii): diagram for the Marketing and Sales components

From the above diagram it is clear that marketing division involves creation of new leads. This can be initiated by launching a new campaign. During the sales cycle all the opportunities are tracked, i.e., the qualified leads can be converted to an opportunity.

SUPPORT
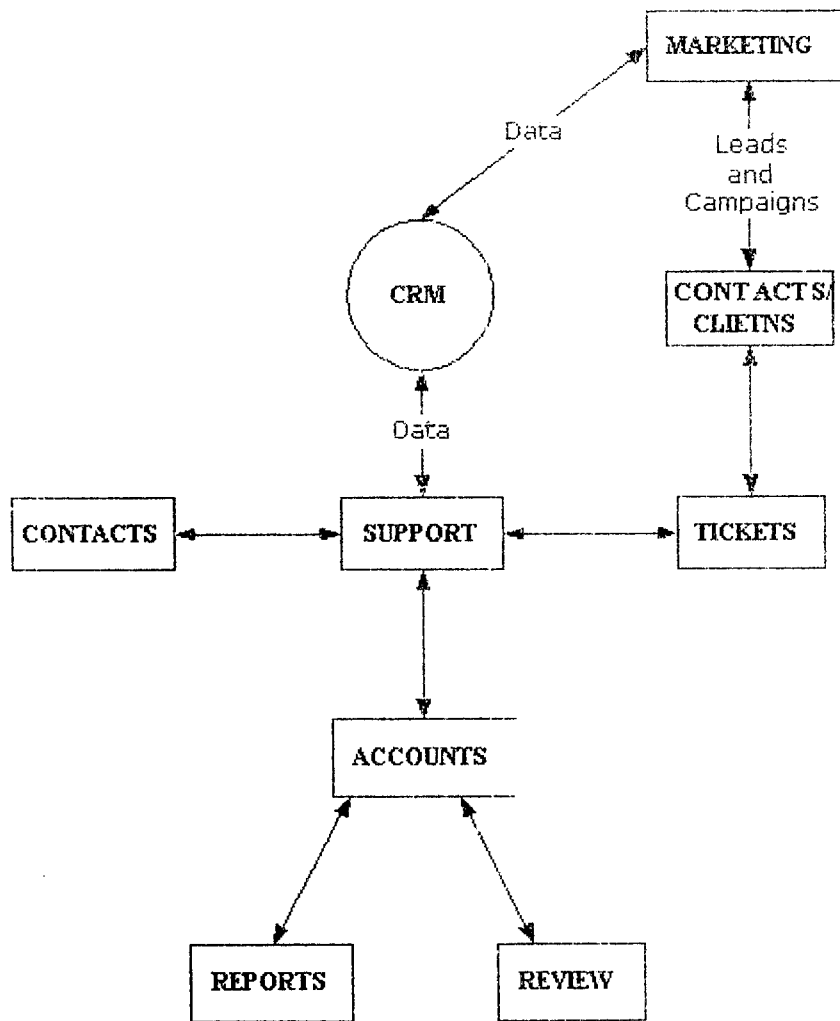
Fig . (iii) : diagram for the Support component

From the above diagram it is clear that support provides complete service and support functionality including call tracking, contract maintenance, problem resolution and knowledge base management.

3.3 DATABASE DESIGN:

Before the database concepts became operational, users had programs that handled their own data independent of other users. It was a conventional file environment where data integration or sharing of common data source applications was possible. In a database environment, common data is available across several applications and are used by several users. Instead of each program managing its own data, authorized users share data across applications with database software managing the database as an entity.

Data structuring is refined through a process called Normalization. Data are grouped in the simplest way possible, so that later changes can be made with a minimum of impart on the data structure.

Normalization is the process of simplifying the relation between data elements in the record. Through normalization, a collection of data in a record structure is replaced by successive record structures. They are simple and more predictable and therefore manageable.

Various objectives are considered for designing the database such as,
- ❖ Control of data integrity
- ❖ Control of redundancy
- ❖ Control of data security
- ❖ Data independence
- ❖ System performance
- ❖ System compatibility

3.3.1 TABLE DESIGN

Department Master

This table stores the details with regard to the each department for its easy identification.

Column Name	Data Type	Description
DepartCode	VARCHAR2(3)	Unique Identification of every Department
DepartName	VARCHAR2(15)	Name of the Department

Accounts Master

Accounts are the entities that we do business with. The accounts table is mainly used to store the details of the companies. An account can be in a variety of different states. A lead or a customer is an example.

Column Name	Data Type	Description
Accounts	VARCHAR2(40)	Unique Identification for every Account/company Name
Address	VARCHAR2(80)	Address of the Account
City, State Zip	VARCHAR2(60)	City, State and Zip of the Account
Phone	VARCHAR2(20)	Phone Number of the Account
Fax	VARCHAR2(20)	Fax number of the Account
URL	VARCHAR2(80)	URL of the Account
DepartCode	VARCHAR2(3)	Department Code—Foreign Key Field

Attachment Master

This table is used to store the details with regard to any proposals to be sent to the companies or individual customers.

Column Name	Data Type	Description
Name	VARCHAR2(50)	Name of the Attachment
Added	VARCHAR2(20)	Whether Added or Not
Modified	VARCHAR2(20)	Whether modified or not
Attached	VARCHAR2(50)	Data to be attached
DepartCode	VARCHAR2(3)	Department Code--- Foreign Key Field

Calendar Master

This table is used to store the details with regard to any appointments and display the same. An appointment is a timed event in the future that can be graphically displayed.

Column Name	Data Type	Description
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field
Appoint Name	VARCHAR2(30)	Name of the Appointment
Accounts	VARCHAR2(40)	Account Name. Foreign Key Field
CurrDate	DATETIME	Current Date
AppointType	VARCHAR2(30)	Type of the Appointment
Contact	VARCHAR2(50)	Contact Person/Company Name
Department	VARCHAR2(30)	Name of the Department
StartTime	DATETIME	Start time of the Department
End Time	DATETIME	End time of the Department
Description	VARCHAR2(50)	Description of the Appointment

Campaign

This table stores the details with regard to campaigns set up by the marketing department. A campaign can be directed towards several contacts.

Column Name	Date Type	Description
Customer	VARCHAR2(30)	Name of the customer
LastName, FirstName	VARCHAR2(30)	Last name, first name of the Employee
MI	VARCHAR2(1)	Middle Name of the Employee
Accounts	VARCHAR2(40)	Accounts Name. Foreign Key Field
Company	VARCHAR2(40)	Name of the Company
DepartCode	VARCHAR2(3)	DepartCode. Foreign Key Field
Camp Name	VARCHAR2(40)	Name of the Campaign
Camp Code	NUMBER(9)	Campaign Code. Foreign Key Field

Contact

This table is used to store the details of the people associated with the Accounts. An Account can have one or many contacts.

Column Name	Data Type	Description
CampName	VARCHAR2(30)	Name of the Campaign
Type	VARCHAR2(30)	Type of Campaign
Potential	NUMBER(9)	Potential of the Campaign
Actual	NUMBER(9)	Actual Output of the Campaign
Est Task	NUMBER(9)	Estimated Task
Cost	NUMBER(8,2)	Cost of the Campaign
Sales	NUMBER(8,2)	Sales in the Campaign
Campcode	NUMBER(9)	Unique Identification of the Campaign

Contract

It serves as a record in the database that describes how we are obligated to support customers.

Column Name	Data Type	Description
ContractId	VARCHAR2(50)	Unique Identification for every Contract
Accounts	VARCHAR2(40)	Name of the Accounts.. Foreign Key Field
Increment	VARCHAR2(50)	Increment Date
Type	VARCHAR2(20)	Type of Contract
Expires	DATETIME	Date of Expiry of the Contract
Remaining	NUMBER(8,2)	Remaining data
DepartCode	VARCHAR2(3)	Department Code.. Foreign key Field

Employee Master

This table is used to store the details with regard to the employees in the concern.

Column Name	Data Type	Description
LastName	VARCHAR2(50)	Last name of the employee
Title	VARCHAR2(40)	
FirstName	VARCHAR2(50)	First name of the employee
MI	VARCHAR2(1)	Middle name of the employee
Salutation	VARCHAR2(5)	Type of Salutation
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field
AccountsPrim	VARCHAR2(50)	Primary Account
Teams	NUMBER(4)	Numbering of teams
Role	VARCHAR2(50)	Role of the employee
Email	VARCHAR2(50)	Email id
Busphone	VARCHAR2(25)	Business phone number
Bdate	DATETIME	Birth date
Extn	NUMBER(9)	Extension number of the Business placement
Fax	VARCHAR2(50)	Fax number
Ecode	NUMBER(9)	Unique identification of the employee

Forecasts

This table is used to store the details with regard to future sales forecast, which is mainly used for report analysis.

Column Name	Data Type	Description
Product	VARCHAR2(40)	Name of the product
Quantity	NUMBER(9)	Quantity of the product
Extended	NUMBER(9)	Extended Product
Notes	VARCHAR2(100)	Notes of the product

History

This table is used to store the history item. A History item is something that happened in the past. Phone calls, meeting notes, and emails are examples. History can be related to Accounts, Contacts and Opportunities.

Column Name	Data Type	Description
HisDate	DATETIME	History Date
Type	VARCHAR2(50)	Type of Data
Notes	VARCHAR2(100)	Notes on the data
Area	VARCHAR2(100)	Area of the data
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field

New Items

This table stores the details of any new products launched in the company.

Column Name	Data Type	Description
Item	VARCHAR2(50)	Name of the Item
ItemDate	DATETIME	Date of the Item
Type	VARCHAR2(50)	Type of the item
Notes	VARCHAR2(100)	Notes on the item
Added_By	VARCHAR2(50)	Item added by whom
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field

Opportunity

This table is used to store the details with regard to the opportunities. Converting a lead usually creates it. Once a lead has been qualified, an Opportunity can be created. An opportunity can have a product Forecast.

Column Name	Data Type	Description
Opportunity	VARCHAR2(50)	Name of the Opportunity
Accounts	VARCHAR2(40)	AccountName. Foreign Key Field
EstClose	DATETIME	Estimated Close
Potential	NUMBER(9)	Potential of the Opportunity
Problem	VARCHAR2(10)	Any Problem or not y/n

Reports

This table is used to store the details with regard to the reports generated.

Column Name	Data Type	Description
Report Type	VARCHAR2(50)	Type of the Report
Report Name	VARCHAR2(20)	Name of the Report
Description	VARCHAR2(100)	Description of the Report
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field

Response

This table is used to store the details of the tracked responses with regard to a launched campaign. One measure of the effectiveness of a campaign is the number of responses it prompts.

Column Name	Data Type	Description
Outpop	VARCHAR2(100)	Population response
Inpop	VARCHAR2(100)	In population response
Date	DATETIME	Response Date
CampName	VARCHAR2(50)	Name of the Campaign
Method	VARCHAR2(50)	Method adopted
Campcode	NUMBER(9)	Campaign Code. Foreign Key Field

Review

This table is used to store the details with regard to reviews of the types Department, Tickets, Support Reviews. Review displays the activities of those employees who have support role in the company.

Column Name	Data Type	Description
Accounts	VARCHAR2(40)	Accounts Field. Foreign Key Field
Address	VARCHAR2(50)	Address of the Accounts
City, State Zip	VARCHAR2(50)	City, State and Zip of the Accounts
Business	VARCHAR2(50)	Business nature of the Accounts
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field
EmpName	VARCHAR2(30)	Employee Name Field
EmpCode	NUMBER(9)	Employee Code. Foreign Key Field

Tickets

This table is used to store the details of the tickets generated. A Ticket is a record in the database that contains information related to a Customer calling in for support.

Column Name	Data Type	Description
Ticket ID	VARCHAR2(50)	Unique Identification of the ticket
Accounts	VARCHAR2(40)	Accounts Field. Foreign Key Field
CSR	VARCHAR2(50)	Displays activities of employees who have a role in the company
Open	VARCHAR2(1)	Problem is sorted or not.
Problem	VARCHAR2(200)	Description of the problem

To Do

This table is used to store the details of a task that must be performed some time in the future. It has a due date but no specific date.

Column Name	Data Type	Description
ToDo	VARCHAR2(100)	Description of the work to be done
DueDate	DATETIME	Due date of the work to be done
Type	VARCHAR2(50)	Type of the work to be done
Priority	VARCHAR2(4)	Priority of the work
DepartCode	VARCHAR2(3)	Department Code.. Foreign Key Field
Contact	VARCHAR2(50)	Contact Name of Company/Person

Vendor

This table is used to store the vendor details (particularly after sales).

Column Name	Data Type	Description
Contact	VARCHAR2(50)	Contact name of the Person/Company
Title	VARCHAR2(50)	Title of the Vendor
Role	VARCHAR2(40)	Role of the contact person
Phone	VARCHAR2(30)	Phone number of the contact person
Fax	VARCHAR2(30)	Fax number of the contact person
DepartCode	VARCHAR2(3)	Department Code. Foreign Key Field
Accounts	VARCHAR2(40)	Accounts Field.. Foreign Key Field

Warehouse

Warehouse is a place where groups of Accounts and Contacts still unknown are stored. Example is a purchased list of potential customers.

Column Name	Data Type	Description
Contact	VARCHAR2(50)	Contact name of the Person/Company
Company	VARCHAR2(50)	Name of the Company
Type	VARCHAR2(20)	Type of Company
Phone	VARCHAR2(30)	Phone number of the contact person
Fax	VARCHAR2(30)	Fax number of the contact person
Email	VARCHAR2(50)	Email id of the contact person/company

3.3.2 ENTITY RELATIONSHIP DIAGRAM:
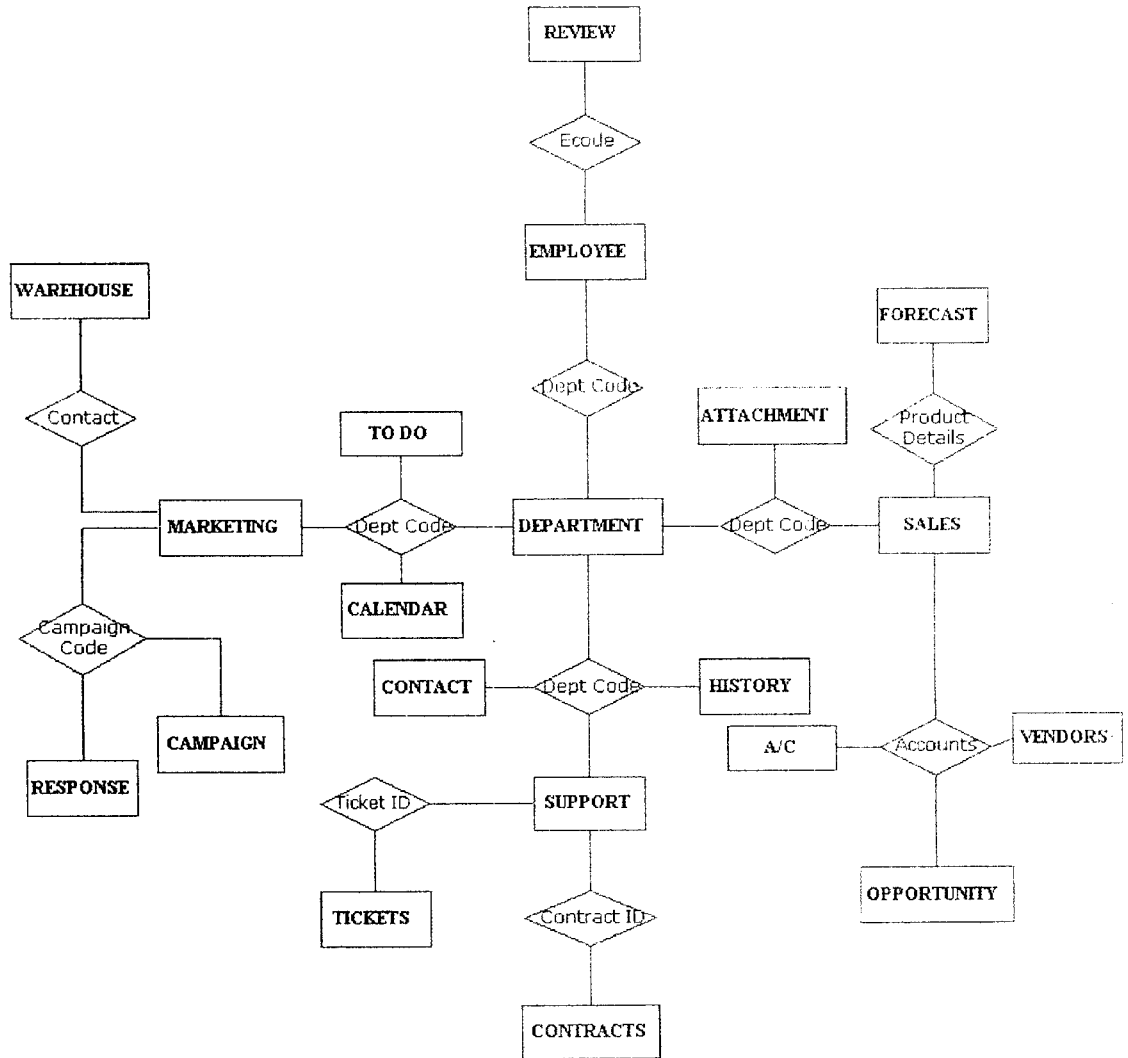
Fig . (iv) : depicts the Entity Relationship Diagram of the system.

3.4 SCREEN DESIGN:

3.4.1 Marketing - Campaign Screen:

3.4.2 Warehouse Information Screen:

Contact	Company	Type	Phone #	Fax #
Simmons.Roberta	AeroPlane Company		312-789-1223 x	
Donaldson.John	Crown Cooling Corp		(972)671-1902 x202	(972)671-1905
Hallock.Linda	Eagle's View Aviation		(908)552-0073 x	(908)974-9835
Piper.Tom	Great Homes Inc.		(206)231-3922 x	
Kleson.George.H.	Ocean Aire		(908)522-0466 x	(908)974-9835
Robinson.Gary	State Shuttle Inc		(401)563-1122 x35	(401)563-1125
Wagner.Art	Wagner Designs		(609)935-1116 x	(609)935-1150
Abbot.Willard.H.	Weston Electric		(111)456-7893 x543	(111)456-7899
Bayerd.Alice.N.	Weston Electric		(111)456-7894 x565	(111)456-7899
Davidson.Zoe.B.	Weston Electric		(111)456-7898 x455	(111)456-7899
Harrison.Kenneth.G.	Weston Electric		(111)456-7897 x455	(111)456-7899
Miller.Sally.K.	Weston Electric		(111)456-7891 x435	(111)456-7899
Norton.Mike.G.	Weston Electric		(111)456-7895 x567	(111)456-7899
Paterson.Wally.M.	Weston Electric		(111)456-7892 x122	(111)456-7899
Royce.Tina.G.	Wing and a Prayer		980-513-6300 x455	980-513-6315

Marketing
Sales
Sales Manager
Support
Support Manager
Telemarketing

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3.4.3 Sales Entities Screen:
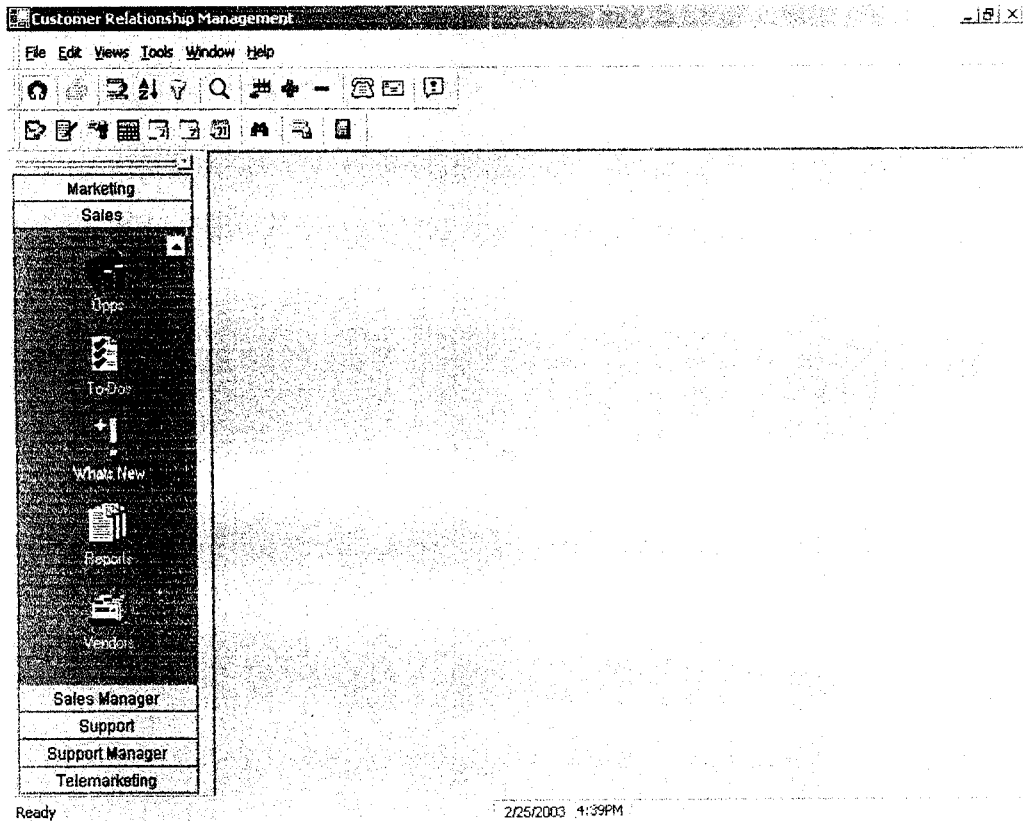
3.4.4 Sales – Calendar Screen:
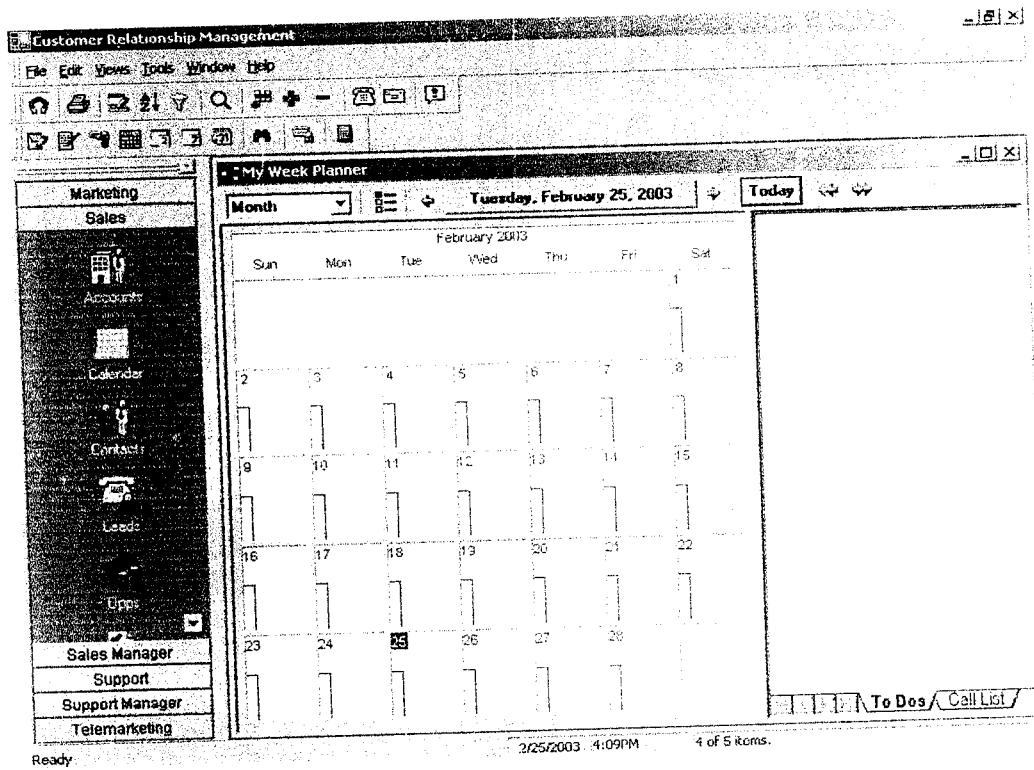
3.4.5 Appointment Entry Screen:

3.4.6 Sales – Contact Review Screen:

3.4.7 Attachment Entry Screen:

3.4.8 Add Item - To Do Screen:

3.4.9 Sales Manager – Teams Review Screen:

3.4.10 Sales Representative Review Screen:

3.4.11 Support – Ticket Tracking Screen:

3.4.12 Support – Contract Details Screen:

IMPLEMENTATION
&
TESTING

4. IMPLEMENTATION AND TESTING

4.1 IMPLEMENTATION TOOLS:

The Microsoft .NET Strategy

Microsoft .NET, represents the next generation of software that connects our world of information, devices and people in a unified, personalized way. With this next generation connected applications, Microsoft sees a paradigm shift away from the dumb terminal model of computing where devices connect to servers, to a model away from the constellations of computers, devices and services work together to deliver a richer user experience.

Visual Studio .Net

Microsoft Visual Studio .Net and the Microsoft .Net Framework supply a complete solution for developers to build, deploy, and run XML Web Services.

Visual Studio .Net is the next generation of Microsoft's popular multi-language development tool, built especially for .Net, Visual Studio .Net helps developers quickly build Xml Web services and applications that scale easily. Visual Studio .Net advances the high-productivity programming languages Microsoft Visual Basic, which includes new object oriented programming features; Microsoft Visual C++, which advances Windows development and enables us to build .Net enabled applications; and C# , which brings RAD to the developers of C and C++.

The .Net Framework is a high-productivity, standards based, multi-language application execution environment that handles essential plumbing chores and eases deployment. It provides an application execution environment that manages memory addresses versioning issues, and improves the reliability, scalability, and security of your application. The .NET Framework consists of several parts, including the common language runtime, a rich set of class libraries for building XML Web Services, and ASP.NET.

Application Platform

With Visual Studio .NET and the .NET Framework, Microsoft .NET provides a leading application development environment in which to create XML Web Services and other applications. .NET offers a complete and comprehensive family of servers including Windows 2000 Server and .NET Enterprise Servers with reliability, availability, stability and manageability at the lowest total cost of ownership in the industry.

Oracle 8i

Oracle is one of the most powerful, secure and popular RDBMS (Relational Database Management System) available. The Oracle server provides efficient, reliable secure data management for applications ranging from high volume on-line transaction system to query intensive data warehouse application. Oracle not only supports the complex data management, but it is also provides the tools to manage the systems, flexibility to distribute the data to users effectively.

Reasons for using Oracle 8i

There are many features available in it that makes it the primary choice selection as the backend.

❖ **Powerful Flexible SQL Language**

Oracle offers a number of robust SQL extensions that allows complex operations to be expressed in SQL, improving developer productivity by reducing the need for procedural code.

❖ **Shared Compiler SQL**

Stored procedures in database triggers are stored in compiled form, allowing them to execute directly without recompilation or parsing, resulting in an optimum runtime performance.

❖ Sophisticated SQL Optimizer

Oracle's numerous, powerful query processing techniques are completely transparent to the end user. Oracle optimizer dynamically determines the most efficient access paths and joins methods for everyday query.

❖ Productive Application development

Oracle's stored procedures and triggers improve application development, scalability and productivity by allowing common procedures to be developed once and maintained in a central location instead of in every application.

❖ Mirrored, multisegment log

Oracle also supports read only table saving time by eliminating backup and recovery of static data. Oracle includes a number of features that promote high availability in the presence of media failures or error mirrored, multisegment log ensures that critical log data remains available if all log device fails.

❖ Transparent distributed Query

With oracle, a simple SQL statement can query data from multiple databases and even perform complex join of data physically stored in different servers. Location transparency allows the application to be developed without knowledge of the location of the data.

❖ Reliable Query results

Oracle effectively supports mixed workload environment characterized query or update activity always provide users with consistent query results, while never imposing a performance penalty on concurrent update activity.

❖ Superior scalability for transaction processing

The architecture of oracle provides OLTP applications with scalability to support large number of users and high volumes of transaction workloads. OLTP applications take processors or machines. such as in the case of a clustered environment. which improves individual transaction response times and overall system throughput.

4.2 TESTING:

Testing is a process of executing a program with intent of finding errors. During testing, the program to be tested is executed with a set of test cases and the output of the program is evaluated to determine if the program is performing as expected.

4.2.1 TEST CASES:

Computer software considers two types of test cases as one to test the specific function of the product called as black box testing and the other to test the internal working of the product called as white box testing.

Black box testing examines some functional aspects of a system with little regard for the internal logical structure of the software. It enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program. It attempts to find errors in categories as incorrect or missing function, interface errors, errors in data structures or external data base functions, performance errors and initialization / termination errors. Black box testing is applied during the later stages of testing, since it disregards control structure and focus on information domain.

White box tests focus on the program control structure. Test cases are derived to ensure that all statements in the program have been executed at least once during testing and that all logical conditions have been exercised. White box testing uses the control structure of the procedural design to derive test cases. It can derive test cases that guarantee that all independent paths with in a module have been exercised at once, exercise all logical decisions on their true and false sides, execute all loops at their boundaries and within their operational bounds and exercise internal data structure to assure their validity.

These test cases are applied to achieve more complete testing by uncovering and correcting the highest number of errors in the program.

4.2.2 TEST METHODS:

Having test cases that are good at revealing the presence of false is central to successful testing. Ideally a set of test cases is to be determined such that successful execution of all implies that there are no errors in the program. Each test case needs more effort, machine time to evaluate the results. One possible ideal set of test cases is one that includes all the possible inputs to the program.

UNIT TESTING:

Unit testing focuses on verification effort on the smallest unit of software design of the module. Using the procedural design description as a guide, important control path are tested to uncover errors within the boundary of the module. The relative complexity of the tests and uncovered errors in limited by the constrained scope established for unit testing. The unit test is normally white box oriented. It is considered as an adjunct to the coding step. This testing is also used to ensure the integrity of data stored temporarily.

Some of the various test cases to test the system are as follows:

➤ Giving inconsistent data and out of range values in form level and module level.
➤ Raising unhandled exception causes explicitly.
➤ Auto generation of codes in normal and query mode.
➤ Boundary cases.

UNIT TESTING FOR CRM SOFTWARE:

Each module of the system is tested individually namely, Marketing, Sales, Support, Telemarketing. . Every module is tested with invalid and redundant data. Unit testing done on all these modules helps us to ensure the correct functionality of the modules.

INTEGRATION TESTING:

Integration testing is a systematic technique for constructing the program structure while conducting test to uncover errors associated with interfacing. The objective is to take unit tested modules and build a program structure that has been dictated by design. The sandwich approach combines the top-down strategy for the upper levels of the program structure coupled with a bottom-up strategy for subordinate levels.

INTEGRATION TESTING FOR CRM SOFTWARE:

The system was developed as 6 different modules and when integrated as a whole, it was tested to check if there was proper flow in the entire system. The system when integrated should update the data entered in the previous module as we enter into the next module.

SYSTEM TESTING:

System testing is actually a series of different tests whose primary purpose is to fully exercise the computer-based system. Although each test has a different purpose, all work to verify that all system elements have been properly integrated and performed allocated functions·

SYSTEM TESTING FOR CRM SOFTWARE:

The system was tested after integrating all the 6 modules, which were developed individually and tested to check if the flow of data through the system was correct, the testing process worked out smoothly and tested as mentioned above.

VALIDATION TESTING:

It is a final series of software testing. Validation succeeds when software functions in a manner that can be reasonably expected by the customer. It is achieved through a series of black box test that demonstrate conformity with requirements. The test plan and test procedure are designed to ensure that all the functional requirements are satisfied, all performance requirements are achieved, documentation is correct and other requirements are met.
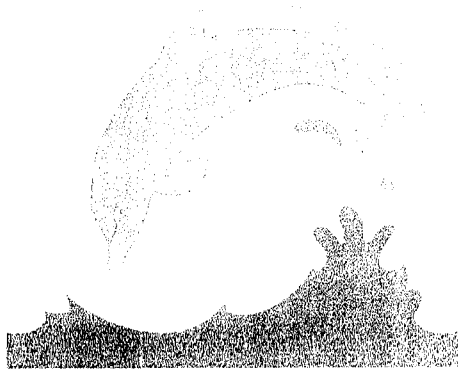
CONCLUSION

5. CONCLUSION

With the roll out of a new product line, companies typically target selected customers and prospects with a special offer. CRM provides tools to develop marketing campaigns, capture and qualify the leads developed, and continuously monitor campaign effectiveness. Using CRM product, Marketing can quickly generate a group of customers who meet the perquisites, and then send a mailer describing the new products.

Using CRM's Lead Analysis, Marketing managers can easily track the effectiveness of each of its promotional campaigns and make adjustments.

Today, customers expect marketing to be "one – to – one," which can be expensive. However, CRM's Sales and Marketing Automated Processes enable personalized mass communication at a low cost. Thus it provides a wealth of features that automate best practices throughout the Marketing process, from campaign design, execution, and tracking to lead collection and information fulfillment, scripted qualification and cross- selling. With a qualified lead and a scheduled sales appointment, CRM can now organize, automate and manage the entire sales cycle.

CRM's opportunity manager also provides an effective tool for establishing and managing a structured selling process.

CRM's service and support is optimized to streamline calls for service and technical support, yet leverage a common customer database with the sales and marketing teams.
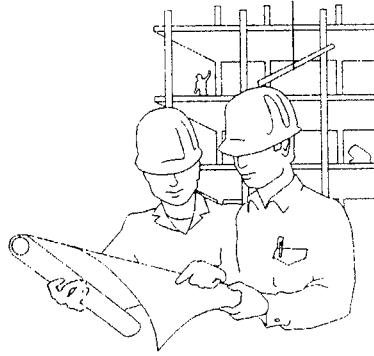
SCOPE FOR ENHANCEMENT

6. SCOPE FOR ENHANCEMENT

FUTURE ENHANCEMENT:

- ❖ Offering a web client that provides full access to both sales and support information (due to the increasingly important role of the Internet in managing an increasingly mobile – even virtual – sales and support team in support of customer relationships.

- ❖ Offering additional extranet capability that extends customer information to business partners and networked "communities".
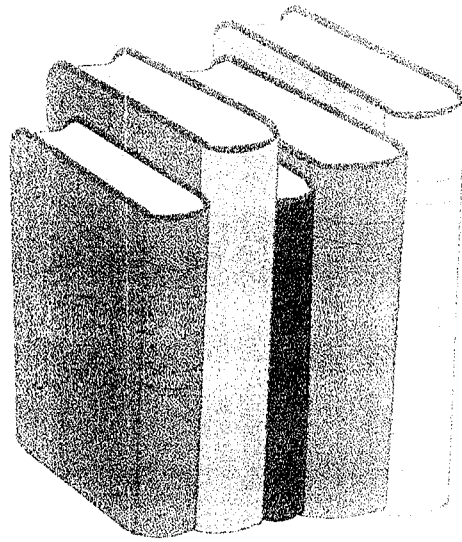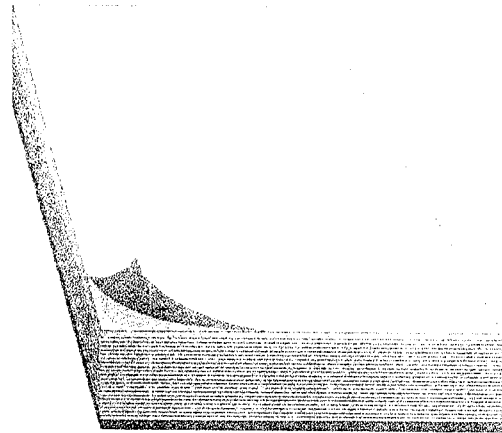
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2. Kris Jamsa, Visual Basic .NET Tips & Techniques, Osborne McGraw-Hill, May 2002.

3. Jeffrey R. Shapiro, Visual Basic.NET: The Complete Reference, Osborne McGraw-Hill, April 2002.

4. Kevin Loney, George Koch, "Oracle 8I; Complete Reference", Osborne McGraw -Hill Publisher, 2000.

WEB SITES:

1. http://www.microsoft.com/net, the definitive resource for what .NET is and why it matters. It includes information for developers, IT pros, and businesses on the advantages of .NET and how to benefit from them.

2. http://msdn.microsoft.com/net, a rich source of information for developers worldwide who want to use .NET technologies and tools.

3. http://msdn.microsoft.com/vstudio/nextgen, Visual Studio .NET home page information for the rapid application development environment Visual Studio .NET

4. http://www.gotdotnet.com, GotDotNet, more than 900 tutorials and code samples that demonstrate the .NET Framework

APPENDICES

8. APPENDICES

SAMPLE REPORTS:

8.1 Sales Representative Reports:

8.2 All Contacts (By Company) Report:

Contact	Title	Type	Business #	Fax #
Aviaonics Inc				
Rubbel.John	VP of Design and Development	Designer	330-555-1905	330-555-1943
Concorde Aviation Ltd				
Findlay.Howard	Purchasing agent	Office Manager	412-555-7090	412-555-7895
Wilbur Orville Industries				
Malick.Charles			513-555-0184	513-555-0185

8.3 All Contacts Report:

Contact	Title	Type	Business #	Fax #	Notes
Findlay,Howard	Purchasing agent	Office Manag	412-555-7890	412-555-7895	
Malick,Charles			513-555-0184	513-555-0185	
Rubbel,John	VP of Design and Development	Designer	330-555-1905	330-555-1943	

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8.4 Contract Summary Report:

8.5 Contract (based to ticket tracking) Report:

Customer Relationship Management

File Edit View Tools Window Help

Marketing
Sales

Opps

To-Dos

What's New

Reports

Vendors

Sales Manager
Support
Support Manager
Telemarketing

Contact - Tickets

Ticket #	Account	Problem	Resolution
[none]			
0701-623EJPJ	Concorde Aviation Ltd	Howard Findlay called to speak with a Sales Representative. He asked if the appropriate representative could call him back.	Will inform Barry Simpson to

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