CUSTOMER RELATIONSHIP MANAGEMENT

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A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report titled

CUSTOMER RELATIONSHIP MANAGEMENT

Is the bonafide work of

Mr. M.THIYAGARAJAN (Reg. No: 71203621058)

Who carried out the research under my supervision Certified further that to the best of my knowledge the work reported here in 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**

We examined the candidate with university Registration Number. 71203621058

In the project Viva- Voce Examination held on 29.06.2006

29/6

INTERNAL EXAMINER

29/6/06

EXTERNAL EXAMINER

Sunvin

Technology Private Limited

May 31,2006

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.M.Thiyagarajan** (Reg No:71203621058) final year student of Master of Computer Applications from Kumaraguru College of Technology, Coimbatore has successfully completed project titled **"CUSTOMER RELATIONSHIP MANAGEMENT SYSTEM"** during the period from Jan 2006 to May 2006.

During this period, his conduct and work was found good.We wish him success for his bright future.

For Sunvin Technology Private Limited,

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ABSTRACT

Customer Relationship Management, abbreviated "CRM," is the term for a business strategy that is designed to improve customer service. CRM is also designed to increase customer satisfaction and gain new customers, thus increasing a business' revenue. CRM is a term that can be applied to software and an entire business strategy.

By integrating this type of software right into a business's daily operations, employees can enter the right data to implement this plan. They ask for addresses and e-mail so that promotional materials can be sent straight to the source. A small fraction of clientele won't want to divulge this kind of information. But the majority will be happy to give it up, because they likely *want* to be notified of sales or special promotions on their favorite brands or products. This data also tells employers who their most frequent and best customers are, because it can track how often (and how much) they are buying. These are the kind of customers you want to drawn into your business on a regular basis.

There are many goals that businesses have when implementing Customer Relationship Management (CRM) techniques and applications. The business wants to improve customer service, which will subsequently improve customer satisfaction. The business also wants to maximize revenue by advertising the right products to the right people. In other words, businesses want to know what customers want. Once a business finds what a customer wants through a CRM method, the business can then provide the customer exactly what he or she desires. This will lead to returning customers, and the gaining of new customers. CRM processes also are designed to monitor all of the contact between customers and companies. Maintaining a positive relationship with one's customers is an essential element in business. Well-rounded CRM works to ensure that this element exists.

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LIST OF SYMBOLS, ABBREVATIONS AND NOMANCLATURE

SQL	-	Structured Query Language
DFD	-	Data Flow Diagram
CRM	-	Customer Relationship Management
MVC	-	Model View Controller
IFS	-	Internet File System
ORDBMS	-	Object-Relational Management System

CHAPTER 1
INTRODUCTION

1.1 OVERVIEW OF PROJECT

The generally accepted purpose of Customer Relationship Management (CRM) is to enable organizations to better serve their customers through the introduction of reliable processes and procedures for interacting with those customers. Major areas of CRM focus on service automated processes, personal information gathering and processing, and self-service.

The modules in the customer relationship management are,

- ✓ Marketing
- ✓ Customer Support
- ✓ Admin
- ✓ Employee Management

1.1.1 OBJECTIVES OF THE SYSTEM

- ✓ Increases business revenues
- ✓ Retain and gain new customers
- ✓ Enhances customer service
- ✓ Reduces time and effort of users

1.2 COMPANY PROFILE

SUNVIN Technology was established in the year 2004. This is one of the growing company whose motto is to provide software development and integration solutions that enable organizations to improve their business processes while retaining more value from their existing investments, thereby increasing their business agility and improving efficiency.

Company mission

To maximize and expand our customer's capabilities by build long-term customer relationships ,By providing high value IT services using our Global delivery model and a world –class employee base with a commitment to customer service, quality and innovation.

Industry focus

- Insurance
- Financial services
- Manufacturing
- Retail
- Health Care
- Transport
- Banking

CHAPTER 2
SYSTEM REQUIREMENT AND SPECIFICATION

2.1 HARDWARE REQUIREMENTS

Processor	:	Intel Pentium III 800 MHz
Primary Memory	:	256 MB SDRAM
Hard Disk Drive	:	40 GB HDD
Display Unit	:	Samsung Color Monitor (15")
Keyboard	:	Samsung108 Keys keyboard
Mouse	:	LG optical mouse

2.2 SOFTWARE REQUIREMENTS

Operating System	:	Windows XP
Database	:	Oracle 9i
Programming Language	:	Java 1.4.2, Servlets, Jsp, HTML
Web server	:	Apache Tomcat v 5.0
Scripting language	:	JavaScript
Web browser	:	IE 6.0
Java Editor	:	Eclipse IDE

2.3 SOFTWARE OVERVIEW

2.3.1 DATABASE

2.3.1.1 ORACLE 9i

Oracle Corporation is the world's leading supplier of software for information management, and the world's second largest software company. Oracle was the first company to release a product that used the English-based structured query language, or SQL. This language allows the end users to extract information themselves, without using a systems group for every little report.

Oracle basically does three things

- Lets you put data into it
- Keeps the data
- Lets you get the data out and work with it

Oracle supports this keep-in-out approach and provides clear tools with considerable sophistication that allows us to find how data is captured, edited, modified and put in; how to keep it securely; and how to get it out to manipulate and how to prepare reports on it.

An object-relational management system (ORDBMS) extends the capabilities of the RDBMS to support object-oriented concepts. We can use oracle as an RDBMS or take the advantage of its object-oriented features. Oracle 8 is the first object-capable database developed by oracle. Oracle 9i, the database for internet computing, provides advanced tools to manage all types of data in web sites. Oracle 8i is an Object Relational Database Management System (ORDMS).

The Internet File System (IFS) combines the power of oracle 8i with the ease of a file system. It allows users to move all of their data into the oracle 8i database, where it can be stored and managed more efficiently. Oracle 8i intermedia allow users to web-enable their multi-media data-including image, text, audio and video data.

Oracle 8i includes a robust, integrated, and scalable Java virtual machine within the server (Jserver), thus supporting java in all tiers of

applications. This eliminates of necessity of recompiling or modifying java code when it is to be developed on a different tier.

With the newly introduced resource management, the DBA can choose the best method to fit an application's profile and workload. The extended features of parallel server and networking improve ease of system administration. The extended functionality of advanced replication results in better performance and improves security.

2.3.2 PROGRAMMING LANGUAGE

2.3.2.1 JAVA

Java is an Object Oriented Programming language developed at Sun Microsystems in June 1995. Java is simple, secure, portable, multithreaded, interpreted, object-oriented, robust, architecture-neutral, high-performance, distributed and dynamic language. The major goal of the Java designers was "write once; run anywhere, anytime, forever". To a great extent this goal was accomplished.

Java is both compiled and interpreted language. Java has a built in compiler known as JIT (just-in-time) compiler which translates the source code to bytecode (.class files). A bytecode is a highly optimized set of instructions designed to be executed by the Java run-time system which is called the Java Virtual Machine (JVM). This JVM is the interpreter for the bytecode. This is how all the Java programs written and compiled once can be run on any machine provided that JVM is installed in that machine.

Benefits of JAVA

Java programming language enables the developer to:

- Write platform independent code
- Develop secure applications that can be transmitted over various networks.
- Build applications that contain various GUI components.
- Enable access to various database and relational database

management systems through JDBC (Java Database connectivity) API.

2.3.2.2 SERVLET

Servlet is a Java programming language class used to extend the capabilities of servers that host applications accessed via a request – response programming model. Here, the request – response programming model is referred to as HTTP (Hyper Text Transfer Protocol).

Advantages of Servlets

- No Need of Plugins

  Servlets run entirely in the Web server, so there is no plug-ins or other requirements placed on the client's web browser.

- Portable

  Since, servlets are written in Java they are portable and can be moved from one web server to another.

- Rapid development cycle

  Servlets has access to entire Java API and thus applications can be developed in quick time

- Performance

  Each client request is executed within a thread, not a process and thus increases performance.

- Security

  Servlets inherit all the built-in security features of the Java programming language.

Servlet Architecture

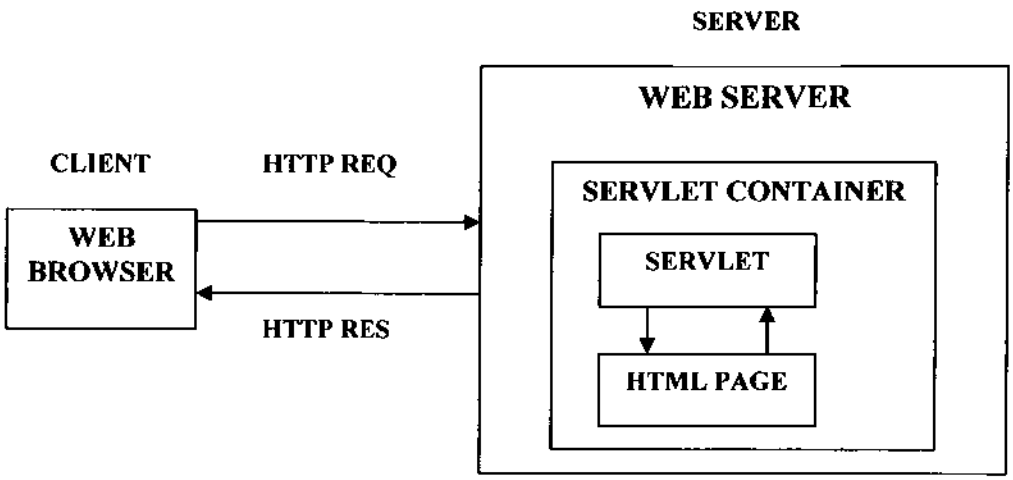


FIG NO 2.3.2.2.1: SERVLET ARCHITECTURE

2.3.2.3 JSP

Java Server Pages (JSP) is HTML document that can contain code from the Java programming language. This allows the HTML documents to go from static to dynamic, since the JSP page is executed in a Java object called servlet.

Advantages of Java Server Pages (JSP)

- Portable

  Java Server Pages use the Java programming language and do not rely on any native code to execute.

- Easy to learn

  The design of JSP makes them usable by Web developers who have minimal programming skills but are well-versed in the areas of Web site development.

- Customizable

  A web application developer can create their own tags allowing them to separate tasks from the visual presentation.

- Automatic Compilation

  Changes made to the JSP pages are automatically compiled by the web server.

JSP ARCHITECTURE

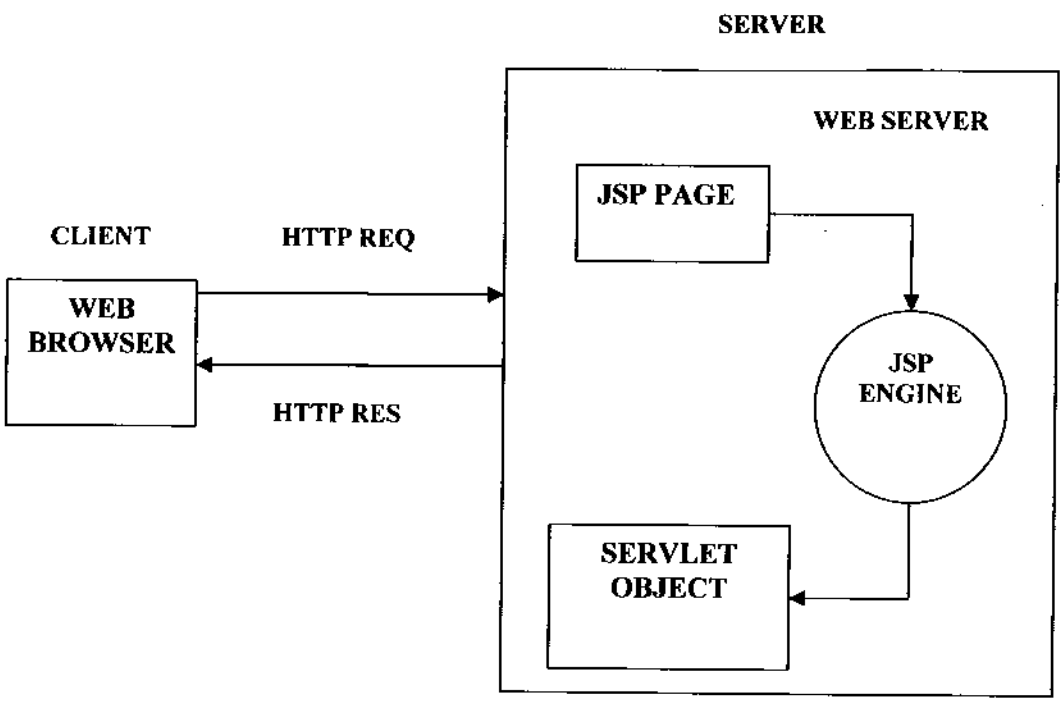


FIG NO 2.3.2.3.1: JSP ARCHITECTURE

2.3.2.4 HTML

HTML stands for Hyper Text Markup Language; it's a language to develop web documents.

2.3.3 WEB SERVER

Java web applications need to be deployed and executed on web servers that provide support for the Java web component.

Web components are HTML pages, image files, Java class files and other resources. Web applications are one or more web components that are to be deployed in web server.

This system uses Apache TOMCAT V 5.0 web server which is developed by SUN Micro Systems. This server has the capability to handle both Servlets and JSP's.

2.3.4 SCRIPTING LANGUAGE

Client side scripting is a type of language normally used to validate the form data. This system uses the Java Script for client side scripting.

2.3.5 WEB BROWSER

Basically web browsers are HTTP client programs but can handle other types of protocols also. This system uses Internet Explorer v 6.0

2.3.6 ECLIPSE IDE

Eclipse is a kind of universal tool platform - an open extensible IDE for anything and nothing in particular. It provides a feature-rich development environment that allows the developer to efficiently create tools that integrate seamlessly into the Eclipse Platform. The Eclipse platform itself is structured as subsystems which are implemented in one or more plug-ins. The subsystems are built on top of a small runtime engine.

CHAPTER 3

SYSTEM ANALYSIS

3.1 PROBLEM STATEMENT

The main objective of this system is that it has a wide reach than the existing system which enables number of customers to access the website. By analyzing the customer details we can track buyer's preferences which enable the company to develop software products tailored to the customer's desire. Company is willing to improve its customer service, which will subsequently improve customer satisfaction. It also wants to increase the revenue by advertising right products to right customers. This will retain existing customers, gaining of new customer and increases revenue for the concern.

3.2 EXISTING SYSTEM

The company sends its marketing people to the customer's place to market their software products. To increase the revenue, it needs number of people to market but that is not economically feasible. Customers make their complaint through telephone calls which may not be directed directly to the concerned person. It is time consuming work for the employees to record the data manually and there are chances of making errors while recording data. It is difficult to track customer's preferences and the existing system does not provide provision for getting feedbacks from the customers. Finally, generation of reports in existing system is tedious task.

3.3 PROPOSED SYSTEM

The CRM provides the customer to explore the website by registering themselves into this site. Once registered, they are given username and password to access the site. They can make software product purchase directly on online. The description about each software product is listed on the site that enables the customer to choose the software that satisfies their constraints. If

they have any clarification and queries they can post it to the concern through customer request process. They can request the concern to develop new software for them.

The customer can also make complaints regarding product or service provided by the concern through complaint process which will be directly addressed to the concerned person. He can also provide feedback about product or service that enables solution provider to provide better customer service and satisfaction. They can view their project status through project status process which is updated periodically.

CRM also serve the administrator for recording information about project, payment, actions against complaint, product delivery and employee data.

3.4 MODULE FUNCTIONALITIES

The proposed system consists of four modules. They are

- ✓ Marketing
- ✓ Customer Support
- ✓ Admin
- ✓ Employee Management

Marketing

Customer can make software product purchase directly on online. The description about each software product is listed on the site that enables the customer to choose the software that satisfies their constraints. If they have any clarifications and queries they can post it to the concern through customer request process. They can request the concern to develop new software for them.

Customer Support

The customer can also make complaints regarding product or service provided by the concern through complaint process which will be directly addressed to the concerned person. He can also provide feedback about product or service that enables solution provider to provide better customer service and satisfaction. They can view their project status through project status process which is updated periodically.

Admin

In this module the administrator enters the details regarding the software product delivery, payment made by the customer, the actions against the complaints of the customer. He also enters project details of the customer.

Employee Management

In this module the administrator enters the details of employees of their concern. He can also modify, view and delete the employee details.

CHAPTER 4
SYSTEM DESIGN

4.1 ELEMENT OF DESIGN

System design is the most creative and challenging phase in the life cycle of system development. Design implies to a description of the final system and the process by which it is developed. The first step to determine is what input data is needed to form the system and the database that has to be designed should meet the requirement of the proposed system. The next step is to determine how the output is produced and in what format.

4.1.1 INPUT DESIGN

The input design is the process of converting the user- oriented inputs into the computer-based format. The goal of designing input data is to make the automation as easy and free from errors as possible.

The input design requirement such as user friendliness, consistent format and interactive dialogues for giving the right message and help for the user at right time are also considered for the development of the project.

Throughout the system, the forms found to get input are,

User and Administrator login form

This form reads user type and password as input and validates it for authorization.

Change password form

This form is used by the users of this software to change their password.

It will read input like old password, and new password.

Forgot Password entry form

This form is used by the users if they forget their password. Input to this form are user name, Question and answer which is entered while customer registration.

Customer Request entry form

This form is used by the users to request for service or clarifying their doubts. It will read inputs like customer name, description, queries...etc.

Propose Project entry form

This form is used by the users to request to develop new software for their concern. It will read inputs like customer name, description, cost and technology constraints etc.

Feedback entry form

This form is used by the users to provide their suggestions to the company about their product or service.

Complaint entry form

This form is used by the users to make complaints if they encounter any problem in the software product.

Project entry form

This form is used by the administrator to enter all project details developed in this concern.

Payment entry form

This form is used by the administrator to enter all payment details.

Action entry form

This form is used by the administrator to enter all details about actions against complaints.

Delivery entry form

This form is used by the administrator to enter all software product delivery details.

Add Employee entry form

This form is used by the administrator to enter the details about an employee. It read inputs like employee name, address, date of birth and joining, experience etc.

4.1.2 OUTPUT DESIGN

A quality output is one, which meets the requirement of the end user and presents the information clearly. Efficient and intelligent output design improves the system's relationship and helps user decision-making. The application output design is customized based on user input, which will generate the data depending on user's requirement. The accessibility of the output design is secured in the system with user authentication and rights.

4.1.3 ARCHITECTURE DESIGN

Architectural design is concerned with refining the conceptual design of the system , identifying internal processing functions, decomposing high level functions into sub functions, defining internal data streams and data stores and establishing relationships and interconnections among functions, data streams and data stores.

The MVC Design Pattern

The MVC design pattern, which originated from Smalltalk, consists of three components: a Model, a View, and a Controller component. Three Components of the MVC Component Description Model Represents the data objects. The Model is what is being manipulated and presented to the user. View serves as the screen representation of the Model. It is the object that presents the current state of the data objects. Controller Defines the way the user interface reacts to the users Input. The Controller component is the object that manipulates the Model, or data object.

Benefits of the MVC include:

Reliability

The presentation and transaction layers have clear separation, which allows you to change the look and feel of an application without recompiling Model or Controller code.

High reuse and adaptability:

The MVC lets you use multiple types of views, all accessing the same server-side code. This includes anything from Web browsers (HTTP) to wireless browsers (WAP).

Very low development and life-cycle costs:

The MVC makes it possible to have lower-level programmers develop and maintain the user interfaces.

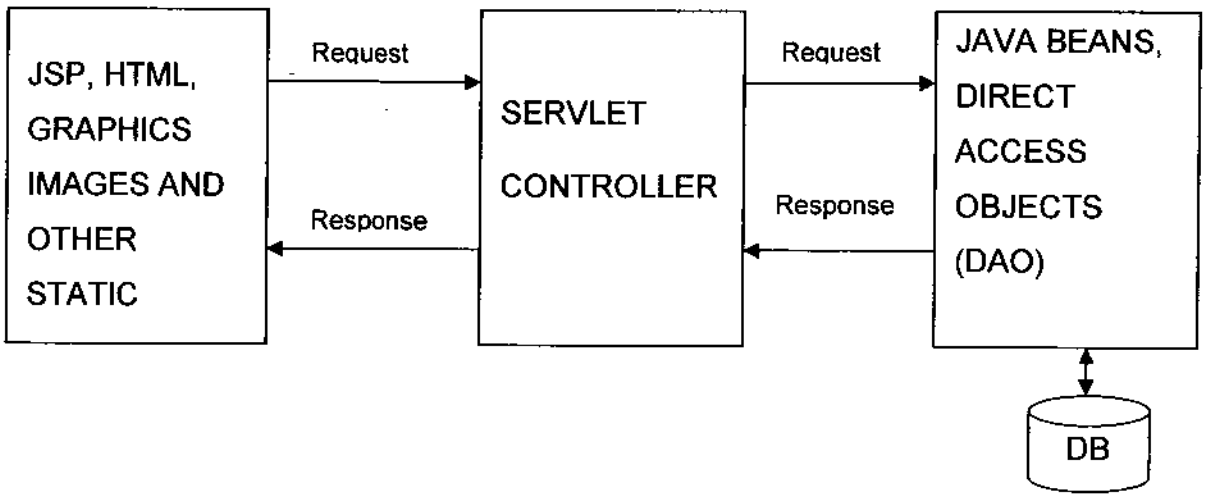
Rapid deployment:

Development time can be significantly reduced because Controller programmers (Java developers) focus solely on transactions, and View programmers (HTML and JSP developers) focus solely on presentation.

Maintainability

The separation of presentation and business logic also makes it easier to maintain and modify Web application.

FIG NO 4.1.3.1 MODEL VIEW CONTROLLER DESIGN



4.1.4 DATABASE DESIGN

A database is a collection of interrelated 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. The design of the database is one of the most critical parts of design phase. An elegantly database can play as a strong foundation for the whole system. The details about the data relevant for the system are identified first.

According to their relationship, tables are designed by the following standard database design methods. The data types for each data item in the tables are decided. For the optimum design of the database, to have better response time, to have data integrity, to avoid redundancy and for the security of the database all the tables created are normalized. The database design is done according to the procedure. The database design transforms the information domain model created during the analysis into the data structure that will be required to implement the system software.

Normalization

The normalization simplifies the entities, removes the redundancies from the system data and finally builds a data structure, which is both flexible and adaptable to the system. Normalization offers a systematic step-by-step approach towards this goal. The different normal forms are,

- First normal form (NF)
- Second normal form (2NF)
- Third normal form (3NF)

In Customer Relationship Management project, up to third normal form is used. All the tables are normalized using third normal form rule.

First Normal Form

An entity E is in 1NF if and only if all underlying values contain atomic values only. Any repeating groups must be eliminated.

Second Normal Form

An entity E is in 2NF if it is in 1NF and every non-key attributes is fully dependent on the primary key.

Third Normal Form

An entity E is in 3NF if it is in 2NF and no non-key attribute of E is dependent on another non-key attribute.

4.2 TABLE DESIGN

TABLE 4.2.1 TABLE NAME: LOGIN

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Userid	Varchar2(20)		Primary key
Pwd	Varchar2(20)		
Usertype	Char(1)		
Question	Varchar2(30)		
Answer	Varchar2(30)		

TABLE 4.2.2 TABLE NAME: CUST_COMPANY

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Custid	Number(10)	Customer id	Primary key
Company_name	Varchar2(20)	Company name	
Userid	Varchar2(20)	User id	Foreign key
Address	Varchar2(50)	Address	
Reg_office_address	Varchar2(50)	Registered address	
Contact person	Varchar2(30)	Contact person	
Contactno	Number(10)	Contact number	
Extn	Number(10)	Extension	
Email	Varchar2(30)	Email	
State	Varchar2(20)	State	
Country	Varchar2(20)	Country	
Zipcode	Number(10)	Zip code	

TABLE 4.2.3 TABLE NAME: PRODUCT

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Prodid	Varchar2(20)	Product id	Primary key
Prodname	Varchar2(30)	Product name	
Proddesc	Varchar2(50)	Product description	
Price	Number(10,2)	Price	
Category	Varchar2(20)	Category	
Licensefee	Number(8,2)	License fee	
Licenseterm	Varchar2(15)	License term	
Technology	Varchar2(20)	Technology	

TABLE 4.2.4 TABLE NAME: EMPLOYEE

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Empid	Number(10)	Employee id	Primary key
Domainid	Number(10)	Domain id	Foreign key
Desgn_id	Varchar2(10)	Designation id	Foreign key
Empname	Varchar2(20)	Employee name	
Dob	Date	Date of birth	
Doj	Date	Date of joining	
Experience	Number(3)	Experience	
Spec	Varchar2(20)	Specialization	
Tech	Varchar2(20)	Technology	
Mobileno	Number(10)	Mobile number	
Address	Varchar2(50)	Address	

TABLE 4.2.5 TABLE NAME: DOMAIN

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Domainid	Number(10)	Domain id	Primary key
Name	Varchar2(20)	Domain name	
Located_at	Varchar2(50)	Location	

TABLE 4.2.6 TABLE NAME: DESIGNATION

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Desgn_id	Varchar2(10)		Primary key
Name	Varchar2(20)		

TABLE 4.2.7 TABLE NAME: CUSTOMER_REQUEST

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Requestid	Number(10)	Request id	Primary key
Custid	Number(10)	Customer id	Foreign key
Prodid	Varchar2(20)	Product id	Foreign key
Reqdesc	Varchar2(50)	Request description	
Req_date	Date	Request date	
Domainid	Number(10)	Domain id	Foreign key
Queries	Varchar2(200)	Queries	

TABLE 4.2.8 TABLE NAME: REQUEST_ACTION

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Actionid	Number(10)	Action id	Primary key
Requestid	Number(10)	Request id	Foreign key
Empid	Number(10)	Employee id	Foreign key
Actiondesc	Varchar2(50)	Action description	
Cust_resp	Varchar2(20)	Customer response	

TABLE 4.2.9 TABLE NAME: PURCHASE

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Purchaseid	Number(10)	Purchase id	Primary key
Prodid	Varchar2(20)	Product id	Foreign key
Custid	Number(10)	Customer id	Foreign key
Date_of_pur	Date	Date of purchase	
Discount	Number(8)	Discount	

TABLE 4.2.10 TABLE NAME: PRODUCT_ENHANCEMENT

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Purchaseid	Number(10)	Purchase id	Foreign key
Teamid	Number(10)	Team id	Foreign key
Enh_made	Varchar2(20)	Enhancement made	
Criticiality	Varchar2(20)	Criticality	
Cost_of_enh	Number(10)	Cost of enhancement	

TABLE 4.2.11 TABLE NAME: PLACE_ORDER

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Orderid	Number(10)	Order id	Primary key
Custid	Number(10)	Customer id	Foreign key
Domainid	Number(10)	Domain id	Foreign key
Orderdesc	Varchar2(20)	Order description	
Exp_comp_date	Date	Expected completion date	
Budget_cons	Number(10)	Budget constraints	
Status	Varchar2(20)	Status	
Tech_cons	Varchar2(20)	Technology constraints	
Mode_of_pay	Varchar2(20)	Mode of payment	

TABLE 4.2.12 TABLE NAME: FEEDBACK

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Prodid	Varchar2(20)	Product id	Foreign key
Custid	Number(10)	Customer id	Foreign key
Comment1	Varchar2(50)	Comment1	
Comment2	Varchar2(50)	Comment2	
Feedback_date	Date	Feedback date	
Ratings	Varchar2(20)	Ratings	

TABLE 4.2.13 TABLE NAME: PROJECT STATUS

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Projectid	Varchar2(20)	Project id	Foreign key
Proj_status	Varchar2(20)	Project status	
Date_status_change	Date	date of status change	

TABLE 4.2.14 TABLE NAME: COMPLAINTS

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Complaintid	Number(10)	Complaint id	Primary key
Prodid	Varchar2(20)	Product id	Foreign key
Custid	Number(10)	Customer id	Foreign key
Comp_date	Date	Complaint date	
CompDesc	Varchar2(50)	Complaint description	
Type_of_comp	Varchar2(20)	Type of complaint	
Status	Varchar2(15)	Status	
Date_of_closure	Date	Date of closure	

TABLE 4.2.15 TABLE NAME: COMPLAINT_ACTION

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Comp_actionid	Number(10)	Action id	Primary key
Complaintid	Number(10)	Complaint id	Foreign key
Response	Varchar2(30)	Response	
Empno1	Number(10)	Employee id	Foreign key
Empno2	Number(10)	Employee id	Foreign key
Empno3	Number(10)	Employee id	Foreign key
Contactno	Number(10)	Contact number	
Date_of_action	Date	Date of action	

TABLE 4.2.16 TABLE NAME: PROJECT

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Projectid	Varchar2(20)	Project id	Primary key
Orderid	Number(10)	Order id	Foreign key
Title	Varchar2(20)	Project title	
Projdesc	Varchar2(50)	Project description	
Tech_used	Varchar2(20)	Technology used	
Proj_start_date	Date	Start date	
Proj_exp_date	Date	Expected completion date	
Estimated_cost	Number(10,2)	Estimated cost	

TABLE 4.2.17 TABLE NAME: PROJECT_TEAM

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Projectid	Varchar2(20)	Project id	Foreign key
Teamid	Number(10)	Team id	Foreign key

TABLE 4.2.18 TABLE NAME: TEAM_MEMBER

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Teamid	Number(10)	Team id	Foreign key
Empid	Number(10)	Employee id	Foreign key

TABLE 4.2.19 TABLE NAME: TEAM_MASTER

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Teamid	Number(10)	Team id	Primary key
Teamname	Varchar2(20)	Team name	
Created_date	Date	Team Created date	

TABLE 4.2.20 TABLE NAME: TEAM_PHASE

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Teamid	Number(10)	Team id	Foreign key
Phaseid	Number(10)	Phase id	Foreign key
Start_date	Date	Start date	
End_date	Date	End date	

TABLE 4.2.21 TABLE NAME: PHASE_MASTER

FIELDS	DATA TYPE	DESCRIPTION	CONSTRAINTS
Phase_id	Number(10)	Phase id	Primary key
Phase_name	Varchar2(30)	Phase name	
Phase_desc	Varchar2(30)	Phase description	

CHAPTER 5
DATA FLOW DIAGRAM

5.1 Data Flow Diagram

The data flow diagram is graphical representation which depicts the information regarding the flow of control and the transformation of data from input to output. The dataflow may be used to represent the system or software at any level of abstraction. In fact dataflow diagram may be partitioned into levels. A level 0 data flow diagram is called the context diagram, which represents the entire software element as single bubble with input and output arrows.

FIG NO 5.1.1 CONTEXT FLOW DIAGRAM

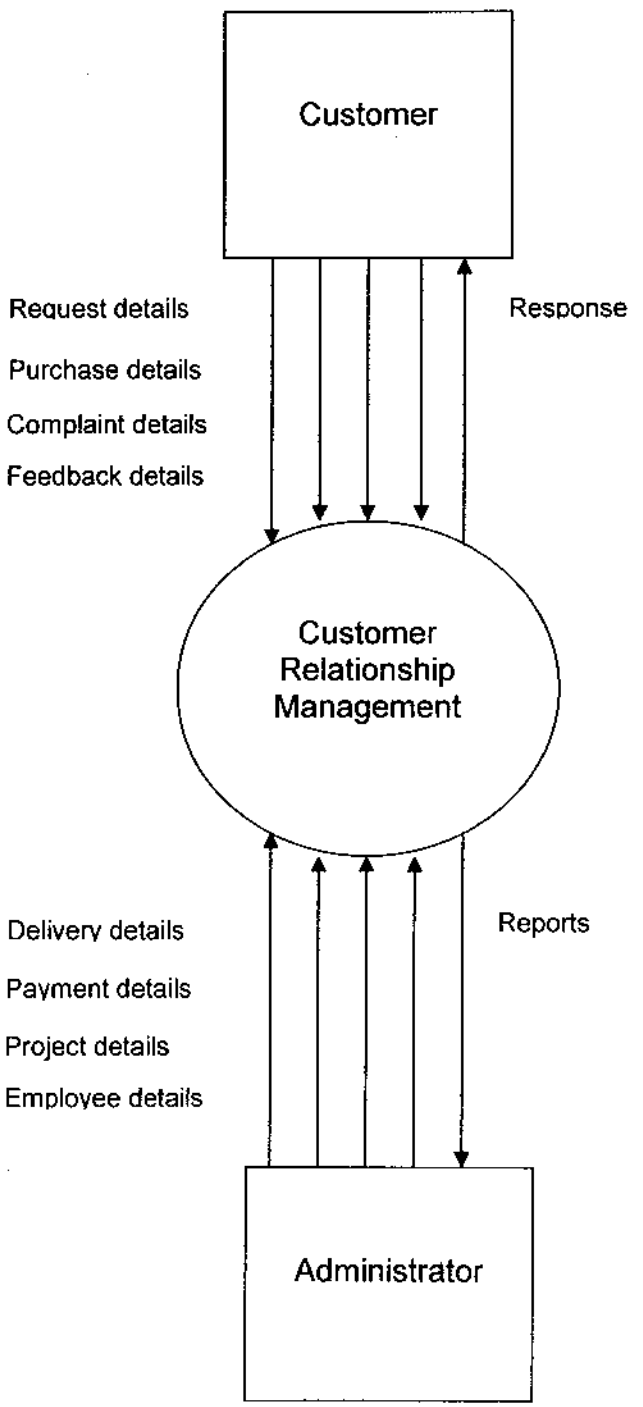


Fig no 5.1.2 DFD FOR MARKETING

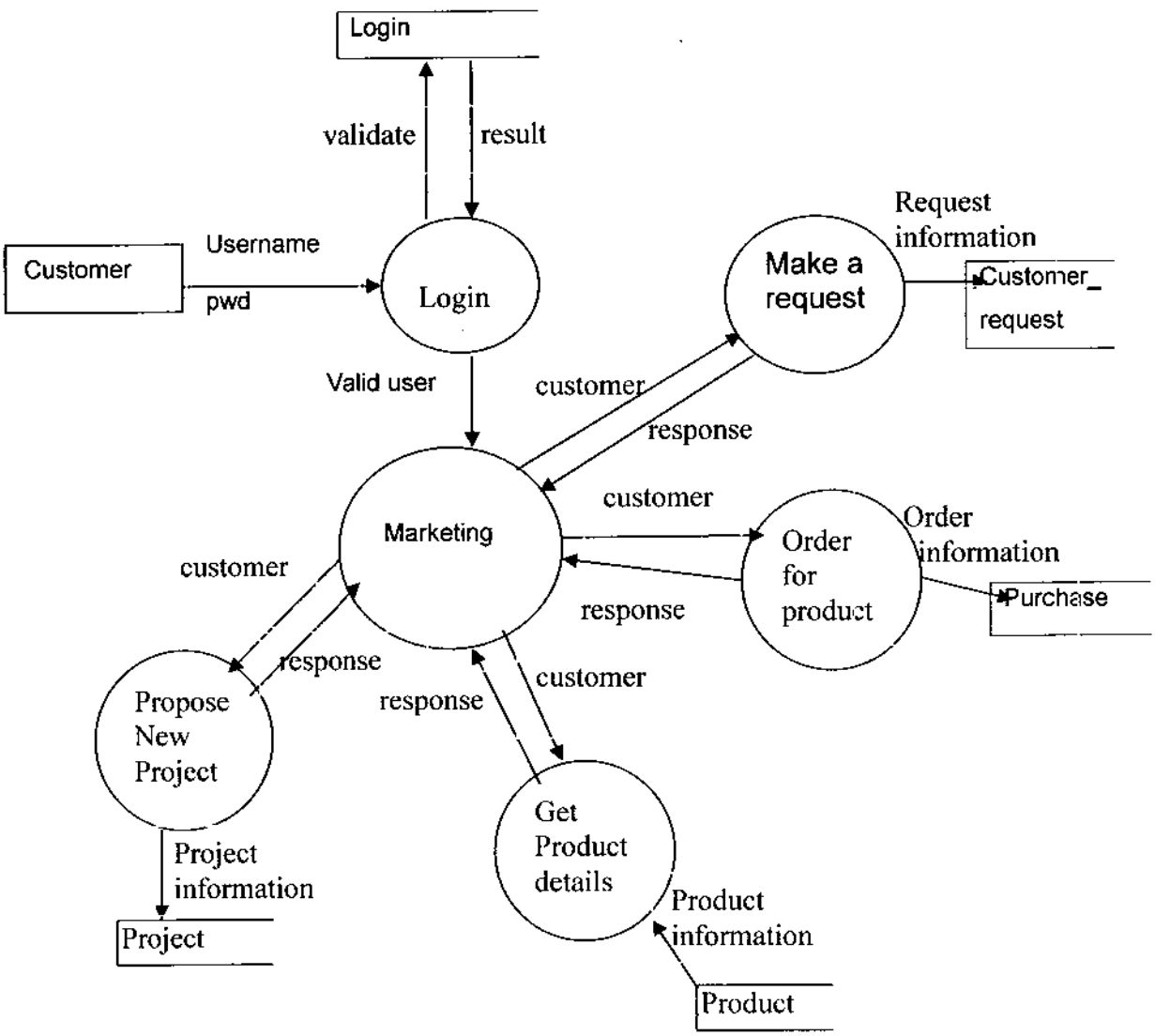


Fig No 5.1.3 DFD FOR CUSTOMER SUPPORT

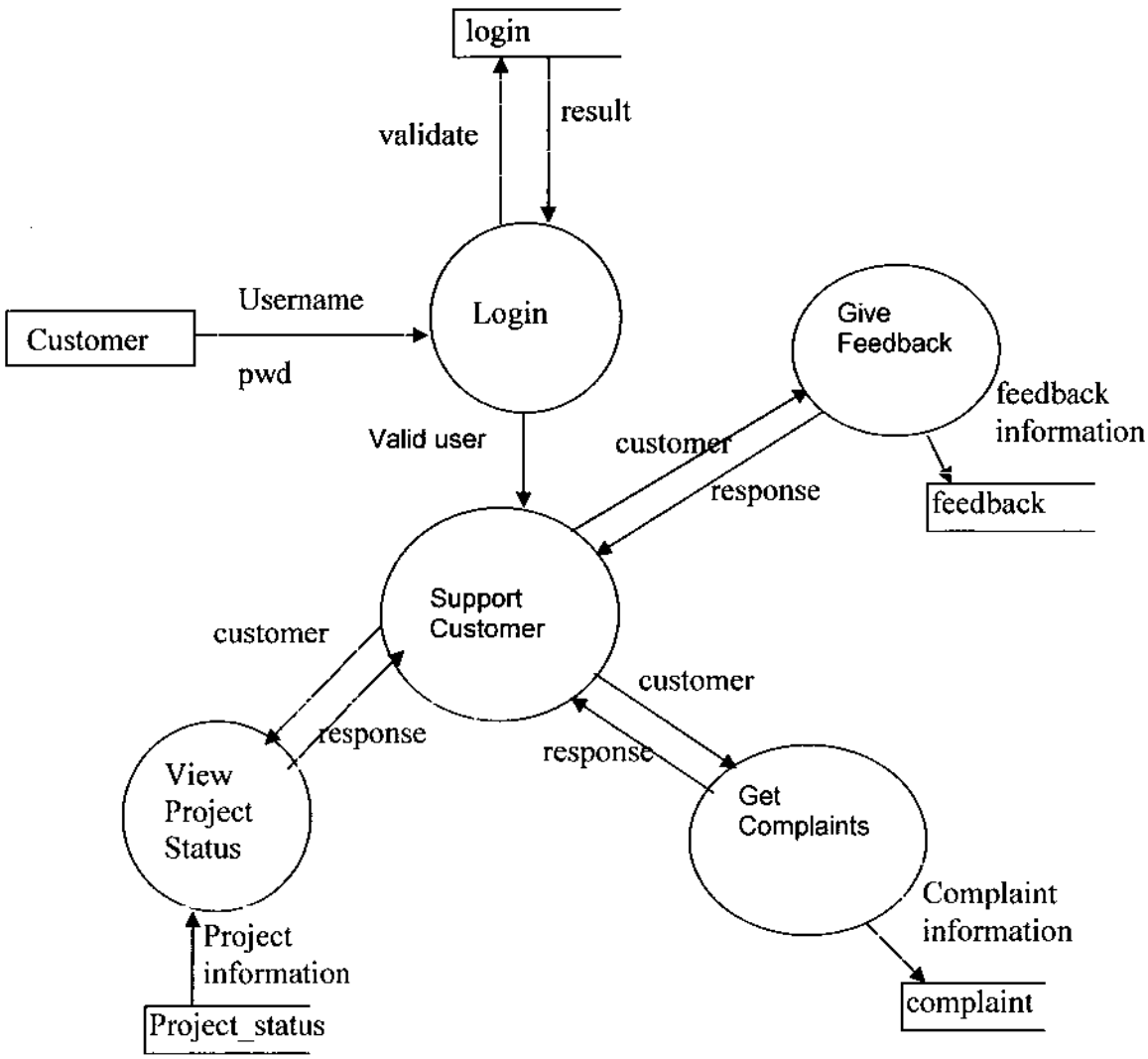
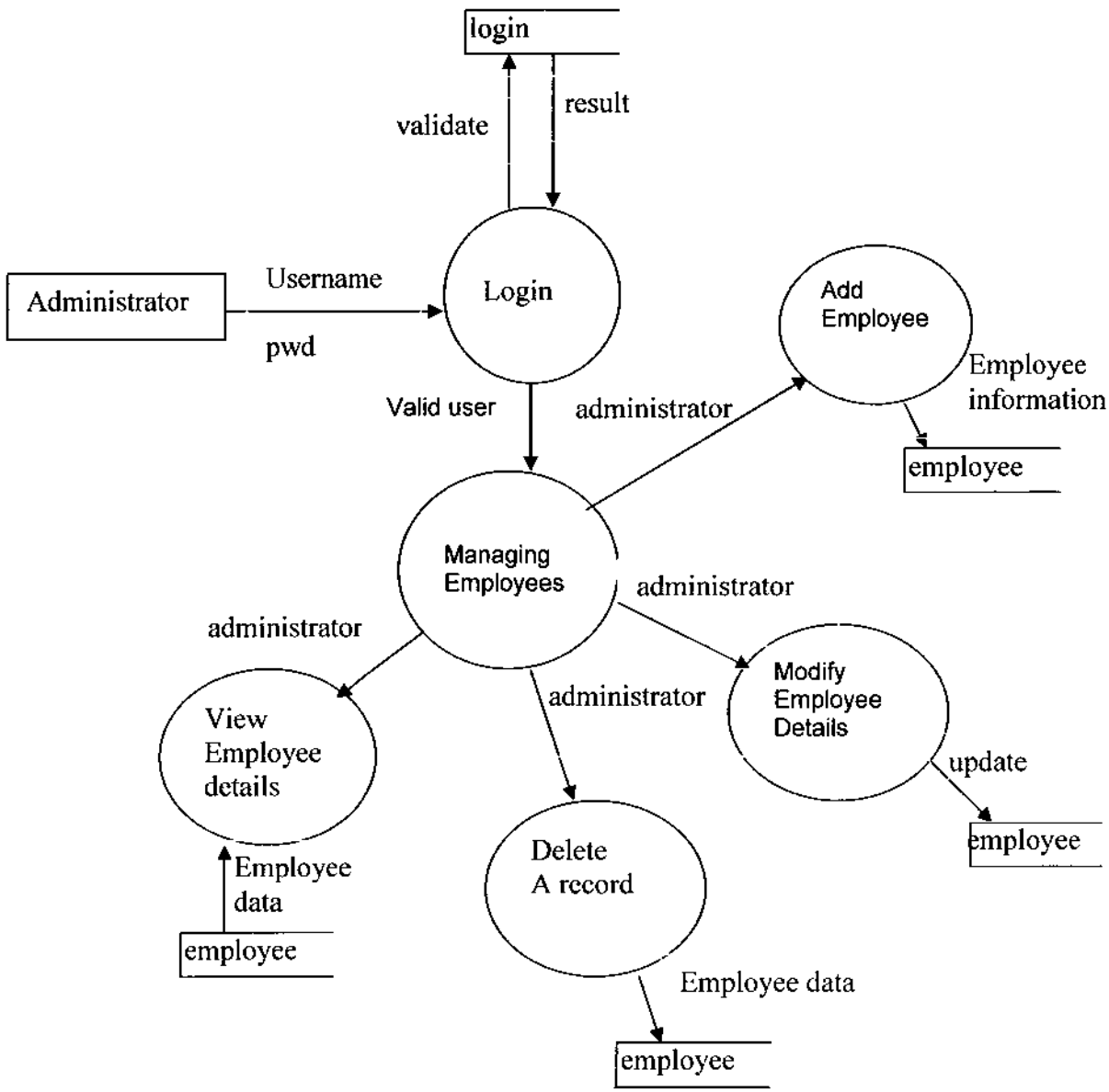


Fig No 5.1.5 DFD FOR EMPLOYEE MANAGEMENT



CHAPTER 6
SYSTEM TESTING AND IMPLEMENTATION

6.1 UNIT TESTING

CRM has four major modules which further has number of sub modules respectively. Initially verification is performed on smallest unit of code to check for errors. The purpose of such test is to ensure the data flow is proper between and within the module. At the end of the test, all the statements in the module must be executed at least once. Eclipse IDE provides JUNIT (juice unit) tool for testing each and every module in the project. It is easy to use and debug the errors in the module.

6.2 VALIDATION TESTING

Users and administrator enters data into various forms but it is necessary to ensure whether correct data is entered. To ensure correctness each form has to be validated. For instance, the users should not enter non numeric value for phone number field. Likewise value for name field should not begin with numeric or any symbols. All these constraints should be checked for each and every form for ensuring correctness of data entered. The system highlights the error to user and requests him to enter correct data to proceed further.

6.3 INTEGRATION TESTING

Bottom Up approach is one way of doing integration testing and it is used in CRM project. Modules at lowest level in the hierarchy are integrated first and gradually moving towards the top most nodes in the hierarchy. Drivers are written and required to integrated separate modules.

6.4 STRESS TESTING

CRM being an online application it is necessary to perform stress testing. The CRM system made to run in 10 different systems connected to the local intranet. All users were allowed to access the database and other resource simultaneously and the system survived this test successfully.

6.5 IMPLEMENTATION

The system is developed in such a way that the existing facilities are enough for implementation. The hard ware facilities are made sufficient enough to implement the newly developed application.

The first step in implementation is to get approval from the users. The data entry through various screens and reports that the system is capable of producing is shown to the users.

When the Administrator is finally satisfied with system it is now ready to implement the system in the concern. The system has been successfully implemented in the organization with full cooperation from the management. Finally the system is handed over to the organization.

CHAPTER 7

CONCLUSION AND FUTURE ENHANCEMENT

7.1 CONCLUSION

The **"Customer Relationship Management"** is successfully designed and developed to fulfilling the necessary requirements, as identified in the requirements analysis phase, such as the system is very much user friendly, form level validation and field level validation are performing very efficiently.

The new computerized system was found to be much faster and reliable and user friendly then the existing system, the system has been designed and developed step-by-step and tested successfully. It eliminates the human errors that are likely to creep in the kind of working in which a bulk quantity of data and calculations has to be processed.

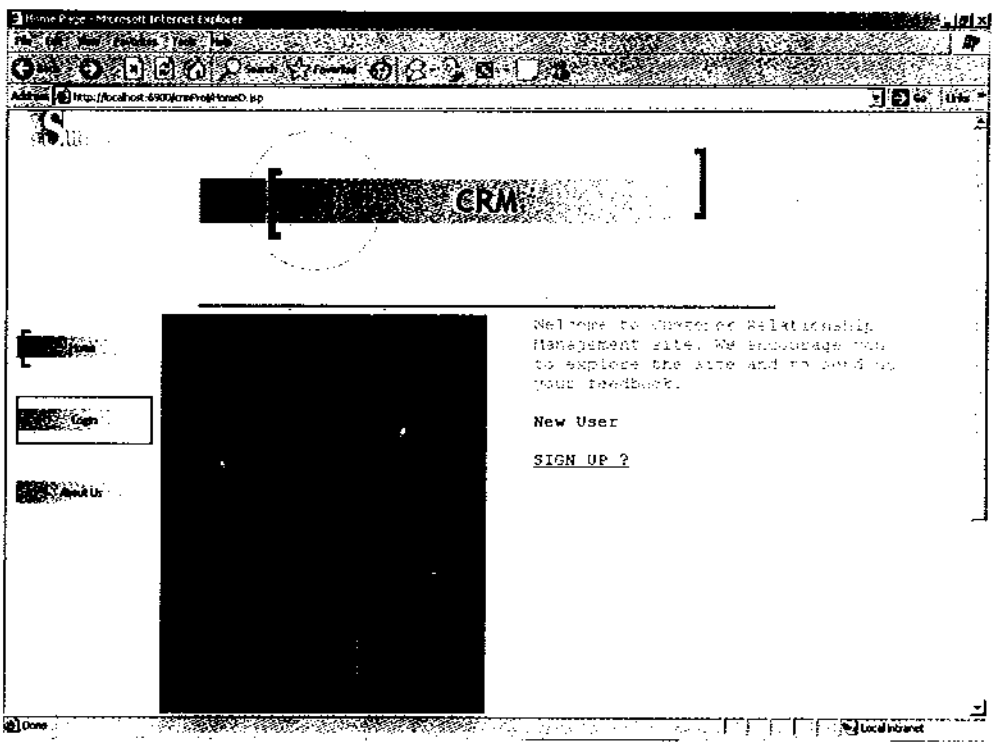
7.2 FUTURE ENHANCEMENT

Every system should allow scope for further development or enhancement. The system can be adapted for any further development. The system is so flexible to allow any modification need for the further functioning of programs. Since the objectives may be brought broad in future, the system can be easily modified accordingly, as the system has been modularized. The future expansion can be done in a concise manner in order to improve the efficiency of the system.

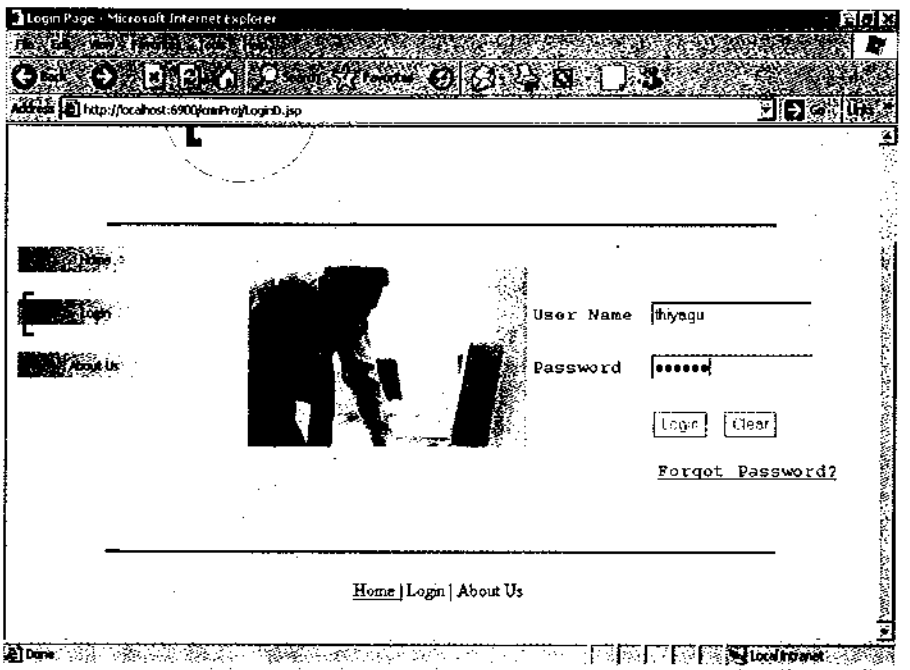
APPENDICES

APPENDIX

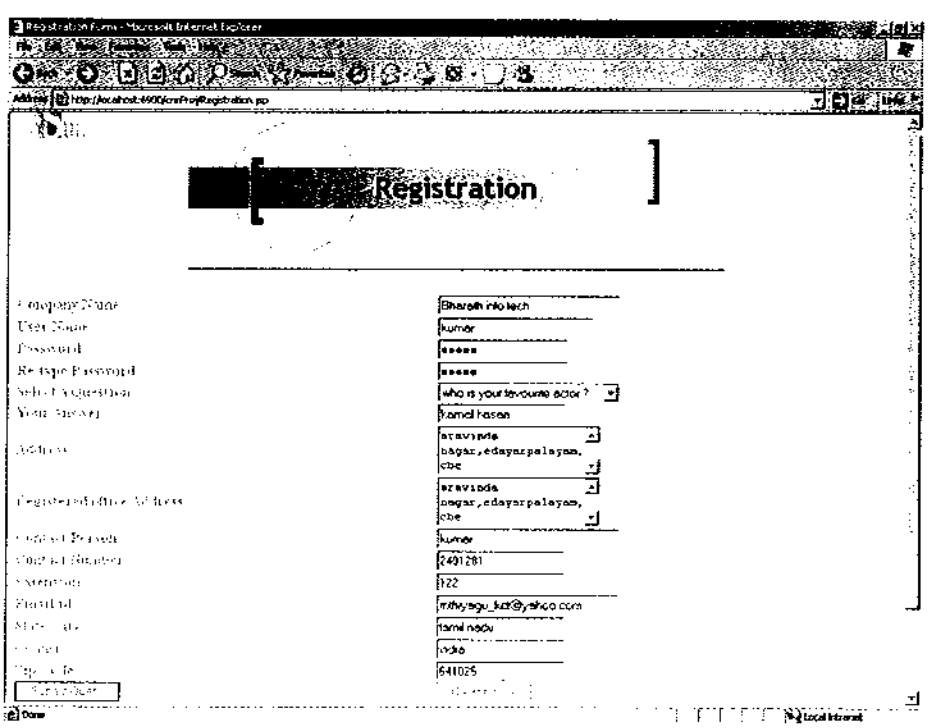
Home Page



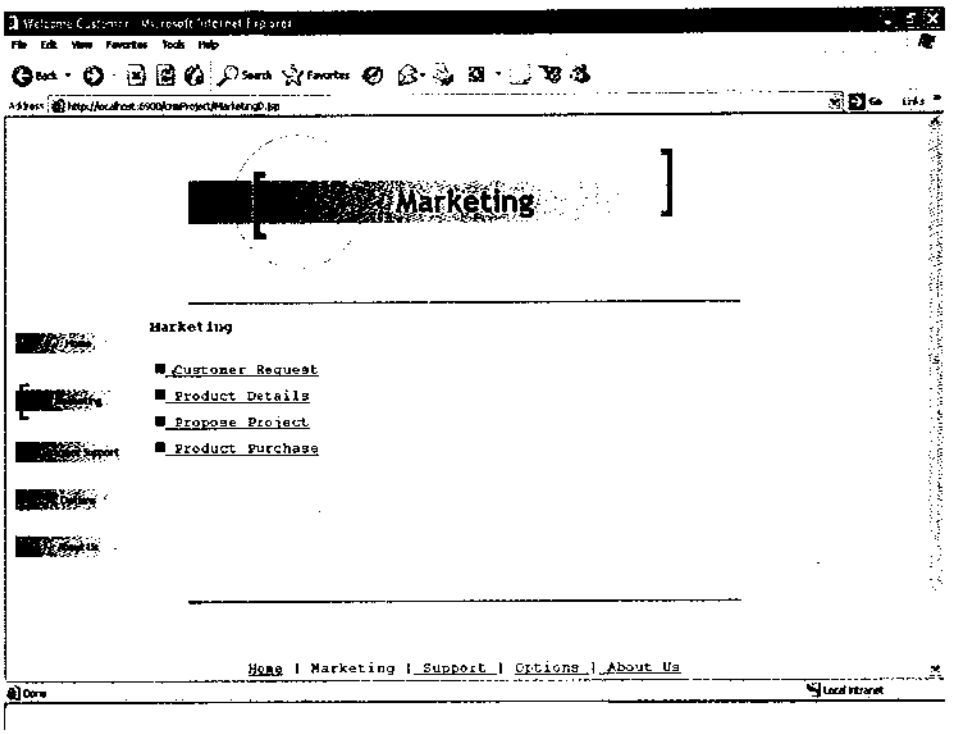
Login page



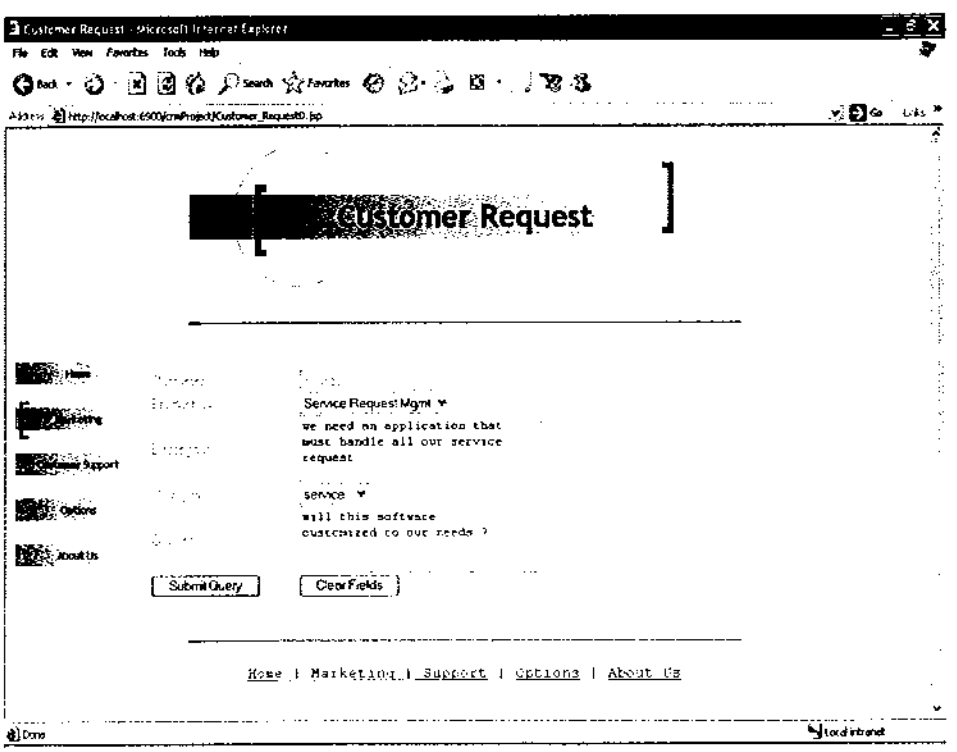
Registration



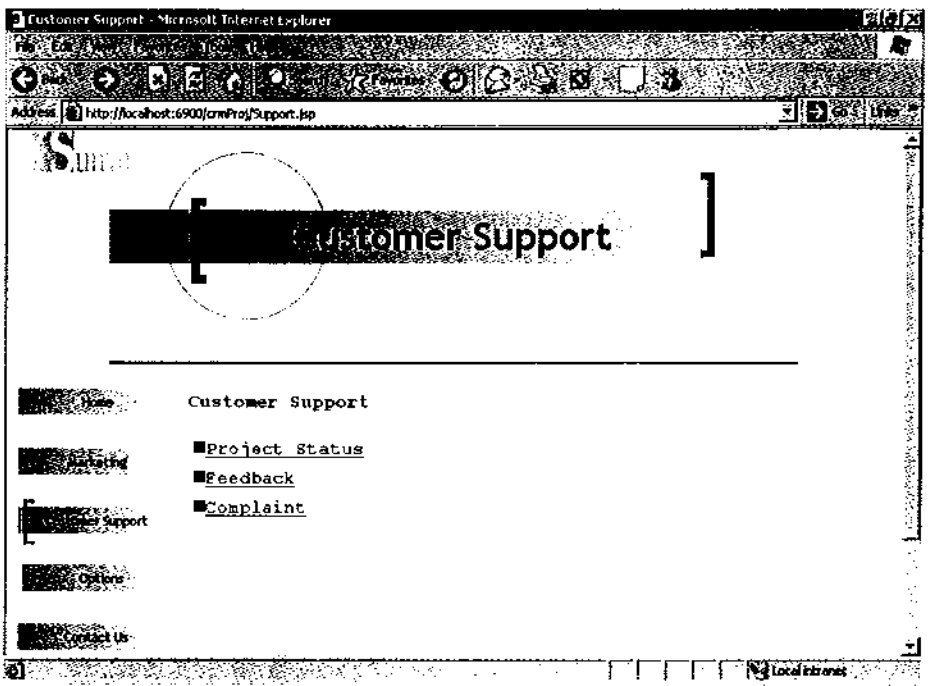
Marketing



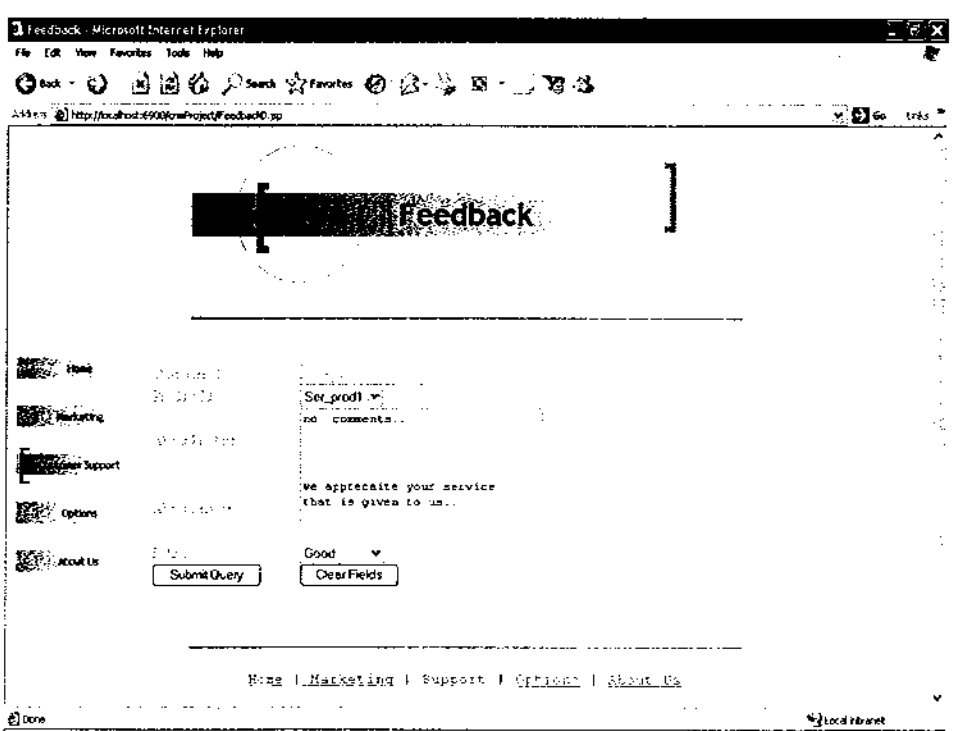
Customer Request



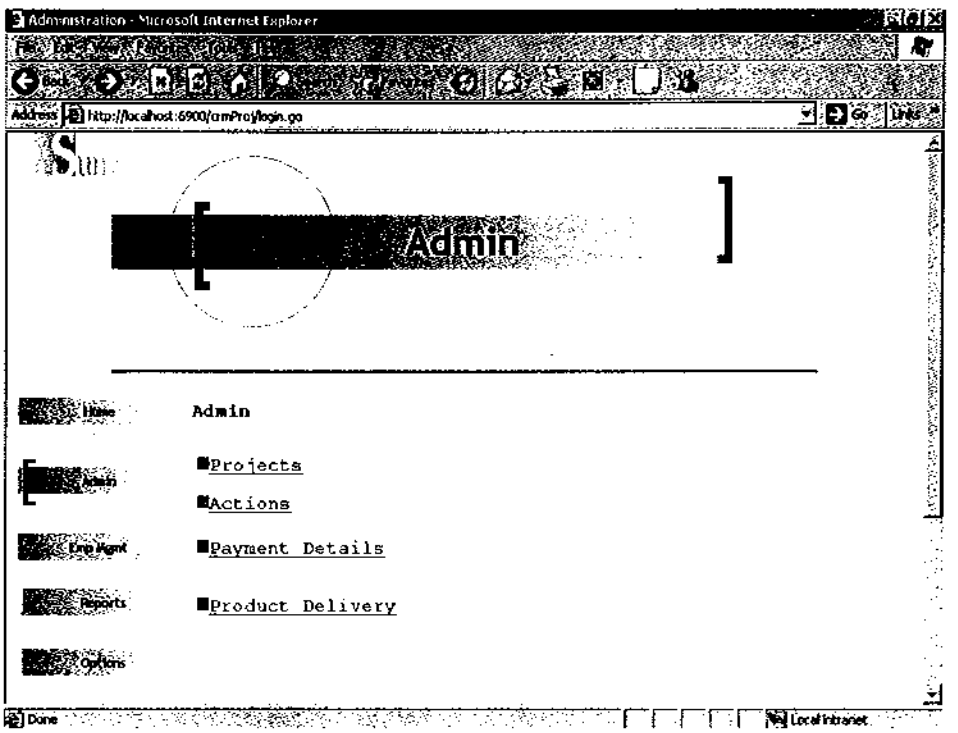
Customer Support



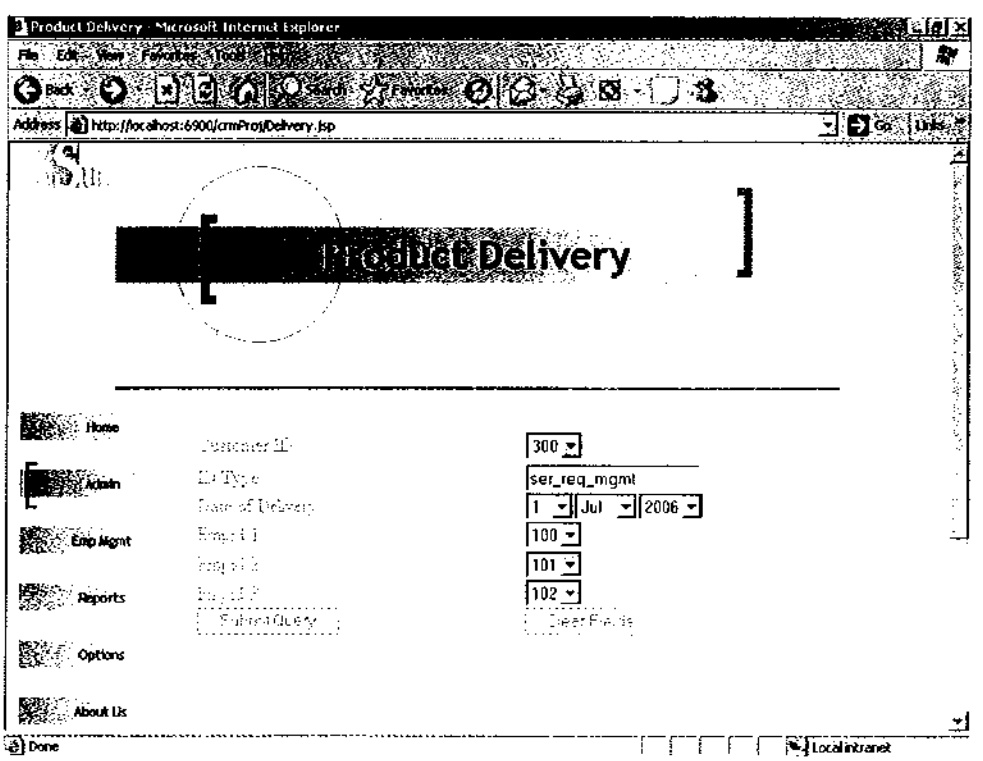
Feedback



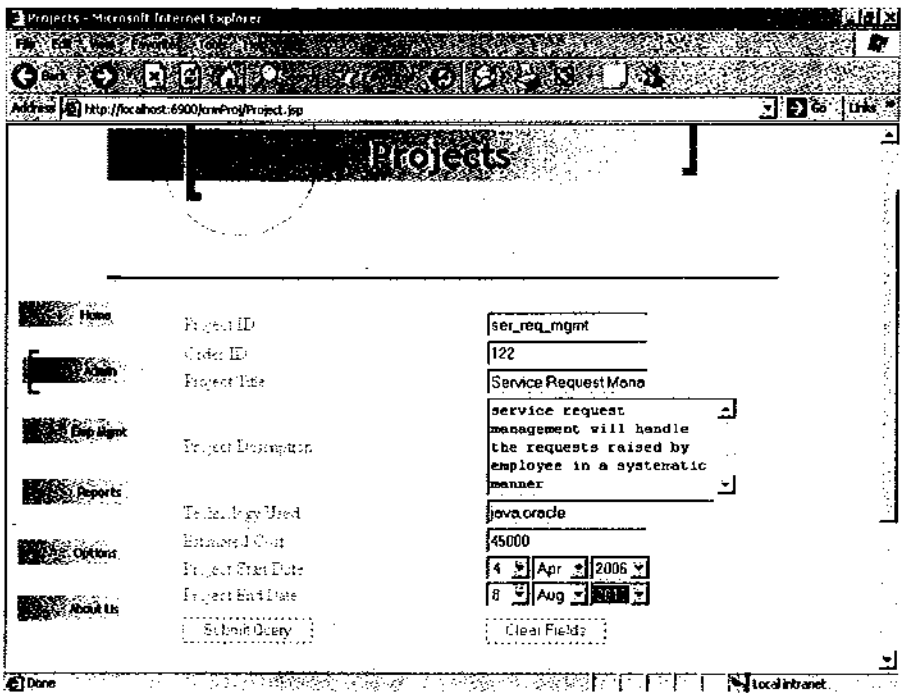
Admin



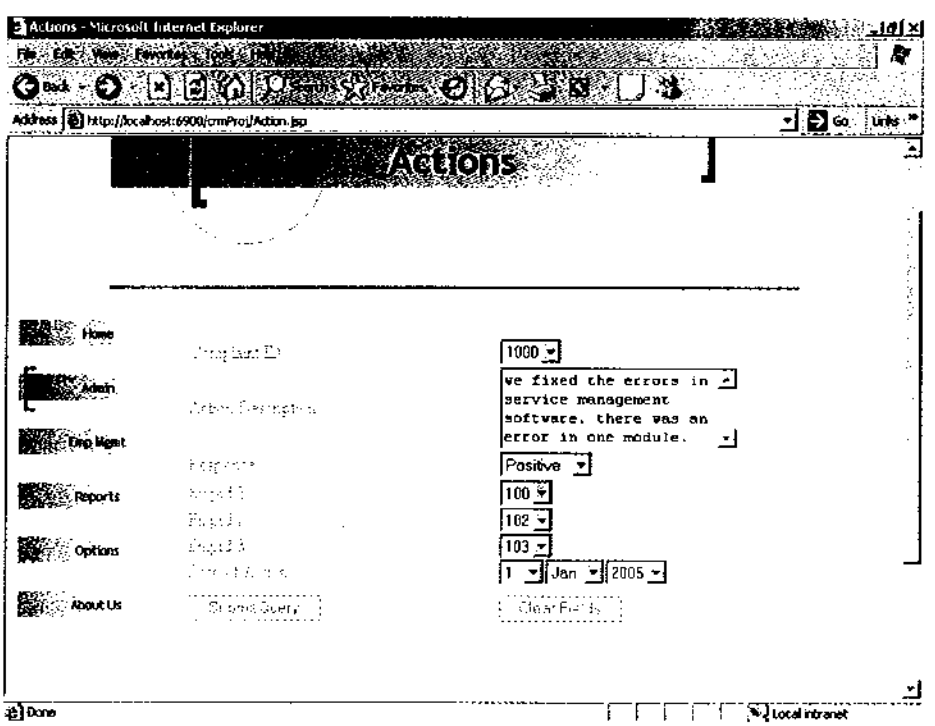
Product Delivery



Projects



Actions



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