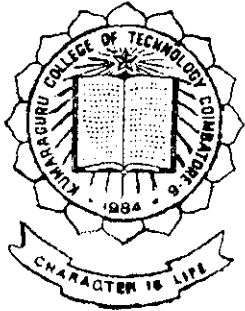


# CALL CENTRE PROJECT FOR CUSTOMER CARE



P-1040

Project Report

Submitted by

**CHARULATHA .S**

002800121

**PREETHI .C.T**

002800148

Under the guidance of

**Mr. N.S. RAMALINGAM, M.C.A.,**

In partial fulfillment of the requirements for the award of the degree of  
Bachelor of Science in Applied Sciences -Computer Technology  
of Bharathiar University, Coimbatore

DEPARTMENT OF COMPUTER TECHNOLOGY

**KUMARAGURU COLLEGE OF TECHNOLOGY**

COIMBATORE - 641 006

# **CALL CENTER PROJECT FOR CUSTOMER CARE**

PROJECT WORK DONE AT

**WIPRO INFOTECH  
COIMBATORE**

## **PROJECT REPORT**

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

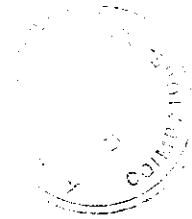
### **B.Sc Applied Science (Computer Technology)**

OF BHARATHIAR UNIVERSITY, COIMBATORE

SUBMITTED BY

**CHARULATHA S  
Reg.No 0028Q0121**

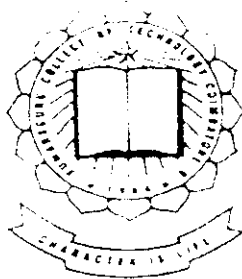
**PREETHI C T  
Reg.No 0028Q0148**



GUIDED BY

EXTERNAL GUIDE  
Mr. SURESH KUMAR .N

INTERNAL GUIDE  
Mr.RAMALINGAM .N. S



**Department of Computer Technology  
KUMARAGURU COLLEGE OF TECHNOLOGY**

COIMBATORE-641006

April 2003

# CERTIFICATE

This is to certify that the project work entitled

**CALL CENTER PROJECT FOR CUSTOMER CARE**

Submitted to

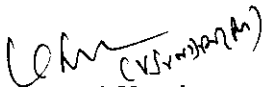
**KUMARAGURU COLLEGE OF TECHNOLOGY**

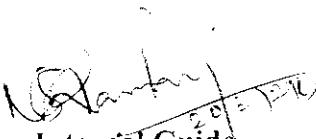
(Affiliated to the Bharathiar University)

in partial fulfillment of the requirements for the award of the  
Degree of B.Sc(Applied Sciences-Computer Technology)  
is record of original work done by

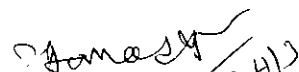
**CHARULATHA S  
PREETHI C T**

**Reg.no 0038Q0121  
Reg.no 0028Q0148**

  
Professor and Head

  
Internal Guide

Submitted to University Examination held on---24.03.2008

  
Internal Examiner

  
External Examiner



## TO WHOMSOEVER IT MAY CONCERN

This is to confirm that **Ms.Charulatha.S. & Preethi.C.T.** pursuing their B.Sc (CT) degree in Kumaraguru College of Technology, Coimbatore has completed the project work entitled "Call Center Project for Customer Care" during Nov - April (2002 -- 2003) in our concern successfully.

Yours truly,

A handwritten signature in black ink, appearing to be "P. Kumar".

P. Kumar  
Area Manager - Customer Support  
Wipro Ltd - Infotech group

# DECLARATION

We hereby declare that the project entitled **Call Center Project for Customer Care**, submitted to **Bharathiar University** as the project work of **B.Sc - APPLIED SCIENCES (COMPUTER TECHNOLOGY)** Degree, is a record of original work done by us, under the supervision and guidance of Mr.Suresh Kumar, Customer support Engineer (Wipro Infotech) and Mr.N.S.Ramalingam, Lecturer, Kumaraguru College of Technology, Coimbatore. This project work has not found the basis for the award of any degree/Diploma/ Associated ship/Fellowship or similar title to any candidate of any University.

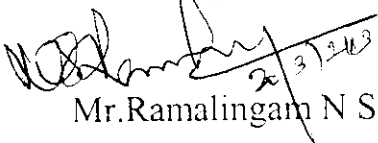
Place: COIMBATORE

Date: 24.3.2003.

Signature of the Students

1) Chaitanya  
2) Prathibha

Countersigned by

  
Mr. Ramalingam N S

(Internal Guide)



Mr. Suresh Kumar N

(External Guide)

# ACKNOWLEDGEMENT

As endeavor over a long period can be successful only with the advice and support of many well wishers. We take this opportunity to express our gratitude and appreciations to all of them.

We are bound to express our gratitude to **Dr.K.K.Padmanabhan, B.Sc (Engg). MTech.Ph.D.** Principal, Kumaraguru College Of Technology for his encouragement throughout our project.

We wish to thank Professor **Dr.V.Sundaram, M.Sc., Ph.D., Head of The Department of Computer Technology**, Kumaraguru College Of technology for allowing us to utilize all his knowledge and for being supportive throughout the tenure of our project.

We admit our heartfelt thanks to my Internal guide **Mr.N.S.Ramalingam, (M.C.A).** Lecturer, /Computer Technology, Kumaraguru College Of Technology for encouraging us to pursue new goals and ideas.

We owe much to our external guide **Mr.N.Suresh Kumar (Customer Support Engineer, Wipro)** for his inspiring advice, immense help and wholehearted support throughout our project and his esteemed Organization.

Last but not the least, we wish to thank our parents and all my friends who were showing their contributions in many subtle ways and indeed instrumental in achieving our final results.

# **CONTENTS**

## **1 INTRODUCTION**

- 1.1PROJECT OVERVIEW
- 1.2ORGANISATION PROFILE

## **2 SYSTEM STUDY AND ANALYSIS**

- 2.1EXISTING SYSTEM LIMITATIONS
- 2.2PROPOSED SYSTEM
- 2.3USER CHARACTERISTICS

## **3 PROGRAMMING ENVIRONMENT**

- 3.1HARDWARE CONFIGURATION
- 3.2DESCRIPTION OF SOFTWARE AND TOOLS USED

## **4 SYSTEM DESIGN AND DEVELOPMENT**

- 4.1INPUT DESIGN
- 4.2OUTPUT DESIGN
- 4.3DATABASE DESIGN
- 4.4PROCESS DESIGN

## **5 SYSTEM IMPLIMENTATION AND TESTING**

- 5.1SYSTEM IMPLEMENTATION
- 5.2SYSTEM TESTING REFINEMENTS BASED ON FEEDBACK

## **6 CONCLUSION**

## **7 SCOPE FOR THE FUTURE**

## 8 BIBLIOGRAPHY ANNEXTURES

A.SCREENS

B.REPORTS

C.SAMPLE CODE

D.DEFINITIONS AND ACRONYMS



# **SYNOPSIS**

Project Title:

## **CALL CENTER PROJECT FOR CUSTOMER CARE**

The Wipro Infotech is a Customer Care center and is an organization serving Customers and professionals. It focuses on Customer Care issues found in the Consumer Affairs, Customer Service, Teleservices, system malfunctions.

The mission is simple — that keeps our computing environment running. The method is straightforward with the right processes, tools, and technologies to help us to avoid surprises and minimize disruption to our computers.

Call Center Management is one of the Customer Relationship Management System, which is developed for the service industry. The objective of this application is to cater services to the customers and manufacturers.

A Call center is the common terms for the business operation in which customers and Service Agents are remote from each other yet interact, through telephone and web. Customers post their queries in the form of complaint or query. The Customers can get the responses either through the web or the service engineers will visit the location to respond to the customers needs.

The main objective of this project is to provide with utmost respect to Human values, and to serve the Customers with integrity, through a variety of Innovative ideas, services and thoughts. The project is applicable to be used in both Internet and Intranet.

### Languages :

- Operating system: Windows 95/98/NT/2000/XP
- Front-end tool: ASP
- Backend tool: MS SQL Server 2000
- GUI tool: Visual Interdev, FrontPage

# **1.INTRODUCTION**

## **1.1PROJECT OVERVIEW**

This project work entitled “Call Center project for Customer Care” is a web based product which is designed to accept input from customers directly or from call center operators.

The web site allows the user (the customer/ call operator) to enter the name of the customer and his request and redirect the same to the concerned authorities. The application must also notify the customer about the status of his request periodically.

The user will type the site’s URL and enter the home page of the site. The call administrator must enter a username and password to access the page. Once the user logs into the application they will be provided with the screen where they can enter their request with all necessary input. Once all the required information is keyed in, the application must redirect the customer request to respective authorities to perform the required action. Once the request is posted successfully the call operator will be taken to the main screen again.

Customer posts their queries in the form of complaint through telephone, fax, e-mail, letter etc., and they get their responses from the service engineers. The service engineers visit the customer's location to respond to their complaints and queries. The service engineer has to reach the customer's location within 5 hours from the time the call was generated, if the location is within the city limits. If the customer's location is somewhere away from the city limits he has to reach the location as soon as possible.

For the designing phase of the project HTML, DHTML are used. Active Server Page (ASP) is used for server side scripting. Visual Interdev and FrontPage are used as GUI tools. MS SQL Server 2000 acts as backend tool. The coding is executed in Internet Explorer 5.0 or above. It is created in such a way that it is suitable for Windows 95/98/NT/2000/XP versions. The server scripts are executable only with presence of Windows NT / 2000 running IIS.

# 1.2 ORGANISATION PROFILE

## WIPRO INFOTECH

At, Wipro they are focused on using technology in a way that translates into real, business benefits for their clients. Wipro has the ability to deliver to tight deadlines, their obvious focus on quality, their ability to scale resources and the overall cost effectiveness of the solution. Wipro's offerings are based on well-defined development and implementation methodologies...that also help to reduce the risks and cost associated with projects.

### Some quick facts about Wipro:

- India's most valuable company.
- Over 20 years of IT Consulting, Systems Integration and Engineering Services experience.
- 27 offices worldwide, 13,000 IT Practitioners and domain Consultants.
- More than 300 customers across USA, Europe and Japan.
- 91% projects completed on schedule as opposed to an industry average of 55%.
- 98.5% requests serviced on time.
- Customer satisfaction index of 4.2 on 5.0.
- Largest order through customer referral.

### Wipro's Promise:

With utmost respect to *Human values*, we promise to serve our customer with *Integrity*, through a variety of *Innovative ideas*, *Value of Money* products and services, by *Applying Thought*, day after day.

## **2.SYSTEM STUDY AND ANALYSIS**

### **2.1EXISTING SYSTEM ENVIRONMENT- LIMITATIONS**

The existing system has not provided much chance for the employees to enhance their services to their customers. Employees do find much difficulty in accessing their wants and needs.

In the existing system the customer are not able to post their queries, complaints at anywhere at any time. The customers had to spend much time in posting their queries and complaints. This leads to customer's dissatisfaction. Since the existing system is not web based the system did not enjoy the advantages of the web-based applications.

The security measures of the existing system were not accurate and reliable. Intranet networking is not possible. Due to this the service engineers find it difficult to use this system. Many reports that are required by the Managers, Administrators, and Service engineers could not be generated accurately with the required details from the existing system.

With respect to the administrator, the existing system did not serve to be a CRM providing tool, a marketing tool. Through the call centers the company can attract many customers. Wide area connectivity is not possible from the existing system. The existing system did not serve to be a better relationship management tool.

## **2.2 PROPOSED SYSTEM**

The proposed system consists of the following features:

### **WEB BASED:**

The system is a web-based application. The application provides a user-friendly environment for the customers who are dispersed geographically.

### **OPERATOR FRIENDLY:**

The system provides user friendly at operator end. The operator has to be able to operate his part according to the requirements of the customer.

### **CUSTOMIZABLE:**

The information view can be customized as per the requirements of the company. The services provided by the call center can be changed as per the requirements of the company.

### **SECURITY:**



Multi-level security is where critical information will be hidden from other users. Database level security can be set for validating the username and password. Password level security can be set and the user level for logging in purpose to prevent misuse of the application.

## **CRM:**

The system is capable of implementing customer relationship management. CRM aims at achieving customer empowerment and satisfaction and to maximize customer loyalty and revenue. It also provides a chance to understand better about customer wants and needs.

## **CUSTOMERS CHOICE:**

The service provided by the system must be able to cope up the customers standard and by the media of their choice. Customer can thus be addressed by his or her id. The system provides the users to use web based media service or telephone based media services, which ever suits them.

## **PROVIDE ACCESS ANYTIME ANYWHERE:**

Access to services will be ever hour of everyday, from wherever the customer chooses. The system is a

web based product the customers maybe able to give their queries or problems at anytime.

### **ENABLE CUSTOMERS TO HELP THEMSELVES:**

Customers will have access to information and can choose self-service. Many customers will prefer to find information or initiate transactions on their own.

### **KNOWING THE CUSTOMERS:**

Manufacturers have to know the customer needs and wants through every customer contact. The manufacturers may capitalize on the knowledge gained by them, so that they are capable of building better relationships with their customers and to cater as per their needs. To help manufacturers to concentrate alone in production, service can be handled through a separate department called the call center.

### **THE GOAL OF THE PROPOSED SYSTEM ARE:**

- Increase the availability of employees or customers.
- Extend the information supplied to customers.

- Process requests more efficiently.

**ALL THIS IS TO ENSURE:**

- Increased customer satisfaction.
- Differentiation from competitors.
- Long-term customer loyalty.

**THE NEW SYSTEM CONSISTS OF THE FOLLOWING MODULES:**

- ❖ Administrator login
- ❖ Customers login
- ❖ Call Login
- ❖ Call Allocation
- ❖ Call Status
- ❖ Call Enquiry
- ❖ Call update

- ❖ Reporting the responses to customers
- ❖ Reporting the responses to Managers,  
Administrator and Service Engineers.
- ❖ Table updation

### **ADMINISTRATOR LOGIN:**

To enter into the main menu the administrator has to enter his username and password. He is the entire controller who handles all the details of the above modules. He has the rite to assign the service engineers to customers depending on their availability.

### **CUSTOMERS LOGIN:**

The login screen comprises of New Member Registration, Password Updation, and Removal of Login. The administrator has the rights to access this screen.

### **CALL LOGIN:**

This screen comprises of the details of the customers .The call login screen has 3 subscreens and

automatic updation is done in the 3 subscreens. The datas are stored in their respective tables.

### **CALL ALLOCATION:**

The customer's details are transferred from the call login screen to the call allocation screen automatically. The Administrator allocates the service engineers manually here.

### **CALL ENQUIRY SCREEN:**

Either the customer or service engineer has any doubts regarding the customers details they can refer this screen for clarification. Here the summary of the calls i.e., customer details will be stored.

### **CALL STATUS SCREEN:**

The current status of the calls i.e., whether the calls have been attended or not, has the problem been solved, and if any spare parts have been changed etc, will be stored here.

## **CALL UPDATION SCREEN:**

Selected details about the customers, the problems and solutions for the attended calls, Customers feedback, Engineers feedback and the like will be updated here.

## **REPORTING THE RESPONSES TO CUSTOMERS:**

The main aim of a call center to satisfy their customers. So periodic reports regarding their complaints are sent to the customers.

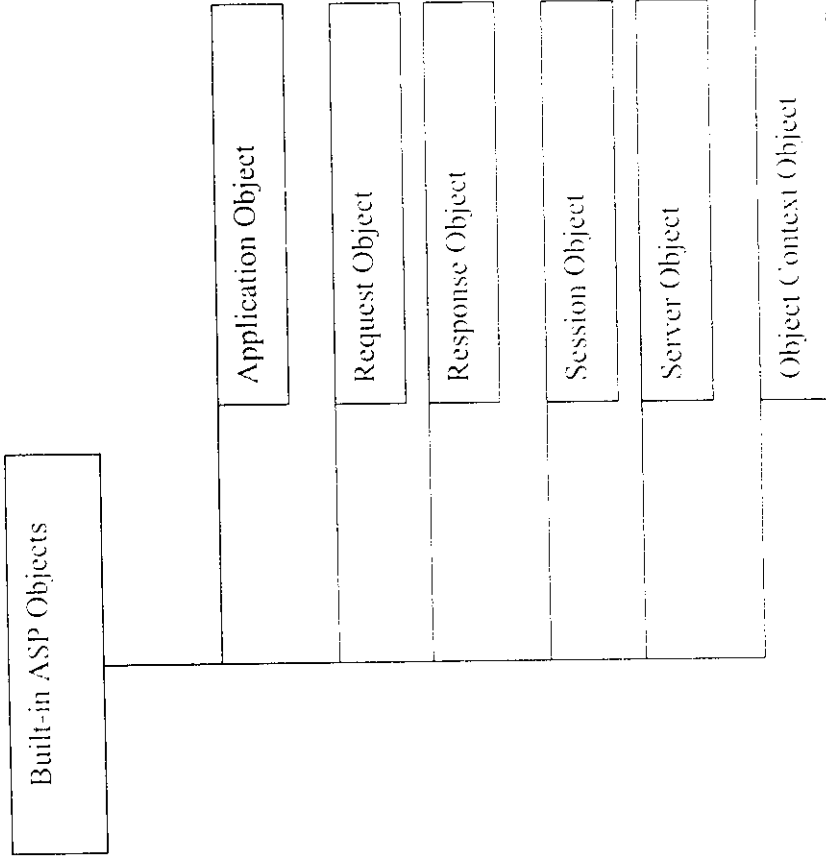
## **REPORTING THE RESPONSES TO ENGINEERS:**

The administrator will give the Engineers a report containing the details of the customers i.e., their queries, and complaints.

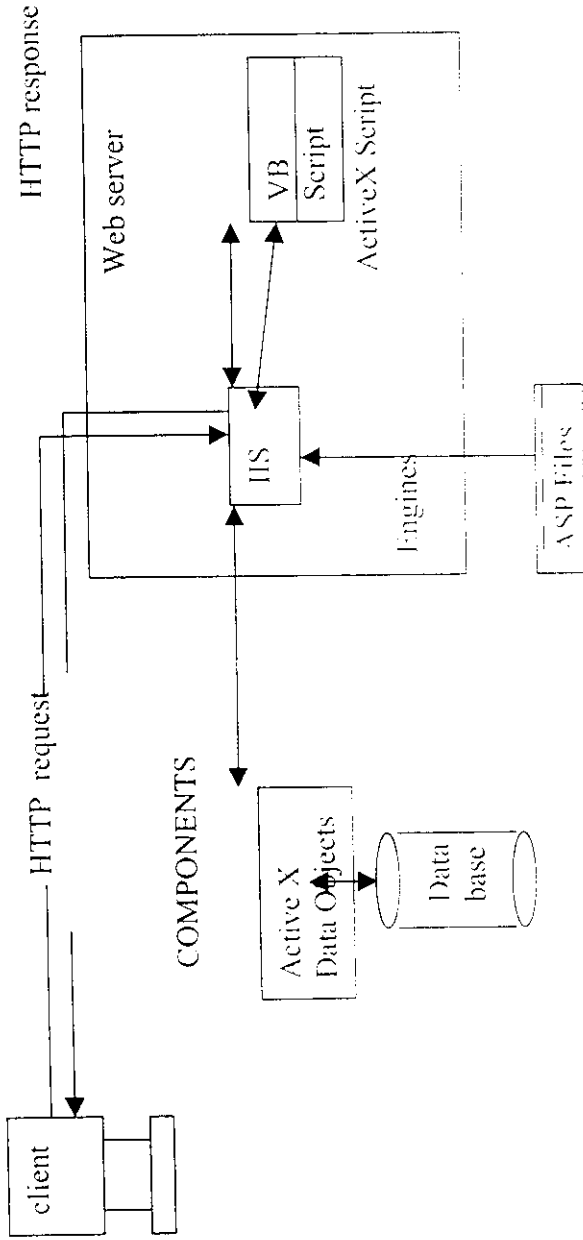
## **TABLE UPDATION:**

All the details updated in the screens are stored in their respective database tables, which are developed using SQL server. Any updation if necessary can also be done.

## BUILT-IN ASP OBJECTS



HOW AN ASP REQUEST IS FULFILLED





# 3.PROGRAMMING ENVIRONMENT

## 3.1HARDWARE SPECIFICATION

### PRODUCTION MACHINE

- Machine: Wipro Netpower 7225Z
- Processor: 2x Intel Pentium Xeon Dual Processor
- Hard disk: 36GB x 3(SCSI )
- RAM: 2 GB
- Keyboard: 108 keys
- Mouse: 3 buttons
- Monitor: 17" colour monitor

### DEVELOPMENT MACHINE

- Processor: Intel Pentium III Processor 1 GHz
- Machine: Wipro Super genius 9100 MW
- Hard disk: 40 GB

- RAM: 128 MB
- Keyboard: 108 keys
- Mouse: 3 buttons
- Monitor: 17" colour monitor

## **SOFTWARE SPECIFICATION**

### **Client side**

- Windows 95
- Internet Explorer, Netscape Navigator
- Internet Connection tools

### **Sever side**

- Windows NT 4.0
- Web Server (Internet Explorer 5.0)
- SQL Sever 2000 as backend
- Active server Pages for Server side scripting

## **3.2 DESCRIPTION OF SOFTWARE AND TOOLS USED:**

### **INTRODUCTION TO ASP**

An ASP file can contain text, HTML tags and scripts. Scripts in an ASP file are executed on the server.

#### **WHAT IS ASP?**

- ASP stands for Active Server Pages.
- ASP is a program that runs inside IIS
- IIS stands for Internet Information Services
- PWS is a smaller-but fully functional-version of IIS.
- ASP is a Microsoft technology.
- To run IIS we must have WINDOWS NT 4.0 or later.
- To run PWS we must have WIN95 or later.
- Instant ASP is another technology that runs ASP without WINDOWS.

## HOW DOES ASP DIFFER FROM HTML?

- When a browser requests an HTML file, the server returns the file.
- When a browser requests an ASP file, IIS passes the request to the ASP engine. The ASP engine reads the ASP file, line by line, and executes the scripts in the file. Finally, the ASP file is returned to the browser as plain HTML.

## ASP OBJECTS

An object is something that typically has methods, properties, or collections. An object's methods determine the things we can do with the object. An object's properties can be read or set to specify the state of the object. An object's collections constitute different set of keys and value pairs related to the object.

- Application
- Object Context
- Request
- Response
- Server
- Session

- **APPLICATION OBJECT:**

The application object is used to share information among all users of a given application. An ASP-based application is defined as all the .ASP files in a virtual directory and its sub directories. Because more than one user can share the application object, there are Lock and Unlock methods to ensure that multiple users do not try to alter a property simultaneously.

- **REQUEST OBJECT:**

When a browser asks for a page from a server, it is called a request. The ASP request object is used to get information from the user.

- **RESPONSE OBJECT:**

Response object is used to send output to the client.

- **OBJECT CONTEXT OBJECT:**

The object context object is used to commit or abort a transaction, managed by component services that have been initiated by a script contained in an ASP page.

- **ASP ERROR OBJECT:**

We can use the ASP error object to obtain information about an error condition that has occurred in script in an ASP page. The ASP error object is returned by the Server.GetLastError method. The ASP error object exposes read-only properties.

- **SERVER OBJECT:**

The server object provides access to methods and properties on the server. Most of these methods and properties serve as utility functions.

- **SESSION OBJECT:**

We can use the Session object to store information's needed for a particular user session. Variables stored in the session object are not discarded when the user jumps between pages in the application; instead, these variables persist for the entire user session.

The web server automatically creates a session object when a user who does not already have a session requests a web page from the application. The server destroys the session object when the session expires or is abandoned.

## **COMMUNICATING WITH A DATABASE USING ACTIVEX DATA OBJECTS (ADO):**

ActiveX data objects come with ASP and allow pages to easily connect to database. ADO works with any OLEDB source, which includes ODBC-complaint sources. So it will work with most databases currently being used. The ADO model contains six objects:

The connection object connects to the data source. Obtaining a connection is the first step to working with databases. The Record set object allows working with a data in a table. The Recordset object contains a set of rows from a table. It can be used to read through the rows of a table, modify the rows, or collect new data to be added to the table. The error object represents an error generated by the data sources. The errors collection is used when a single failed method call is allowed to generate multiple errors. The field objects represent a single column in a table. The command object provides another way to create a Recordset object. It combines the Recordset object and the connection object. The parameters collection contains any parameters needed by the command. The parameters are stored in a parameter object.

## **JAVA SCRIPT**

Perhaps the best-known scripting language prior to the introduction of VBScript was JavaScript. JavaScript is used to create interactive web applications supported by the Netscape browser. JavaScript offers many of the same advantages as VBScript. JavaScript is simple to use, light weight and dynamic. Developers can easily embed code functionality for interactive applications inside a web page.

The Internet Explorer 3.0 supports JavaScript directly through a scripting engine in the file jscript.dll. In fact, we can use both VBscript and JavaScript in a single web page.

## **FONT CONTROL:**

Styles provide all the text control features normally found in word processors, font size, weight, family and decorative features such as underlining.

## **TEXT SPACING:**

Styles provide margin, padding, and border spacing features which are block formatting information equivalent to 'paragraph formats' in word processors.

## **POSITIONING:**

Styles allow the element they apply to be located away from the normal position it would adopt when rendered by the browser. Absolute positioning allows the element to appear anywhere.

## **SUPERIMPOSITION:**

With absolute positioning a possibility elements can overlap. The style mechanism defines the z-order that resolves which element appears on top.

## **VISIBILITY AND DISPLAY:**



Elements can take up visual space in a document or they cannot be allocated any at all, much like hidden form fields. If they do take up space, then they can be visibly present (the normal case) or just withhold that space from other users, like the Netscape proprietary <SPACER>tag.

## **VBSCRIPT**

VBScript is a subset of visual Basic for Applications. Therefore, VBScript programming has many similarities to Visual Basic for Applications programming. Many of the powerful features of Visual Basic for applications such as classes and API call were omitted to make the language portable and secure.

Although VBScript is just text and can be written with a simple text editor, a graphical design tool for VBScript is available. This visual layout tool is called ActiveX control pad. ActiveX control pad allows us to combine HTML code; ActiveX controls, and HTML layouts, And VBScript or Javascript. ActiveX control pad works in conjunction with a HTML layout control. The HTML layout control is a drawing board that allows us to visually add and manipulate controls.

VBScript promises the same boom in ActiveX development that we have seen in OCX control. Because VBScript, with the support of the Internet Explorer, can automate ActiveX components, vendors can design ActiveX controls to perform a particular Internet task.

VBScript does not have an integrated debugging environment. This means that code debugging

can be rather demanding. Typically, we run the script in a browser and trouble shoot any errors that may occur. The most suitable debugging component is a well-placed MSG Box, and until a complete IDE is available, development will remain cumbersome.

## **JAVASCRIPT VS VBSCRIPT**

JavaScript and VBScript have many similarities. Infact, anyone who has mastered VBScript will find JavaScript just as easy to learn. Since the Internet explorer supports both languages, knowledge of the fundamentals of both is valuable. The key differences between JavaScript and VbScript are as follows:

### **SYNTAX**

As stated before, the most obvious difference is syntax. JavaScript uses curly brackets to denote functions, whereas VBScript uses functions...end functions and sub...end sub. Infact Jscript supports only functions, whereas VBScript supports both functions and sub routines. If we want to create a function that behaves like a sub routine in Jscript, simply omit the return value.

### **OBJECTS**

Neither Jscript nor VBScript is truly object-oriented. Without digressing into a full definition of object oriented programming, we can safely say that neither language exhibits all of the characteristics of a truly object oriented language. Nither language, for example, supports the concept of inheritance.

Jscript, however, makes stronger use of objects than does VBScript. Jscript allows for the definition of classes for the subsequent creation of objects. To define a class, we create a function that specifies the class name and the class's properties and methods.

VBScript does not support object creation or used defined classes. VBScript supports only reusable functions and sub routines. In order to use VBScript to manage the above information for multiple students; we would have to create separate variables for each student we wanted to track.

## **LANGUAGE SCALABILITY**

A primary difference between VBScript and JavaScript is scalability. Once we learn VBScript, we are well on our way to learning visual basic for applications. Although JavaScript has similarities to C++, it is a new language.

## **INTERNET INFORMATION SERVICES**

Internet information services (IIS) Microsoft's brand of web server software, using Hyper Text Transfer Protocol (HTTP) to deliver World Wide Web documents. It incorporates various functions for security, allows for CGI application, and also provides for gopher and File Transfer Protocol (FTP) servers. In version 4.0 and earlier, IIS was named Internet information server.

## **SQL SERVER**

## **INTERNET INTEGRATION**

SQL Server is an ideal data base engine for powering web sites. With IIS, SQL Server can add database capabilities to web sites. Through tight integration with IIS, SQL Server can be queried and updated via popular web browsers. SQL Server's native ODBC lets it interoperate smoothly with a IIS.SQL Server web assistant let's one automatically update HTML pages on the fly either data triggered or scheduled using SQL Servers built – in scheduling system.

## **TRANSACTION PROCESSING**

Consistency and recoverability of a database are guaranteed in case of system failure, even in the middle of complex updates by more than one user. SQL Server treats all database changes inside a transaction as a single unit of work. By definition, either an entire transaction is completed safely and all the resulting changes are reflected in the database, or the transaction is rolled back and all changes to the database are undone. Using a two phase commit protocol, SQL Server can even support synchronized transactions, which span more than one server, helping to guarantee that all the servers on the network will be maintained in a consistent state.

## **IMPLICIT CONCURRENCY CONTROL**

Another benefit of SQL server's transaction processing design is implicit concurrency control. SQL server employs dynamic locking, a locking architecture that keeps concurrent users from interfacing with each other during queries and updates. Page-level locking is the default, with optional insert row level locking. All SQL servers locking are implicit-the programmer does

not have to worry about locking commands. The process of obtaining a lock is exceptionally fast since lock information is stored in a memory resident table. Multiple levels of locking are supported; an SQL server always picks the least restrictive lock needed to support the operation.

SQL server's built-in intelligence is capable of supporting both adhoc and programmed updates to the database using any available s/w with complete safety-a crucial requirement if a server is to be an open platform for popular client applications.

### **HIGH AVAILABILITY (DYNAMIC BACKUP AND AUTOMATIC RECOVERY)**

SQL server avoids costly downtime for routine maintenance tasks. Nothing is more detrimental to productivity than network resources that become periodically unavailable. SQL server's dynamic backup allows one to backup database even while user are actively reading and writing to them-a fundamental requirement for mission critical applications. In case of system failure (operating system crashes, power outages, etc.) SQL server's automatic recovery mechanism recovers all databases to the last state of consistency in a matter of minutes with no administrator intervention. Applications can be up and running again right away. SQL server's high availability design even allows one to perform database design or diagnostics while the system is online.

### **CLIENT SERVER ARCHITECTURE**

It makes it possible for multiple front ends to share informations, enabling one to choose the most appropriate tool for the job. SQL server makes efficient use of network. Because data base queries are processed at the centralized server network traffic is reduced.

## **RICH, WINDOWS –BASED SYSTEM ADMINISTRATION**

SQL enterprise manager provides graphical management of database objects such as tables, views, stored procedures and triggers. Visual basics-based scripting can extend these capabilities to automate remote operations across multiple servers.

## **NETWORK INDEPENDENCE**

Unlike database servers, which run only on proprietary operating systems or support only proprietary network protocols, SQL server is network independent. Because SQL server relies on open industry standards, it can run most popular networks.

## **SCROLLABLE CURSOR SUPPORT**

SQL server's cursors support simplified development of rich data browsing applications with the capability such as forward/backword scrolling, position updates and deletes and flexible concurrency control options.

## **SINGLE PROCESS, MULTITHREAD ARCHITECTURE**

Microsoft SQL server consistently high performance in a client/server DBMS. It is optimized for Windows NT, and uses a very efficient design that incorporates multiple native threads within a single process to handle user request- allowing queries to be processed in parallel with a very little overhead and no runtime memory allocation. This architecture is also memory efficient. The major advantage is the throughput. SQL Server does not slow down as multiple users are added to the network.

## **CLIENT ADVANTAGE**

- Easy to use
- Supports multiple hardware platform
- Supports multiple software applications
- Familiar to the user

## **SERVER ADVANTAGES**

- Reliable
- Sophisticated locking
- Fault tolerant
- High performance hardware
- Centralized control

# **4.SYSTEM DESIGN AND DEVELOPMENT**

## **4.1INPUT DESIGN**

Input design is the part of the overall system design, which requires very careful attention. Most expensive part in this is that the collection of input data interims of equipments and persons involved. If a data going in to a system is incorrect then processing an output will magnify these errors. Several stages during input design that are to be carried out are:

- ❖ Data recording
- ❖ Data verification
- ❖ Data correction

The users are provided with the screens to log on and enter details of request, view the status of request and post comments on the services offered to them. The screens will be designed in HTML using scripting languages such as JScript, VBScript, etc. The client will be a thin client with only the web browser at their end and all the processing will be server side using ASP.

The administrator will type the site's URL and enter the home page of the site. When a customer has been registered then a username and a password will be given to them. Using this information the user can log into this system and post their queries. Once the user logs in, they will be provided with a screen where they can enter all the necessary inputs.



## 4.2 OUTPUT DESIGN

Output from the computer systems are required primarily to communicate results of processing to users (including machine based systems) they are also used to provide 'hard copy' of the results for the later consultation.

The output of the system is a report which provides the user the response to their appropriate queries posted by them. The output consists of the

- ❖ Response
- ❖ Date of posting the response
- ❖ Name of the engineer who has posted the query
- ❖ Query posted date
- ❖ The query to which response has been posted
- ❖ Number of days taken for providing response.

The customers who have posted their queries through web can get their response through web. The customers posting their queries through phone can get their responses through phone. The user can also get the status of the query.

## 4.3 DATABASE DESIGN

### TABLE STRUCTURES

#### ADMIN

USERNAME    VARCHAR

PASSWORD    VARCHAR

PRIMARY KEY:      USERNAME

#### LOGIN

LOGINID    VARCHAR

PASSWORD    VARCHAR

PRIMARY KEY:      LOGINID

#### LINK

CALL\_NO    VARCHAR

SERVICE\_TYPE                                    VARCHAR

ACCOUNT\_NAME                                    VARCHAR

ADDRESS    VARCHAR

MACHINE\_TYPE                                    VARCHAR

MC\_ITEM\_SL\_NO                                   VARCHAR

HARDWARE\_SOFTWARE                            VARCHAR

CHARGABLE                                        VARCHAR

CRITICAL    INTEGER

CALL_TYPE	VARCHAR
CONTACT_PERSON	VARCHAR
CUSTOMER_E_MAIL_ID	VARCHAR
CUSTOMER_PHONE_NO	INTEGER
CALL_DATE	DATETIME
TO_BE_ATTENDED	DATETIME
UNIT	VARCHAR
CALL_LOGGING_FROM	VARCHAR
PROBLEM	VARCHAR

**PRIMARY KEY:** CALL\_NO

**FOREIGN KEY:** ACCOUNT\_NAME

**UPDATE**

CALL_NO	VARCHAR
DATE	DATETIME
ENGNAME	VARCHAR
SYS_MODEL	VARCHAR
PERI_ADD_ON_MODEL	VARCHAR
SERVICE_TYPE	VARCHAR
CALL_TYPE	VARCHAR
PRODUCT	VARCHAR
CALL_CAT	VARCHAR
CALL_REPORT	VARCHAR
CALL_ASSIGN	VARCHAR

TRAVEL_TIME	DATE TIME
CALL_ATTEND	VARCHAR
START_OF_SERVICE	DATE TIME
END_OF_SERVICE	DATE TIME
ENG_TIME	DATE TIME
ACTION_TAKEN	VARCHAR
PART_REP	VARCHAR
CALL_STATUS	VARCHAR
USERNAME	VARCHAR
TEL_NO	INTEGER

**FOREIGN KEY** :CALL\_NO WITH RESPECT TO LINK TABLE

**FOREIGN KEY**: ENG\_NAME WITH RESPECT TO ENGINEER1 TABLE

### **CUSTOMER1**

CUST_ID	VARCHAR
CUST_NAME	VARCHAR
CUST_ADD1	VARCHAR
CUST_ADD2	VARCHAR
CONTACT_PERSON	VARCHAR
E_MAIL	VARCHAR
PHONE	INTEGER

**PRIMARY KEY**: CUST\_ID WITH RESPECT TO LINK TABLE

### **ENGINEER1**

ENG_ID	VARCHAR
--------	---------

ENG\_NAME                    VARCHAR  
ADDRESS                    VARCHAR  
MOBILEPAGER\_NO INTEGER

**PRIMARY KEY:** ENG\_ID

**LOGIN2**

CALL\_NO                    VARCHAR  
CUST\_CODE                 VARCHAR  
CUST\_ADD1                 VARCHAR  
CUST\_ADD2                 VARCHAR  
CUST\_ADD3                 VARCHAR  
CITY\_CODE                 INTEGER

**PRIMARY KEY:** CALL\_NO WITH RESPECT TO LINK TABLE

**LOGIN3**

CALL\_NO                    VARCHAR  
MC\_ITEM\_SL\_NO             VARCHAR  
ITEM\_DESC                 VARCHAR  
SERVICE\_DESC             VARCHAR  
START\_DATE                 DATETIME  
END\_DATE                    DATETIME

**PRIMARY KEY:** CALL\_NO WITH RESPECT TO LINK

**RESPONSE**

CALL\_NO                    VARCHAR  
ACCOUNT\_NAME              VARCHAR  
CALL\_DATE                  DATETIME

CUST_ADD1	VARCHAR
PROBLEM_DESC	VARCHAR
MC_ITEM_SL_NO	VARCHAR
CRITICALITY	INTEGER

**PRIMARY KEY:** CALL\_NO WITH RESPECT TO LINK TABLE

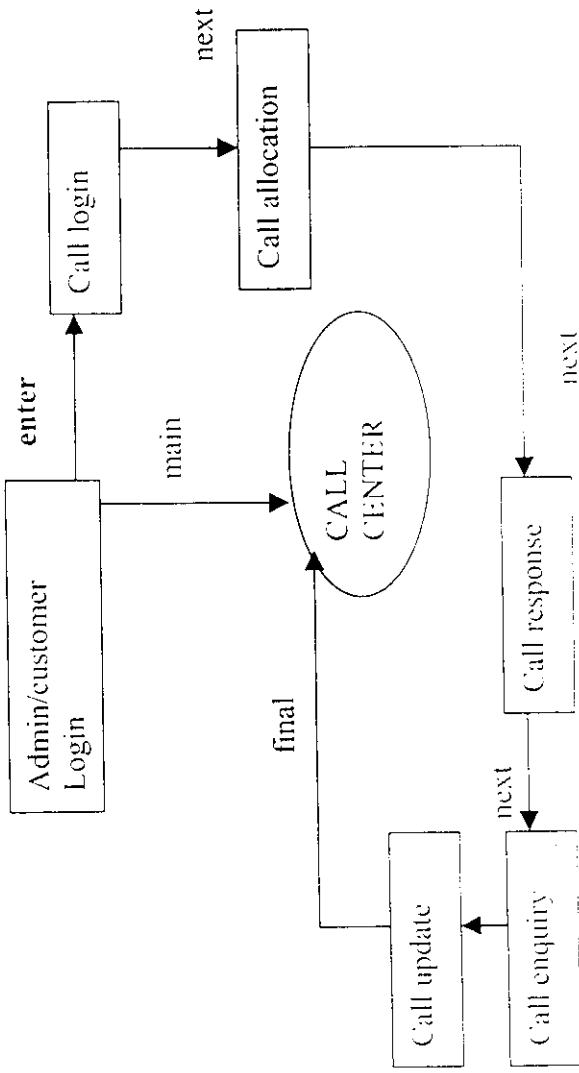
## **4.4 PROCESS DESIGN**

### **DATA FLOW DIAGRAM**

A data flow diagram is a graphical technique that depicts information flow and transforms that are applied as data moves from input to output. In this graph the nodes represent the processing activities and the arcs specify the data item to be transmitted between processing nodes. The DFD may be used to represent system software at any level of abstraction. The DFD provides a mechanism for functional modeling as well as information flow modeling. The DFD might represent dataflow between concurrent processes, or data flow in a distributed computing system where each node represents a geographically remote processing unit. Unlike flow charts DFDs do not indicate the decision logic or the conditions under which the various processing nodes in the diagram might be activated. DFDs are an excellent means of communicating with the customers during the requirement analysis and they are also useful for representation of excellent and top-level internal design specifications, naming conventions. Data flow oriented design is an architectural design method that allows a convenient transition from the analysis model to a design description of program structure.

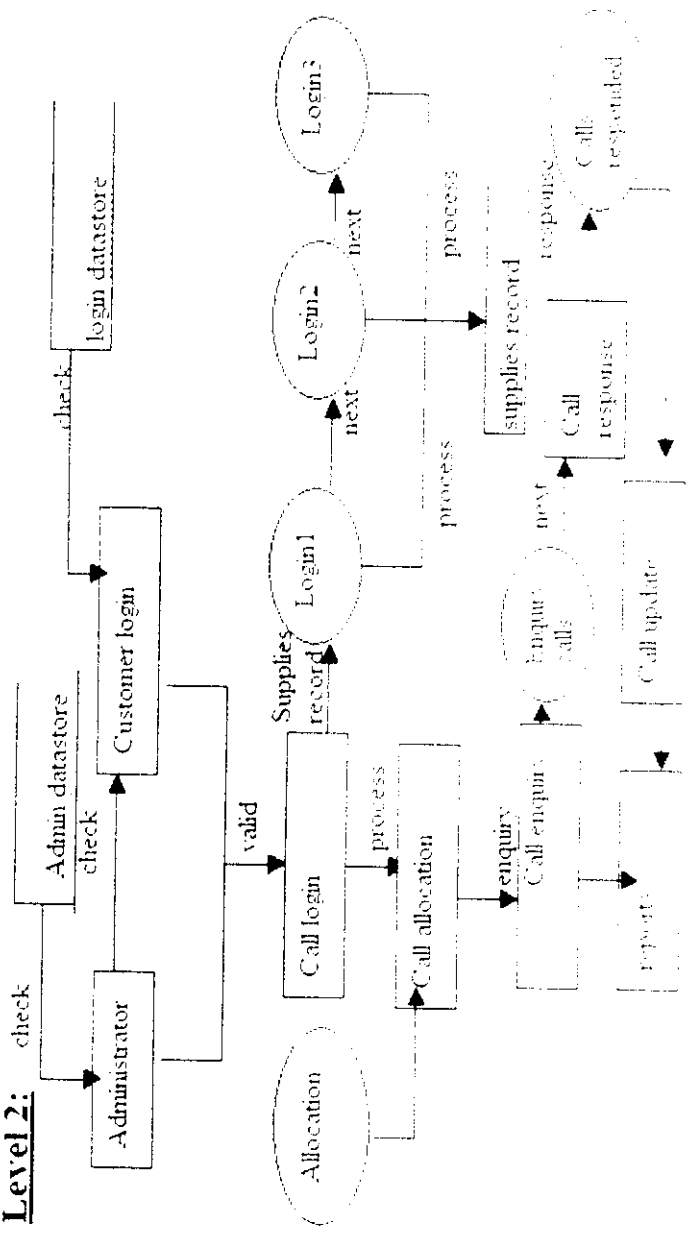
The design phase is mainly concerned with the identifying software components (functions, data streams, and data stores), specifying relationships among components specifying s/w structures.

# DATA FLOW DIAGRAM





**Level 2:**



# **5.SYSTEM IMPLEMENTATION AND TESTING**

## **5.1SYSTEM IMPLEMENTATION**

Implementation is the key stages in achieving a successful new system because; usually it involves a lot of upheaval in the user department. It must therefore be carefully planned and controlled. Normally, this involves setting a co - coordinating which will act as a sounding board for ideas, complaints and problems.

Apart from planning the two other major tasks of preparing implementation and education and training of users and testing of the system. Education of the users should to really have taken place much earlier in the project when they were being involved in the investigation and design work, at the implementation stage the emphasis must be on training in new skills to staff so that they could be able to cope up with the new system. Once the staff has been trained, system can be tested. The whole system should be tested for flaws. Once the coordinating committee is satisfied with the training and the resting, changeover can begin.

## **SYSTEM TESTING**

A strategy for s/w testing integrates s/w test case design methods into a well-planned series of steps that results in the successful construction of software. A software testing strategy should be flexible enough to promote the creativity and customization that are necessary to adequately test all large s/w based system. It should also promote reasonable planning and progresses.

Testing is vital to the success of the system. System testing makes logical assumption ie.all parts of the system are correct; the goal will be successfully achieved.

## **DISPLAY TESTING**

Display testing was conducted to ensure that all the display procedures are working properly. The display information is checked whether the information is properly displayed in various modules.

## **UNIT TESTING**

Here, each individual program was tested using the test data. The outputs as per the requirements were found satisfactory. Thus it was possible to conclude that every program in the s/w is functionally correct. The interrelated modules were also tested in an exhaustive fashion that will make the whole s/w work properly.

## **INTEGRATED TESTING**

The individual programs are combined together to form modules. Integrated tests were performed on each of the modules and again the validity is checked. After that, all modules were brought under a single module and the integrity test was found to be successful.

This system is validated in such a way that even the slightest deviation in inputting the data will invoke error messages and provide guideline regarding the input.

## **5.2 SYSTEM TESTING REFINEMENTS BASED ON FEEDBACK**

### **OBJECTIVES OF TESTING:**

- ❖ Testing is the process of executing a program with the intent of finding an error.
- ❖ A good test case is one that has a high probability of finding a discovered error.
- ❖ A successful test is one of that an undiscovered error.

The system on a whole were tested for the following:

- Validation of inputs.
- Sequence tests.
- Consistency of application.

The objective of testing is to discover errors. To fulfill these objectives a series of tests were planned and executed.

## **MODULE TESTING:**

Each module is tested for errors. Module testing is done to check whether each and every module is working as per the requirements under various conditions.

## **LOGIN TESTING:**

The login process was tested with both authorized and unauthorized login. Access is denied for invalid login ids and incorrect passwords. Passwords were changed and addition and deletion of users were done.

## **6.CONCLUSION**

We hereby conclude that the project work entitled “Call Center Project for Customer Care” designed to solve their problems faced by the customers and professionals. It focuses on Customer Care issues found in the Consumer Affairs, Customer Service, Teleservices and System malfunctions.

The mission is simple – that keeps our computing environment running. The project provides extreme satisfaction to the customers and this has been the main objective of our project. Authentication and validation is provided for security purposes. Our project has the facility to be implemented in the Internet and intranet.

We are sure that this project will be implemented successfully in the company. This project is flexible enough to support any future enhancements required by the company.

## **7.SCOPE FOR FUTURE DEVELOPMENT**

This system can be integrated with other MIS systems or any be allowed to function independently. File uploading can be integrated in this, in which files can be copied into the destination directory through the use of scripting. Also it is also possible to send mails regarding the status of the complaints to individuals. Embedding VB Components into the HTML page can do this.

- Voice response applications can be developed to provide better user interface.
- The application can be enhanced in the future by providing mailing services by the application to the customers for better service.
- The application could also have a Search Engine tool, which may enable the customers to know their queries with short period of time.
- Unified messaging can also be implemented in the future, which allows users to manage all their voice, fax, and e-mail messages from a single application on their multimedia - equipped PC or laptop.

### **Change Over**

Once all the preparatory work of implementation had taken place the system has been tested and the staff trained – the change over from old to new system began. Changeover is the state of moving over from old manual system to the new computer – based system.

In order for the changeover, the clerical file had to be converted into computer format and media and then input to the computer to form the new computer files. When the files have been set up on the



computer, the changeover properly takes place. There where several possible methods to achieve this, e.g. direct changeover, parallel running and staged changeover.

The implementation co – coordinating committee choose the most appropriate method that is the direct changeover in our case of execution. The users are satisfied with the results and the new system is working properly under the system analyst.

### **Creating an Effective Change Management Plan**

Planning and managing change, both cultural and technological, will be one of the most challenging elements of the project. Understanding the key areas of change management, and the associated traps and pitfalls and other areas has to be encountered, which is critical to the success. The transition to new tools and technology, including key areas to be considered when planning major technical improvements and system changes.

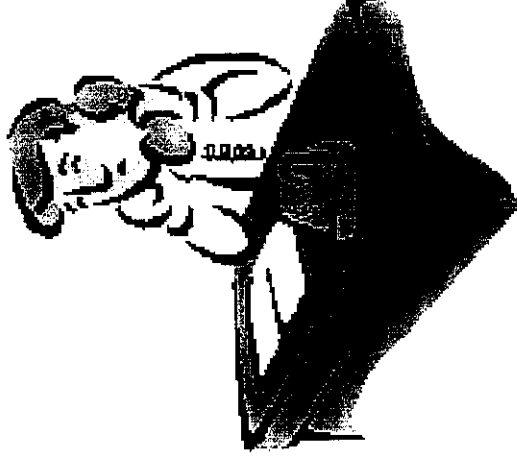
# WIPRO INFOTECH

WIPRO INFOTECH LIMITED | WIPRO INFOTECH LIMITED | WIPRO INFOTECH LIMITED

## WIPRO INFOTECH LIMITED

ADMINISTRATOR'S LOGIN

CUSTOMER'S LOGIN



# ADMINISTRATOR LOGIN

Enter the details for login

Username: **admin**

Password: **xxxx**

# LOGIN MAINTENANCE

login name:

password:

To update password "click" update password

Login name:

password:

To unregister'click'remove login

Login name:

password:

# COMPASS CUSTOMER CARE

For all "C" System 5000's

CALL LOGIN SCREEN

CALL ALLOCATION SCREEN

CALL ENQUIRY SCREEN

CALL RESPONSE SCREEN

CALL TRANSFER SCREEN

# CALL LOGIN SCREEN

call number:	123
service type :	warranty
contact name:	ram
address:	ssi
company type:	wipro
company item s/rc:	1234
Hardware/Software:	<input type="radio"/> Hardware <input type="radio"/> Software
Chargeable:	<input type="radio"/> Yes <input type="radio"/> No
priority:	1
call type:	correct_maintanance
contact person:	raj <input type="button" value="update"/>
customer e-mail id:	ram@yahoo.com <input type="button" value="update"/>
customer phone no:	876567 <input type="button" value="update"/>
call date:	1 Jan 2002
to be attended:	1 Jan 2002
login:	Keyboard
call logging from:	Phone
	loose connection
problem:	
	<input type="button" value="Submit"/> <input type="button" value="Reset"/>

# CALLS CATEGORISED INTO SERVICE TYPES

service type:

call reg no	dat	eng_name	sys_model	peripheral_addr	service type	call type	product	call_cat	call_rep	call_assign	travel cost	call_a
123	2 apr 2002	ramu	wipro	logitech	Warranty	24 *7	Desktop		2 apr 2002	2 apr 2002	2	2 apr.
126	22 nov 2002	arun	acer	logitech	Warranty	Site Ins	Datacomm	Software	22 nov 2002	22 nov 2002	5	22 nov 2002

# CALLS CATEGORISED BASED ON LOCATION

Enter the city code:

ok your citycode is valid

call_no	cust_add1	cust_add2	cust_add3	city_code
123	ssi	r.s.puram	coimbatore	0422
123	mit	ebe	ebe	0422



## SAMPLE CODING

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<HTML><HEAD><TITLE>LOGIN MAINTENANCE FORM</TITLE>
<META http-equiv=Content-Type content="text/html; charset=windows-1252">
<META content="MSHTML 6.00.2600.0" name=GENERATOR>
<META content="Microsoft Visual Studio 6.0" name=GENERATOR></HEAD>
<BODY text=purple bgColor=lavender>
<P>
<SCRIPT language=javascript>
function check()
{
if(frm.loginid.value=="")
{
alert("Enter the Login Name");
return false;
}
else
if(frm.password.value=="")
{
alert("Enter the Password");
return false;
}
else
return true;
}
</SCRIPT>

<CENTER>
<H1>LOGIN MAINTENANCE </H1></CENTER>
<FORM name=frm action=createlogin.asp method=post>
<CENTER>
<H3></CENTER>
<TABLE cellSpacing=0 cellPadding=5 width=400 align=center border=0><FONT
color=#000000 size=2>
<TBODY>
<TR>
<TD align=right><B>login name:</B> </TD>
<TD><INPUT name=loginid> </TD></TR>
<TR>
<TD align=right><B>password:</B> </TD>
<TD><INPUT type=password name=password>
</TD></TR></FONT></TBODY></TABLE>
<P>
```

```

<CENTER><INPUT onclick="return check();" type="submit" value="create login"
name=submit>
</FORM>
<P>
<H3>To update password "click"update password </H3>
<P></P>
<FORM name=fr action=updatepassword.asp method=post>
<TABLE cellSpacing=0 cellPadding=5 width=400 align=center border=0><FONT
color=#000000 size=20></TR>
<TBODY>
<TR>
<TD align=right><B>Login name:</B> </TD>
<TD><INPUT name=loginid1> </TD></TR>
<TR>
<TD align=right><B>password:</B> </TD>
<TD><INPUT type=password name=password1>
</TD></TR></FONT></TBODY></TABLE>
<CENTER>
<P><INPUT type=submit value="update password" name=update>
</CENTER></FORM>
<H3>To unregister'click'remove login </H3>
<FORM name=frms action=removelogin.asp method=post>
<TABLE cellSpacing=0 cellPadding=5 width=400 align=center border=0><FONT
color=#000000 size=2>
<TBODY>
<TR>
<TD align=right><B>Login name:</B> </TD>
<TD><INPUT name=loginid2> </TD></TR>
<TR>
<TD align=right><B>password:</B> </TD>
<TD><INPUT type=password name=password2>
</TD></TR></FONT></TBODY></TABLE>
<P>
<CENTER><INPUT type=submit value=removelogin name=delete>
</CENTER></FORM>
<P>&nbsp;</P></CENTER></H3></BODY></HTML>

```

## **8.BIBLIOGRAPHY**

- Christoph Wille,Christian Kollar,ACTIVE SERVER PAGES IN 24 HOURS,Sams Publishing,1999.
- Smith Eric,ACTIVE SERVER PAGES BIBLE ,IDG Publications,2000
- Buczek Greg,ASP DEVELOPERS GUIDE,Tata McGraw Hill Publications,1999.
- Stephan Walther,ACTIVE SERVER PAGES 2.0 UNLEASHED,BPB Publications,1999.

### WEBSITES

- [www.aspdeveloper.net](http://www.aspdeveloper.net)
- [www.asp.com](http://www.asp.com)
- [www.asp-help.com](http://www.asp-help.com)
- [www.activeserverpages.com](http://www.activeserverpages.com)
- [www.aspfree.com](http://www.aspfree.com)
- [www.aspwire.com](http://www.aspwire.com)

## **GLOSSARY OF TERMS**

- Customer/User :Person(s) accessing the website to enter their requests.
- Clients :Person(s) or Organisation who will maintain the website.
- Developer :It is the same as supplier within this report.
- Application :The website,also the product,which deals with call center management of any service industry.
- CHP :Customer's home page.
- OHP :Operator's home page
- CRM :Customer relationship management.
- Supplier :Person(s) or organization that is developing the product.