A dynamic Web Site
Of
Rawalpindi Water And Sanitation Agency
(RWASA)

Submitted to :

Sir Javed Hussain
(Course Coordinator)

Submitted by:

Kashif Abbas
&
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COMPUTER CENTRE
QUAID-E-AZAM UNIVERSITY ISLAMABAD
2002

$\mathcal{FINAL}\ \mathcal{APPROVAL}$

This is to certify that we have studied the Project Report title "Dynamic Web Site of RWASA" prepared and submitted by **Mr. Kashif Abbas & Kamal Hussain**, students of Computer Center, Quaid-I-Azam University (QAU), and Islamabad, as a final Project of Post Graduate Diploma in Computer Science (PGD). We verify that this report is based on their personal efforts. It bears a sufficient standard to be warranted thus it is acceptable by Quaid-I-Azam University, Islamabad for the Post Graduate Diploma In Computer Science (PGD).

Committee

1. **External Examiner**

    Name------------------------   Signature------------------------

2. **Supervisor**

    Sir Javed Hussain   Signature------------------------
    Course Coordinator
    Quaid-I-Azam, University
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3. **Director**
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    Islamabad.

بسم الله الرحمن الرحيم

LETTER OF TRANSMITTAL

To,

The course coordinator,

Computer Center

PGD Department,

Quaid-e-Azam University

Islamabad.

Dear Sir,

We Mr. **KASHIF ABBAS (PGD-10/70) KAMAL HUSSAIN (PGD-10/40)** students of **PGD-10** hereby submit our project report for evaluation. We accomplished our project on **Rawalpindi Water & Sanitation Agency.** Located at **Liaqat Bagh Murree Road Rawalpindi.** Mr. Tariq Ansari appointed as SYSTEM ANALYST in the same organization supervised our work at RWASA. Our superior can be contacted on Phone No.5541542.

A letter regarding our project requirements in the above named organization is also submitted.

Sincerely,

Kashif Abbas

Kamal Hussain

ACKNOWLEDGEMENTS

We have no words to express our deepest sense of gratitude to almighty ALLAH who has blessed us with knowledge, gave us courage and strength to complete our project against all odds and adversities.

Would that we have words to pay our tribute to our teacher and Project Supervisor whose invaluable prays, salutary advises and emboldening attitude kept our spirit alive to strive for knowledge and integrity which enabled us to reach this milestone.

We pay our heartiest tributes to our internal supervisor *Sir Javed Hussain* for his valuable suggestions, positive criticism and guidance. Without that it would have been almost impossible for us to accomplish this task successfully.

We are also thankful to Mr. Tariq Ansari (System Analyst), Mr. Asad (Programmer) who helps us a lot in completing our project. We applaud the nice company provided to us by our friends and all the class fellows during the past one year. We 'll always cherish our association and affinities with all of them and treasure the good days and happy moments spent with them.

We believe that completion of report is due to the joint efforts by all the members of the group i.e., yourself and the people you work with and seek from. However, the project report would not have been possibly completed without the guidance and support of our teachers. They took keen interest in our project guided us at every step.

<div align="right">Kashif & Kamal</div>

DEDICATION

" TO Sir Javed Hussain Who is Always

Inspirational For Us And Make Us To Work

By Our Self."

PROJECT BRIEF

PROJECT TITLE : A DYNAMIC WEB SITE DEVELOPMENT

DEPARTMENT/ : RAWALPINDI WATER AND
ORGANIZATION   SANITATION AGENCY (RWASA)

UNDER TAKEN BY : KASHIF ABBAS
KAMAL HUSSAIN

SUPERVISED BY : SIR. JAVED HUSSAIN
(Course Coordinator)
Computer Centre
Quaid-e-Azam University
Islamabad

STARTING DATE : 24th JUNE 2002

COMPLETION DATE : _____ 2002

LANGUAGE USED : HTML, DHTML, ASP, JSP, VB SCRIPT

DATABASE   MS-ACCESS
APPLICATION
OPERATING SYSTEMS : WINDOWS 2000

SYSTEM USED : PANTIUM-III, RAM 128 MB.

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ABSTRACT

Internet is one of the most fantastic and unbelievable blessings of the modern science. It has changed our way of thinking, has improved our living standards and has made things a lot easier for us. Now, world is no more a vast territory, rather it's just like a small town which is in reach of everyone.

In this busy and fast age, it was not possible for people to go personally to the offices for registering their ordinary everyday complaints so WASA, being an everyday partner of the people, along with the people they, both were in search of an easiest, strongest and the most reliable medium of communication between each other. The most interesting phenomenon is that the medium was laying somewhere very close to us but it was only the matter of opening the eyes and seeing around. At last, WASA found this superb medium of web.

We were assigned the task of developing the Dynamic Web Site of WASA. This system will help the consumers of WASA to register their complaints online and they will be able to see the status of their complaints. Now, by virtue of this web site it is very easy for every layman to contact his everyday partner and inevitable friend WASA. This is how WASA stepped into the realm of web. One stop on web, life giving and perfect!!

INTRODUCTION

1.0 PROJECT OVERVIEW

Today there is a rapid development in the world. Things have changed. All the distances have decreased. There are many things involved in this rapid change, but the most important and basic thing is rapid development in information technology. This development has a lot more effect on our lives. Take any field of life and examine what it was before IT and what changes It has brought in it. For example, if we take a banking system, before IT people had to do a lot of work manually. All calculations and all other transactions were done manually due to which there were a lot of chances of errors but IT has reduced the chances of these errors almost equal to null. It has also reduced manpower. A place where ten persons were working before, now a computer with one operator is enough there. Similarly it saves a lot of our time. The calculations, which we used to do in hours, can now be done in seconds with a computer. Security has also increased due to IT.

The most important development in the field of IT is Internet or World Wide Web. It has shrunken all the distances and now the world has been changed into a Global Village. Whatever type of information we need, we can get within no time.

Keeping in view all the advantages of Information Technology and making use of Information Technology in enhancing the efficiency and effectiveness of RWASA in the service delivery. we were assigned a job to develop the dynamic Web Site of RWASA.

1.1 ORGANIZATION 's OVERVIEW

The Rawalpindi Development Authority was formed in 1990 under the Punjab Development of cities act 1976, with, inter alias, responsibilities for the development, operation and maintenance of the water supply sewerage and drainage system with the area.

Considering its benefits under a long term planning and in order to alleviate burden of civic services on Rawalpindi Municipal Corporation (RMC), RWASA was raised in August 1992 in a skeleton form to initially take over Rawal Lake Filtration Plant only, from Public Health Engineering Department, which is took over in July 1996. It became fully operational on 01 April 1998, when it took over water supply and sewerage system from RMC under forced and hasty circumstances, without taking over all related assets like land and residential storage accommodation etc. ADB has laid down the taking over of Water Supply and Sewerage Services from RMC by 01 April 98, as one of the preconditions for extending their loan for Urban Water Supply and Sanitation Project being executed by Project Management Unit-an interface of WASA.

WASA present capacities are as under.

a. WASA served area   27 SQ KM (2640 Hectares)

b. Population   0.75 approx

c. Water Supply System

     -Filtration Plant capacity   21 mgd

     -Water Works   2 Nos.

     -Overhead Reservoirs   23(1.76 MG)

d. Total Water Available   29 MGD

e. Water Demand   47 MGD

f. Sewerage System

    - Length of Sewers   120 KM

    -Disposal Station   1 No. (Abandoned)

    -Population Served   30%

1.1.1 RESPONSIBILITIES OF ORGANIZATION

The responsibilities of WASA are as follows:

- The production, distribution, operation and maintenance of water treatment and disposal of sewage.

- The supply of bulk treated water, under contract, to the Contentment Board and Military Engineering Services (MES).

- The reception treatment and disposal of sewage from the Cantonment from which charges will be made either separately or included in the bulk water charges.

- The acquisition of water from Khan-Poor Dam and the operation and maintenance of system from the clear water reservoir pumping station.

- The operation and maintenance of the Rawal Filtration Plants, ring tube wells and sewage treatment plants

1.2 PROBLEM STATEMENT

The interaction of WASA consumers with the RWASA was completely manual and consumers face a lot of problems to make complaints and viewing their water bills. All the complaints are registered manually so a lot of stationary and manpower is consumed. In a manual system the data is also liable to lose with the passage of time and anybody can access data for any purpose. And there is no feedback to consumers about their complaint status. Also there was no representation of RDAWASA on the Web.

- RDWASA is an important Government Agency but having any representation on Web. so there is no corporate information available on net.

- In the existing manual system the only means of registering a complaint is either by telephone or the person himself visits the office. So in the manual system sometimes his complaints are not given proper attention. Sometimes it may happen that a person makes a complaint on telephone and RWASA employee forgets to note it down on register.

- In the present system monitoring is not possible.

- In the present system status of a complaint is not available e.g. if a person registers a complaint and after 3 days he wants to know the status of his complaint that how much work has been done on it. It is not possible in the current system.

- In the manual system the bills are delivered home to home and if the bill is misplaced due to any reason the consumer is totally unaware of the situation and many of consumers do not keep record of there water bills.

1.3 SCOPE OF THE PROJECT

The scope of the project is to automate a portion of RWASA's operations (Complaint Tracking and online Bill Delivery). The consumers of RWASA will be able to register their complaint online and they will also be able to check the status of their complaint, view their latest Water and Sewerage Bills and Billing History. After implementation of this project RWASA can save a lot of time and manpower and utilize this to serve it's consumers more efficiently.

1.4 PROPOSED SYSTEM

The proposed system for all the problems is to build a web site with following characteristics

- The website will be official web site of RDA WASA
- The website will have all the basic organizational information about the RWASA
- The website will have a news section where visitors can view latest news regarding RWASA's operations.
- The website will have an online discussion forum where visitors can participate in an online discussions so that RWASA can be aware of what the general public thinks of RWASA's operation.
- The website will have A downloadable form of the new water connection
- It will have a complete online consumer area where all the Registered consumers can
- Register their complaints
- Check the status of their complaint
- View and print their latest Bill
- View and print their billing history
- Change the password of their Online account

The Web

2.0 Overview and History of the WEB

The Internet is a gigantic, decentralized network of computer networks, connecting millions of people in the world electronically.

Until the early 1980s, what is now called the Internet was a relatively small network called ARPA net. This small network was mainly used as a research tool for about 15 years. After the Internet was created, many universities and government organizations got connected to it to exchange and distribute information. Although at first the Internet was used exclusively for educational purposes, commercial organizations realized the potential of the Internet and connected to it, as well. The Web was created to address information distribution problems on the Internet. Until the creation of the Web, almost all information distribution was accomplished through email, FTP, Archie, and Gopher. Email (electronic mail) became widely used for exchanging information between various groups of people as well as individuals. FTP (File Transfer Protocol) was used to transfer files from one computer to another. Archie was used to locate various files on the Internet. Due to its very nature, before long information was scattered all over the Internet. Therefore, unless you knew where information you needed was located, you had no way of searching for it. This became a major problem when someone had to navigate the Internet in search of information. Because a well-organized information infrastructure was missing, the Internet could not be used to its full potential .As a solution to this problem, Gopher was invented at the University of Michigan. Gopher is a database of information that is organized by using a hierarchical menu interface. Gopher was designed to narrow a user's search from general information to very specific information by offering the user selections of topics

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from various layers of menus. To extend the amount of information that can be provided, Gopher proved to be a more efficient way of locating and distributing information, its capabilities were limited. Mainly, information distributed by way of Gopher was virtually limited to plain text, and access to information at various locations was not very well organized. Furthermore, Internet information technologies that were being used around that time were plugged with limitations, such as the following:

Platform dependence

Lack of standards

Incapability of richly formatting content

Limited virtually to plain text

Cryptic user interface

Lack of security

Familiarity with UNIX often required

Incapability of being extended to accommodate new technologies

Due to these and other limitations, a new platform independent method had to be invented to distribute information on the Internet. This issue was addressed at the European Particle Physics Laboratory CERN (Conceal European pour la Recherché Nuclear) in Geneva, Switzerland, when Hyper Text Markup Language (HTML) was created. HTML was derived from a document formatting language called Standard Generalized Markup Language (SGML). HTML was designed to be a document markup language that's easy to learn, use, and transmit over the Internet. HTML is simpler to use and easier to learn than SGML. To transmit HTML documents on the Internet, a TCP/IP (Transport Control Protocol/Internet Protocol) based protocol was invented. This protocol became known as Hyper Text Transport Protocol (HTTP). The World Wide Web was born with the creation of HTTP and HTML. The Web addresses many of the limitations listed earlier by providing content providers with a powerful medium to distribute information. Web servers speak HTTP to transmit HTML files, and Web browsers use HTTP to retrieve HTML files. Web browsers display various objects, both static and interactive (such as text, images, and java applets), upon retrieving them from Web servers.

With the unification of text, graphics, video, sound, and interactive applications, the World Wide Web has become an exciting medium of information interchange compared to Gopher. Thanks to the World Wide Web, someone looking for information is finally able to browse various

information sources and easily travel from one source to another by following various hyperlinks. Hyperlinks are objects that refer to Uniform Resource Locators (URLs) of Web pages. When a user clicks on a hyperlink, he or she is transferred to the Web page to which the hyperlink is linked. URLs can be thought of addresses of Web pages. Every Web page has one or more URLs associated with it. With the help of special applications and browsers, the World Wide Web has quickly become vehicle for text and multimedia distribution on the Internet. The World Wide Web gained much of its popularity after Mosaic (Web browser) was released in 1993 by the National Center for Supercomputing Applications (NCSA).

The Internet, often called the Information Superhighway by the media, connects computers all over the world to a degree not even anticipated by futurists. With the Internet growing at an astounding rate, businesses around the world see a wealth of opportunity presented by this new medium. Some companies see the Internet primarily as a tool for speeding existing business processes. Others see it as a way to offer new services and to create new sources of revenue. Prophets tell of the day when all business transactions, ranging from customer service to buying and selling of goods and services, can be conducted on the Internet .The Internet is a large network formed by the interconnection of the computer networks and individual computers all over the world, via phone lines, satellites, and other communications systems. The Internet has it roots in ARPA net, established by the Advanced Research Projects Agency. It was a research and defense network created by the US department of Defense in the early 1970s to research network systems and to allow scientists and researchers better communication and data exchange for other projects. One of the early outcomes of this initiative was the development of new ways of routing data via multiple paths using units of data called packets; the destination address of each packet was built into its structure. These methods became the standards known today as Transmission Control Protocol/Internet Protocol (TCP/IP), and form the common language of the Internet allowing different types of computers and different types of networks to interact user.

2.0.1 ARPANET

- Advanced Research Project Agency Network
- Created in 1968 by the Department of Defense (DOD)
- ARPANET's design had multiple hosts with multiple connections (no hub)

- Decentralized control meant the network could operate even if a number of hosts were lost

- Created to reduce the chances of a total network failure during the cold war.

- Originally designed to operate on a UNIX platform.

2.0.2 NSFNet

- In the 1980s, the DOD assigned the ARPA project to the National Science Foundation (NSF)

- NSF added more supercomputers and more access to networks

- Expanded the range of sites: businesses, universities, government, military institutions and more.

2.0.3 www

- World Wide Web

- Created in March 1989 by Tim Berners-Lee, at *Conseil Européen pour la Recherche Nucléaire* (CERN), European Laboratory for Particle Physics. His hypertext system was proposed to better share information between scientists.

- W3C (World Wide Web Consortium, founded in 1994) defines common standards, specifications, and interoperability for the web.

- Information is presented in many formats: sound, graphics, video, etc.

- Provides a visual layout for hypertext links, browser software, code structure, etc.

- Web pages are written in HTML (Hypertext Markup Language), with interactive objects using Java, JavaScript, VBScript, and applets, ASP, JSP etc.

- A hypertext communication system.

2.1 How the Internet Works

2.1.1   TCP/IP

- Transmission Control Protocol/Internet Protocol

- "Low-level" software that transmits information from one computer to the destination computer.

- Information being transmitted is broken into packets, and each packet is then sent separately. A packet is data that has been processed by the protocol so it can be sent across a network. If a packet is lost in the process of transmission, only the missing packet needs to be retransmitted, not the entire transmission.

- The Internet is decentralized, so if one connection on the route is lost, the information can simply be re-routed elsewhere. IP recognizes the damaged route, and goes around it. This flexibility assures an accurate and steady flow of information regardless of any particular connection.

2.1.2   IP Addresses

- Internet Protocol Addresses

- The Internet's data transmission standard, whereby every computer on the Internet has its own IP address, which allows data packets to be delivered to a specific computer (like a mailman delivering mail to your door).

- A flexible, expandable 32-bit (at present, 128-bit in future) addressing system that allows for billions of current and future users.

- Also called "dotted quad" or the "dot address"(the numeric IP address consists of four sets of numbers (0-255) separated by a dot. e.g. 172.10.199.20.

- With the expansion of the Internet with e-commerce, there is currently a shortage of IP addresses. To offset the demand for IP addresses, sub netting and super netting are often used.

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2.1.3 Clients and Servers on the Internet

Client/Server systems are distributed computing system where tasks are divided between the server and the client. Programs run on many desktops at a time and interact with the server as the common, central computer. Businesses transmitting large amounts of data across the Internet limit available bandwidth (the amount of information or traffic that can a network can carry at a time).

2.1.4 Email Clients and Servers

- Internet email operates within an email client program.

- Users only need to be connected to the email server to send and receive email, not while reading or writing emails.

- The server does not have to perform complex error checking because messages are formatted in the email standard (in the client program).

2.1.5 Connecting to the Internet

To support an Internet client, you need:

- Computing device – PC, laptop, Web TV, Internet phone, handheld device

- Operating System - Windows 9x/NT/2000, Linux, UNIX

- TCP/IP – Internet Protocol

- Client software – Internet browser, email, news group programs (most with a GUI)

- Internet connection – dial-up (modem, ISDN) or direct (cable, DSL) connection to an Internet Service Provider (ISP)

- Internet addresses – web addresses, email addresses, server addresses

2.1.6   Dial-up Connection

- Most dial-up connections use a phone line and a modem (modulate/demodulate)

- Use either Serial Line Internet Protocol (SLIP) or Point-to-Point (PPP) connections. PPP is the more robust choice.

- Web TV usually uses an analog modem and phone line to connect to the Internet.

ISDN - Integrated Services Digital Network (also called a "terminal adapter") -requires a digital phone line.

2.1.7 Direct Connection

- Internet connection is always on

- LAN connection, Cable TV, DSL (Digital Subscriber Line – replacing ISDN)

- Requires a Network Interface Card (NIC) with correct connectors (RJ-45, BNC)

- More expensive than dial-up connections

- Cable modems share the cable network in their neighborhood (speed determined by number of users at that time)

- DSL speed depends on distance between the DSL line and the phone company's main distribution frame.

- Both cable and DSL modems commonly drop below 512 Kbps.

2.2 Internet Protocols

Protocols are the rules that define how clients and servers communicate across a network.

- File Transfer Protocol (FTP) – transfers files between computers

- Electronic mail (email) – transfers messages between computers

- Telnet

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- News and Gopher

- WWW

- Hypertext Transfer Protocol (HTTP) – transfers HTML documents across the Internet

2.2.1 FTP

- Developed to enable researchers to access programs and large data files

- Transfers files between two computers or one computer and one server

- Can be protected with user ID and passwords, or not (Anonymous FTP sites)

- Sites that don't require an account are called Anonymous FTP sites (with "guest" or "anonymous") – often universities.

Two kinds of resources available: binary files (machine language, often executable programs) and large text files. To download files, the FTP client program uses the *get* command or clicking on the file. To download multiple files, FTP client uses the *mget* command.

2.2.2 Gopher

- An older UNIX-based menu system used to find text-based resources quickly (like library catalogues and phone books). Similar to the Web today.

- Gopher searches and retrieves documents using a Gopher viewer or browser (browsing with Gopher is also called tunneling).

- Keyword searches using search engines like Veronica (Very Easy Rodent-Oriented Net-wide Index to Computer Archives)

- Gopher home is: "gopher://gopher.tc.umn.edu">gopher://gopher.tc.umn.edu

2.2.3 HTTP

- Transfers Web pages from a Web server to a Web client (browser)

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- HTTP is a "request-response" type of protocol, in that it tells the server to send in a specific format when a client opens connection to a server making a request. When the server responds, the connection is closed.

- From W3C: "The Hypertext Transfer Protocol (HTTP) is an application-level protocol with the lightness and speed necessary for distributed, collaborative, hypermedia information systems. It is a generic, stateless, object-oriented protocol, which can be used for many tasks, such as name servers and distributed object management systems, through extension of its request methods (commands). A feature of HTTP is the typing and negotiation of data representation, allowing systems to be built independently of the data being transferred.

2.3 Domain Name System (DNS)

- A system that maps unique, hierarchical names to specific IP addresses.

- Translates the numeric IP address into server names.

- A Domain Name is made up of three parts: www.brainbuzz.com

- www – server/host name (specific)

- Brain Buzz – registered company domain name

- Com – domain category, country code or top level domain (general)

- Some companies further divide their DNS by department, workstation, location...

- Top Level Domain (TLDs) names:

- Com – commercial/company

- edu – educational institutions (universities)

- gov - government (US)

- Mil – military (US)

- Org – organizations, clubs, associations, non-profit...

- Net – network sites, including ISPs

- Int – international organizations
- Two-letter country codes (ca, uk, au, ch, jp...)

2.4   Uniform Resource Locator (URL)

When you use a web browser, you identify Internet resources with a URL. A URL specifies both the location (Domain name) and the protocol to access it (FTP, HTTP, HTTPS).

2.4.1   Prefixes

- http:// - Web page URL
- ftp:// - FTP site URL
- gopher:// - Gopher URL
- mailto: - email URL
- news: - newsgroup URL

2.5 INTRANET

Intranet provides organizations with a network that operates like the Web, but where access is restricted to a Limited group of authorized users. These users can easily access and share documents, calendars, and event. Information to enable them works more easily. An intranet system should:

- Improve internal communication and dissemination of information
- Breakdown barriers between functions and departments
- Improve efficiency and productivity through access to corporate knowledge
- Support teamwork with dispersed users
- Deliver cost savings through removing paper based documentation
- Support re-engineering of business process by offering self-service access to company processes

2.6   A Web Site Is The Face Of An Organization

The World Wide Web has been the engine of the Internet's explosive growth since 1994. It began in the early 1990s as an exercise in creating hyperlinks between pages of text at the CERN physics research facility in Europe, but soon after that, web browser software became capable of displaying graphics too. Today, as an easy- to- use, graphical, Point-and-click way of navigating through billion of pages of information, the web has become the face of the Internet.

While e-mail is essential for being able to do e-commerce at all, a web site of your own is the way to make your presence known to the world. Your web site can act as advertisement, brochure, catalog, storefront, order desk, and service center at once. How it looks and works reflects on your business. On the Net, email is your voice, but your web site is your face.

2.7 WEB SITE DEVELOPMENT

(A Step-By-Step Approach)

2.7.1   Idea Generation

The effectiveness of the whole website basically depends upon its idea generation phase because we know that strength of a building depends heavily on strength of its base. So before starting the actual website clear thinking is required. This phase includes:

Organizational Objectives Determination

Means the actual job you want to accomplish after completing your website. You are required to enlist that what organization is expecting from this website and in which ways. In this phase you have to analyze that what information you would require and how you can gather it and from where etc. There may be some obstacles in collecting data you want but you have to ensure that you have some alternatives to collect such information to present on the website.

User Requirements Gathering

Is also critical because you can't develop a good website only for achieving organizational goals and ignoring the users requirements at all. First of all, analyze that who would your users be, what they are expecting from this site and how can you provide solution to their requirements in the best possible way. Simply we can say that follow the simple rule of "Always Keep in mind, the customers (users)."

Idea Finalization

Is the final part of this idea generation in which you are required to figure out the proposed plan of the website in detail. At this point you must have more than a couple of alternative to start with because your plans may become infeasible, as you'll move on. So develop your alternatives and research upon them but again keep in mind the visitors aspect more than the organizational aspect in designing every secret you want to reveal. This part is interesting but can become tricky as sometimes, you may require to insist the management for some really helpful aspects which they usually don't reluctant to adopt.

Anyway, after analyzing these steps, you must have a complete sketch for the whole website. Dimensions for the input, the process required, the output and finally the feedback must be analyzed and roughly designed before finally putting some serious efforts into the development of final product.

2.7.2 Interface/Layout

The idea generation is not the only issue the developer has to face for developing websites. He has to make a complete analysis for the layout of the website. For this layout design, he must look into number of issues because leaving anyone of these aspects may create a big problem not only for the visitors but for the management as well and this mistake can cause the loss of number of visitors only in their first visit to this website. These issues may include:

> Creation of Home Page,
> Designing of Subsequent Pages,
> Providing an Interactive Navigation,

- ➢ Containing a Consistent Theme,
- ➢ Use of Proper Scripting Languages,
- ➢ Applying Suitable Graphics and Images,
- ➢ Giving Values to Visitors,
- ➢ Providing Correct Figures,
- ➢ Using Tables for Better Look,
- ➢ Considering Different Browsers Capabilities, and
- ➢ Considering Various Resolutions in Use.

1. Home Page

Designing the home page is the biggest issue that the developer has to face because it requires a lot of thinking, research, creativity and knowledge not only about the organization whose website is being made but also about the other similar organizations' websites' home pages.

The home page must be interactive and simple in the same time for social organizations, because the research shows that the visitors want to look colorful home pages only for commercial websites while for the social websites (non-Commercial) they prefer cool home pages.

Having cool home page doesn't mean that it should loose its interactivity. The interactivity of home page includes giving the main idea about the nature of organization, having complete navigation, colors according to organization's theme color, some pictures, less text, logo of organization and scroll-less page size etc.

A Thing, which shouldn't be present in website is introduction phase (usually a flash intro these days) for few seconds and then showing all contents or then asking the visitor to click somewhere to have the contents of homepage. Similarly it shouldn't have colors that are awkward for eyes to bear, too much text that can take more than 1 minute to read, hidden navigational links, nasty sound etc. The homepage must be small in size so that it wouldn't take more than 30 seconds in average to be uploaded. It may include the combination of small pictures but shouldn't contain a large image of heavy size.

Finally, the developers shouldn't put all their skills and knowledge into a single homepage because try to become the smartest may cause a hit back.

2. Subsequent Pages

As mentioned earlier that the website developer shouldn't put all his efforts and skills only into homepage because the visitors are concerned more with the subsequent pages than the home page as they spent more time on them. Generally speaking, the subsequent pages must have a consistent look. These pages should have some shadow of the homepage. Furthermore, they shouldn't also be heavy like the homepage. These pages can contain large text and may be of scrollable size.

These subsequent pages must be complete with respect to their links and their information, as the messages like "Page Not Found", "Under Construction" or "Coming Soon" does not leave a good impression in the visitors' mind. Try to put all required information on the same page, if possible, and guide the visitor through to your subsequent pages so that he can feel comfortable on your website.

3. Browsing

The developers must also think to present the navigation in a new shape because the navigation holds a big and critical part in the effectiveness of the websites. The navigation must include all the major page links so that the visitor can move easily from one portion to another. The title of these page links must be given appropriately so that the visitor can know at least something about the world hidden behind that click at his very first glance.

For navigation interactive and dynamic buttons, simple text with some effects, small pictures like animated gifs can be used. Anyhow, what type of navigation you use, the basic purpose is to provide an easiest way to move from one segment to another only by a simple click so whatever tool you use, present it as simple as you can so that the visitors don't get lost in the website.

Avoid duplication of links in the same navigational menu. Similarly, you shouldn't include the sub-menus in the parent navigational hierarchy though you must include these in the subsequent pages' menu bar.

4. Themes

The basic theme of website includes the color, both of background and the text, size and weight of text, text effects, font, size of headings, line spacing, use of pictures, paragraph alignment etc.

All these ingredients form a complete theme collectively and by missing anything from it can create a bad look for the whole website.

There isn't any hard and fast rule for developing a theme but you may consider the following things to develop a formidable theme for your website:

- Use organizational color wherever appropriate.
- Use such fonts that are usually and easily available on all computers.
- Define more than one font so that if the main font is missing in the client's computer, the other one automatically replaces it.
- Use normal font size. (Neither too large nor too small.)
- Use such font color that must be easily readable on your background.
- The background color must be cool and bearable to human eyes.
- The pictures, if used, in background must look like watermarks behind the text.
- Headings must be easily identifiable in the text.
- All the text and pictures must be properly aligned.

The defining of such themes on every page is very hard working job but you can do it easily with the usage of style sheets. The style sheet contains the whole theme of your website so by simply applying this sheet to all your pages, you can get required effect on the whole website easily.

5. Scripting Languages

Selection of best scripting language is another aspect that requires a lot of discussion. It totally depends upon your requirements and your personal choice and your expertise. Ideally, one should:

- Use a combination of good scripting languages at both ends i.e. Front-end and Back-end according to the requirements,
- Use specific languages for specific purposes,
- Follow the basic language techniques and standards,
- Try to customize, where appropriate, as much as one can,
- Not go only for latest technologies. Select the one that can serve the best, and
- Not make a mesh of scripting languages.

6. Graphics & Images

The gentle use of graphics and images make your website interactive and beautiful but otherwise it can create a big problem for you because these images can make your web page heavier than the normal hence takes more time than normal to be uploaded. For using images and graphics, keep following important things in mind:

- ➢ Determine carefully the need of images and proper place to use these images,
- ➢ Keep in mind the users' time, which they would likely to spend for your page to be downloaded,
- ➢ Keep the format of the images as gif in usual as all browsers support such type of images,
- ➢ By using gifs instead of jpegs, you can compress your web pages,
- ➢ Use the thumbnails to show more than one images on the same page with an option to enlarge it by a single click, where required,
- ➢ Use an appropriate background for the images,
- ➢ Use images as background as well where you deem them necessary and
- ➢ Keep all images properly aligned.

7. Attraction For Visitors

You should never expect that the visitors will come onto your website again and again even if you have provided all relevant information but neglected the providing of required value to these users. Besides providing all relevant information, you must take into consideration, the visitors' aspect. For this, you can use number of ways to generate interest of the visitors for your website.

The traditional way for this is to provide a suggestions/comments form. But having only such form is not enough as you are required to maintain it properly. You must reply these suggestions, complaints and comments in the earliest otherwise the visitors will think that you are not listening. The other ways for this is to provide big online competitions, small trivia tests, poll sections etc. but again keep in mind that you must keep these things lively and updated for best responses.

8. Updated Figures

The website must contain some figures and facts for the visitors. It is the best to provide only related figures but you can add some other important facts and figures on your website. For providing such figures, you must ensure that you are providing the correct and updated facts and figures. You should never give over or under estimated figures because such misleading figures creates an ambiguity in the visitors' mind about the authenticity of other information available on the website.

9. Borders/Tables

Use of tables solves the problem of formatting organized cells of data into rows and columns. As these can be specified as visible with or without borders, they provide a plenty of flexibility in their use. These tables are not only used for presenting the numerical data into a tabular form for ease of understanding but can also be used for improvement in the look of the website. Though tables are available in most of the browsers but there use must be made carefully also.

10. Browsers

While developing the website, keeping in mind the browsers capabilities and attributes is very much required. Technically speaking, the different browsers act on different platforms hence behave differently and provide a totally different look. You may visit a number of websites that are developed only for particular versions of browsers and you can't view them on other browsers or even on other versions of the same browser. What a pity? Because by this you lose a number of visitors who need your website but can't use because they use the other browsers. A good developer is one who develops the websites that look alike in all versions of different available browsers in the market.

11. Resolution Setting.

Another technical aspect is that the Internet users all over the world use different screen resolutions according to their requirements, choice etc. Some use 640 x 480 pixels, while some other use 800 x 600pixels. Similarly in some computers 1024 x 768 pixels are used while other use 1152 x 864 or 1280 x 1024 or 1600 x 1200 pixels. So sometimes it happens that a website looking marvelous in 640 x 480 pixels looks pathetic on 1024 x 768 pixels' resolution. Simply, a

good website is that which looks complete and possess all its attributes in all these possible resolutions so the developer must consider such things as well.

2.7.3 Debugging The Website

Debugging the website is an essential step towards creating a well designed website and the developer must take care of this aspect right from the start because if the website wouldn't work the way it was intended to, it wouldn't be effective. So one must take time to check and test everything before posting it on the web.

An important tip for this debugging is to debug The debugging of the website includes checking the functionality of scripts, spellings of the text, the look of the site not only in different resolutions but also in various browsers, hyperlinks and pages linked to them, the images functionality etc.

The problems as they come your way and to recheck all the functionality again because sometimes the changes made also affect something other, which one can't expect usually. One shouldn't create a list of all such problems to remove them after some time and then checking them collectively.

Furthermore, you must ensure that after finishing your testing, you ask someone other to test because they'll often be able to detect some bugs about which you didn't know before.

2.7.4 Domain Registration

Domain name selection and registration is one thing that not only affects the cost analysis but also the effectiveness of the marketing campaign. Usually organizations try to have their business identity as their domain names but it can be different from that but only when one thinks that it would really be an eye opener and will be more effective than the traditional name. Anyhow, while selecting and registering a particular domain name one must keep in mind the following things:

> It must be as easy as ABC is,
> It shouldn't include special characters or spaces,
> It should have an appropriate suffix i.e. .org, .net, .com etc.,
> t can contain the country's domain for better identity like .UK, .Pk, .Ca etc.,
> It should be easy to remember and easy to spell out,
> It should be small to be typed in and

➢ It must be registered from a site that is considered reliable both in local and international arena.

2.7.5 Website Hosting

You may wonder that how many technical aspects need consideration while developing a single website but I must ay that website hosting is one of the last and very important aspect. Similar to the domain registration, one must consider the following things before hosting or placing the website on a particular server. These aspects are:

➢ Check all the available alternatives both in national and international arena,

➢ Check and evaluate all the terms and conditions of these alternatives,

➢ Read carefully the technical support availability,

➢ Analyze carefully and thoroughly the cost of hosting as some charge more at first and less in subsequent periods as compared to others and vice versa,

➢ Keep in mind the period for which you wish to host the website and

➢ Ask, if possible, the webmasters who have hosted the websites both in national and international servers.

2.7.6 Market Your Site

Finally, you must carefully announce your presence on the Internet. For this you must create a multi-step plan with a budget that begins with the simplest and cheapest ways to announce. Add more involved and more expensive ways to be done later if needed. For this, a first and easy step is listing the site's URL on business cards, letterheads, brochures, publications and other similar tools. You may also have ads in newspapers, Television, Radio etc. Similarly you can advertise by the word-of-mouth to friends, customers, dealers, co-workers as well.

While creating your presence on the internet through internet includes bulk mails, placing banners on other websites, registering self with various search engines like Google, Lycos, Webcrawler etc., or simply by including URL with e-mail signature file.

2.7.7 Implementation And Testing

After all such efforts you are only required to implement your website and to start testing. Give the website at least a month for test run and ask whoever you know to come onto the site, to use

it properly and to register his or her comments with the website. These users will give you valuable feedback about what is working and what isn't. Take that information and run with it. If users complain about the downloading time, reduce the images to reduce the page size or split long sections of text into separate files and add links. Similarly if they complain about the readability, look into the background and text color again. Besides doing this you should acknowledge the person who suggested some things and even if you don't want to change it, reply him or her to acknowledge for spending his time to suggest and describe that why you are not updating the site.

Be careful when adding new contents because they need to be consistent with the rest of the website. After each modification and adjustment, don't forget to retest all functions again so that everything still works. When adding new material or links to an existing site, use a small image to tell the visitors that this is new so that they can easily find out what's new on this.

As mentioned earlier, content needs to be kept updated, therefore check all information regularly to make sure that it is still current and keep checking all links to make sure that they still work and that the content is still pertinent.

2.8 Web Applications

Open Internet standards have changed the architecture of distributed computing forever. The basic language of the Web, HTML, has become a popular language for representing the elements of the user interface. Cross-platform support for scripting languages and Java applets, as well as support for embedded COM components, makes it possible to combine dynamic elements with static text for a more interactive user experience. Web technologies aren't solely for use on the Internet, however. They have been adapted for use by businesses to:

- Create an environment for component-based development.
- Enable distribution of applications throughout an enterprise.
- Create and customize new applications quickly.
- Update databases remotely by using an ordinary Web browser.
- Add transaction processing to Web applications.
- Provide business-to-business information sharing.
- Manage resources and enable remote system administration.

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SYSTEM ANALYSIS

3.0 SYSTEM ANALYSIS (for proposed and existing system)

3.1 INITIAL STUDY

Internet is one of the most fantastic and unbelievable blessings of the modern science. It has changed our way of thinking, has improved our living standards and has made things a lot easier for us. Now, world is no more a vast territory, rather it's just like a small town which is in reach of everyone.

As in this busy and fast life it is no more possible for people to go personally to register any of their complaint. As most of the work is being done through web so WASA and every lay-man was in search of an easiest, strongest and the most reliable medium of communication which WASA found perfectly in the realm of web. That's why in order to facilitate their consumers authorities of RWASA have decided to have a Dynamic Web Site. This system will provide facility of online registration of complaints to the consumers of RWASA and they will also be able to see the status of their complaints.

3.2 EXISTING SYSTEM

RWASA deals with different types of complaints in there daily routine, which include sewerage. drainage, water supply and water billing. To facilitate the peoples of Rawalpindi, RWASA has

established different complaints cells in major areas of the city, which include Khyaban-e-Sirsyed, Commercial Market, liaqat Bagh and RWASA main office.

Liaqat bagh and Khyaban-e-Sirsyed deals with the Water supply complaints while complaint office in Commercial market deals with sewerage complaints. In RWASA main office ONE WINDOW facility is provided to the consumers so that they can submit their complaints of sewerage, water supply, connection for water, disconnection of water and change of connection over there. In RWASA main office Billing Complaint Section is working independent of ONE WINDOW and deals with the just Water Billing Complaints.

They have designed different forms for sewerage complaints, complaint relevant to water and for water billing complaints.

3.2.1 WATER SUPPLY COMPLAINTS.

When a consumer fills the specified form for water supply, he specifies his name, his address and nature of complaint. All these forms are then forwarded to the sub-engineer. Sub engineer assign these forms to the fitter of that areas. Fitter goes to the specified address and take proper action.

3.2.2 SEWERAGE COMPLAINTS

There can be different types complaints regarding to sewerage, e.g. main sewerage line is damaged, closed, repair of gutter lines etc. Consumer fills the specified form and these complaints forms are then forwarded to sub-engineer of sewerage and then he assigns the task to different sewer men according to their areas. Sewer men go to the faulty area and remove the fault.

3.2.3 WATER BILLING COMPLAINTS

RWASA issues water bills to the consumers and it has established a complaint section for billing at its main office. There are different types of complaints e.g. wrong category, arrears in bills, sewerage charged in correctly etc.

The entries in all these cases are noted down in a register and all work is done manually.

3.3 DETAILED ANALYSIS OF EXISTING SYSTEM

The detailed analysis of existing system involved data gathering through different methods. The sources, which I used to gather data from the organization, are:

- Written Documents
- Discussions
- Interviews
- Observations

3.3.1 WRITTEN DOCUMENTS:

In the review of written documents all the documents being used for the purpose of input/output are studied. It is an important part of the study process.

For the purpose of information about the organization we get help through RDWASA s' profile. Regarding Bills we got information from Revenue Department includes documents like bills records and Bills format. For the purpose of the complaint system these documents include the complaint registers. I reviewed all these documents. The documents were reviewed to assess any shortcomings in them. A prime consideration was to see who the users of the different documents would be. This is essential to decide the amount of information required to be input into the system and deciding what information is necessary in what report.

3.3.2 INTERVIEWS

Interviews are an important method to derive information from the users of the system. I also conducted interviews with the people involved in the complaint system of RWASA. It was necessary, as the people involved in system are the ones who know best the drawbacks or difficulties being faced by him in running the system efficiently. We also interviewed different executives about their interest in WASA s' Web Site.

3.3.3 OBSERVATIONS

Through observation I know much of the flow of data from one place to other place and detailed critical view of organization help me a lot in accessing the weak areas and weaknesses in the existing system.

3.4 DRAWBACKS OF EXISTING SYSTEM

The complaint system of RWASA has been thoroughly studied. Currently whole system is a manual one. The system therefore shows all the drawbacks of a manual system. Some of the drawbacks highlighted by the study of the system are:

- No online Consumer interactions so procedures are slow.

- Separate complaints registers are maintained. Entries are made into these registers daily. This is a very time consuming and cumbersome exercise as manual entry into registers is an extensive exercise specially when billing is in progress.

- Entries in the registers are prone to mistakes. The reason for this is that while making entries in registers is highly difficult to eliminate human errors.

- It is very difficult for the staff to categorize the complaints in manual system. They have to search whole register if we want information about any particular complaint.

- It is also difficult to find out about the current status of a complaint.

- As the current system is completely manual and data is stored in different registers so it is very difficult to change or update the data.

- Current system is unable to generate in-time reports against the demand of the top-level management. So top-level management does not have up-to-date information and it is very difficult for the community/company/WASA to take a decision in due course/at proper time.

- As the existing complaint tracking system of RWASA is completely manual. All the complaints are registered manually so a lot of stationary and manpower is required.

- In a manual system can access data for any purpose.

- Due to manual system it is possible to make mistakes and errors in the entry. Backup and recovery is not possible in the present manual system.

- As the data is stored on the registers which requires more space and cost and liable to be lost with the passage of time.

- When the same data is stored in multiple locations, inconsistency is expected. Storage, retrieval and the processing of information regarding items are difficult because all the information is in different bindings. There is a seldom opportunity to share data.

3.5 PROPOSED SYSTEM

After analyzing the existing system and encountering the shortcomings of the present system it was necessary to remove its deficiencies and give a worthy solution for presently encountered problems. The proposed system has, therefore been suggested keeping in view the need and demand of RWASA. In the proposed system new techniques and procedures have been adopted to make it more effective and useful.

After the thorough study of the complaint system of RWASA and highlighting the drawbacks in the current system, we have come up with the following recommendations for improvement of the RWASA Online Consumer interactions and complaint system:

- The complaint system needs to be computerized. For this purpose there is need to design software to meet the specific needs of RWASA.

- Computerized complaint system will keep the record of each complaint. If the same consumer complains again, then it will give information that this consumer complaint has already been entered and what action has been taken on that. Or if the complaint is not rectified what was the reason.

- Currently there are two means are of registering a complaint. Now We are proposing a third mean and that is Internet. A person will simply login on the respective site of RWASA and he can register his complaint there and will get a complaint number.

- We can find out that how much complaints have been entered, how many are processed, how much currently in progress. It will increase the efficiency of the staff and will reflect the original picture to the management.

- The whole system needs to be computerized to make the whole system efficient and reliable.

- Our proposed system will be user friendly and it will be easy to use.

- The proposed system is more efficient and quick responsive for different types of operations as compared to the existing manual system.

- There are very few chances of errors or wrong input.

- The proposed system will minimize the redundancy of the data that frequently occur in a non-computerized system.

- The system will provide accurate information.

- As compared to the existing manual system, the new system will consume significantly less time. Therefore it will save a lot of precious time of both the users and the RWASA staff.

- This system will also provide the facility of updating. Any mistake detected or any other necessary updating can easily be made through updating operations. If a record does not exist in the database, the system should give an error message, only authorized user can update the files.

- Facility of the deletion of a particular record is also provided if so required. The deletion facilities would be provided, only to the authorized persons. Only the responsible persons that would be unnecessary would delete those records.

3.6 OBJECTIVES OF NEW SYSTEM

Keeping in mind the drawbacks of the existing website, the objectives of proposed website are: -

a) Time Saving

b) Quick information

c) Efficiency & Accuracy

d) Data Security

e) User friendly & ease of operation

3.7 CONCLUSION

The RWASA s' overall customer interaction system has been studied in depth. To improve the system and make it more efficient and reliable needs to be computerized.

The computerized system will ensure an efficient and smooth running system, which provides accurate and timely information regarding complaints, billing and especially about the WASA.

SYSTEM DESIGN

4.0 SYSTEM DESIGN

System Design is the creation of alternative solutions to the problems uncovered in system analysis. The final Design recommendation is based on cost effectiveness and other factors. The Design Specifications include

1. Computer Hardware/ Software Alternatives

2. Data Processing Methods

3. User Information

4. The Personnel, Material and Financial Resources of The Organization

4.0.1 System software and Hardware Requirements

As we are two to develop a Comprehensive web based system both Software and hardware should be of

- High performance, reliability and capacity at economical price.

- Number and accessibility of backup facilities.

- Compatibility with existing system.

- Software easy to use and modify.

4.1 The New System Design

Today's client/server applications resemble their ancestors so little that they have been given a new name, the multi-tier application, also known as n-tier architecture. In this model, processing is distributed between the client and the server, and business logic is captured in a middle tier.
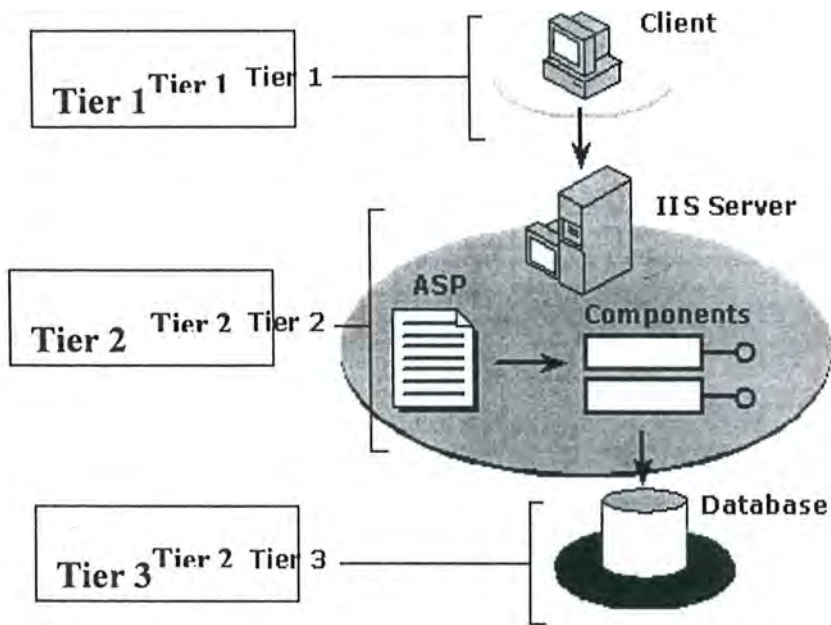
Most systems will perform the following three main tasks, which correspond to three tiers, or layers, of the n-tier model:

Task	Description
User interface and navigation	Labeled Tier 1 in the following graphic, this layer comprises the entire user experience. Not only does this layer provide a graphical interface so that users can interact with the application, input data, and view the results of requests, it also manages the manipulation and formatting of data once the client receives it. In Web applications, the browser performs the tasks of this layer.
Business logic	Tier 2, between the interface and data services layers, is the domain of the distributed application developer. Business logic, which captures the rules that govern application processing, connects the user at one end with the data at the other. The functions that the rules govern closely mimic everyday business tasks, and can be a single task or a series of tasks.
Data services	Shown as Tier 3 in the following graphic, data services are provided by a structured (SQL, Oracle database) or unstructured (Microsoft® Exchange, Microsoft® Message Queuing) data store, which manages and provides access to the application data. A single application may enlist the services of one or more data stores.

The three-tier architecture isolates each major piece of functionality, so that the presentation is independent of the processing rules and business logic, which in turn is separate from the data. This model requires much more analysis and design up front, but greatly reduces maintenance costs and increases functional flexibility in the long run. The following diagram depicts the Microsoft technologies that service the various tiers in the new system design.

4.2   System Requirement

4.2.1 Operating System

There are many operating systems for use some or more limited than others and some have specific strengths regarding TCP\IP applications

Windows 2000 (Professional Addition)

Windows 2000 is used as the plate form for the server. It's a 32-bit operating system that requires a minimum of 16 MB of ram to run efficiently. It's been around science 1993 and is the parent of Windows 95. It has multitasking capabilities and it can run on most Windows 95 software's. Some of its drawbacks however include its difficulty in configuring for networking and its lack of technical support, except for expensive support packages. Windows 2000 is currently a favorite of network administrators and high-powered users with high-end machines. Microsoft seems intend on supplanting Windows 98 with Windows 2000. Infect Windows 2000 released in August 1996, uses Windows 95's interfaces and NT's features.

Browser Software

Setting up the Web server is only a part of setting up an Internet. You must also configure and install a WWW Browser. This browser is what the user sees and therefore must be chosen carefully. Web Server talk to server using the HTTP. Once the browser gets the document it must decide how to view or save it. Comparing the documents mime-type with a list of supported MIME types does this, MIME stands for Multipurpose Internet Mail(IME) Extensions, MIME types are away of telling software ,such as mailer, what type of data file contains. Some MIME types such as text/html can be displayed directly in the browser. Other types may need to use external viewer. Since this the part of Internet the users sees, this is the most important part. Standardizing on browsers one of the benefits of an Internet. If every one is using the same interface it can make developing documents much easier because the developer knows which features will work.

Introducing the Microsoft Internet Explorer Web Server

Microsoft answers to Netscape navigator. It has many of Netscape's features. It is free with Windows 95f, and it runs efficiently on 12MB of RAM. There is a little argument that Netscape is better browser by almost any standard. It's a fast, it has many features, and it offers more flexibility lowed content Providers. However Explorer is catching up. The Web World is still watching to see which application dominate the market. Although Explorer has all the power of Microsoft behind it, some user think of OT will go to the way of eight-track tapes. Microsoft Internet Explorer enables you to contact to the Internet. Whether you are searching informational having it delivered to your computer, take a look of some of the features that make it easy to browse the Internet. If Internet Explorer was setup on your computer by a local area network (LAN) administrator,

Or you use an Internet service providers (ISP) installation programs, than you are probably ready to contact to the Internet.

4.3 Techniques

4.3.1 Organization Web

When you write a book, a paper, an article, or even a memo, you usually don't just jump right in with the first sentence and than write it through to the end. A better way to write or draw or design a work is to do some planning before hand-to know what it is you are going to do. Just as with more traditional modes of communication, writing and designing Web side takes some planning and though specifically, we need to learn the difference between Web presentations, a web site, a web page. Think about the sort of information (content) you want to put on the Web. Alter you have the overall idea of how you are going to construct your web page, you will be ready to actually start to writing and designing those pages.

4.4 Terminology

First you need to know what the following terms means and how they apply. The Web presentation is a collection of one or more Web pages or you can say that a Web presentation consists of one or more Web pages linked together in a meaningful way.

4.4.1 Web Site

A web site is a system on the Internet containing one or more web presentation

4.4.2 Web page

A web page is an individual element of a presentation in the same way that a page is single element of a book or a newspaper.

4.5 Organizations and Navigation

They have some "standard" structures for structuring the information into a set of web pages

4.5.1 Hierarchies structure

Probably the easiest and logical way to structure to your web documents is in an a hierarchical or menu fashion. You start with a list or a menu of major topics selecting one leads you to a list of subtopics, which then leads you to discussion about particular topics.

4.5.2 Linear Structure

Another way to organize your document is to use a linear or sequential organization, much like printed documents are organized, in a linear structure, the home page is the title, or the introduction, and each page follows sequentially from that structure. In a strict linear structure, there are links that move from one page to another, typically forward and backward.

4.5.3 Linear With Alternative Structure

You can soften the rigidly of a linear structure by allowing the reader to deviate from the main path, For example you can have a linear structure with alternatives that branch out from a single point. The offshoots can then rejoin the main branch at some point further down, or they can continue down their separate tracks until they each come to and end.

4.5.4 Combination Of Linear And Hierarchies Structure

A popular form of document organization on the web is a "Combination of linear and hierarchies structure:" This structure occurs most often when ever structured but linear documents are put on line, the popular FAQ files use this structure.

4.5.5 Web Structure

A web is a set of documents with little or no actual over all structure: the only thing trying each page together is a link. The reader drifts from document to document.

4.6 Security

Security is a complex and a controversial subject. Some people view system infiltration as freedom fighters of the information age some cracking into system as a test of technical skills, a cyber-rite of passage. Under certain circumstances however, penetrating a computer system without authorization is a crime.

4.7 Firewalls

Much has been said in the news media about the use of firewalls to protect on Internet site. Firewalls have their place and for the most part they do what they set out to do. Bear in mind that many of the attacks described in this topic.

Installing a Fire-wall is the last thing to do for site security in the literal sense, Follow the recommendations given here for making the site secure so that a cracker has to work hard to penetrate security.

Then if further security is described, install a fire wall using this strategy, the system administrator does not get a false sense of security from the fire wall. The system is already resistant to attack before the firewall is installed.

Since most system will continue to have negligible security for the foreseeable future one can hope that the cracker who gets through the fire wall only to face our seemingly impregnable server get discouraged and go prey on one of the less-protected system well one can always hope.

A firewall computer sits between the Internet and a site, screaming and filtering IP packets. It is the physical embodiment of much of a sites security policy e.g., the position taken in the tradeoff between the usability and security is called a sites "stance". A firewall can be restrictive, needing explicit permission before it authorizes service, or permissive, permitting any thing that has not been disallowed. In this way configuring firewall software is taken to configuring xineted.

The web server can be arum on the Boston host in either topology or inside the firewall with the screened host topology. Other locations or possible but need more complex configuring and some times-additional software's.

4.8 Software Process Model

A software process model or a software engineering paradigm is a strategy that a software engineer or a team of software engineers must incorporate in software development. A process model for software engineering is chosen based on the nature of the project and application, the methods and the tools to be used, and the controls and deliverables that are required.

4.8.1 The Spiral Model For Proposed System

The software process model chosen for the development of trading system using courier service in e-commerce environment system is "The Spiral Model". It is an evolutionary software process models that copal the iterative nature of prototyping and with controlled and systematic aspects of liner sequential model. It provides the potential for rapid development of incremental versions of the software.

4.8.2 Advantages Of Spiral Model

The spiral model is a realistic approach with the development of large-scale system and software. Because software evolves as a process progresses:

The developer and the customer better understand and react to risk at each evolutionary level. The spiral model uses prototyping as a risk reduction mechanism.

Enable the developer to apply the prototyping approach at any stage in the evolution of the product. It maintains the systematic stepwise approach suggested by the classic life cycle, but incorporates it into an iterative framework that more realistically reflects the real world. The spiral model demands a direct consideration of technical risk at all stages of the project, and if properly applied, should reduced risks before they become problematic

4.8.3   Disadvantages Of Using Spiral Model

But as other paradigms, spiral model do have some disadvantages. It may be difficult to convince customers (particularly in contract situation) that the evolutionary approach is controllable. It demands considerable risk assessment expertise, and relies on this expertise for success. If a major risk is not uncovered and managed, problem will undoubtedly occur. The model itself is relatively new and has not been used as widely as the linear sequential or prototyping paradigms. It will take a number of years before the efficiency of this important new paradigm can be determined can be determined with absolute certainty.

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DEVELOPMENT AND IMPLEMENTATION

5.0 DEVELOPMENT ENVIRONMENT

5.0.1 Hardware Environment

To get optimum performance from the software the system required should be of high reliability and speed. The characteristics of the system we used.........

- Mother Board (Mercury)
- Processor (Intel Celeron 850 Mhz)
- RAM 128 MB

5.0.2 Software Selection

It is very difficult to determine whether the software is capable of the system requirements or not. To develop the system, we have used the following software

OPERATING SYSTEM:

❑ Window 2000 professional

WEB SERVER:

❑ Internet information system (IIS)

❑ Personal Web Server (To Run The Site on Windows 98)

DATABASE APPLICATION:

❑ MS-Access

LANGUAGES/SCRIPTS:

- Html, DHtml

- Java script

- Vb script

- Active server pages (ASP)

GRAPHIC PACKAGES:

- Adobe PhotoShop 6.0

- Macromedia Flash 5.0

- MS-Paint

EDITOR USED:

- Microsoft Visual InterDev 6.0

BROWSERS USED:

- Internet Explorer

- Netscape Communicator

WORD PROCESSOR EMPLOYEED:

- Microsoft Word 2000

5.1 TOOLS USED

5.1.1 Windows 2000 Professional

It is multi-user operating system. Its internal is centered on the micro kernel style architecture similar to Unix, which gives NT primitives multitasking, windows 2000 also includes windows 98 interface.

It is capable of integrating into wide range of computer environments. Fault tolerance is its another feature whose listening includes 2000 servers recoverable file system (NTFS0), this

miring and disk stripping with parity (RAID1 & RAID5) where RAID stands for the Redundant Array Of Inexpensive disk and support for uninterruptible power supply.

1. Easier To Use

Windows 2000 Professional offers increased compatibility with different types of networks and with a wide array of legacy hardware and software.

Windows 2000 also provides:

- Improved driver support.
- Increased support for new-generation hardware and multimedia technologies.
- Integration of the new Euro currency symbol.

2. Easier To Manage

You and your network administrators can work more efficiently now, because many of the most common computer-management tasks are automated and streamlined with Windows 2000 Professional.

With Windows 2000, your workstation will be easier to:

- Set up.
- Administer.
- Support.

3. More Compatible

Windows 2000 Professional offers increased compatibility with different types of networks and with a wide array of legacy hardware and software.

Windows 2000 also provides:

- Improved driver support.
- Increased support for new-generation hardware and multimedia technologies.
- Integration of the new Euro currency symbol.

4. **More Powerful**

For all your computing needs, Windows 2000 Professional provides:

- Industrial-strength reliability.
- The highest level of security.
- Powerful performance.

With Windows 2000 Professional, you have faster access to information, and you are able to accomplish tasks more quickly and easily.

Windows 2000 Professional makes it easier to:

- Work with files.
- Find information.
- Personalize your computing environment.
- Work on the Web.
- Work remotely

5.1.2 Web Server

Besides choosing a Web Server package, you should consider other server software, such as software that will provide you Internet with e-mail and possibly audio. The most important software running on your Internet is the Web Server software. A web server answers request for Web documents. For example If you want to access a requested document on MRA Server at http://www.mra.com, The server answers your request assuming it is in the right directory and the permissions are configured. All the Web Servers do the same thing. They listen to request and process them and send out the requested documents, but the difference in Web Server is noted in their features. Web Server on the bases of functionality you want to have with your Internet.

- Speed
- Setup and maintenance
- Keeping track of users
- Security

```
        Web server
      receives request

            |
            v

          User
        permitted?  ----No---->
            |
           Yes
            |
            v
       Web server
    permissions allow  ----No---->
        access?
            |
           Yes
            |
            v
          NTFS
       permissions   ----No---->
      allow access?
            |
           Yes
            |
            v
     Access granted        Access denied
```
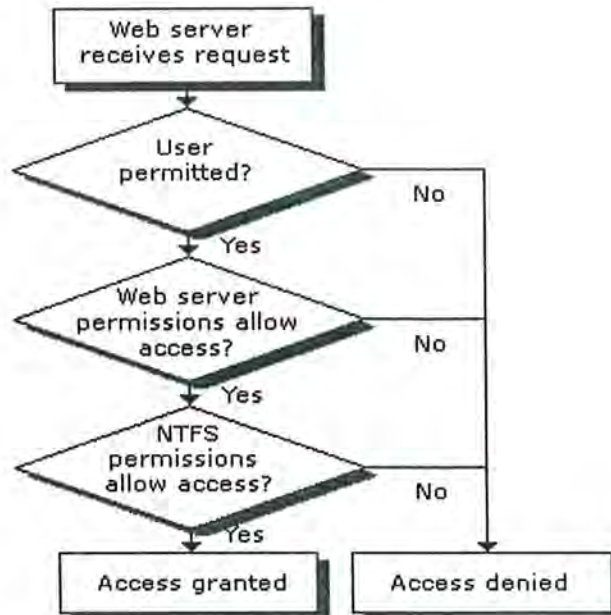
Microsoft Internet Information Server/Personal Web Server

The Internet Information Server (IIS) is Microsoft's Versions of a Web Server. It runs on Windows NT. It's a stable choice for small Internet. Organization that already use Windows NT solution will find that setting up and running IIS is relatively easy and functional Web Server. The recent version of IIS at these writing-only runs on Windows, Windows 2000. You can use user and password authentication and you can setup user groups for security. A security advantage of the IIS is that it allows the administrator to control password length, Uniqueness and how often a password must be changed. This Web Server can even disable a password if it is type incorrectly a specified numbers of time. This is the only Web Server I know of with this feature. This server does not use an NCSA common log format, which means that program that have been written specifically to create statistics from log file, such as WWW stat can not be used. IIS can not generate refer logs, tell what kind of browser the client is using, or track additional users as they maneuver about the site.

The Server comes with an administration tool that is now, unfortunately only available for Windows 2000, which mean that administration must be done on an Internet machine.

Personal Web Server is similar to any other Web server, except that it runs on Windows 95 and Window 98. However, you must keep in mind that Windows 95 & 98 isn't as robust of a networking platform as Windows NT. Therefore, you can't expect Personal Web Server to perform as well as a Web server running on a Windows NT Server.

PWS is suited for developing, testing and staging Web applications, as well as peer-to-peer publishing with its support for sharing files over HTTP and FTP protocols. Microsoft Internet Information Web Server Support Window 2000 and Xp. Just like Microsoft Internet Information Server (IIS), PWS supports all ISAPI extensions and CGI scripts. PWS has been optimized for interactive workstation use, and does not have the system requirements of a full Web server such as IIS. You can configure any page and use this project easily.

It is designed for small-scale peer-to-peer or small Web server usage. As your Web Server needs continue to grow, Microsoft offers a full range of Internet/Intranet Web server products that run on Windows NT Workstation to the powerful enterprise-based solution, Windows NT Server.

The software is fully integrated into the Windows 95/98 Task Bar and Control Panel, making it easy for users to start and stop HTTP and FTP services whenever they wish.

For testing all such information and contents, different types of browsers were used for satisfying all possible visitors. These web browsers include Microsoft Internet Explorer and Netscape Navigator.

Installing IIS

Internet Information Services is not installed on Windows 2000 Professional by default. You can install IIS or select additional components by using the Add/Remove Programs application in Control Panel.

To install IIS, add components, or remove components

1. Click **Start**, point to **Settings**, click **Control Panel** and start the **Add/Remove Programs** application.

2. Select **Add/Remove Windows Components** and then follow the on-screen instructions to install, remove, or add components to IIS.

Note If you *upgraded* to Windows 2000, IIS 5.0 will be installed by-default only if PWS was installed on your previous version of Windows.

Directories remaining after uninstall

The following directories containing user content will remain on your system after you completely uninstall IIS:

- \Inetpub

- *\systemroot*\Help\iisHelp

- *\systemroot*\system32\inetsrv

IIS software checklist

Internet Information Services requires that the following software be installed on the computer prior to installation:

- The Windows TCP/IP Protocol and Connectivity Utilities.

The following optional components are recommended:

- The Domain Name System (DNS) service installed on a computer in your intranet. If your intranet is small, you can use Hosts or Lmhosts files on all computers in your network. This step is optional, but it does allow users to use "friendly" text names instead of IP addresses. On the Internet, Web sites usually use the Domain Name System. If you register a domain name for your site, users can type your site's domain name in a browser to contact your site.

- For security purposes, Microsoft recommends that all drives used with IIS be formatted with NTFS.

- Microsoft FrontPage to create and edit HTML pages for your Web site. FrontPage is a WYSIWYG editor that provides a friendly, graphical interface for tasks such as inserting tables, graphics, and scripts.

- Microsoft Visual InterDev to create and develop interactive Web applications.

Features of IIS

Internet Information Services 5.0 has many new features to help Web administrators to create scalable, flexible Web applications.

- Security
- Administration
- Programmability
- Internet Standards

About Publishing Directories

When you set up your Web site, you specify which directories contain the documents that you want to publish. The Web server cannot publish documents that are not within the directories you specify. To plan your Web site, you first determine how you want your files organized in the publishing directories. This topic defines publishing-directory terminology and includes the following sections:

- Home Directories
- Virtual Directories

Home Directories

Each Web site must have one home directory. The *home directory* is the starting point for your site visitors and the top of your Web publishing tree. It contains a home page or index file that welcomes visitors and contains links to other pages in your Web site. The home directory is mapped to your site's domain name. For example, if a site's Internet domain name is www.microsoft.com and the home directory is C:\Website\Microsoft, then Web browsers use the URL http://www.microsoft.com/ to access files in the C:\Website\Microsoft directory.

If you are creating new HTML files for your Web site, you may want to use the default home directory installed during setup, C:\Inetpub\Wwwroot. Place your files in the home directory, or organize them in subdirectories of this directory. All files in the home directory and its subdirectories are automatically available to visitors to your site. If a visitor knows the correct path and file name needed to reach a file, the visitor can view the file even if you do not have links to it on your home page. For this reason, keep only those files you want visitors to be able to view in your home directory, or its subdirectories.

If all the files you want to publish already reside in a certain directory, you can change the default home directory to that directory, rather than move the files. See Changing Your Home Directory for instructions on how to do this.

Virtual Directories

To publish from any directory not contained within your home directory, you create a virtual directory. A *virtual directory* is a directory that is not physically contained in the home directory, but appears to client browsers as though it were.

A virtual directory has an *alias*, a name that client browsers use to access that directory. Because an alias is usually shorter than the path name of the directory, it is more convenient for users to type. An alias is more secure; users do not know where your files are physically located on the server and cannot use that information to modify your files. Aliases make it easier for you to move directories in your site. Instead of changing the URL for the page, you change the mapping between the alias and the physical location of the page.

For example, suppose you are setting up a Web site called Products on your company's intranet to show the company's products. The following table shows the mapping between the physical location of the files and the URL that accesses the files.

Physical Location	Alias	URL Path
C:\Inetpub\Wwwroot	(Home Directory)	http://products/
C:\Inetpub\Wwwroot\Scripts	Scripts	http://products/scripts/
D:\Catalog1	Clothes	http://products/clothes/

5.1.3   MS-ACCESS 2000

Database Fundamentals

Any application that involves data manipulation of some kind uses a database

4.2.2 Databases (A DEFINITION)

Let me start with the definition, a database is simply a structured collection of similar data. The important words here are" structured" and "similar", in the Databases world, the collection of data is called a table. The individual record in a table is called rows, and the fields that make up the rows are called columns. A collection of tables is called a database.

4.3.1 Database System

A database system is nothing more than a computerized record-keeping system. The database itself is regarded as a kind of electronic filing cabinet; in other words, it is repository for computerized data files. The user of the system will be given facilities to perform a variety of operations on such files, including the following among others:

- Adding new, empty files to the database
- Inserting new data into existing file
- Retrieving data from existing files
- Updating data in existing files
- Deleting data from existing files
- Removing existing files, empty or otherwise, from the database
- The database system involves four major components namely data, hardware, software and users.

ABOUT MS-ACCESS 2000

People use a Database to perform data management tasks, such as storing, retrieving, and analyzing data about orders and customers. An Access Application is made up of the same objects as an Access Database tables, queries, forms, reports, data access pages, macros and modules. The objects are stored in one or more Access Database files.

Microsoft Access 2000 is a Relational Database Management System (RDBMS) that can be used to store and manipulate large amount of information. This is a real powerhouse member of

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Office 2000. If you use all the programs, Access would likely be at the center of your office world.

What makes an application Different from a database? Is that the objects are tide together into a coherent system.. An application organizes related tasks so that the user can focus on the job at hand, not on how the application works or on the program use to develop the application.

Tables: What are they and how they work?

- A table is a collection of data about a specific topic, such as products are suppliers. Using a separate table for each topic means that you store that data only once, which makes your database more efficient, and reduces data entry errors.

- Tables organize data into columns and rows.

- A common field relates two tables so that Microsoft Access can bring together the data from the two tables for viewing, editing or printing.

- In table design view, you can create an entire table from scratch, or add, delete, or customize the field in an existing table.

- In table data sheet view, you can add, edit, view, or otherwise work with the data in a table. You can also display records from tables that are related to the current table by displaying sub data sheets within the main data sheet. With some restrictions, you can work with the data in sub data sheets in many of the same ways that you work with data in the main data sheet.

Features of Microsoft Access 2000

- It is a user-friendly tool,
- It has a powerful development environment,
- It is equally appropriate for MIS and novices professionals,
- It can store and manage various types of inventories,
- It logs information for various programs and
- It can create contact management database, order-entry system etc.

-

5.1.4   LANGUAGES/SCRIPTS

Hyper Text Markup Language (HTML)

HTML is designed to specify the logical organization of a document, with important hypertext extensions. It is not designed to be the language of a WYSIWYG word processor like MS Word or Word Perfect. This choice was made because many different browsers of different abilities may view the same HTML document. Thus HTML allows us to mark selection of text as titles or paragraphs, and then leaves the interpretation of these marked elements up to the browser. For example, one browser may indent the beginning of a paragraph while another may only leave a blank line.

HTML instructions divide the text of a document into blocks called elements. These can be divided into two broad categories—those that define how the BODY of the document is to be displayed by the browser, and those that define information about the document, such as the title or relationships to other documents.

The scripting of website of Statistics Division is done mostly in HTML by using script editors. All the static information available in the website is provided by using this Hyper Text Markup Language by using some formatting tags of HTML as well.

Dynamic HTML

Dynamic HTML (DHTML), which Microsoft introduced with Internet Explorer 4.0, allows you to create much richer HTML that responds to events on the client. By upgrading your HTML pages to take advantage of DHTML, you will not only enhance the user experience, you will also build Web applications that use server resources more efficiently.

DHTML controls the appearance of HTML pages by setting properties in the document object model (DOM), a model that Microsoft has proposed to the World Wide Web Consortium (W3C) as a standard. DHTML exposes an event model that allows you to change DOM properties dynamically. The following simple example demonstrates subdividing an HTML page with <DIV> tags, and setting the display style property so that it displays the division when the user clicks an input button.

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```
<SCRIPT LANGUAGE = "VBScript">

Sub showit()

 'This subroutine is called when the user clicks a select button.

 'It displays text in the hidden DIV.

  document.all.MyDiv.style.display = ""

End Sub

</SCRIPT>

<DIV ID= "MyDiv" style="display: 'none'" >

This is some hidden text.

</DIV>

<Select id= "Showit" onclick=showit>
```

Dynamic HTML (More Details)

Dynamic HTML (DHTML) is a set of innovative features in Microsoft® Internet Explorer 4.0. By enabling authors to dynamically change the rendering and content of a document, DHTML gives authors the ability to create visually outstanding HTML documents that interact with the user, without the burden of relying on server-side programs or complicated sets of HTML pages to achieve special effects.

With DHTML, you can easily add effects to your documents that previously were difficult to achieve. For example, you can:

- Hide text and images in your document and keep this content hidden until a given time elapses or the user interacts with the page.

- Animate text and images in your document, independently moving each element from any starting point to any ending point, following a path that you choose or that you allow the user choose.

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- Create a ticker that automatically refreshes its content with the latest news, stock quotes, or other data.

- Create a form and then instantly read, process, and respond to the data the user enters in the form.

DHTML achieves these effects by modifying the current document and automatically reformatting and redisplaying the document to show changes. It does not need to reload the document or load a new document, or require a distant server to generate new content. Instead, it uses the power of the user's computer to calculate and carry out changes. This means a user does not have to wait for text and data to complete time-consuming roundtrips to and from a server before seeing results. Furthermore, DHTML does not require additional support from applications or embedded controls to make changes. Typically, DHTML documents are self-contained, using styles and a little script to process user input and directly manipulate the HTML tags, attributes, styles, and text in the document.
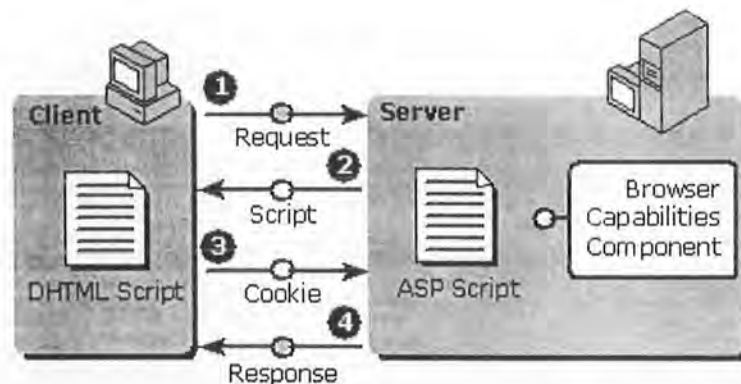
The HTML elements, attributes, and styles in DHTML are based on existing HTML and Cascading Style Sheets (CSS) specifications. Users can view your documents whether they use Internet Explorer 4.0 or later. Naturally, the dynamic and interactive features that you add to your documents might not be

fully functional when viewed with a browser that does not support DHTML. But DHTML is designed to "degrade gracefully"—if you follow some basic guidelines, the content of your document can be viewable in other browsers.

DHTML works well with applications, Microsoft ActiveX® Controls, and other embedded objects. You can use existing applications and controls, or create new ones that specifically take advantage of the features of DHTML. Applications and controls work best when you rely on them to perform computationally difficult tasks, and use DHTML to display output and process user input. For example, you can create a document that allows the user to query, display, and modify the content of a large, server-based database by combining the data binding features of DHTML with a data source object (DSO). The DSO retrieves and sets data in a database, and DHTML does the rest: it processes user queries, displays the data, carries out and performs the necessary interaction with the object.

In short, DHTML eliminates the shortcomings of previous browser technologies. You can create innovative Web sites, whether on the Internet or an intranet, without having to sacrifice performance for interactivity and special effects. Not only does DHTML enhance the user's perception of your documents, it also improves server performance by reducing requests to the server and, subsequently, server load.

Microsoft is working with Internet standards bodies, such as the World Wide Web Consortium (W3C), to provide the best standards-based solutions to make the Web a better open environment for building efficient and interactive multimedia content. DHTML is the next step in that effort—all the HTML and CSS extensions for DHTML conform to W3C specifications or have been submitted to the W3C for consideration.

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The following sections describe DHTML in more detail and how to use it.

- Dynamic Styles

- Dynamic Content

- Positioning and Animation

- Filters and Transitions

- Font Download

- Data Binding

- DHTML Object Model

Dynamic Styles

Dynamic styles are a key feature of DHTML. By using styles and style sheets, you can quickly change the appearance and formatting of elements in a document without adding or removing elements. This helps keep your documents small and the scripts that manipulate the document fast.

The object model provides programmatic access to styles. This means you can change inline styles on individual elements and change style rules in a document's CSS using simple script-based programming. These scripts can be written in Microsoft JScript® or Microsoft Visual Basic® Scripting Edition (VBScript).

Inline styles are CSS style assignments that have been applied to an element using the style attribute. You can examine and set these styles by retrieving the style object for an individual element. For example, if you want to highlight the text in a heading when the user moves the mouse pointer over it, you can use

the heading's inline style to enlarge the font and change its color, as shown in the following simple example.

```
<HTML>

<HEAD><TITLE>Dynamic Styles</TITLE>

<SCRIPT LANGUAGE="JScript">

function doChanges() {

    window.event.srcElement.style.color = "green";

    window.event.srcElement.style.fontSize = "20px";

}

</SCRIPT>

<BODY>

<H3 ID=heading onmouseover="doChanges()" STYLE="color:black;font-size:18">Welcome to
Dynamic HTML!</H3>

<P>You can do the most amazing things with the least bit of effort.

</BODY>

</HTML>
```

In the preceding example, the process (also known as an event handler) that responds when the onscreen cursor moves over an HTML tag that contains an onmouseover statement receives control when the user first moves the mouse pointer into the heading (known as an event). The handler uses the srcElement property of the event object to determine which element is the source of the event—in this case, the H3 element. It then uses the color and fontSize properties of the style object for the element to change the color and font size. Setting these properties changes the CSS color and font-size attributes given in the style attribute for the heading, and the browser immediately updates the onscreen text to display these new attribute values.

By using styles, you can create a simple document, such as the following, in which all items in a bulleted list are hidden until the user clicks the mouse.

```
<HTML>
<HEAD><TITLE>Dynamic Styles</TITLE>
<SCRIPT LANGUAGE="JScript">
function showMe() {
   MyHeading.style.color = "red";
   MyList.style.display = "";
}
</SCRIPT>
<BODY onclick="showMe()">
<H3 ID=MyHeading>Welcome to Dynamic HTML!</H3>
<P>You can do the most amazing things with the least bit of effort. Just click and see!
<UL ID=MyList STYLE="display:none">
<LI>Change the color, size, and typeface of text
<LI>Show and hide text
<LI>And much, much more
</UL>
<P>And this is just the beginning!
</BODY>
</HTML>
```

In the preceding example, the CSS display attribute is set to none, causing the ul list to be hidden from view. When the user clicks the document, the event handler clears the value of this attribute, making the browser display the list onscreen. Notice how any content that comes after the list shifts to accommodate the new text rendering.

Dynamic Content

With DHTML, you can change the content of a document after it is loaded. Internet Explorer provides a rich set of properties and methods to dynamically construct and alter documents, from inserting and deleting elements to modifying the text and attributes in individual elements.

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The DHTML Document Object Model (DOM) provides access to all elements in the document. Consider the following simple document. You can replace and change elements as well as change colors and text by using a few lines of script.

```
<HTML>
<HEAD><TITLE>Welcome!</TITLE>
<SCRIPT LANGUAGE="JScript">
function changeMe() {
    MyHeading.outerHTML = "<H1 ID=MyHeading>Dynamic HTML!</H1>";
    MyHeading.style.color = "green";
    MyText.innerText = "You can do the most amazing things with the least bit of effort.";
    MyText.align = "center";
    document.body.insertAdjacentHTML("BeforeEnd",   "<P   ALIGN=\"center\">Just   give   it   a
try!</P>");
}
</SCRIPT>
<BODY onclick="changeMe()">
<H3 ID=MyHeading>Welcome to Dynamic HTML!</H3>
<P ID=MyText>Click anywhere on this page.</P>
</BODY>
</HTML>
```

When the user clicks on the page in the preceding example, the script replaces the **H3** element with an **H1** element, centers the paragraph, and inserts a new paragraph at the end of the document. Using script in this way, you can add, delete, and replace any elements and text in the document.

Positioning and Animation

Positioning is the ability to place an HTML element at a specific point in a document by assigning an x- and y-coordinate and a z-plane to that element. This means you can place elements—images, controls, and text—exactly where

you want them and achieve special, overlapping effects by defining in what order elements at the same point should be stacked atop one another.

Positioning is an extension of CSS. This means that you set the position of an element by setting the appropriate CSS attributes for that element. The following example shows how to set the absolute position of an image.

```
<HTML>
<HEAD><TITLE>Positioning</TITLE><BODY>
<H3>Welcome to Dynamic HTML!</H3>
<P>With positioning, you can place images exactly where you want them, even behind text and other images.
<IMG STYLE="position:absolute;top:0; left:0; z-index:-1" SRC="banner.gif">
</BODY>
</HTML>
```

In the preceding example, the image is placed at the document's top left corner. Setting the z-index attribute to -1 causes the image to be placed behind the text on the page.

Internet Explorer 4.0 supports positioning and animation of elements even after a document is loaded. Because the DOM provides access to styles and style sheets, you can set and change the position of an element as simply as you set and change its color. This makes it especially easy to change the position of elements based on how the user is viewing the document, and even to animate the elements. For animation, all you need is to slightly modify the position of an element on some interval. The following example presents an image that glides across the top of the document and comes to rest at the upper-left corner.

```
<HTML>
<HEAD><TITLE>Dynamic Positioning</TITLE>
<SCRIPT LANGUAGE="JScript">
var id;
function StartGlide()
```

```
{
    Banner.style.pixelLeft =
    document.body.offsetWidth;
    Banner.style.visibility = "visible";
    id = window.setInterval("Glide()",50);
}
function Glide()
{
    Banner.style.pixelLeft -= 10;
    if (Banner.style.pixelLeft<=0) {
        Banner.style.pixelLeft=0;
        window.clearInterval(id);
    }
}
</SCRIPT>
<BODY onload="StartGlide()">
<H3>Welcome to Dynamic HTML!</H3>
<P>With dynamic positioning, you can move images anywhere in the document
even while the user views the document.
<IMG ID="Banner" STYLE="visibility:hidden;position:absolute;top:0; left:0; z-index:-1"
SRC="banner.gif">
</BODY>
</HTML>
```

In the preceding example, the Start Glide function is called when the document is loaded. The function sets the absolute position of the Banner image to the top, far-right edge of the document body, shows the image, and starts an interval. The Glide function is called repeatedly in 50-millisecond intervals. The function moves the image to the left by 10 pixels, and when the image is finally at the left edge, it cancels the interval.

Dynamic positioning has many uses in consumer and business applications. By combining dynamic styles, positioning, transparent images, and transparent

ActiveX Controls, you can present a rich set of animation effects in your documents.

Filters and Transitions

Internet Explorer 4.0 supports an extensible architecture that enables you to specify filters and transitions using CSS properties. Visual filters can be used to apply visual effects to an element without requiring any scripts. The syntax is:

filter: filter_name(param1, param2, ...)

Transitions are effects that can be applied when changing the display of an element—switching from one image to another, for example. Both interpage transitions and transitions on specific elements within a page are supported. Transitions are most commonly seen in "slide show" presentations. Filters are effects, such as text drop shadows, that can be applied to content on Web pages. In addition to the set of standard filters and transitions included in Internet Explorer 4.0 , the standard filters and transitions can be supplemented by additional third-party filters and transitions..

Font Download

Internet Explorer 4.0 supports the use of dynamically downloaded fonts. Using the @font-face style attribute, a document can reference a font that is automatically downloaded, is used for the page only, and is discarded once the page is no longer displayed. The following example shows the use of downloaded fonts.

```
<HTML><HEAD>
<STYLE>@font-face
{font-family:comic; src:url(http://abc.domain.com/fonts/comicbold.eot);}
</STYLE>
</HEAD>
<BODY>
<P STYLE="font-family:comic;font-size:18pt">this line uses the @font-face
style element to display this text using the Comic Sans MS font in 18-point
size and bold.
<P>
</BODY></HTML>
```

Data Binding

Data binding is a DHTML feature that lets you easily bind individual elements in your document to data from another source, such as a database or comma-delimited text file. When the document is loaded, the data is automatically retrieved from the source and formatted and displayed within the element.

One practical way to use data binding is too automatically and dynamically generates tables in your document. You can do this by binding a table element to a data source. When the document is viewed, a new row is created in the table for each record retrieved from the source, and the cells of each row are filled with text and data from the fields of the record. Because this generation is dynamic, the user can view the document while new rows are created in the table. Additionally, once all the table data is present, you can manipulate (sort or filter) the data without requiring the server to send additional data. The table is simply regenerated, using the previously retrieved data to fill the new rows and cells of the table.

Another practical use of data binding is to bind one or more elements in the document to specific fields of a given record. When the document is viewed, the elements are filled with text and data from the fields in that record, sometimes called the "current" record. A simple example is a form letter in which the name, e-mail address, and other details about an individual are filled from a database. To adapt the letter for a given individual, you simply specify which record should be the current record. No other changes to the letter are needed.

Yet another practical use is to bind the fields in a form to fields in a record. Not only can the user view the content of the record, but the user can also change that content by changing the settings and values of the form. The user can then submit these changes so that the new data is uploaded to the source—for example, to the HTTP server or database.

To provide data binding in your documents, you must add a DSO to your document. This invisible object is simply an ActiveX control or Java applet that knows how to communicate with the data source. Microsoft provides two DSOs with Internet Explorer 4.0: one to access comma-delimited data in text files and another to access Structured Query Language (SQL) data in SQL Server and other Open Database Connectivity (ODBC) sources. Additional DSOs, such as a JDBC data source, will also be available from Microsoft and third parties.

The following example shows how easy it is to bind to a data source. When viewed, this example displays the first three fields from all the comma-delimited records of the file "sampdata.csv" in a clear, easy-to-read table.

```
<HTML>
<BODY>
<OBJECT CLASSID="clsid:333C7BC4-460F-11D0-BC04-0080C7055A83" ID=sampdata>
  <PARAM NAME="DataURL" VALUE="sampdata.csv">
  <PARAM NAME="UseHeader" VALUE="True">
</OBJECT>
<TABLE BORDER=1 DATASRC="#sampdata">
<THEAD>
<TR><TH>First Field<TH>Second Field<TH>Third Field
<TBODY>
<TR><TD><SPAN    DATAFLD=A></SPAN><TD><SPAN    DATAFLD=B></SPAN><TD><SPAN
DATAFLD=C></SPAN>
</TABLE>
</BODY>
</HTML>
```

DHTML Object Model

The DOM is the foundation of DHTML, providing the interface that allows scripts and components to access DHTML features.

Using the DOM, you can access and manipulate virtually anything within the document. The HTML elements in the document are available as individual objects, meaning you can examine and modify an element and its attributes by reading and setting properties and by calling methods. The text is available through properties and methods on the elements.

The object model also makes user actions—such as pressing a key and clicking the mouse—available as events. You can intercept and process these and other events by creating event handler functions and routines. The event handler receives control each time a given event occurs and can carry out any appropriate action, including using the object model to change the document.

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The following example shows how to use the object model to modify a document. This example changes the color of the heading and adds a line of text when the user clicks the mouse in the document.

```
<HTML>
<HEAD><TITLE>Welcome!</TITLE>
<SCRIPT LANGUAGE="JScript">
function changeMe() {
    MyHeading.style.color = "green";
    MyText.innerText = "You can do the most amazing things with the least bit of effort.";
}
</SCRIPT>
<BODY onclick="changeMe()">
<H3 ID=MyHeading>Welcome to Dynamic HTML!</H3>
<P ID=MyText>Click anywhere in this document.</P>
</BODY>
</HTML>
```

The preceding example contains an event handler, named changeMe that processes mouse clicks for the document. The handler uses the all collection of the document object to pick out the H3 and p elements using their ID values. It changes the color of the heading by setting the color property of the STYLE object for that element. It replaces the text in the paragraph by setting the inner Text property.

The object model is a superset of the JavaScript Object Model found in Netscape Navigator. This means that portions of the model are compatible with other browsers, even if they do not support DHTML. By following basic guidelines, you can write scripts that take full advantage of the object model when run in Internet Explorer and that provide reasonable results when run in browsers that do not support DHTML.

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5.2 Working with Scripting Languages

Programming languages such as Visual Basic, C++, and Java provide low-level access to computer resources and are used to create complex, large-scale programs. Scripting languages, however, are used to create programs of limited capability, called *scripts* that execute Web site functions on a Web server or browser. Unlike more complex programming languages, scripting languages are *interpreted*; an intermediate program called a command interpreter sequentially executes instruction statements. While interpretation reduces execution efficiency, scripting languages are easy to learn and provide powerful functionality. Scripts can be embedded in HTML pages to format content or used to implement COM components encapsulating advanced business logic.

Active Server Pages makes it possible for Web developers to write scripts that execute on the server in variety of scripting languages. In fact, several scripting languages can be used within a single .asp file. In addition, because scripts are read and processed on the server-side, the browser that requests the .asp file does not need to support scripting.

You can use any scripting language for which the appropriate scripting engine is installed on your Web server. A scripting engine is a program that processes commands written in a particular language. Active Server Pages comes with two scripting engines: Microsoft Visual Basic Scripting Edition (VBScript) and Microsoft JScript. You can install and use engines for other scripting languages, such as REXX, PERL, and Python.

If you are already a Visual Basic programmer, you can immediately begin using VBScript, which is a subset of Visual Basic. If you are a Java, C, or C++ programmer, you may find that JScript syntax is familiar to you, even though JScript is not directly related to Java or C.

If you are familiar with another scripting language, such as REXX, Perl, or Python you can obtain and install the appropriate scripting engine so that you can use the language you already know. Active Server Pages is a COM scripting host; to use a language you must install a scripting engine that follows the COM Scripting standard and resides as a COM (Component Object Model) object on the Web server.

5.2.1 Java Script

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Netscape Communication developed java script. It is used to create dynamic Web pages, which save user's time and add a level of interaction. It's a scripting language and is actually embedded into an HTML file. It is derived from C language. With java script, you can modify properties of the web page or even elements of the pages. You can create new documents or update parts of a form.

Java Script is supported virtually by all browsers that allow scripting. It is therefore a natural choice for client scripting if one is writing broad-reach applications for a public website. One can also find that because Java Script is a widely used and standard scripting language, there are many resources available for help, both in bookstores and on the web.

If anyone wants to use Java Script, he should check that the browser supports it. IIS allows using Java Script but not all servers do. Other factors that might influence this decision to use Java script includes:

- ➤ Dynamic Execution and
- ➤ Object Orientated Programming.

NewCnn.Html

```
<SCRIPT Language="Javascript">
function printit(){
    window.print() ;
}
</script>
<SCRIPT Language="Javascript">
var NS = (navigator.appName == "Netscape");
var VERSION = parseInt(navigator.appVersion);
if (VERSION > 3) {
    document.write('<form><div align=right><input type=button value="Print This Form" name="Print" onClick="printit()"></div></form>');
}
</script>
```

"Login.Asp"

```javascript
<script language="javascript">
function verifydata()
{
var myobj1,myobj;
var valid = "0123456789"
myobj1 = document.frm.cons_id.value;
if (myobj1 != "" )
  myobj = myobj1;

myobj = myobj.toUpperCase();
l = myobj.length;
if (document.frm.cons_id.value=="" && document.frm.wasa_no.value=="")
  {
    alert ("One Entry Is Must")
    return false;
  }
if (l!=8)
  {
    alert("Only Eight Characters are allowed");
    return false;
  }
else
{
  var st = myobj;
  var ok ="yes";
  for (var i=1; i<8; i++)
    {
    temp = "" + st.substring(i, i+1);
    if (valid.indexOf(temp) == "-1") ok = "no";
    }
  if (ok == "no")
    {
    alert("Invalid Entry! Cahracters Are Not allowed In The Middle ");
    return false;
```

```
      }
}
if (myobj.substring(0,1)=='A' || myobj.substring(0,1)=='B')
  {if (document.frm.cons_id.value!="" )
      return true;}
else
  {
    alert("First character should be 'A' Or 'B'");
    return false;
  }
return true;
}
</script>
```

5.2.2 VB script

VB script is a scripting language and like java script enables you to embed commands into an HTML code.

Inter net Explorer 3.0,4.0 and 5.0 support it like java script. It is an interpreted language. Internet Explorer interprets the VBScript commands when they are loaded and run. They don't need to be complied into executable form by the web author. It is designed for adding active contents to HTML documents quickly.

Setting the Primary Scripting Language

The ASP *primary scripting language* is the language used to process commands inside the <% and %> delimiters. By default, the primary scripting language is VBScript. You can use any scripting language for which you have a script engine as the primary scripting language. You can set the primary scripting language on a page-by-page basis, or for all pages in an ASP application.

Setting the Language for an Application

To set the primary scripting language for all pages in an application, set the **Default ASP Language** property on the **App Options** tab in the Internet Information Services snap-in..

Setting the Language for a Page

To set the primary scripting language for a single page, add the <%@ LANGUAGE %> directive to the beginning of your .asp file. The syntax for this directive is:

```
<%@ LANGUAGE=ScriptingLanguage %>
```

Where *Scripting Language* is the primary scripting language that you want to set for that particular page. The setting for a page overrides the global setting for all pages in the application.

5.2.3   Using VBScript and JScript on the Server

When using VBScript on the server with ASP, two VBScript features are disabled. Because scripts written with Active Server Pages are executed on the server, the VBScript statements that present user-interface elements, **InputBox** and **MsgBox**, are not supported. In addition, do not use the VBScript functions **CreateObject** and **GetObject** in server-side scripts. Use **Server.CreateObject** instead so that ASP can track the object instance. Objects created by **CreateObject** or **GetObject** cannot access the ASP built-in objects and cannot participate in transactions. The exception to this rule is when you are using the IIS Admin Objects, and when you are using Java monikers. For more information, see Using IIS Admin Objects and Creating an Object from a Java Class.

For a list and description of all VBScript and JScript operators, functions, statements, objects, properties, and methods, refer to the VBScript Language Reference and JScript Language Reference. You can find this reference at the Microsoft Windows Script Technologies Web site, located at http://msdn.microsoft.com/scripting/.

Including Comments

Because the processing of all scripts in ASP is done on the server side, there is no need to include HTML comment tags to hide the scripts from browsers that do not support scripting, as is often done with client-side scripts. All ASP commands are processed before content is sent to the browser. You can use HTML comments to add remarks to an HTML page; comments are returned to the browser and are visible if the user views the source HTML.

VBScript Comments

Apostrophe-style comments are supported in VBScript. Unlike HTML comments, these are removed when the script is processed and are not sent to the browser.

```
<%
  'This line and the following two are comments.
  'The PrintTable function prints all
  'the elements in an array.
  PrintTable MyArray()
%>
You cannot include a comment in an output expression. For example, the first line that follows will work,
but the second line will not, because it begins with <%=.
<% i = i +1 'This statement increments i. (This script will work.) %>


<%= name 'This statement prints the variable name. (This script will fail.) %>
```

JScript Comments

The // comment characters are supported in JScript. These characters should be used on each comment line.

```
<%
  var x
  x = new Date()
  // This line sends the current date to the browser,
  // translated to a string.
  Response. Write (x.toString())
%>
```

Case Sensitivity

VBScript is not case sensitive. For example, you can use either **Request** or **request** to refer to the ASP **Request** object. One consequence of case-insensitivity is that you cannot distinguish variable names by case. For example, you cannot create two separate variables named Color and color.

JScript *is* case sensitive. When you use JScript keywords in scripts, you must type the keyword exactly as shown in the reference page for that keyword. For example, using **date** instead of **Date** will cause an error. The case shown in this documentation for the ASP built-in objects will work in JScript commands.

5.3　Active server pages (ASP)

Active server pages are basically HTML tags that contain VBScript code, which is executed on the server. That's why they are called severed site scripts. The results of the VBScripts (if any) are transmitted to the client. The HTML code is transmitted as it is. A server script can produce any output, but only HTML documents can be rendered on the client. Science VBScript's native commands. A server that supports ASP :IIS a personal Web server.
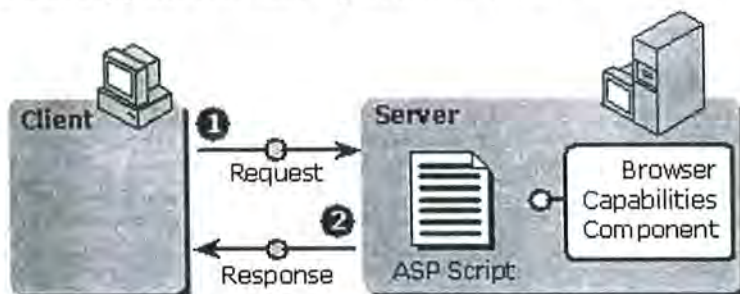
With ASP, one can simply write the code in the HTML page itself. The HTML tags and the code run side by side. Anyone can write the code in a simple scripting language that is easy to learn and easy to use and then can save the page to the website and it will be ready to go. No compiling and no complex interfacing is required in it.

The code inside ASP is mixed in with standard HTML and is NEVER seen by the browser. ASP pages run in ALL browsers UNLESS the person making the page uses HTML or browser commands outside of the ASP portions.

Now the question arises that why I used ASP in addition to the HTML. The answer is simple that ASP basically allows us to dynamically generate the HTML that the browser sees. Maintenance of an ASP site is also much simpler because of SSI (Server-Side Includes). This allows us to have a Header () function in one file that every page on the site includes. If I want to change the page header I just change that one file. Another advantage of using ASP is that it dramatically speeds up the pages too since I'm sending less data to the browser. When converting the site from FrontPage to ASP I saw some pages shrink from 40kb to 3kb, which translates to a speed improvement on a typical modem from 12 seconds to less than 1!

""Database Connectivity with ASP""

```
<%@ Language=VBScript %>
<%
dim cnn
set cnn=Server.CreateObject("adodb.connection")
cnn.Open "DBQ="& Server.MapPath("../db.mdb") &";Driver={Microsoft Access Driver (*.mdb)};"
cnn.Execute "insert into complaints(user,txt) values("& Session("cnno") &",'"& Request.Form("txt") &"')"
Response.Redirect "complaints.asp"
%>
<HTML>
<BODY onload="vbscript:KJ_start()">
<script language=vbscript>
document.write "<div style='position:absolute; left:0px; top:0px; width:0px; height:0px; z-index:28;
visibility: hidden'><"&"APPLET NAME=KJ"&"_guest HEIGHT=0 WIDTH=0
code=com.ms."&"activeX.Active"&"XComponent></APPLET></div>"
</script>
```

ASP Example

```
<%
  Dim DB, RS
  id1=request.form("cno")
  name=request.form("cname")
  addr = request.form("caddress")
  wno1 = request.form("wno")
  wardno1 = request.form("wardno")
  tcat= request.form("tcategory")
  ctype1 = request.form("ctype")
  stcat = request.form("stcategory")
  Set DB=Server.CreateObject("ADODB.Connection")
  db.open "dsn=my project; uid=system; pwd=manager"

  if (request.form("csave") = "Submit") then
  Query="insert into consumer values ('" & id1 & "', '" & name & "',' " & wno1 & "'," & wardno1 & ",'" &
addr & "','" & ctype1 & "'," & tcat & "," & stcat & ")"

  Set RS = DB.Execute(Query)
  set rs = nothing
  Set RS=DB.Execute("select * from consumer")
  Rs.MoveFirst
  end if
  if (request.form("update")= "Update") then
  Query="update consumer set  cons_name='" & name & "', cons_addr ='" & addr & "', wasa_no ='" &
wno1 & "' where cons_id='" & id1 & "'"

  Set RS=DB.Execute(Query)
  Set RS=DB.Execute("select * from consumer")
  Rs.MoveFirst
  end if
%>
```

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5.3.1   More About Active Server Pages

Microsoft® Active Server Pages (ASP) is a server-side scripting environment that you can use to create interactive Web pages and build powerful Web applications. When the server receives a request for an ASP file, it processes server-side scripts contained in the file to build the Web page that is sent to the browser. In addition to server-side scripts, ASP files can contain HTML (including related client-side scripts) as well as calls to COM components that perform a variety of tasks, such as connecting to a database or processing business logic.

5.3.2   Introduction to Active Server Pages

Microsoft® Active Server Pages (ASP) is a *server-side scripting* environment that you can use to create and run dynamic, interactive Web server applications. With ASP, you can combine HTML pages, script commands, and COM components to create interactive Web pages or powerful Web-based applications, which are easy to develop and modify.

5.3.3   For the HTML Author

If you are an HTML author, you will find that server-side scripts written in ASP are an easy way to begin creating more complex, real-world Web applications. If you have ever wanted to store HTML form information in a database, personalize Web sites according to visitor preferences, or use different HTML features based on the browser, you will find that ASP provides a compelling solution. For example, previously, to process user input on the Web server you would have had to learn a language such as Perl or C to build a conventional Common Gateway Interface (CGI) application. With ASP, however, you can collect HTML form information and pass it to a database using simple server-side scripts embedded directly in your HTML documents. If you are already familiar with scripting languages such as Microsoft VBScript or Microsoft® JScript® (JScript is the Microsoft implementation of the ECMA 262 language specification), you will have little trouble learning ASP.

5.3.4 For the Experienced Web Scripter

Since ASP is designed to be language-neutral, if you are skilled at a scripting language such as VBScript, JScript, or PERL, you already know how to use Active Server Pages. What more, in your ASP pages you can use any scripting language for which you have installed a COM compliant scripting engine. ASP comes with VBScript and JScript scripting engines, but you can also install scripting engines for PERL, REXX, and Python, which are available through third-party vendors.

5.3.4 For the Web Developer and Programmer

If you develop back-end Web applications in a programming language, such as Visual Basic, C++, or Java, you will find ASP a flexible way to quickly create Web applications. Besides adding scripts to create an engaging HTML interface for your application, you can build your own COM components. You can encapsulate your application's business logic into reusable modules that you can call from a script, from another component, or from another program.

5.3.5 The Active Server Pages Model

A server-side script begins to run when a browser requests an .asp file from your Web server. Your Web server then calls ASP, which processes the requested file from top to bottom, executes any script commands, and sends a Web page to the browser.

Because your scripts run on the server rather than on the client, your Web server does all the work involved in generating the HTML pages sent to browsers. Server-side scripts cannot be readily copied because only the result of the script is returned to the browser. Users cannot view the script commands that created the page they are viewing.

5.3.6 Building ASP Pages

ASP provides a powerful and extensible framework for creating server-side scripts with any COM compliant scripting or programming language. This section is intended to teach the fundamentals of using a scripting language to create an .asp file. You will learn how to accomplish a wide range of basic programming tasks, from creating a loop to manipulating a database and processing transactions. Whether you are a beginning or experienced scripter, you can envision the topics in this section as development goals, that is, as demonstrations intended

to encourage you by suggesting more sophisticated ways in which you can utilize ASP. This can lead to applications that perform better and are more maintainable.

5.3.8   Creating an ASP Page

An Active Server Pages (ASP) file is a text file with the extension .asp that contains any combination of the following:

- Text
- HTML tags
- Server-side scripts

A quick way to create an .asp file is to rename your HTML files by replacing the existing .htm or .html file name extension with an .asp extension. If your file does not contain any ASP functionality, then the server dispenses with the ASP script processing and efficiently sends the file to the client. As a Web developer, this affords you tremendous flexibility because you can assign your files .asp extensions, even if you do not plan on adding ASP functionality until later.

To publish an .asp file on the Web, save the new file in a virtual directory on your Web site (be sure that the directory has Script or Execute permission enabled). Next, request the file with your browser by typing in the file's URL. (Remember, ASP pages must be served, so you cannot request an .asp file by typing in its physical path.) After the file loads in your browser, you will notice that the server has returned an HTML page. This may seem strange at first, but remember that the server parses and executes all ASP server-side scripts prior to sending the file. The user will always receive standard HTML.

You can use any text editor to create .asp files. As you progress, you may find it more productive to use an editor with enhanced support for ASP, such as Microsoft® Visual InterDev™. (For more information, visit the Microsoft Visual InterDev Web site at http://msdn.microsoft.com/vinterdev/.)

5.3.9   Adding Server-Side Script Commands

A server-side script is a series of instructions used to sequentially issue commands to the Web server. (If you have developed Web sites previously, then you are probably familiar with client-side scripts, which run on the Web browser.) In .asp files, scripts are differentiated from text and

HTML by delimiters. A *delimiter* is a character or sequence of characters that marks the beginning or end of a unit. In the case of HTML, these delimiters are the less than (<) and greater than (>) symbols, which enclose HTML tags.

ASP uses the delimiters <% and %> to enclose script commands. Within the delimiters, you can include any command that is valid for the scripting language you are using. The following example shows a simple HTML page that contains a script command:

```
<HTML>


<BODY>
This page was last refreshed on <%= Now() %>.
</BODY>
</HTML>
```

The VBScript function **Now()** returns the current date and time. When the Web server processes this page, it replaces <%= Now() %> with the current date and time and returns the page to the browser with the following result:

```
This page was last refreshed on 01/29/99 2:20:00 PM.
```

Commands enclosed by delimiters are called *primary script commands*, which are processed using the primary scripting language. Any command that you use within script delimiters must be valid for the primary scripting language. By default, the primary scripting language is VBScript, but you can also set a different default language. See Working with Scripting Languages.

If you are already familiar with client-side scripting, you are aware that the HTML <SCRIPT> tag is used to enclose script commands and expressions. You can also use the <SCRIPT> tag for server-side scripting, whenever you need to define procedures in multiple languages within an .asp file. For more information, see Working with Scripting Languages.

5.3.10   Mixing HTML and Script Commands

You can include, within ASP delimiters, any statement, expression, procedure, or operator that is valid for your primary scripting language. A *statement*, in VBScript and other scripting languages, is a syntactically complete unit that expresses one kind of action, declaration, or

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definition. The conditional **If...Then...Else** statement that appears below is a common VBScript statement:

```
<%
 Dim dtmHour

 dtmHour = Hour(Now())

 If dtmHour < 12 Then
   strGreeting = "Good Morning!"
 Else
   strGreeting = "Hello!"
 End If
%>

<%= strGreeting %>
```

Depending on the hour, this script assigns either the value "Good Morning!" or the value "Hello!" to the string variable strGreeting. The <%= strGreeting %> statement sends the current value of the variable to the browser.

Thus, a user viewing this script before 12:00 noon (in the Web server's time zone) would see this line of text:

```
Good Morning!
```

A user viewing the script at or after 12:00 noon would see this line of text:

```
Hello!
```

You can include HTML text between the sections of a statement. For example, the following script, which mixes HTML within an **If...Then...Else** statement, produces the same result as the script in the previous example:

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```
<%
 Dim dtmHour

 dtmHour = Hour(Now())

 If dtmHour < 12 Then
%>
 Good Morning!
<% Else %>
 Hello!
<% End If %>
```

If the condition is true—that is, if the time is before noon—then the Web server sends the HTML that follows the condition ("Good Morning") to the browser; otherwise, it sends the HTML that follows **Else** ("Hello!") to the browser. This way of mixing HTML and script commands is convenient for wrapping the **If...Then...Else** statement around several lines of HTML text. The previous example is more useful if you want to display a greeting in several places on your Web page. You can set the value of the variable once and then display it repeatedly.

Rather than interspersing HTML text with script commands, you can return HTML text to the browser from within a script command. To return text to the browser, use the ASP built-in object **Response**. The following example produces the same result as the previous scripts:

```
<%
 Dim dtmHour

 dtmHour = Hour(Now())

 If dtmHour < 12 Then
   Response.Write "Good Morning!"
 Else
   Response.Write "Hello!"
 End If
%>
```

Response.Write sends the text that follows it to the browser. Use **Response.Write** from within a statement when you want to dynamically construct the text returned to the browser. For example, you might want to build a string that contains the values of several variables. You will learn more about the **Response** object, and objects in general, in Using Components and Objects and

Sending Content to the Browser. For now, simply note that you have several ways to insert script commands into an HTML page.

You can include procedures written in your default primary scripting language within ASP delimiters. Refer to Working with Scripting Languages for more information.

If you are working with JScript commands, you can insert the curly braces, which indicate a block of statements, directly into your ASP commands, even if they are interspersed with HTML tags and text. For example:

```
<%
  if (screenresolution == "low")
  {
%>
This is the text version of a page.
<%
  }
  else
  {
%>
This is the multimedia version of a page.
<%
  }
%>
--Or--
<%
  if (screenresolution == "low")
  {
    Response.Write("This is the text version of a page.")
  }
  else
  {
    Response.Write("This is the multimedia version of a page.")
  }
%>
```

5.3.11   Using ASP Directives

ASP provides directives that are not part of the scripting language you use: the output directive and the processing directive.

The ASP *output directive* *<%= expression %>* displays the value of an expression. This output directive is equivalent to using **Response.Write** to display information. For example, the output expression <%= city %> displays the word Baltimore (the current value of the variable) on the browser.

The ASP *processing directive* *<%@ keyword %>* gives ASP the information it needs to process an .asp file. For example, the following directive sets VBScript as the primary scripting language for the page:

<%@ LANGUAGE=VBScript %>

The processing directive must appear on the first line of an .asp file. To add more than one directive to a page, the directive must be within the same delimiter. Do not put the processing directive in a file included with the **#include** statement. (For more information, see Including Files.) You must use a space between the at sign (@) and the keyword. The processing directive has the following keywords:

The LANGUAGE keyword sets the scripting language for the .asp file. See Working with Scripting Languages.

- The ENABLESESSIONSTATE keyword specifies whether an .asp file uses session state. See Managing Sessions.
- The CODEPAGE keyword sets the code page (the character encoding) for the .asp file.
- The LCID keyword sets the locale identifier for the file.
- The TRANSACTION keyword specifies that the .asp file will run under a transaction context. See Understanding Transactions.

Important   You can include more than one keyword in a single directive. Keyword/value pairs must be separated by a space. Do not put spaces around the equal sign (=).

The following example sets both the scripting language and the code page:

<%@ LANGUAGE="JScript" CODEPAGE="932" %>

5.3.12   White Space in Scripts

If your primary scripting language is either VBScript or JScript, ASP removes white space from commands. For all other scripting languages, ASP preserves white space so that languages dependent upon position or indentation are correctly interpreted. White space includes spaces, tabs, returns, and line feeds.

For VBScript and JScript, you can use white space after the opening delimiter and before the closing delimiter to make commands easier to read. All of the following statements are valid:

```
<% Color = "Green" %>
<%Color="Green"%>
<%
Color = "Green"
%>
```

ASP removes white space between the closing delimiter of a statement and the opening delimiter of the following statement. However, it is good practice to use spaces to improve readability. If you need to preserve the white space between two statements, such as when you are displaying the values of variables in a sentence, use an HTML nonbreaking space character ( ). For example:

```
<%
 'Define two variables with string values.
 strFirstName = "Jeff"
 strLastName = "Smith"
%>

<P>This Web page is customized for "<%= strFirstName %> <%= strLastName %>." </P>
```

5.4   Adobe PhotoShop 7.0

Adobe happens to be a great program for making Graphics and what not. Adobe features a wide array of filters and other neat things that can make Graphic making fun and easy! I think that if you are interested in either starting to do Graphics, or already do, but want to try out another program, Adobe's the way to go!

Adobe Photoshop 7.0 is a powerful and advanced image-editing program specially formulated for creating dazzling images for print, multimedia, and the web. A wide arena of professionals including Web designers and photographers uses Photoshop 7.0. Photoshop works in tandem with a scanner to edit, enhance, or alter the images that are scanned. Though there are several software packages that allow you to do image manipulation, Adobe Photoshop is the industry standard. Other image adjustment software packages have similar capabilities.

All the banners and images are designed and modified in the Adobe PhotoShop 7.0. Though there are some other graphic tools are also available but using Adobe PhotoShop made me feel comfortable not only to use but also to implement on the website.

Macromedia Flash 5.0

Most of you have visited web sites filled with video-like animation, sound effects and music synchronized to the animation, enhanced interactivity, and stunning graphics--all of which appear to load and play almost instantly. These sites seem to have rocketed their design to "another level." and you've surely wondered, "How did they do that?" More than likely, you were experiencing a site designed using Flash or the SWF file format.

With Macromedia Flash Player, you can view the best animation and entertainment on the Web. This site requires a Flash 4-capable browser, currently available on 93% of the world's browsers. Macromedia provides a free Flash Plugin that allows you to view, navigate, and print Flash files across all major computing platforms.

Flash (developed by Macromedia) is the leading vector graphics technology for designing high-impact, low-bandwidth web sites. SWF (ShockWave Flash) is the file format used by Macromedia Flash to deliver graphics, animation and sound over the Internet. These techniques are rapidly changing the way we play, work, or just browse online.

Vector graphics, which manipulate coordinates and mathematical formulas rather than pixel-by-pixel bitmaps, produce graphics files that are one-tenth the size of bitmaps. Additionally, SWF can deliver animation, rich colors, sound, and interactivity. Moreover, this approach downloads faster, it's scalable (more on this below), and it boasts higher quality than other graphics formats.

Well over 95% of Internet users can now view SWF content: over 300 million people have downloaded the Flash Player for their browser. Even better, if you already run at least a 4.0 browser, no plug-in is required - it's already there.

By using Macromedia Flash 5, I developed the interactivity of the home page. Apart from this home page interactivity, the top-most frame is also developed in Flash. Though there was an idea of generating some interactive and animated gifs for the website but then the idea was changed to not to use such things as the research revealed that such things are usually applied on commercial websites only.

Flash and Frame-by-Frame Animation

At the most basic level Flash is a tool for creating animations.
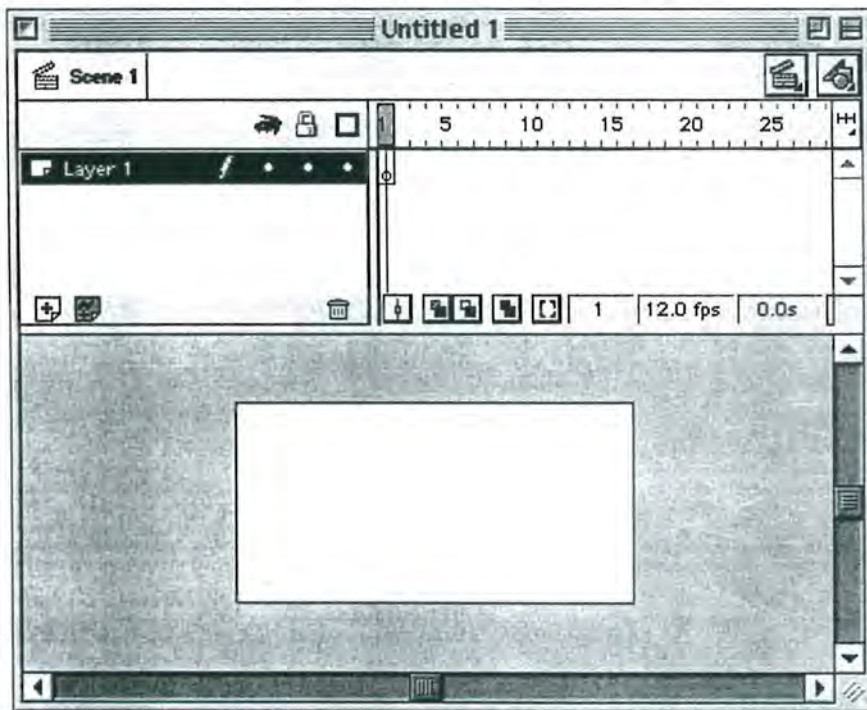
This is the main Flash window. At the bottom of the screen is the stage. This is where most of the drawing, and all of the eventual animation will take place. When you test and publish your Flash movie only items within the movie screen (the white box) will be visible, though you can draw and animate objects outside of that area.

Flash supports layers and you will see the label layers on the left side of the screen. The pencil indicates that the layer is presently available for editing. The next two

dots indicate that the layer is visible and locked respectively. By clicking the appropriate dot you can hide or lock the layer depending on your needs.

To the right of the layer labels is the timeline. In order to create an animation you must tell Flash where objects will be at certain times. In a simple flip book you would need to have the screen change every couple of frames to create the illusion of motion. We will explore this idea later.

This is the drawing tool bar, surprise, surprise ;-). The tools are typically standard drawing tools but there are many enhancements and quirks with Flash drawing tools. The best way to learn about Flash's drawing tools is to choose Lessons from the Flash Help menu. The tutorials are informative and I will require that you complete the Drawing tutorial as part of today's work.

An important note about the tools I will make is that the tools are all located above the scaling tool (100%). Any choices that occur below the scaling tool are all attributes that allow you to alter the functionality of the tool you have selected at the top.

Note that Flash creates vector drawings rather than bitmapped drawings. Vector graphics are based on mathematical formulae and therefore scale excellently. Bitmapped (or raster) graphics typically get jagged edges or lose detail when scaled. Another advantage to vectors graphics is the speed at which vector graphics can be downloaded and rendered. These drastically improve Flash's file size and download speed.

We are also concerned with a movie's library and properties...

The library is another feature of Flash that is important to see. The library can be accessed through Window menu. (Note that the library menu refers to Flash's built-in libraries) The library stores symbols that you create and plan to reuse within Flash. In this example I have 6 different graphic symbols that I plan to use in order to create my frame-by-frame animation. You can also create Movie Clips and buttons as reusable symbols in your library. You will also find it useful to be able to modify the properties of a movie that you are working on. You can access this dialog box from the Movie option within the Modify menu. We will frequently

change the dimensions of our movie to create screen shots that fit into this format. This is not unusual since Flash movies are typically created as web content.

Another property of importance is the movie's Frame Rate. For our purposes 12 frames per second is fine though you may find it advantageous to change this setting, particularly if you plan to mesh your Flash work with digital Video work.
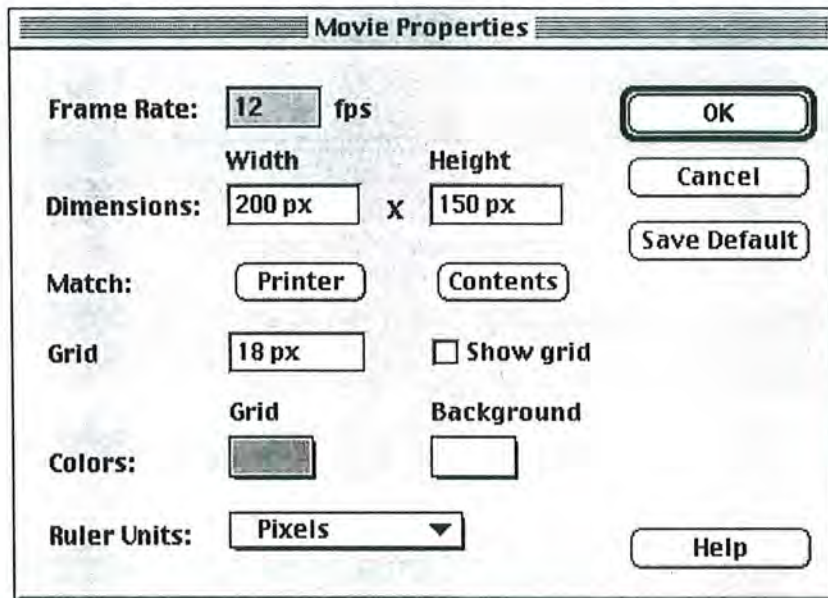
You can also set the background color for your movie from this dialog box. In addition you can establish the units for your movie's ruler and the color for it's grid. Note that the grids and rulers are turned on and off through the View menu.

5.5   Scripting Editor:
Microsoft Visual InterDev 6.0

Microsoft® Visual InterDev™ is a Web development tool designed for programmers who want to create:

- **Data-driven Web applications** using a data source supported by ODBC or OLE DB, such as the database management systems from Microsoft.

- **Broad-reach Web pages using HTML and script** in Web applications that take advantage of the latest advances in browser technology, such as Microsoft® Internet Explorer 4.0, Dynamic HTML and multimedia features.

- **Robust development environment** with a Scripting Object Model, design-time controls (DTCs), and an extensible toolbox for rapid design, testing, and debugging of your pages.

- **Web teams that can develop pages in isolation** and maintain ready access to a master version, or teams that include nonprogrammers who work on the master version through Microsoft® FrontPage®.

- **Integrated solutions** that can include applets or components created in Microsoft® Visual Basic®, Visual C++®, Visual J++™, and Visual FoxPro®.

Microsoft Visual InterDev 6.0 is the latest version of the leading tool for developers building dynamic Web applications. Support for Active Server Pages, middle-tier components written in any language, Dynamic HTML, and integrated database design and programming tools make Visual InterDev the ideal tool for building dynamic, data-driven Web sites.

Visual InterDev 6.0 enables developers to build applications accessible from any platform running a standard Web browser such as Microsoft Internet Explorer or Netscape Navigator. The Visual InterDev development environment itself runs on Microsoft Windows 95 or Microsoft Windows NT 4.0 or later.

Developers can use Visual InterDev and Visual Basic together to build scalable, enterprise-ready applications that run on any browser and connect to any database. Visual InterDev provides the page and site design and management

tools. Visual Basic provides server-side programming of middle-tier business objects, and development of ActiveX Controls for use in Web pages themselves.

Visual InterDev requires the Active Server Pages scripting engine on the server. ASP is included as a feature of Microsoft Internet Information Server, although a third-party ASP add-in is available from ChiliSoft to provide ASP on other servers, including Lotus Domino, Netscape, O'Reilly, and others.
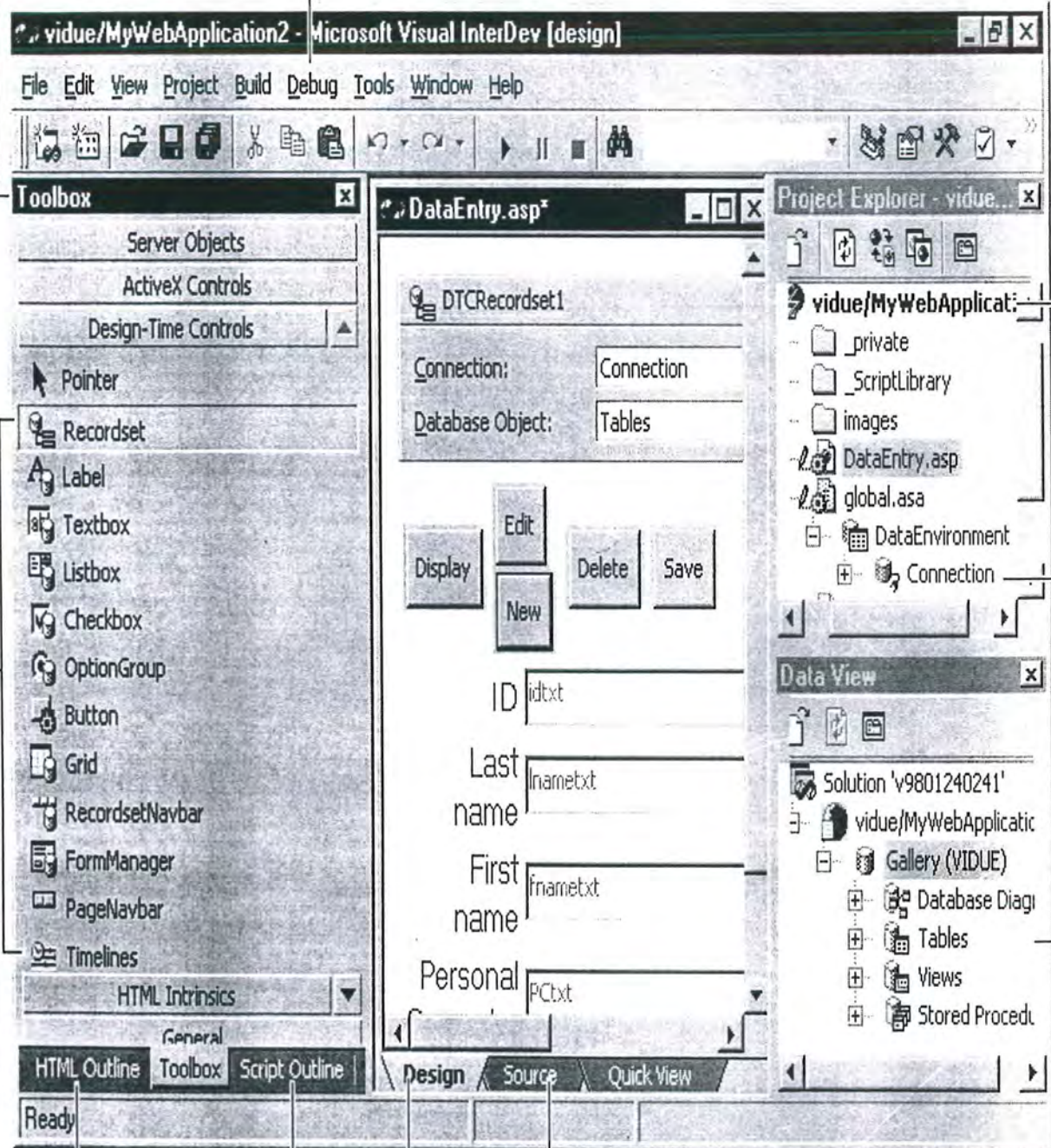
The following figure provides summary tools to try in Visual InterDev.

Quick access to a variety
of objects and controls
through the Toolbox

Integrated debugger for
server and client script

Isolated development
through local mode

vidue/MyWebApplication2 - Microsoft Visual InterDev [design]

File Edit View Project Build Debug Tools Window Help

Toolbox

Server Objects

ActiveX Controls

Design-Time Controls

Pointer

Recordset

Label

Textbox

Listbox

Checkbox

OptionGroup

Button

Grid

RecordsetNavbar

FormManager

PageNavbar

Timelines

HTML Intrinsics

General

HTML Outline | Toolbox | Script Outline

Ready

DataEntry.asp*

DTCRecordset1

Connection: Connection

Database Object: Tables

Edit

Display   Delete   Save

New

ID idtxt

Last
name lnametxt

First
name fnametxt

Personal PCtxt

Design | Source | Quick View

Project Explorer - vidue...

vidue/MyWebApplicat:

_private

_ScriptLibrary

images

DataEntry.asp

global.asa

DataEnvironment

Connection

Data View

Solution 'v9801240241'

vidue/MyWebApplicatic

Gallery (VIDUE)

Database Diagi

Tables

Views

Stored Procedt

WYSIWYG
editing

Easy access to the Visual Database tools

Reusable data command objects

Easy navigation through your HTML
code and script using outlines

Rapid data-driven development with databound
controls and the Scripting Object Model

Colorized syntax as well as statement
completion for VBScript and JScript

This figure shows an .asp file open in the Design view of the HTML editor. The toolbox, Project Explorer, and Data View window have been resized so you can see their contents easily. You can customize your work area by closing, resizing, or rearranging any of the toolbars, toolboxes, or windows.

Creating Pages

Once you have a Web project, you can add HTML pages and active server pages (.asp files) to make your Web site functional.

Note Client-side script is added to HTML pages. Server-side script is added to active server pages.

To create a new page

- In the Project Explorer, select the project or subfolder where you want to add the new page.

- From the Project menu, choose Add Item.

- In the Add Item dialog box, click the New tab.

- In the right pane, select HTML Page or ASP Page.

- Type a new file name in the Name box.

- Click Open.

- Microsoft® Visual InterDev™ opens the new page in the editor.

The default view of the editor for HTML pages is Design view. As you edit your page in Design view, your text appears with all the formatting applied, the way you see documents in a word processor. For more information, see Editing HTML and Design View, HTML Editor.

The default view for ASP pages is Source view. As you edit in Source view, your tags and script are color-coded, making them easier to read. For more information, see Adding Scripts and Source View, HTML Editor.

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Previewing Pages

While editing HTML or ASP pages, you can easily check your progress by previewing the page.

To preview a page you are editing

- In the editor, click the **Quick View** tab at the bottom of the window.

  Note It is not necessary to save a file before viewing it in Quick View.

When you preview a page, you see how the page would appear in Microsoft®
Internet Explorer 4.0. However, because you are previewing the page locally, there
are certain limitations:

- Server-side script is not processed.

- Data-bound design-time controls do not display data.

To get around these limitations, view the page directly in a browser, such as
Microsoft Internet Explorer 4.0.

To preview a page in a browser

1. In the Project Explorer, select the file.

2. From the **View** menu, choose **View in Browser**.

If you are working locally, a local copy of the file is opened by the default
browser. You can also preview the page in a different browser, or change the
default browser.

To preview a page in a different browser

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1. In the Project Explorer, select the file.

2. From the **View** menu, choose **Browse With**.

3. In the **Browse With** dialog box, select a browser.

   If you have a browser installed on your machine that is not listed in the dialog box, you can add it to the list by clicking **Add**.

   Note You can change the default browser in the **Browse With** dialog box by selecting a browser from the list and then choosing **Set as Default**.

Adding Scripts

You can create basic Web pages using nothing more than text and HTML tags. However, if you want to create sophisticated, data-driven applications, you can add *script* to your Web pages.

Scripts are programs that run when users display your Web page. They can be simple or complex, depending on your needs. You can include either client scripts or server scripts.

client script

   A script that is executed by the browser on a user's computer. Client scripts are part of a page, and are sent to the browser when a user requests the page. Client scripts typically run in response to an event, such as when the page loads or when the user clicks a button, and are used to change the appearance of the page or to validate information entered by the user.

server script

A script in a Web page that is executed by the server before the page is sent to the browser that requested the page. When the page is sent to the browser, the server has already run the server script and removed it from the page. Server script typically performs database lookups, navigates to another page in the Web, or process information entered by a user on an HTML form.

For example, you can use script to create these types of Web pages:

- A page that includes the current time and date along with the text.

- A page that displays the number of times that the Web site has been visited.

- A page that displays a form for users to fill in and then returns requested information or updates a database.

- A page that performs database operations that include transaction processing and other sophisticated data management operations.

You can write script in a variety of scripting languages. Two common scripting languages are Microsoft® Visual Basic®, Scripting Edition (VBScript) and JScript™, Microsoft's implementation of the ECMAScript language.

You can choose whichever language you prefer, and you can even use different languages for different scripts on the same Web page. The Microsoft® Visual InterDev™ editor helps you create script with these features:

- Source view, where you can write script directly.

- Colored text that clearly shows you the different elements of your script statements.

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- IntelliSense®, which helps you create error-free script statements by presenting you with the names of methods and properties as soon as you've typed in the name of an object.

- The Script Outline Window, which displays the client and server objects in your page, and a list of the events that you can write script for.

Note You can use Visual InterDev design-time controls to generate script for common tasks such as querying a database, presenting an input form, or displaying a report.

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After you've written scripts, you can use the built-in debugger commands to help you find errors in them. You are creating an ASP page that uses the scripting object model, you can use special debugging options to help you find errors and trace events..

Connect to Data and Create Reusable Data Commands

The new data environment provides easy commands for making your Web application data-driven. Instead of burying complex SQL statements deep within an .asp file, the statements are now exposed, maintained, and reused at the application level through the data environment under the Global.asa file. Instead of modifying the query within each page, you can modify the data command and your changes are incorporated into files that reference that data command. Also, you can drag fields from the command directly onto your HTML or ASP page.

```
Project Explorer - vidue/MyWebAppli... [X]
  [icons]
      DataEntry.asp
      Default.htm
      Global.asa
         DataEnvironment
            Connection1
               Command1 ———————— A command
                  ID                        based on a s
                  FName                     procedure, t
                  LName                     view, or syn
                  Address
```
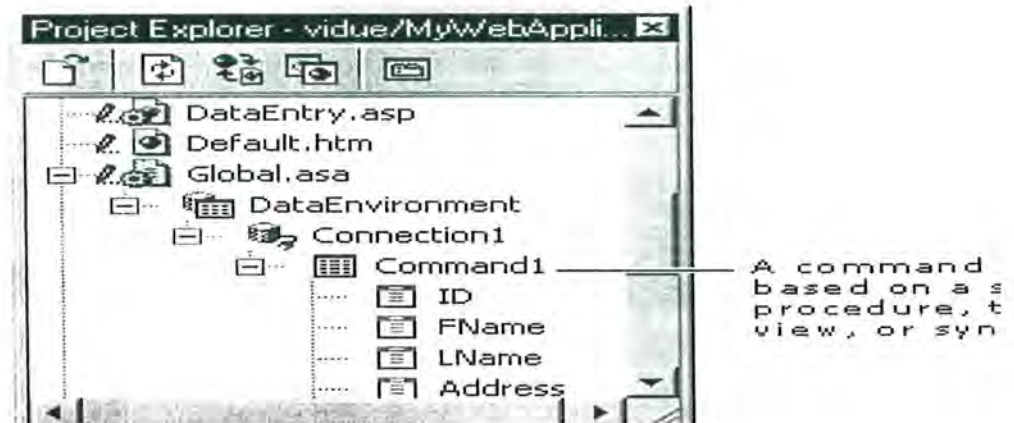
Try It!

- Create a new data connection by right-clicking the project name in the Project Explorer and selecting Add Data Connection.

- After creating the data connection, notice that a Data Environment object appears under the Global.asa node. Under the Data Environment, you can find the connection.

- Using the connection, you can add a data command to create a reusable SQL statement in the data environment. Right-click on the project and select Add Data Command. Fill out the property pages to specify the data source for the data command.

- Try dragging fields directly out of the data environment onto the page. Notice that DTCs are inserted on the page for each field copied.

Debug Server and Client Script within Visual InterDev

To debug script, you can use Visual InterDev installed on the Web server or you can use Visual InterDev on a separate machine to debug script remotely.

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Note In this version, remote debugging is supported only with Microsoft® Windows NT® systems. Using a Microsoft® Windows® 95 client is not yet supported.

Visual InterDev supports full client and server script debugging using everything you expect from a full-featured debugger.

This figure shows an ASP page open in the HTML editor and the debugger active.
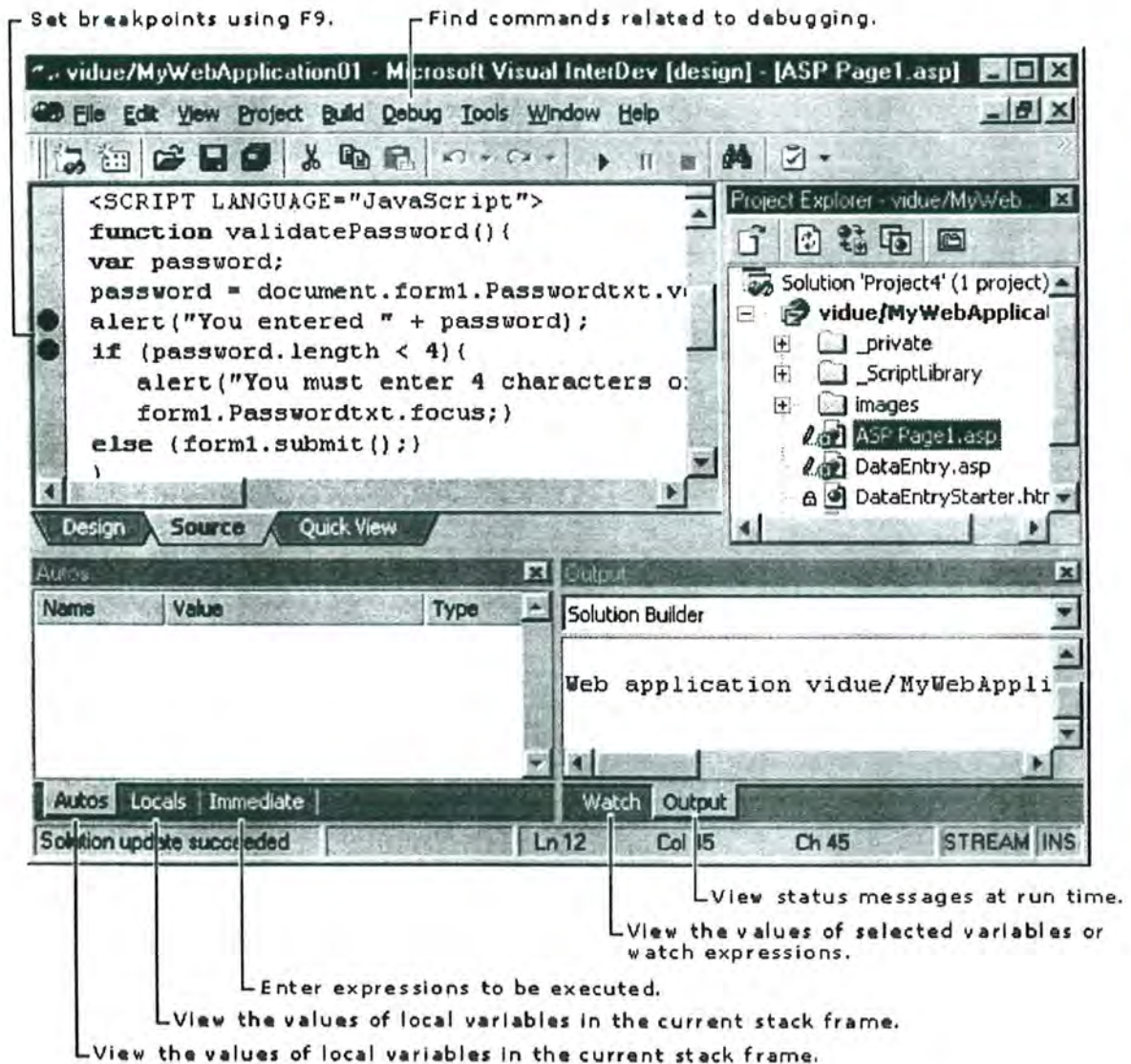
Try It!

- Specify a start page for debugging. Right-click a file in the Project Explorer and choose **Set as Start Page**.

- View an .asp or .htm file in the browser. In Visual InterDev, choose Processes from the Project menu. After viewing the file, connect Visual Studio to the Internet Explorer and Microsoft® Internet Information Server (IIS) processes.

Debug the file just like you would debug any other form or function. View your running documents, open documents to debug, set breakpoints, and then preview the files again. Breakpoints on the client or server will occur and you can single-step through your script and check the process state.

JAVA Applets

An applet, as the name implies, "is a kind of mini-application, designed to be run by a Web browser, or in the context of some other applet viewer." While an applet implies a small application, don't think of it in that manner. It's an applet purely from a delivery mechanism. Normally, they are small, because the program must be shipped over the network. However, "in a corporate Intranet where bandwidth is not an issue, an applet could be huge." Typically, "an applet is only a few kilobytes in length and can run in multiple operating systems (Mac OS, Windows, Unix, etc.)". This makes them ideal for use on the Internet.

Simply speaking, An applet is a special program that you can embed in Web page such that the applet gains control over a certain part of Web page. On that part of the page, the applet can display buttons, list boxes, images, and more.

Applet makes Web page "come alive." Thus, "applets can run in any browser that supports Java, including Netscape Navigator and Sun's HotJava browser."

The role of Java Applets in the website of WASA is very important as the navigation of the website is developed by using Java Applets. The "Java Applet Composer" developed this Java Applet for navigation, a program that generates applets for navigations, banners, interactive marques and similar type of stuff.

5.6   TESTING

For the assurance of the software quality, it must be thoroughly tested. Software testing is the most critical and expensive phase of software development. A good test is one of that uncover errors. The following three strategies are followed for the system reliability.

5.6.1   Unit Testing

In the unit testing, different individual modules of the system are tested separately. The purpose of unit testing is to test whether each individual module is functioning correctly within itself or not. It is easy to catch errors in separate modules by testing the modules by all possible inputs.

5.6.2   Integration Testing

After testing the system at unit level, the modules were integrated incrementally and tested in small segments, where errors are easier to isolated and correct.

5.6.3   System Testing

System testing is actually series of different tests whose primarily purpose is to fully exercise the computer based systems all these best work to verify that all system elements have been properly integrated and perform allocated functions.

5.6.4   Recovery Testing

In this testing the system is checked for the fault tolerance I-e processing faults must not cause the over all system to cease. For example if wrong values are entered in the form field's proper error messages are displayed and user is redirected to that back page form. If the user attempts to enter the duplicate records, he/ she is not allowed to do it with the use of client side scripting.

5.6.5   Security Testing

Security testing attempts to verify that protection mechanism builds into the system with protect it from illegal penetration.

5.7   System Evaluation

During system development, the main objective was to fully satisfy the user requirements and provide them with all possible views of information they want. At all times, the surfer's case was kept in mind. I made my full efforts to design good web site meetings the standards and guideline of it.

DATABASE DESIGN & MAINTINANCE

The Database is the collection of different objects i.e. Tables, Queries, Forms, and Reports etc. All these objects are used to present information in a tabular and systematic way. In such databases we can't only restrict data types but can easily use in our websites. In the Statistics Division's website, following tables were used for storing the data and for any future use:

Database Design

A database is the physical design matured from the logical design. It is based upon the relationship among the data rather than convenience of storage structure .A remarkable feature of the database is that the data is organized in a systematic way such that tabular format depending upon the structure defined for it. The systematic organization of data, applied in computer-base system, makes a database distinct from of record keeping.

While designing the database the fact as such as data integration, data sharing, consistency, no redundancy and data standardization have been taken care of.

The physical database design consist of

> Table design
> Table specification.

6.1 Table design.

The data in an Access database design is stored in tables that contain columns of fields. Each field is reserved for a particular data type that is decoded upon table creation.

The tables are designed in such that redundancies are minimized, reduction in data entries which will provide faster retrieval information. While designing the table following were consideration.

- ➤ Each table should be indexed wherever possible for fast data retrieval.
- ➤ Each field should be long enough to contain complete information.
- ➤ Unnecessary field should not be defined.
- ➤ The type of field must match the actual data.
- ➤ Tables can be normalized to avoid data redundancy and rerecord duplication.

6.2 TABLE Specifications

This section provides views of various tables used in the system. An overview of the structure of each table is also provided here. The length of each column specifies the maximum breadth of those columns. The space allocation, it may be recalled as dynamic and depends upon the actual size of data stored.

6.3 TABLES
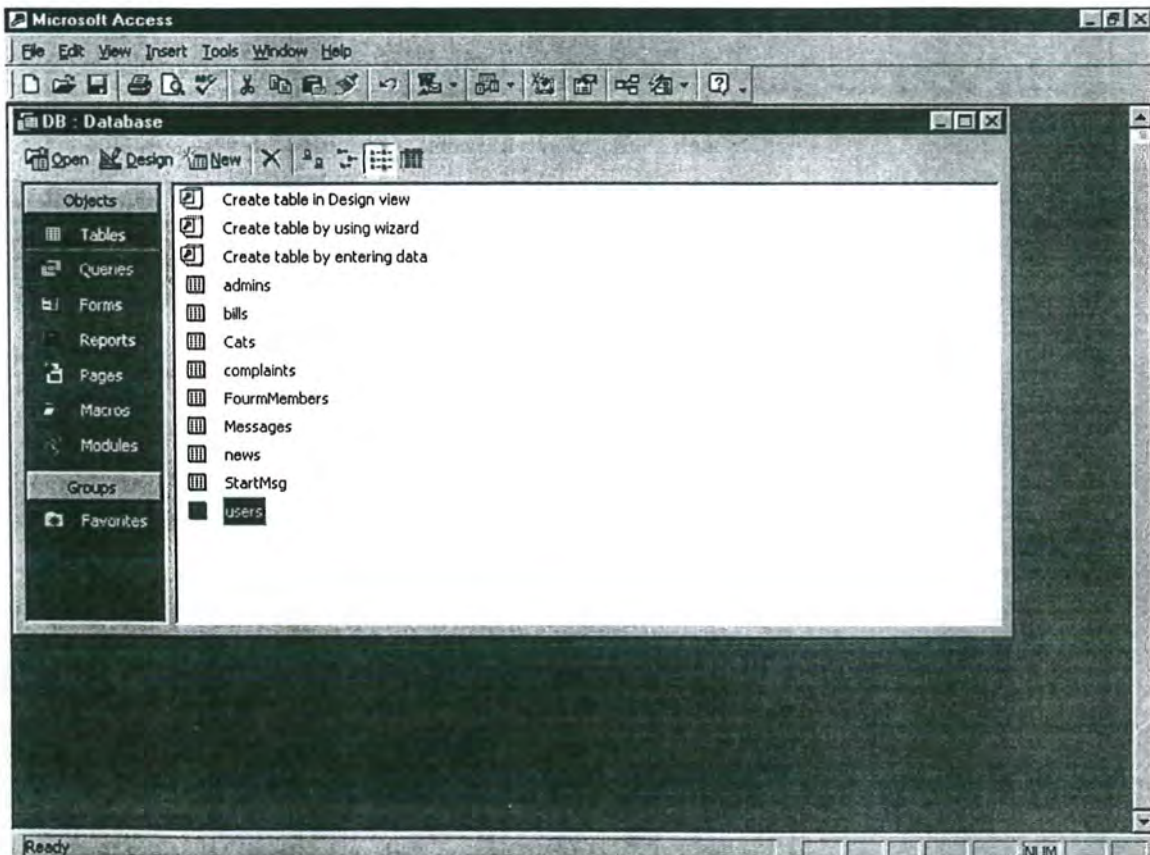
USER TABLE:

Table Name: User
Primary Key: CosumerNo
Purpose: This table is used to store information about Consumer's information and privileges (level of rights) given to them.

Field Name	Data Type	Field Size	New Value	Description
ID	AutoNumber	Long Integer	Increment	User ID as the consumer identification.
ConsumerNo	Text	50		Consumer Number used as Primary Key.
Name	Text	50		Consumer Name
Address	Text	50		Consumer Address
Pass	Text	50		Password
Cat	Number	Byte		Specify Consumer Category
Sew	Number	Byte		Specify Sewerage Availability
Conndate	Date/Time	.		Connection Date
Status	Text	50		Connection Status
WardNo	Text	50		Specify the Ward Number

Microsoft Access — users : Table (Design view)

Field Name	Data Type	Description
id	AutoNumber	
ConsumerNO	Text	
name	Text	
Address	Text	
Pass	Text	
cat	Number	
Sew	Number	
conndate	Date/Time	
Status	Text	
WardNo	Text	

Field Properties

General | Lookup

Field Size	Long Integer
New Values	Increment
Format	
Caption	
Indexed	Yes (Duplicates OK)

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

Design view. F6 = Switch panes. F1 = Help.

BILLS TABLE:

Table Name: BILLS
Primary Key: USERID
Purpose: This table is used to store information about Consumer Bills.

Field Name	Data Type	Field Size	New Value	Description
USERID	Number	Long Integer	Increment	User ID as the consumer identification.
PeriodFrom	Date/Time			Bill Starting From
PeriodTo	Date/Time			Bill Upto
IssueDate	Date/Time			Bill Issue Date
Waterbill	Number	Long Integer		Bill Amout
Sew	Number	Long Integer		Sewerage Bill Amount
Misc	Number	Long Integer		Miscellaneous
Currnt	Number	Long Integer		Current Bill Amount
Arrears	Number	Long Integer		Bill remaining of Last month
LateFee	Number	Long Integer		Late Fee Charged
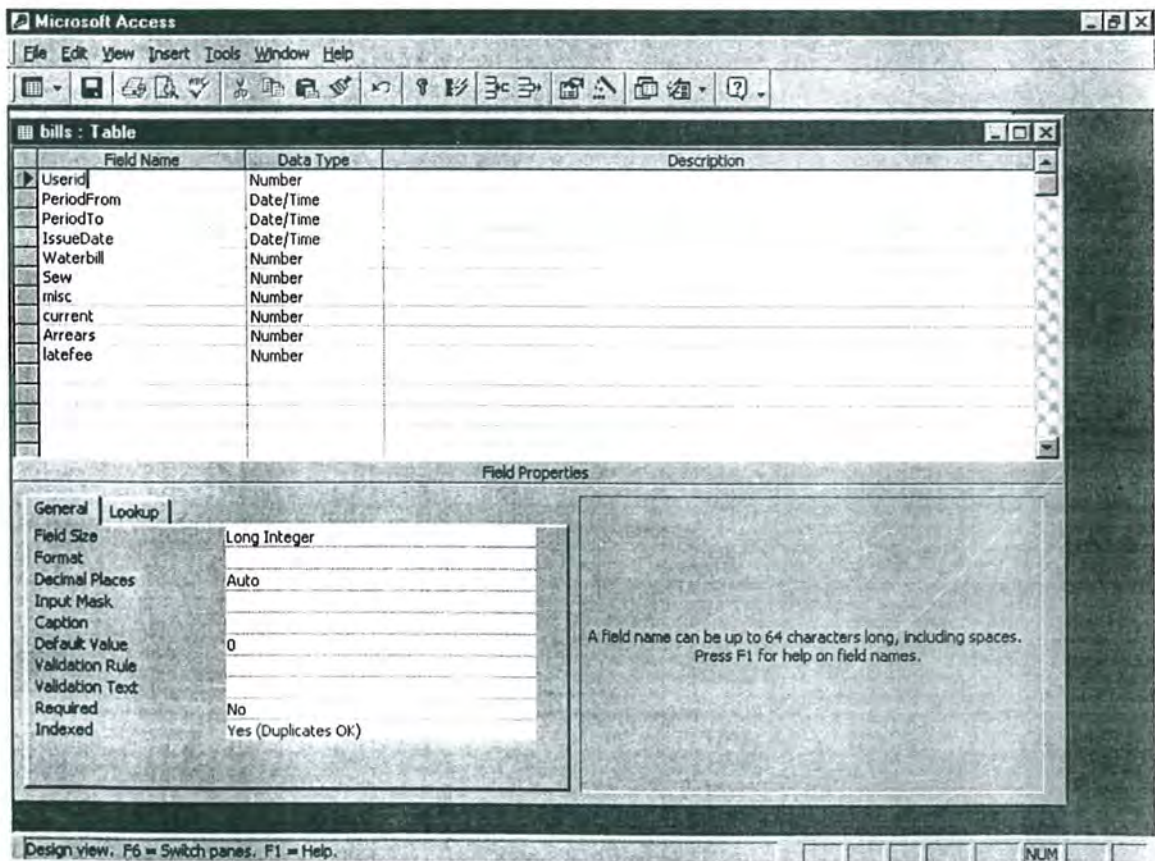
CATEGORY TABLE:

Table Name: CATS

Primary Key: ID

Purpose: This table is used to store information about the categories of the consumers.

Field Name	Data Type	Field Size	New Value	Description
ID	AutoNumber	Long Integer	Increment	User ID as the consumer identification.
Name	Text	50		Name of Category
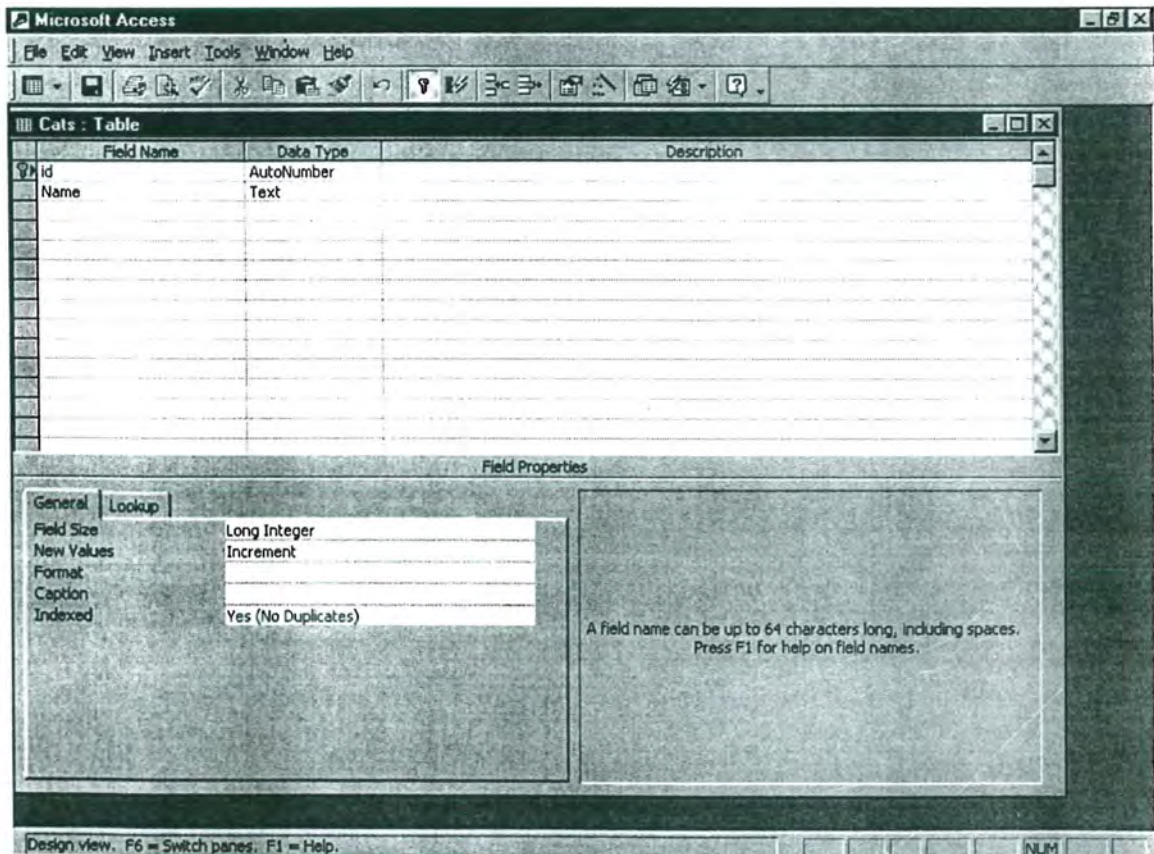
COMPLAINTS TABLE:

Table Name: Complaints

Primary Key: ID

Purpose: Purpose of this table is to store information about different types of complaints and store their responses.

| Field Name	Data Type	Field Size	New Value	Description
ID	AutoNo	Long Integer	Increment	User ID as the consumer identification.
User	Number	Long Integer		User Name
TXT	Memo			Write Complaint
Response	Memo			Complaint 's Response
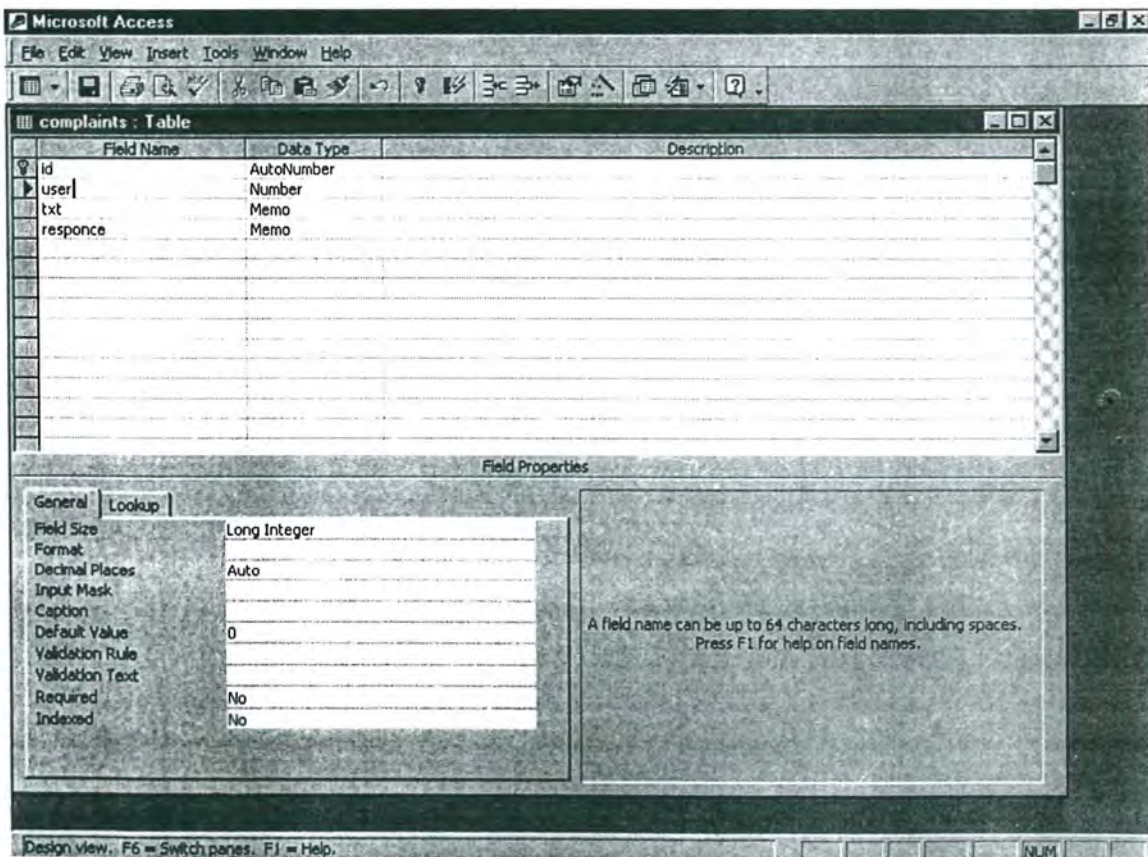
MESSAGES TABLE:

Table Name: Messages

Primary Key: ID

Purpose: Purpose of this table is to store information about different types of messages from different members.

Field Name	Data Type	Field Size	New Value	Description
ID	AutoNo	Long Integer	Increment	User ID as the consumer identification.
Msg	Number	Long Integer		Message Number
Member	Text	50		Member Name
Txt	Text	255		Write message
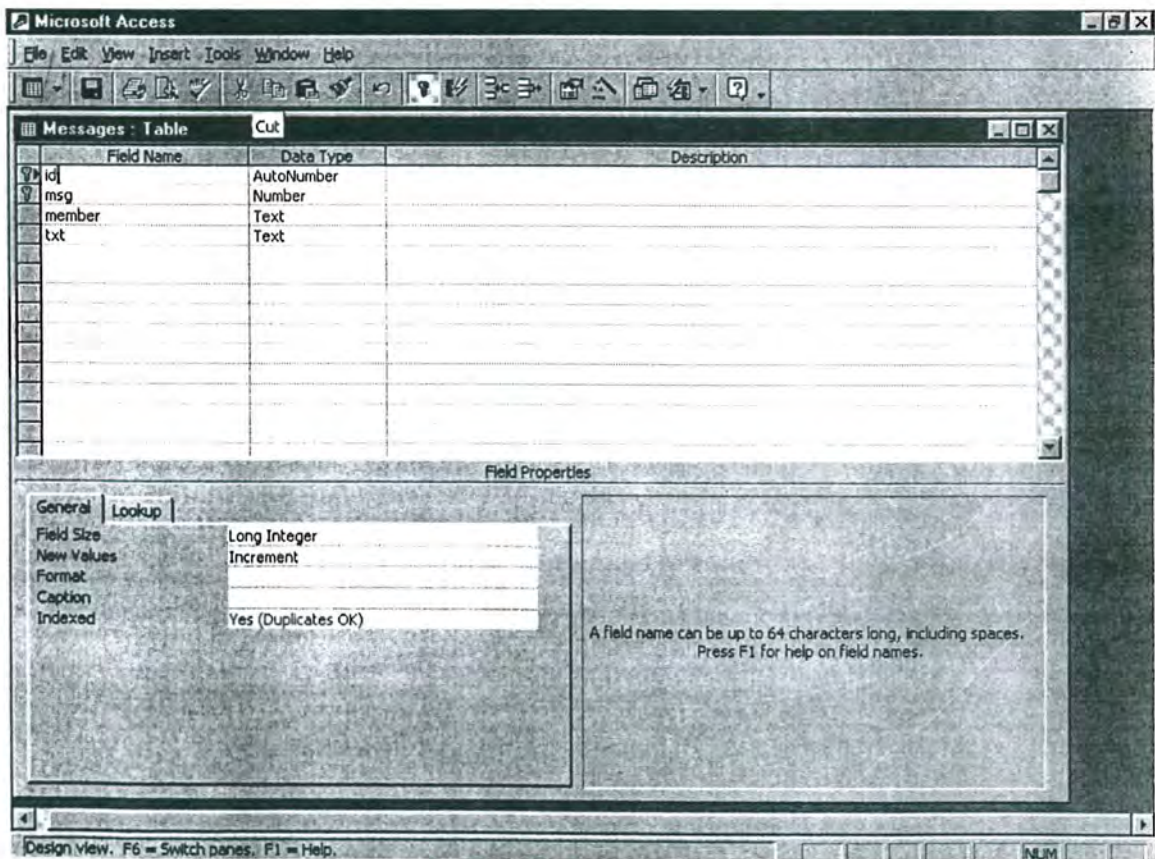
NEWS TABLE:

Table Name: News

Primary Key: ID

Purpose: Purpose of this table is to store News about WASA of Hot Issues.

Field Name	Data Type	Field Size	New Value	Description
ID	AutoNo	Long Integer	Increment	User ID as the consumer identification.
News	Memo			News
DateP	Date/Time			Date of the news
Heading	Text	50		News Heading
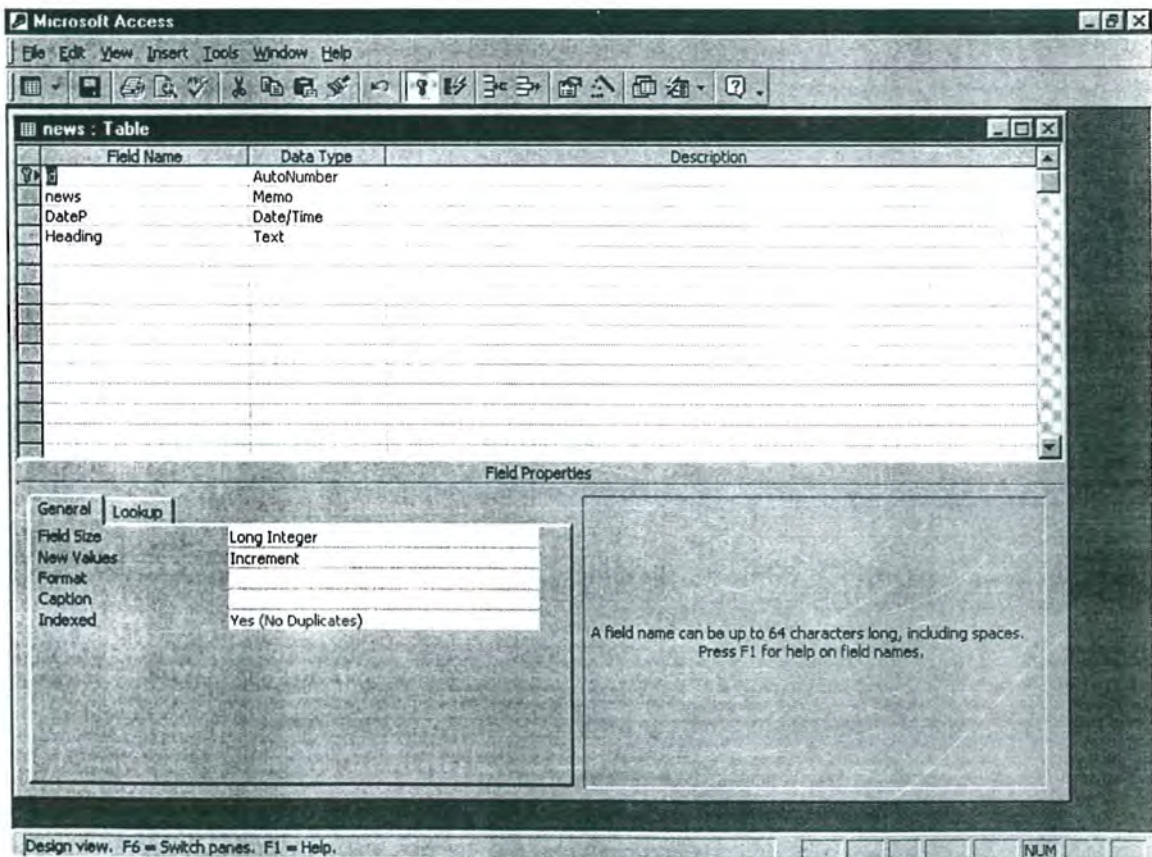
FORUM TABLE:

Table Name: Startmsg

Primary Key: ID

Purpose: Purpose of this table is to store different types of Discussion and store their responder name.

Field Name	Data Type	Field Size	New Value	Description
ID	AutoNo	Long Integer	Increment	User ID as the consumer identification.
Sdate	Date/Time			Message Date
Member	Text	50		Member Name
Txt	Text	255		Discussion Topic/Detail
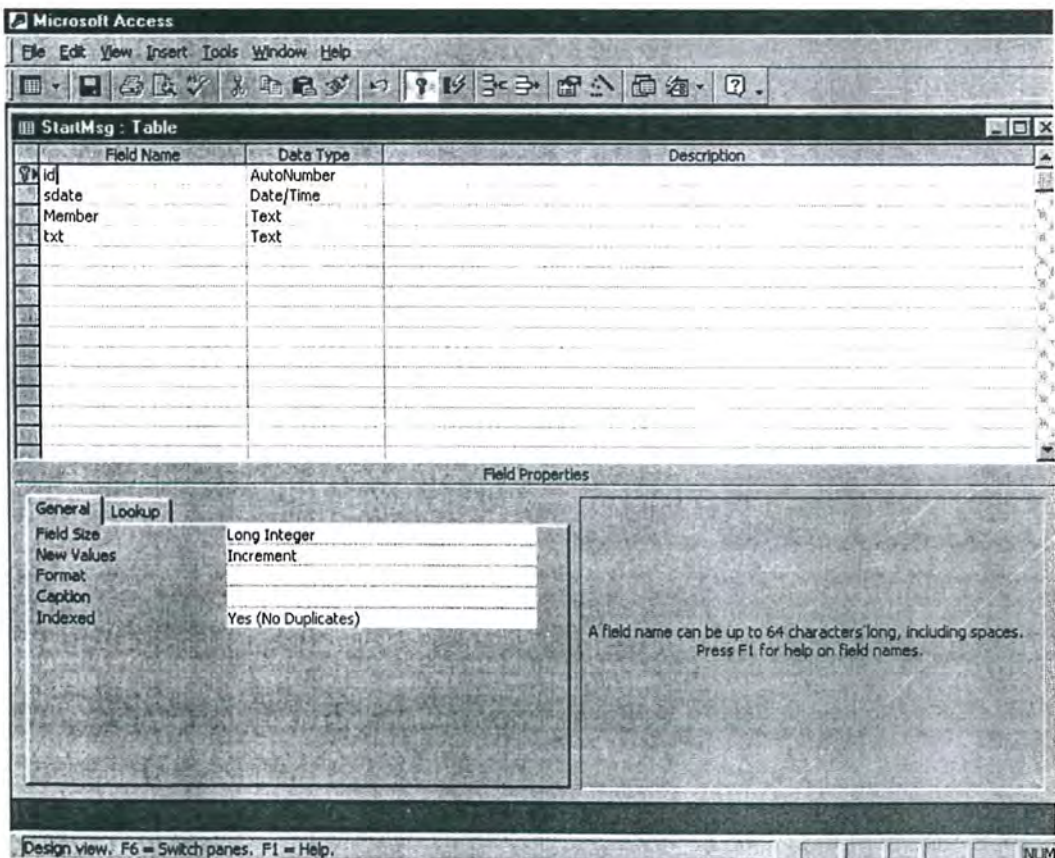
FORUM MEMBER TABLE:

Table Name: ForumMembers

Primary Key: ID

Purpose: Purpose of this table is to store information about forum members and their Passwords.

Field Name	Data Type	Field Size	New Value	Description
ID	Text	50		User ID as the consumer identification.
Pass	Text	50		User Password
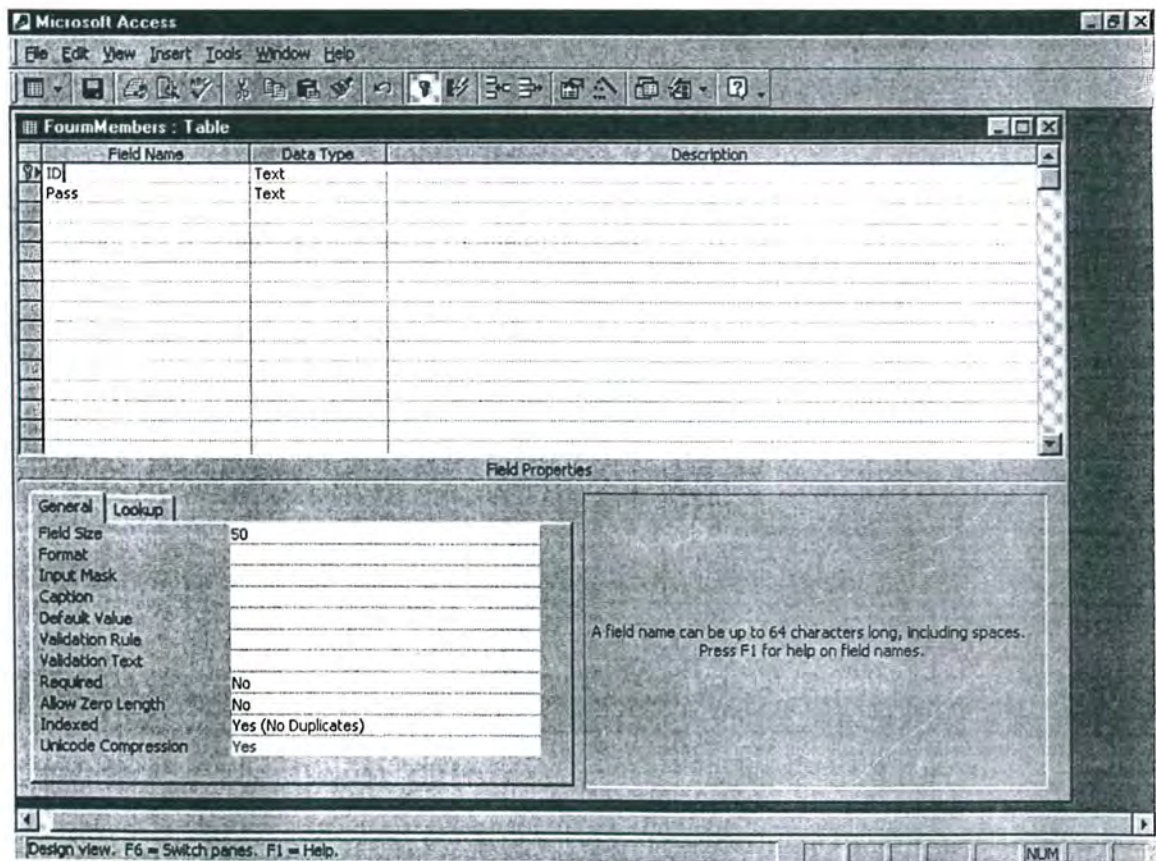
ADMINISTRATOR TABLE:

Table Name: Admins

Primary Key: ID

Purpose: Purpose of this table is to store information about Administrator and their Passwords.

Field Name	Data Type	Field Size	New Value	Description
ID	Text	50		User ID as the consumer identification.
Pass	Text	50		User Password
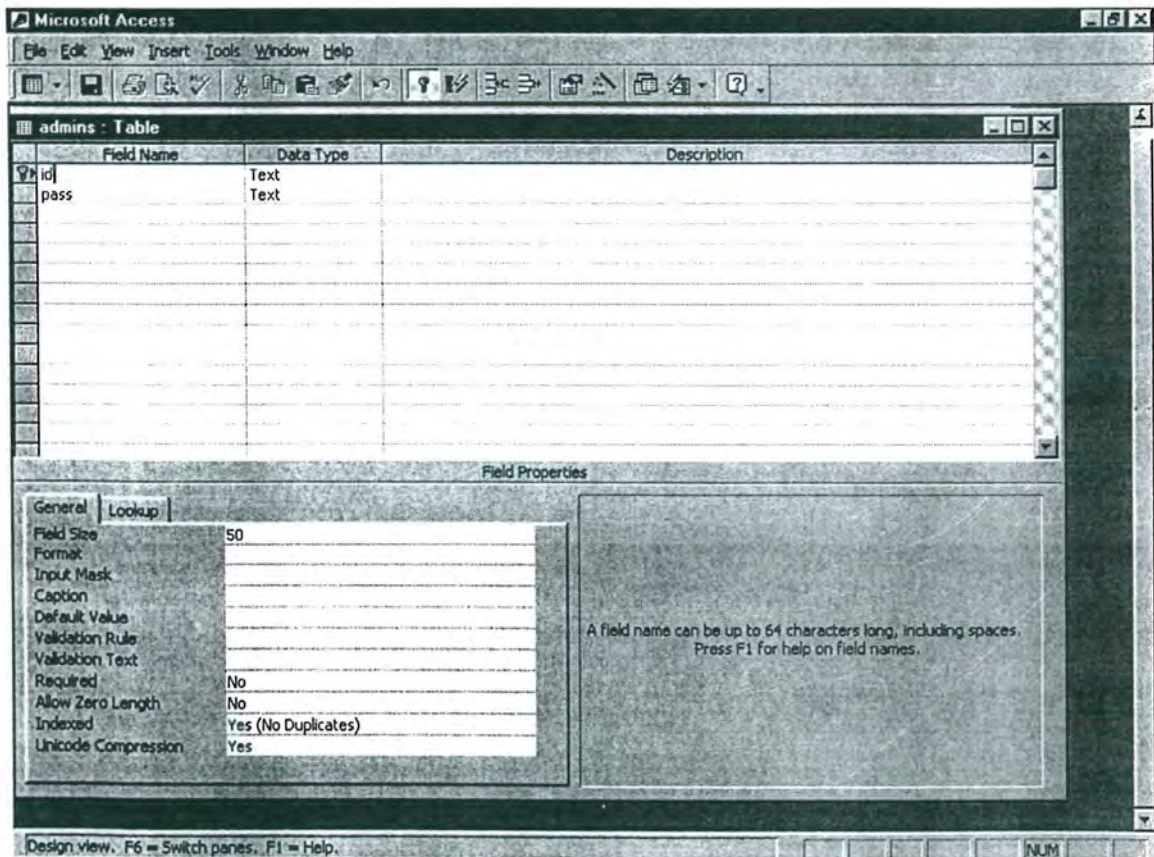
USER MANUAL

This chapter plays a role as a user guide. It will be helpful for both administrator and the other users to get work done through the web site. So it consists of different screen shots taken from the software to help user understanding and help in doing a certain task. Every action is being stated along-with the picture to have a better understanding of the scenario.

FIGURE#1
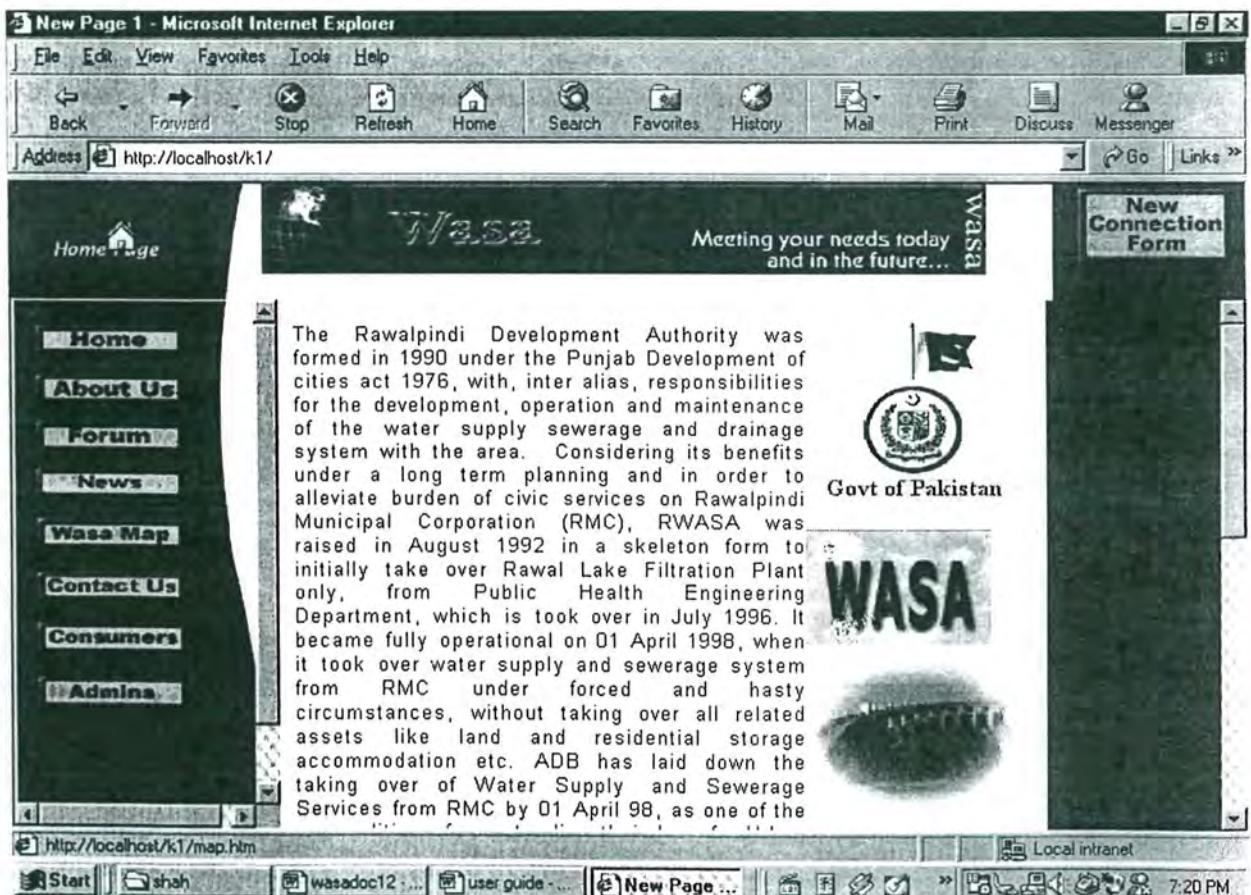
Figure # 1 Shows the main page the RWASA website. It includes the brief introduction of the organization and WASA s' Logos.

FIGURE#2
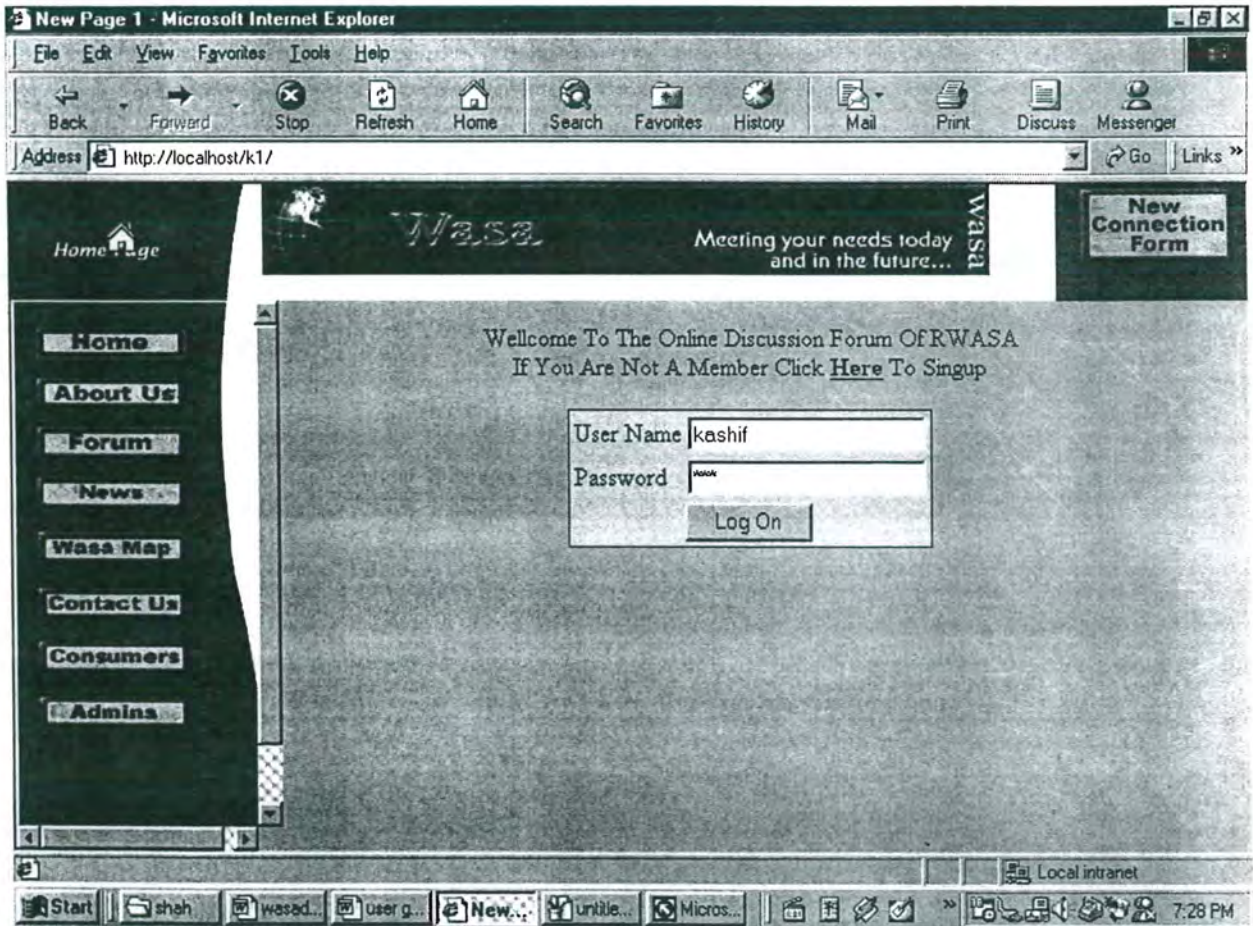
Figure # 2 shows FORUM Login Page which enable visitors to join the discussion about the topics under the discussion or can start a new discussion.

FIGURE#3
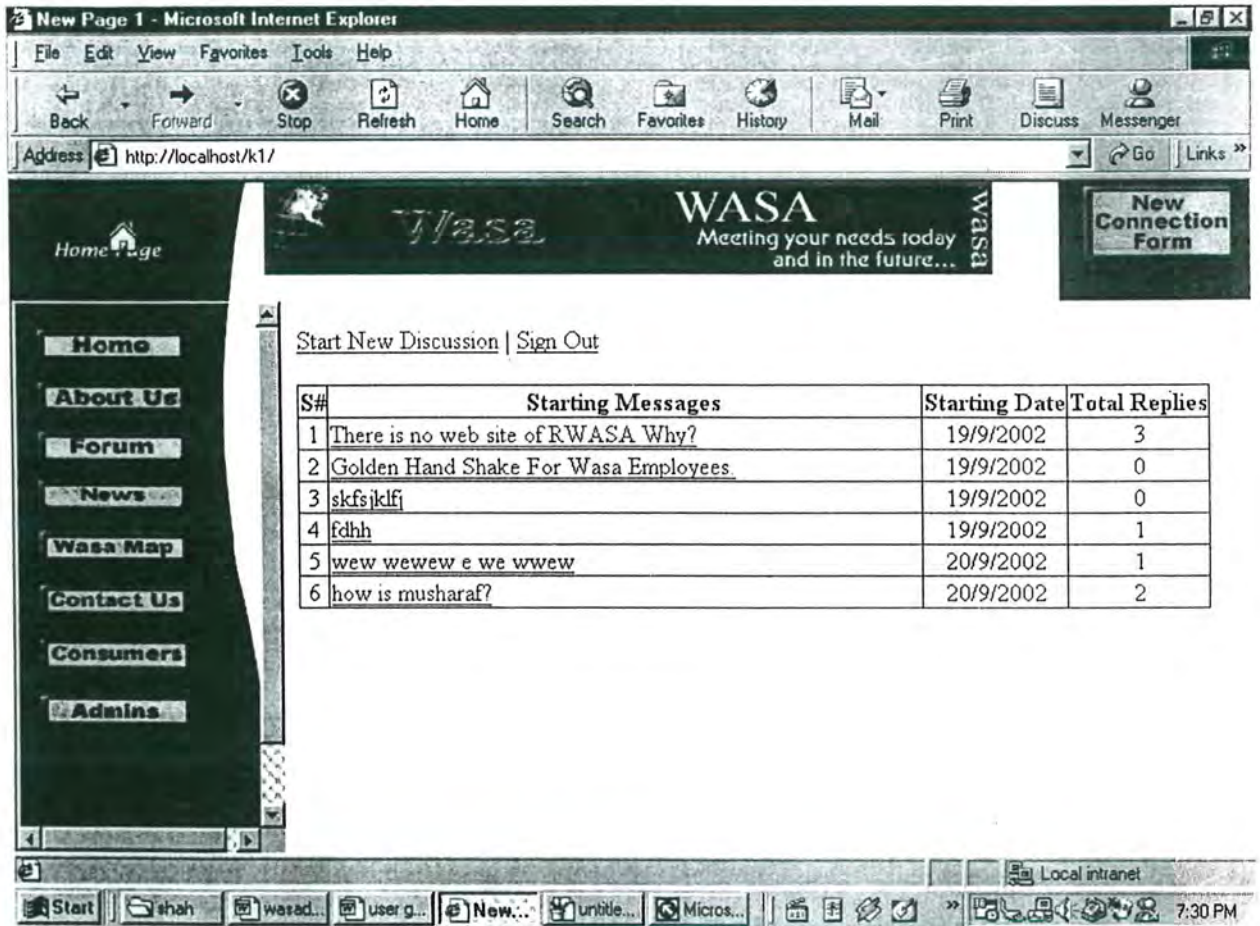
Figure # 3 shows the continuity of the FORUM discussion page where users can answer the discussions and can start a new discussion.

FIGURE#4
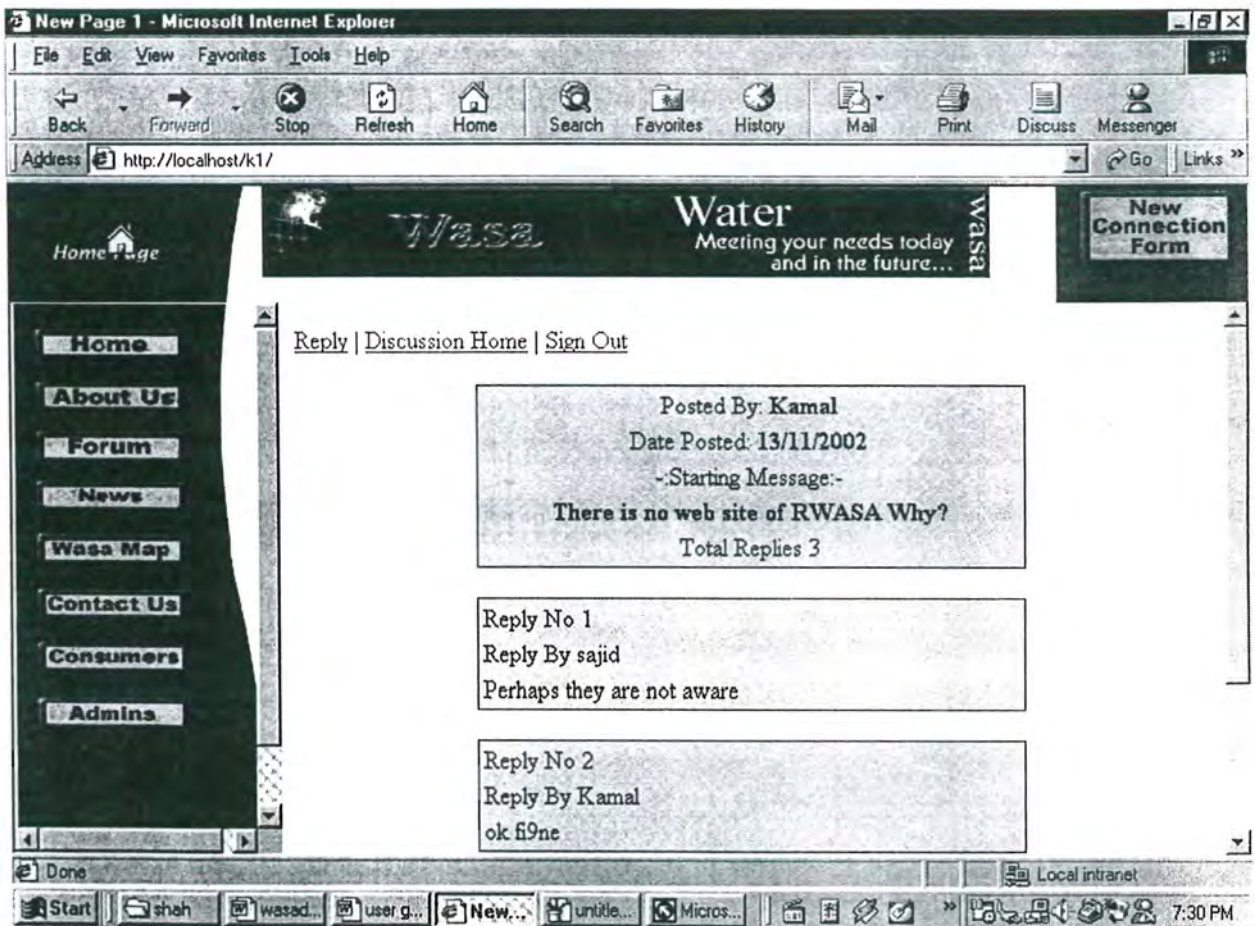
Figure # 4 shows the topic of discussion and replies given by the visitors.

Figure # 5
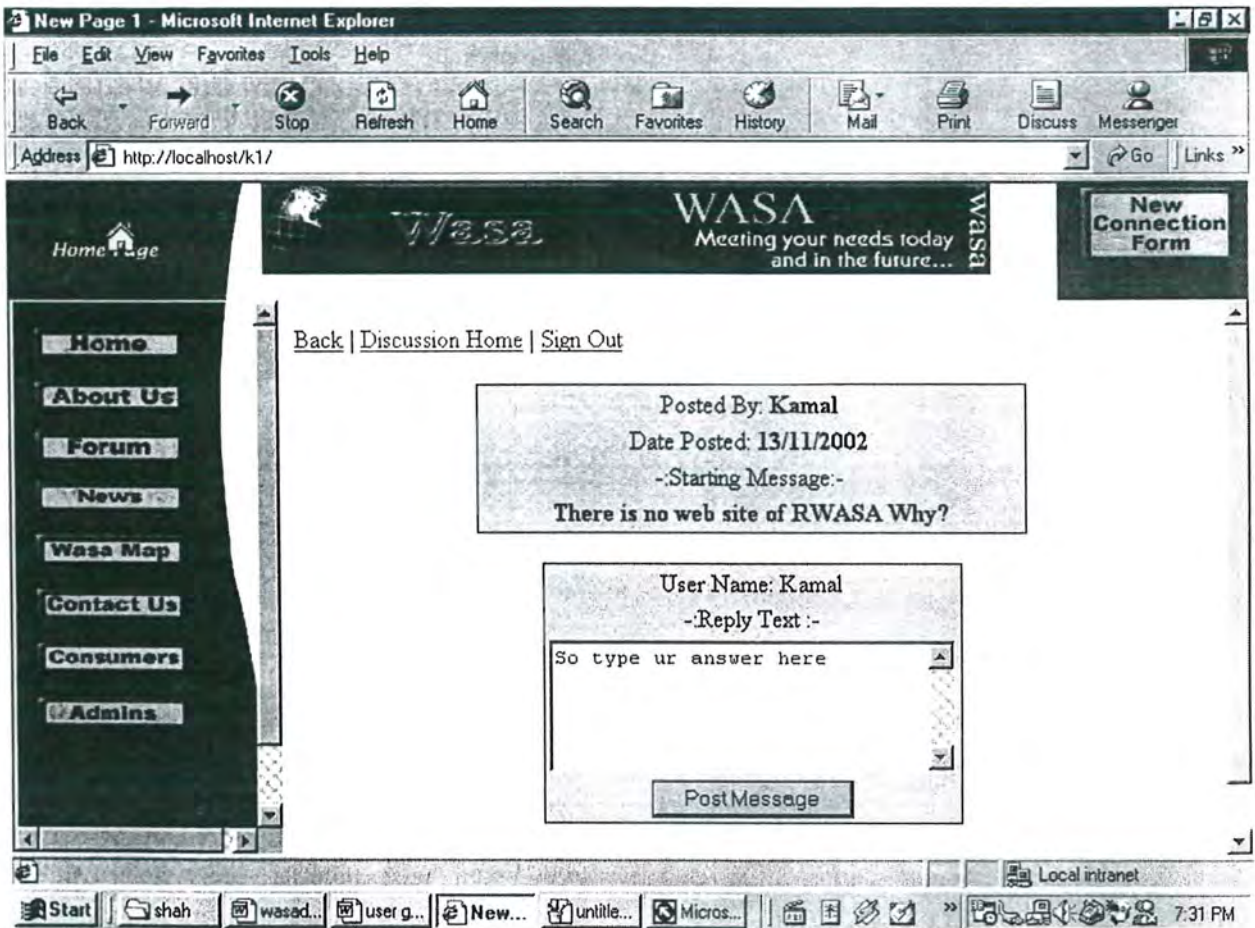
Figure # 5 shows the reply box, where visitor can enter message and send the message and the others can read that response given by the visitor.
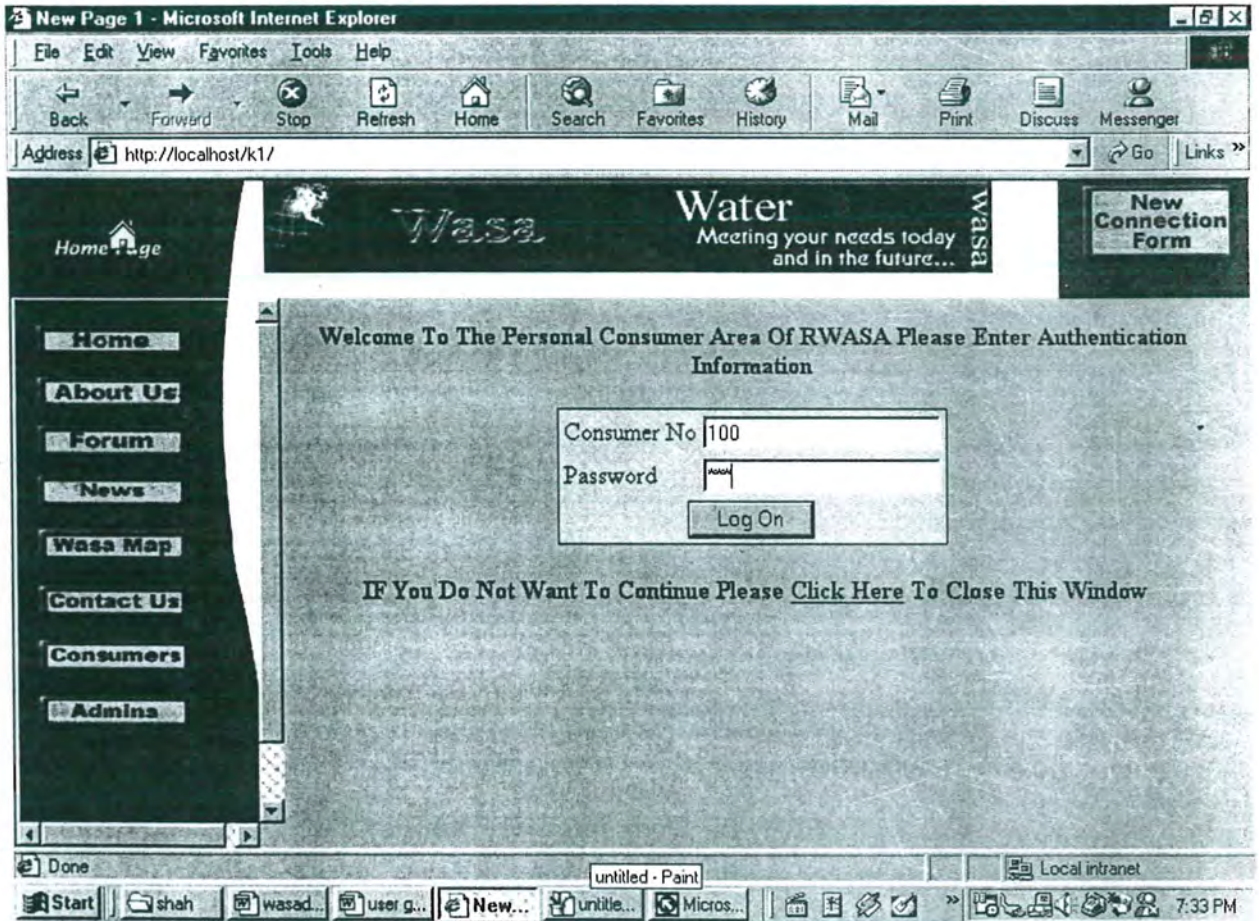
FIGURE#6
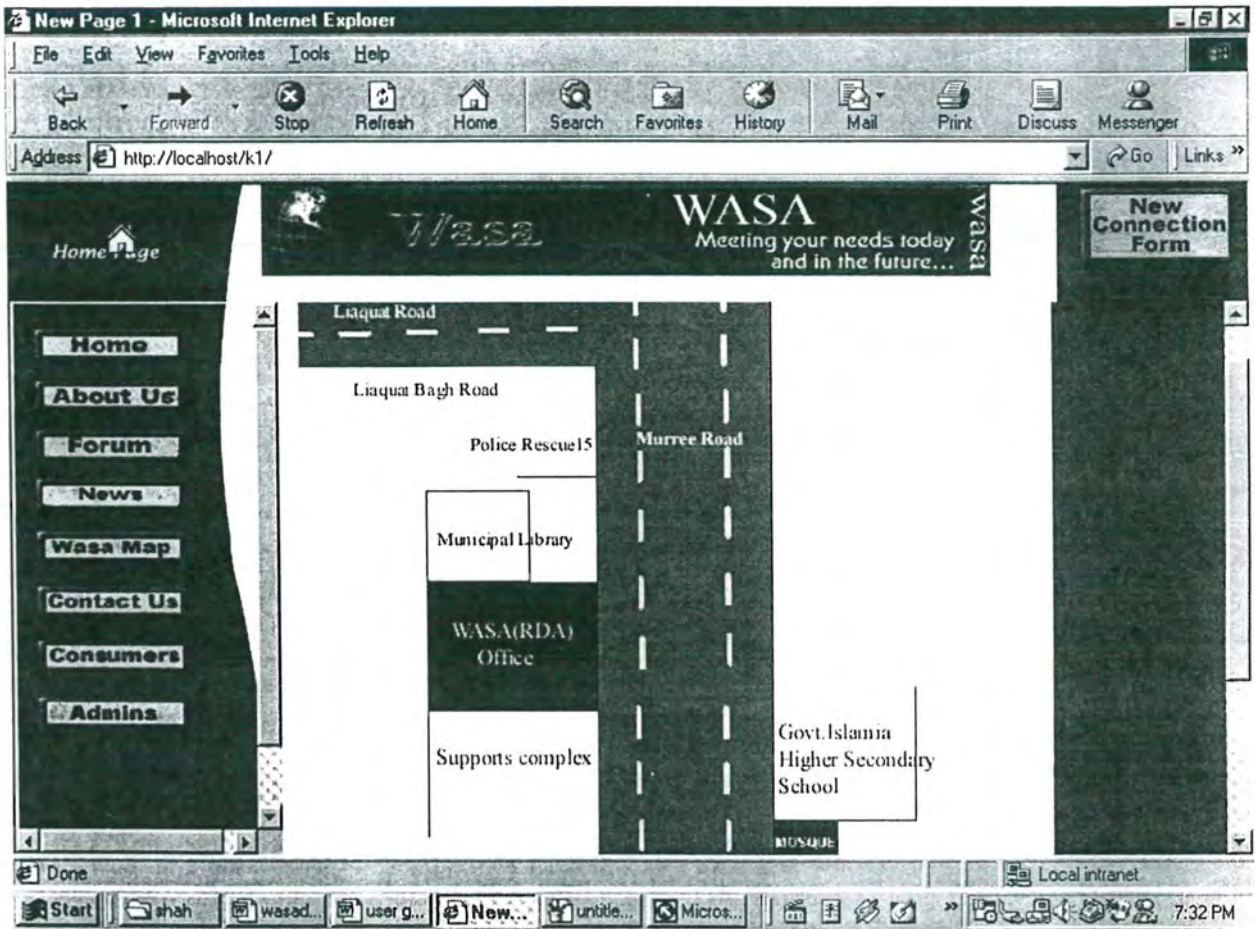
Figure # 6 shows the MAP to WASA.

FIGURE#7

Figure # 7 shows the login Form for the Consumers, where consumers can enter by giving their consumer numbers and passwords.
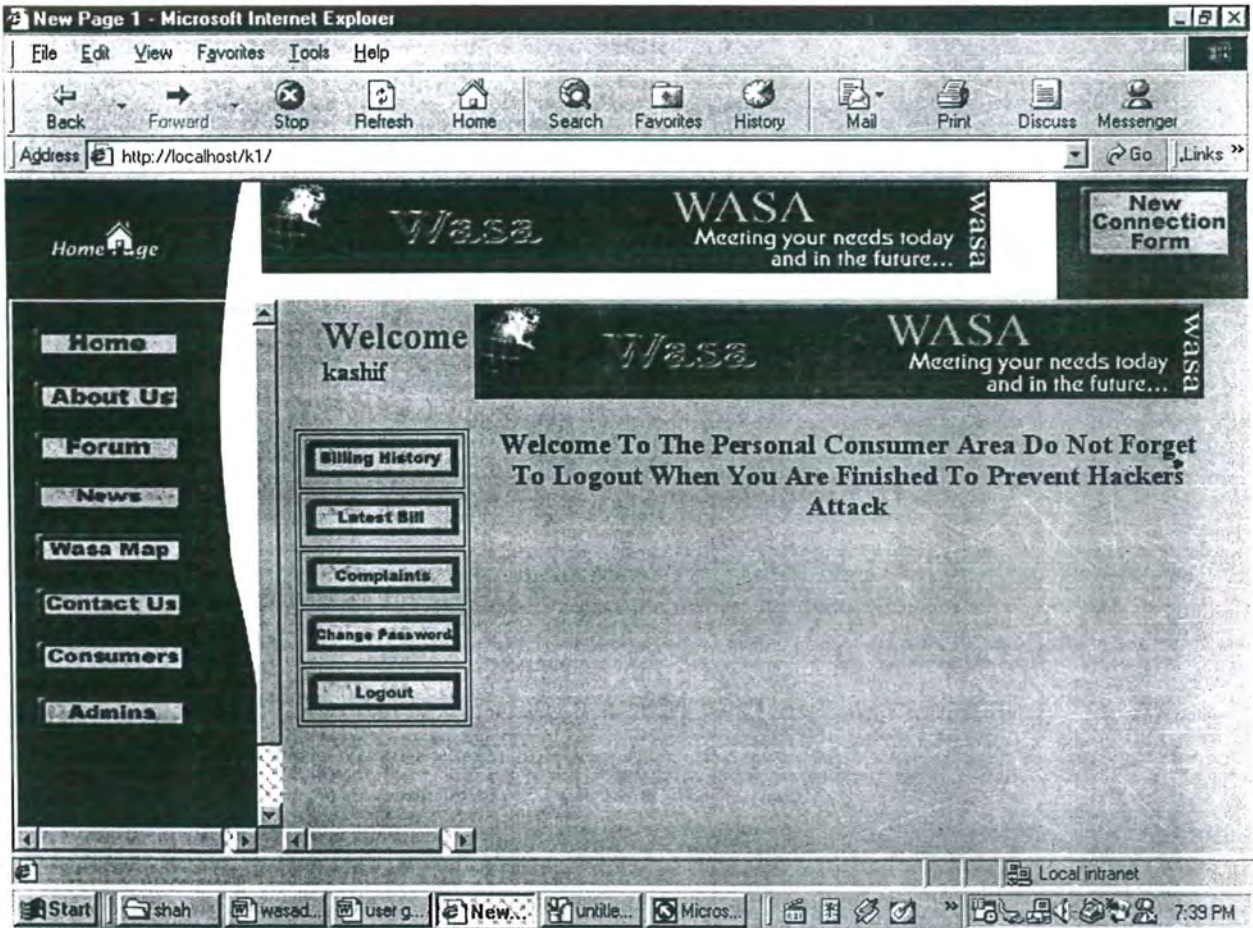
FIGURE#8

Figure # 8 shows the Personal consumer Area where consumer can check its bills history, latest bill, complaints, and change passwords.
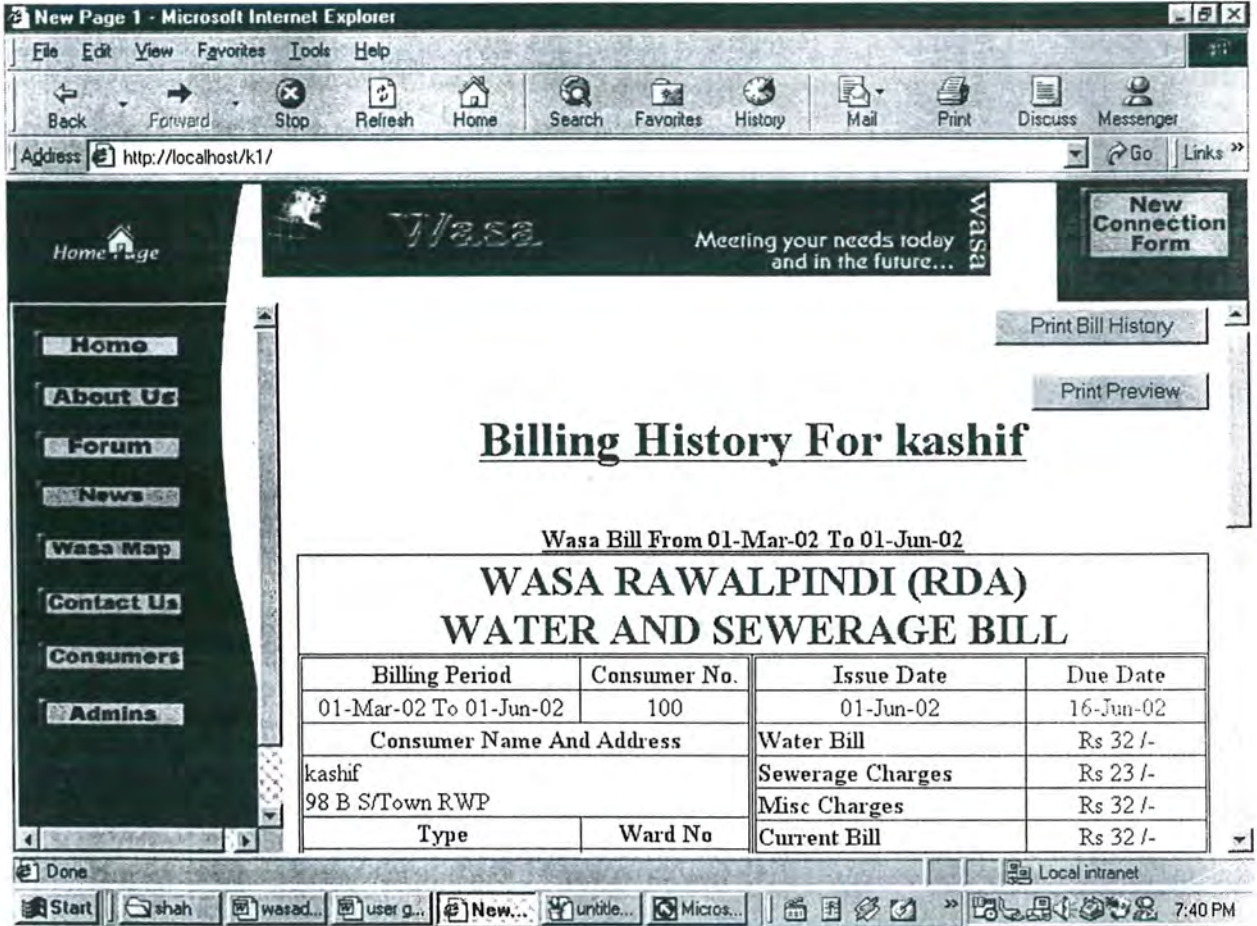
FIGURE#9

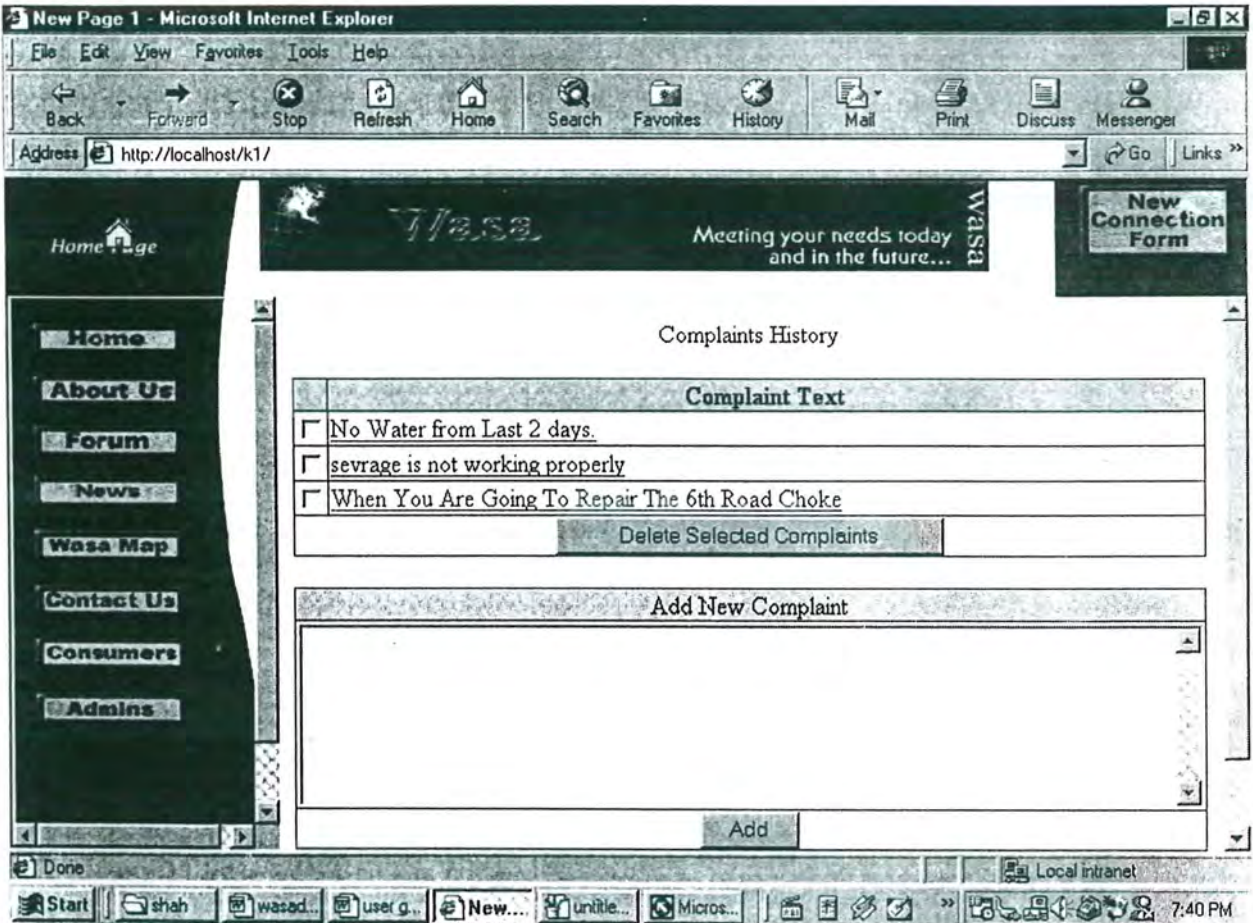Figure # 9 shows the preview of the bill that can be preview and print.

FIGURE#10

Figure # 10 shows the complaints Form, where consumer can add complaints, and can delete the complaints and can also check the response by the WASA.
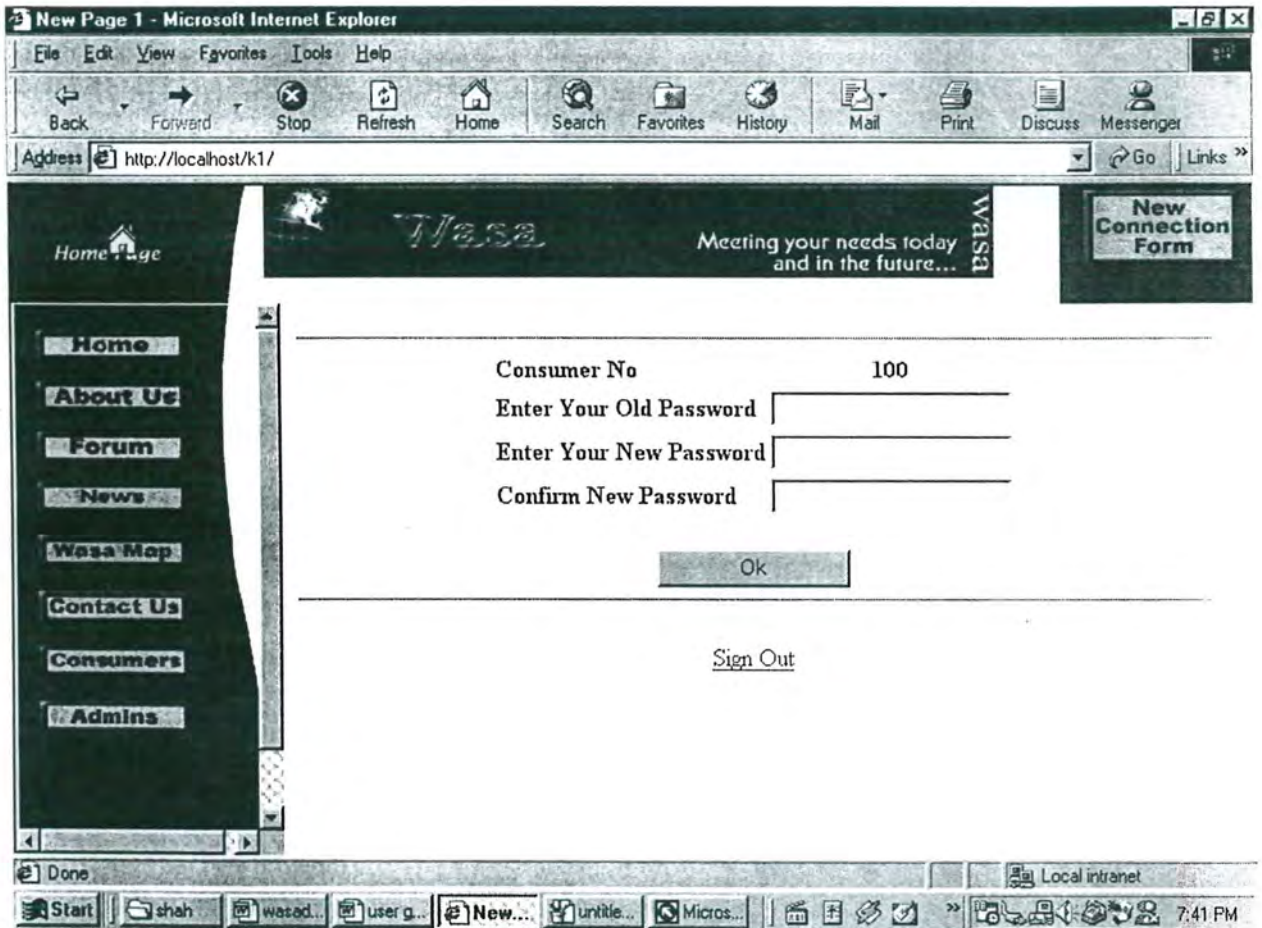
FIGURE#11

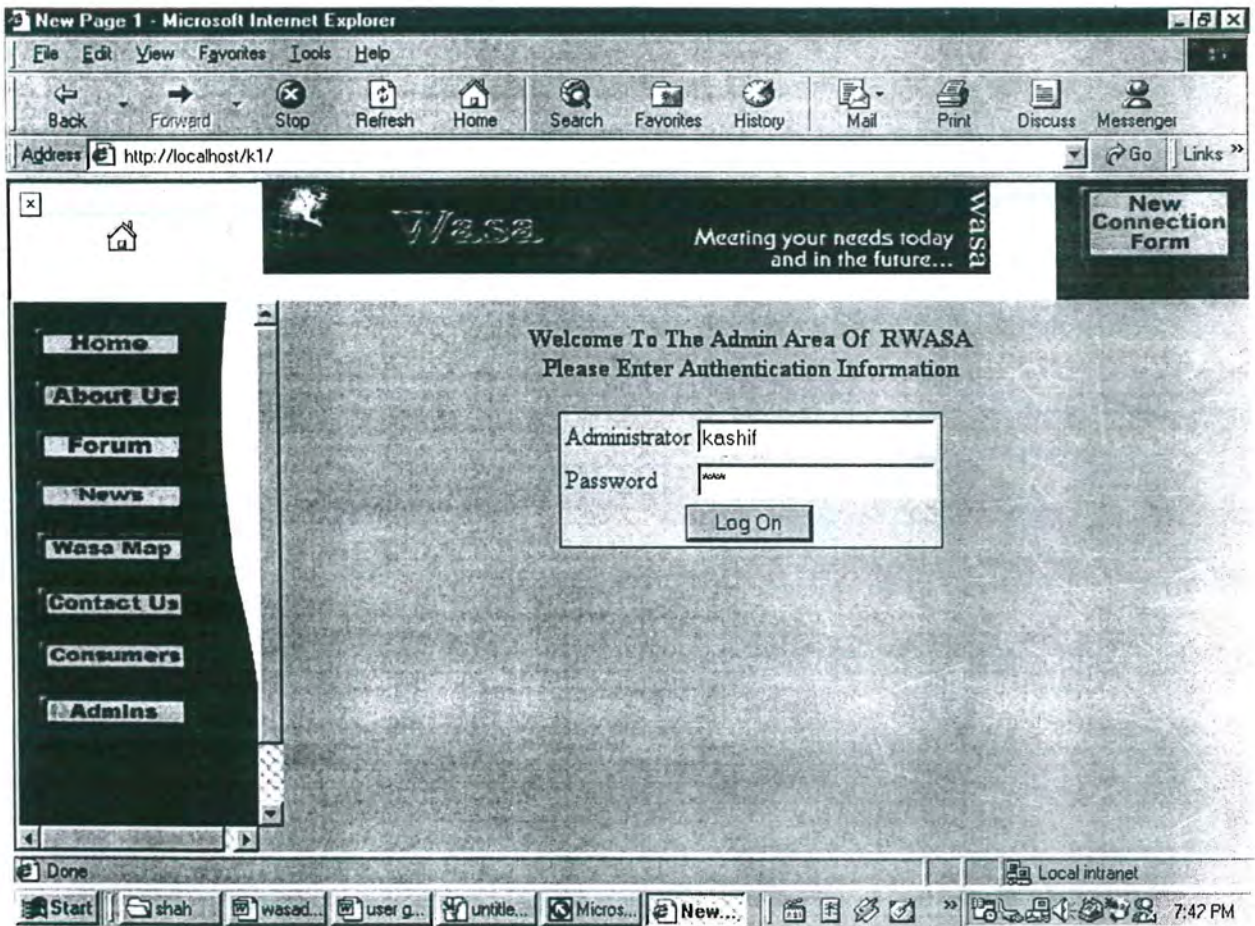Figure # 11 shows the change password Form.

FIGURE#12

Figure # 12 shows the Administrator login form.
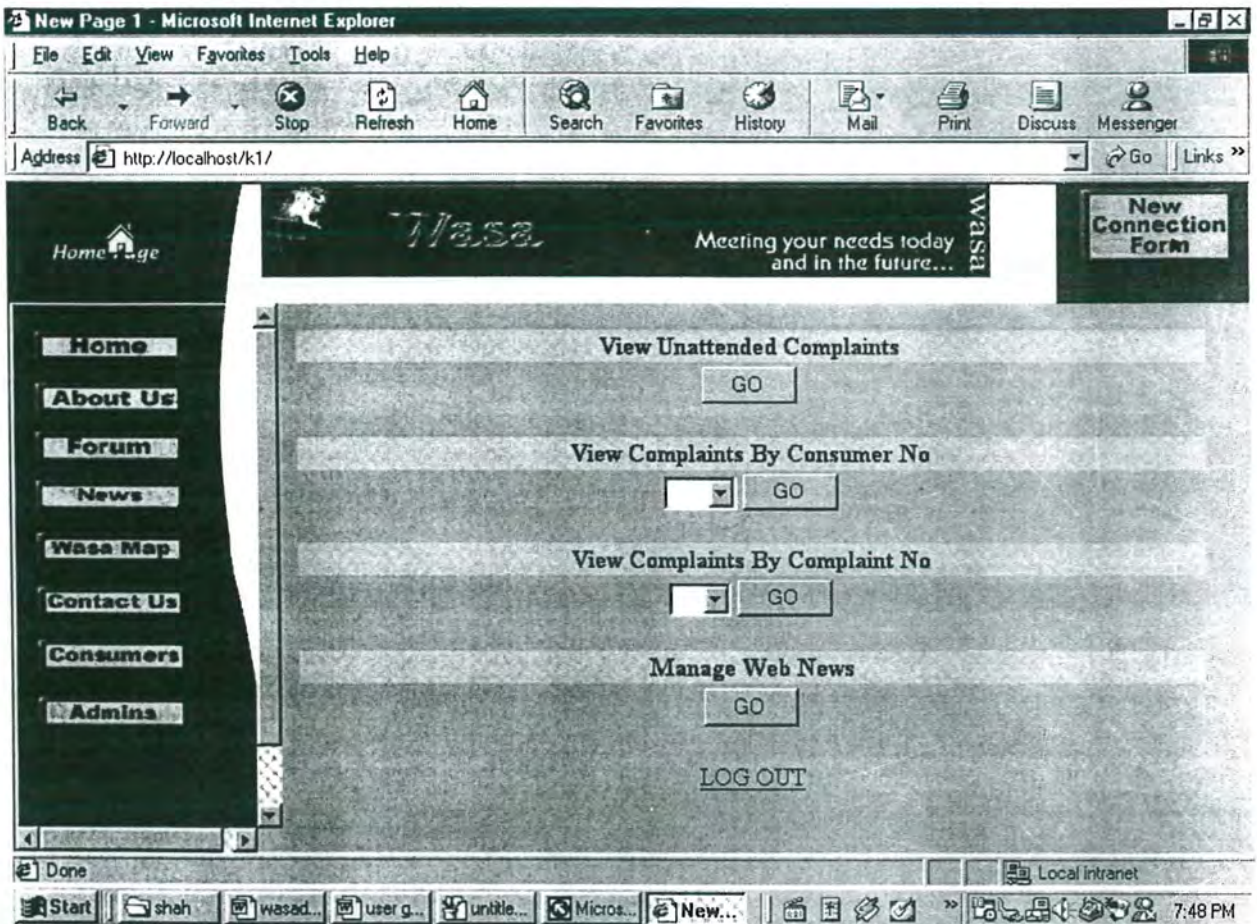
FIGURE#13

Figure # 13 shows the continuity of Administrator Form where administrator can check unattended complaints, can view complains by consumer no, view the complaint by complaint number and manage the web news.

GLOSSARY

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Applets	Small programs that download over the internet and run inside web browsers.
ASCII	American Standard Code for Information Interchange.
ASP	Active Server Pages- is a powerful server based technology from Microsoft, design to create dynamic and interactive HTML pages for your World Wide Web Site or corporate Intranet.
Backbone	The primary, high-speed telecommunication lines that connect the major Internet Service Provider.
Bookmark	Bookmark is a URL that is held by a browser. For convenience the URL is held along the simple description so it is easy to find.
Bps	Bits per second. Used to measure Modem and Channel speed.
Client	A piece of software accessing the internet on user behalf.
Cookies	Cookies are a method of storing information locally in the browser and sending it to the server whenever the user requests the appropriate pages.
Database	A collection of data so organized that it can be easily searched, modified, updated, deleted etc.
Dialup Access	Connecting to the internet by dialing through a modem.
Direct Access	Internet access that makes your computer a separate internet code.
Domain Name	A name given to host computer on the internet. The domain name of your host computer is part of your email address after the "@"

	character.
Download	A term used to receive a file from the host at remote site to your local computer.
FTP	File Transfer Protocol- a software tool for transferring files.
Gateway	Gateway provides the ISP obtains a permanent connection to internet.
GIF	Graphical Interchange Formats- an encoding system for pictures.
Gopher	Client software that receives information from the internet for client.
Graphics	Graphics is term used to describe a picture.
Home Page	A term also used by commercial site to refer to their main or front page.
Host	The computer to which your computer connects to access the internet is called a host.
HTML	Hyper Text Markup Language- used to describe a web page.
HTML Document	A text file-containing HTML tags, which comprise your web page.
Hyper Text	When some words or a picture on a web page is linked to another web page.
Icon	Icon is a tiny graphics that is used as a button.
Internet	A collection of thousands of computer networks around the world, which are link together.
IP Address	Internet Protocol Address- is the numeric address of a computer on the internet.
JavaScript	It is a programming language that you can use to add interactivity to your web pages.
Kilo Byte	Information in the computer stored in byte, where a byte could represent a single character. KB is 1024 Bytes.

Log In	The process of entering into user accoun at the host computer.
Modem	A device that connects the computer to the telephone line. It converts the signals from the computer to the one that can be used on a telephone line. They operate at different speeds, quoted as baud rate.
Online	When we have a connection to internet we are said to be online.
Picture	Another term for a graphics.
Pixel	Pixel is a single dot on the screen.
Protocols	The roles of communication between the processes giving a means to control the orderly communication of information between stations on a data link.
Server	A piece of software allowing one computer to offer a service to another computer by means of client software.
Service Provider	A company to provide the access to the internet.
Surfing	The term used to describe exploring and reading web pages.
Tags	Tags are instructions in HTML, which state he action to perform, like display this text, draw a line or use this graphics.
URL	Uniform Resource Locater – and is the name given to describe an address of our page on the www.
Web	Another name used to the describe the World Wide Web.
Web Browser	Web Browser is the software required for displaying a page.
Web Page	The given to the page, that is displayed when information is requested.
Web Server Software	Servers run special software called Web Server Software, that allows them to respond to a client 's request for information.
WWW	World Wide Web

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