WAP COMMERCIAL SERVICES

P- 497

PROJECT REPORT

Submitted By

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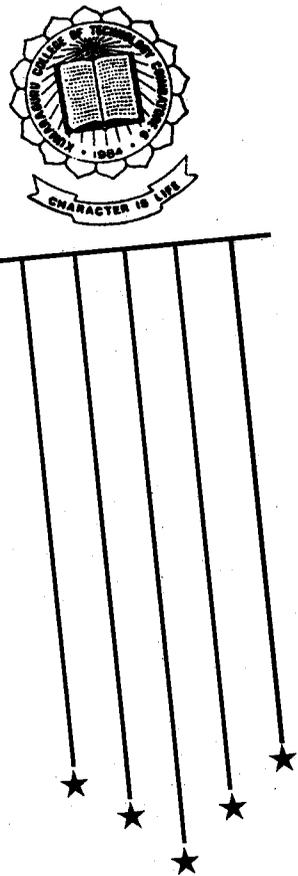**JAGADEESH P**
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IN PARTIAL FULFILMENT OF THE REQUIREMNTS
FOR THE AWARD OF THE DEGREE OF
BACHELOR OF ENGINEERING IN
COMPUTER SCIENCE AND ENGINEERING
OF BHARATHIAR UNIVERSITY

2000 - 2001

Department of Computer Science and Engineering
KUMARAGURU COLLEGE OF TECHNOLOGY

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CERTIFICATE

This is to certify that the Project Report entitled

WAP Commercial Services

is a bonafide record of work done by

Mr / Ms..P..GAYATHRI.,..P..JAGADEESH.,..S.PRAVEENA.,..V.RAJASEKAR

in partial fulfillment of the requirements for the award of Degree of

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Submitted for the University Examination held on ....MARCH...12......2001

University Register Number ....

External Examiner

Certificate

To Whomsoever It May Concern

Certified that this thesis **"WAP Commercial Services"** is the bonafide work of **Ms.S.Praveena, Ms.P.Gayathri, Mr.P.Jagadeesh & Mr.V.Rajsekar** who have carried out the project under our supervision, certified further that to the best of our knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate. The Documentation submitted by the group was well compiled and the project completely satisfied our expectations.

Director
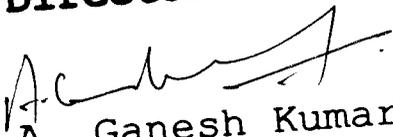
A. Ganesh Kumar.
9/3/2001

Project Guide

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Declaration

We, Gayathri P, Jagadeesh P, Praveena S, Rajsekar V hereby declare that this project work entitled 'WAP commercial services' submitted to Kumaraguru College of Technology, Coimbatore (Affiliated to Bharathiar University) is a record of original work done by us under my supervision and guidance.

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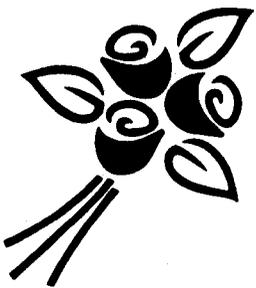Staff in Charge:

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Date : 9th March 2001

Dedicated to our beloved
parents

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With immense pleasure, we express our heartfelt gratitude to **Mr.Ganesh Kumar**, the Managing Director, Bharath Advanced Technologies, Coimbatore for providing us the opportunity to do the project in his organization.

We also take this chance to equally express our gratitude to **Mr.Kumaresh**, our project guide at the company for providing technical guidance and all the others of this organization for their constant motivation during the course of our project.
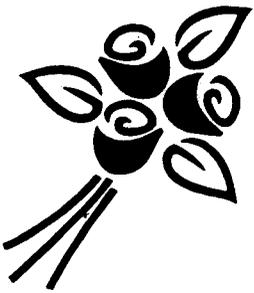
WAP Commercial Services

SYNOPSIS

Over recent years, the trend towards smaller and faster devices, coupled with the need for information access on the move, has paved the way for a new technology that brings together the two worlds of the web and the mobile phone. The Wireless Application Protocol is an industry-wide standard, defining a communications protocol and application environment that allows us to access internet content and services from mobile phones. Designed from the ground up for low-power, small screen devices with limited input capabilities and low bandwidth, WAP has enabled the development of a new breed of Internet-ready phones at mass-market prices.

This project entitled **"WAP Commercial Services"** has been developed using MS Access 2000 with Active Server Pages 3.0 for Bharath Advanced Technologies (BAT) , Coimbatore.

Our project aims at converting the existing website **www.batindia.com** into a WAP compatible site which includes mail services, patient – doctor interaction, employment opportunities and information about our city. This software module of ours is freely accessible by any WAP phone user but cannot be subjected to any changes without the formal permission of its developers, Bharath Advanced Technologies, Coimbatore.

With an abundant increase in the usage of mobile wireless communication, customers prefer to use the WAP – based technology.

This system of ours will serve their purpose by enabling the presence of our customer services and facilitating the customers to avail the services, independent of the availability of a computer system.

This project has tried its best to provide maximum user friendliness to its users and enable navigation through the WAP site.

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Introduction

1.INTRODUCTION

1.1 PROJECT OVERVIEW

The new Internet reality is that of wireless networks, providing service to legions of miniaturized, hand-held mobile devices. This places an entirely new set of requirements. Few of the requirements we have tried to fulfill includes

- BAT Mail services
- BAT Analyst
- Employment opportunities
- City catalogue

The definitions and objectives of the above mentioned modules are as follows:

BAT MAIL SERVICES

BAT has a highly successful mail service through which new users can sign up and the existing users can view their inbox. It also extends its service by giving the user the facility to compose, reply and delete mails. The security features in this module have been brought about by the usage of passwords and unique user identifications. Th

mails in the inbox are identified using the sender's mail id. On selecting one, the message is viewed and any of the above operations can be performed.

BAT ANALYST

This module proves again the versatile use of a mobile phone in breaking down the barriers of distance between the doctors and the patients. Our project tries to bring out the maximum utilization possible through the mobile. Whenever the patient registers in this site, the available doctors who have already registered will be displayed. The patient chooses the doctor and gets the remedy from the physician.

The BAT Analyst

✗ Enables BAT doctors to keep track of their patients' condition.
✗ Enables users to get their condition monitored by a BAT specialist.
✗ Identifies the history of BAT Hospitals and its various departments and services.
✗ Facilitates patients to get their remedy immediately.

EMPLOYMENT OPPORTUNITIES

The Employment Opportunities module of our site provides excellent job opportunities whereby the companies can send their requirements and also all the candidates' details required. At the en

user side the candidates can post their resumes which will be viewed by the corporate users. This module of the project really is a boon for young and aspiring graduates hoping to get into reputed firms and everything is done through a hand–held mobile device. The system has been designed in such a way that whenever a corporate user signs in, all the candidates whose resume suits the requirement of the company will be displayed. The vice versa will be done at the end user side .The job seekers will be able to view the industries that suit their resumes.

CITY CATALOGUE

The city catalogue module emphasizes on major details about the Coimbatore city covering hotels, educational institutions, auto components, cinema halls, medical institutions, departmental stores, hospitals, electronic & electrical shops, furniture marts and many others. This holds a design-updating page of all designs currently held with their specifications. It attracts customers by announcing contests and special offers.

EXTERNAL MAIL SERVER ACCESS

This module enables the users to select a particular mail server such as yahoo.com, usa.net, etc. Then it creates a session with that server by logging into it using the username and password. This allow the users to read, compose, delete the mails in his/her inbox. It provide the users to login to the different email account from the same location and avoids the round about in going for each mail server separately.

THE DATABASE

Since information processing, maintenance and retrieval forms the core of this system, Database forms its backbone. The importance given to the database maintenance is very high. MS Access ' 2000 has been chosen as the backend because of its flexibility more than its power and security. Since information to be added or updated frequently sufficient provisions have been given for faster update and retrieval. Several security measures have been taken during the access of the database. The package thus turns out to be flexible, reliable and dependable system.

THE MODULES

The WAP site developed comprises of four main modules. Of these some have sub modules under them. But the main modules associated with it are responsible for organizing the system. These are integrated finally to form the full-fledged system.

The four main modules that comprise the system are:

- ⊕ BAT Mail Services

- ⊕ BAT Analyst

- ⊕ Employment opportunities

- ⊕ City catalogue

THE FEATURES

The main features of the system are:

- Time sharing, Database, Real time system
- Integrated multi-user and enhanced graphical user interface
- Freely and easily down loadable and easy navigation
- Modular, reliable and dependable design
- Flexible, up gradable and easy to install
- Fool proof protection and security features with sound back up and recovery features.

DESIGN

The package is designed in such a way that *modularity* and *reliability* are given prime importance. Modularity has been maintained from the start till the end and this is an important factor for the success of our project. Our project is divided into independent modules with a clear line of demarcation laid between them. Reliability comes through with the modular design. Enough emphasis has been laid in maintaining a high level of reliability. Though tested during development itself the actual reliability can be fully realized in the long run with huge workload.

INTERFACE

The interface of the system is designed carefully so as to provide maximum user friendliness. A comfortable user interface always reduces the strain on the user. Since many different types of users are expected to use the system for massive data entry process and other intricate data processing, prime importance is given to the user interface. The functions available in the software should be invoked with least effort and minimal keystrokes to speed up the operations performed on the system.

FLEXIBILITY

Flexibility has been provided for the future scope to extend the system and for easy upgrade of the system to a later version of the tools and the operating system used. The installation process is allowed to take certain decisions about the installation of the system without the compromise to the security.

SECURITY

The system security is facilitated with an in-built power of MS Access 2000 for the backend objects. The security at the front end is also provided.

BACKUP

Data is given due importance in the system. Accidental deletions of data cannot render the system useless. Keeping this factor in mind a strong backup and restore facility has been provided in the system for the safety of the data.

1.2 ORGANIZATION PROFILE

Bharath group of companies started in 1949 basically as **Bharath Engineering Works** by the man of foresight, Mr.R.Arumugaswamy at Pollachi stepped into property developing arena and now into computers- the growing technology.

Bharath Advanced Technologies (BAT), a limb of the Bharath Group was launched basically as a training center. As and add-on to its experience, **BAT** took the franchise of MDC Systems U.S.A., for its training. In a short span, **BAT** has grown in the field of information technology to numerous activities based on two major divisions viz. training and project development.

BAT has got its own training division, which focuses on low-end training on a variety of languages and packages. The entire training methodology is based on the latest concepts in the IT Field today. **BAT** concentrates on equipping its students to adapt to any platform and any new technology. The center also believes in the concept of self-learning and survival of the fittest. **BAT** has an insight that **INTERNET** would dominate the world tomorrow.

BAT has got its own big project division. The projects are mainly classified into three areas of activity.

Web enabled Client Server Solutions Package for a variety of industrial needs. **BAT** understands that no company is without

business software solutions, but become outdated, as time goes by and new products fill in. **BAT** has solutions for these customers to go online without much added investment, i.e., doing business on the Internet without going for a new client-server package. The existing package is made to work on the web.

As the need for e-commerce and wireless communication is growing rapidly, **BAT** has solutions catering to almost all industry needs, ranging from hotels to lodging, net banking to remote area business management solutions.

NETWORKING SOLUTIONS

The networking solutions that **BAT** provides range from multiple accesses of different operating systems by the same user from the same machine to RABMN and VSAT networking and extensively web enabled networking solutions.

2.SOFTWARE REQUIREMENTS SPECIFICATIONS

2.1.INTRODUCTION

2.1.1 Purpose

☛ To provide paper documentation of
  * Specific software requirements
  * Overall Description of the software
  * Performance requirements
  * Constraints

☛ To ensure easy design, maintenance and future expansion of the software.

2.1.2 Scope

The software is supposed to

☛ Enable users tap the potential of the Internet in online commercial services.

☛ Provide a safe transaction environment.

☛ Manage a real time database.

2.1.3 Developer's Responsibilities' Overview

The developers are responsible for designing, developing and installing the software satisfying the client's requirements.

Any change made to the requirements in future will have to g through a formal change approval process. The developer may n make any alteration without permission of the client.

2.2.OVERALL DESCRIPTION

2.2.1 Product Function Overview

This WAP compatible site enables users to freely download a *customized package* comprising of four modules namely

- BAT Mail services
- BAT Analyst
- Employment Details
- Updated city catalogue

The user enters the URL of the web site and on the mobile phone the WAP compatible equivalent developed by us will be displayed. The home page offers options for him to choose links to one of the four modules. On clicking any of the hyperlinks, the user is taken to the index page of the respective online service. He can explore to its fullest capability.

Every page of the WAP site holds links to all the pages of the respective module and to the home page of the entire site. This enables the users to freely navigate through the site and return to the home page at his ease whenever he wants it.

2.2.2 User Rights and Reservations

The software can be freely downloadable by all the users but shall not be subject to any alteration without the permission of its developers, *Bharath Advanced Technologies (BAT), Coimbatore.* However, if the users would like to host any or all of the four modules of the web site under their banner for their organization they can approach the developers to incorporate modifications as per their data and requirements, after a mutual agreement with the developers.

2.2.3 User Characteristics

This site is for users who are familiar with browsing through the internet and also familiar in using mobile devices and who wishes to book services anytime, anywhere they are.

2.2.4 Asumptions and Dependencies

- The BAT Analyst can provide the remedy - only whenever the doctor signs up.
- The BAT Mail Services can support only the WAP compatible files because file types like wbmp exceeding a size limit will not be displayed.
- Viewers can just view the information of all the various commodities available in the city for any user to be easily guided.

2.3.SPECIFIC REQUIREMENTS

External Interface Requirements

2.3.1 User Interfaces

All the modules gives an effective user interface that screens to make online booking, effective links to all the pages and detail description of all the facilities provided for the customers.

2.3.2 Hardware Interfaces

A database server, which will host the site, and application server that processes requests to the respective database modem and telephone line.

Performance Constraints

Depends on the accessibility of the mobile phone, the distances up to which they can be accessed, network traffic and also the server capabilities.

Design Constraints

Components and tools needed for development.

Hardware:

Pentium III, 64 MB RAM, 1.44 HDD, CDD.

OS:

Windows NT/98 OS.

Software:

- Personal Web Server 4.0
- Microsoft Access
- Microsoft Developer Studio
- Internet Information Server 4.0
- Active Server Pages 3.0
- Phone.com Simulator
- Ericsson WapIDE
- WML and WMLScript
- VBScript
- Java 1.3
- Java Mail API
- Java Servlet Development Kit 2.0

For users:

- a WAP compatible mobile phone. (or)
- a WAP Simulator

Acceptance criteria

The developers are required to take the client on a comprehensive tou of the WAP compatible system and ensure that all the specifications are met.

3.PROGRAMMING ENVIRONMENT

3.1 Hardware Configuration

Processor : Pentium III

Clock Speed : @500 MHz

Main Memory : 64 MB

Cache : 512 KB

Hard disk Drive : 8.3 GB

Floppy Disk Drive : 1.44 MB

CD – ROM Drive : 32x- Creative

Display Type : SVGA Color Monitor

Mouse : Microsoft Mouse

Keyboard : 104 Standard

3.2 Description of Software and Packages used

Platform   :   WINDOWS 98

Back- end   :   MS Access 2000

Front- end   :   Active Server Pages 4.0

Microsoft Visual InterDev

Phone.com UPsdk 4.0 simulator

a. Platform- MICROSOFT WINDOWS 98

This system is developed on Microsoft Windows 98 operating system. Because of the popularity Windows 98 enjoys, it is the suitable choice for the operating system. Windows 98 is a highly user-friendly operating system and the main advantage of this popular GUI OS is the huge application base available over it.

A lot of Front end and Back end tools are available in the market of Windows 98. Moreover the PWS works only in the '98 system. Also, the users are very much familiar with its interfaces and so they feel comfortable t work with it. This also reduces the amount of training for the users. Thes were the few reasons as for which Windows 98 was selected as the platfor of this application.

b. Back-End – MS Access 2000

A database is a collection of information related to a particular purpose. If your database isn't stored on your computer, or only parts of it are, you may be cracking information from as variety of sources that you have to coordinate and organize yourself. Using Microsoft Access you can manage all the information from a single database file.

Within the file, divide your data into separate storage containers called tables; view, add and update table data using online ASP pages; find and retrieve just the data you want using queries; and analyze or print data in a specific data using the simulator.

Microsoft Access is an interactive relational database management system for Microsoft Windows. Access takes the full advantage of the graphical power in Windows, giving visual access to data and simple and direct ways to view and work with information. Its powerful querying and connective capabilities helps you to find the information you want quickly, regardless of format or location. Only one query is needed to work with the data stored in different formats and network locations.

Microsoft Access Database

A database is a collection of data related to a particular topic. A database system is a system that stores and retrieves information in a database. Microsoft Access is a relational database management system (RDBMS) which stores and retrieves information according to relationships defined. Access, the power to organize the data according to the subject so that the data is easy to track and verify and information can be stored about how different subjects are related and hence to bring related data together.

Access database can have several tables and a database can be designed so that it also stores information about how the tables are related. Each piece of information is stored only in one place. That saves storage space by eliminating duplication. It makes updating information faster and more accurate, because you make a change only in one place.

Features of MS Access

★ Microsoft Access does not load software components that are not required for all the databases until they are needed. This shortens the time it takes a database to load and improves the overall efficiency.

★ Access helps you to maintain the compiled state of your database even if you modify it.

★ Access can optimize bulk update queries for ODBC data source by sending the query to the server, where all the appropria... ...ed at once instead of one record at a time.

* Microsoft Access does not load modules, include form modules until the ASP code in the module is executed. This improves overall performance.

* Access has improved performance of embedded ActiveX controls. Performance Analyzer wizards analyzes the database objects and suggests ways to make them fast as they can be.

c. Front - End – Active Server Pages

Active Server pages is an open, compile- free application environment in which you can combine WML, Scripts and reusable ActiveX server components to create dynamic and powerful business solutions. Active Server Pages enables server side scripting for PWS with native support for both VBScript and JScript. Using Active Server Pages, you can create pages with new content in response to user requests. Thus the web server itself becomes active in the process of creating the WAP page.

From the perspective of the web server, an Active Server Page is very different from a normal WML page. A normal WML file is sent without processing to the browser. All the commands in an Active Server Page, on the other hand, must first be executed to create a WML page. This allows an Active Server Page to contain dynamic content. From the perspective of the browser, on the other hand, an Active Server Page is almost exactly the sam as a normal WML page. The difference is that the Active Server Pag typically must end with an extension .asp rather than .wml. When a request f

an Active Server Page the browser receives the normal WML page. This enables the Active Server Page to be compatible with all the browsers.

An Active Server Page is primarily a scripting environment. The easiest way to add a script to an Active Server page is by using the script delimiters <% and %>. Any text enclosed within these delimiters will be processed as scripts. By default, any Active Server Page assumes you will be using VBScript, the primary scripting language. This means that you don't need to do anything beyond using the above delimiters and script delimiters to use this language.

Active Server Pages Objects and Components

Active Server Pages include several built in objects and installable ActiveX Components. These objects and components extend the power of your Active Server Pages scripts.

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

An ActiveX component is similar to an Active Server Page built -in object. However, when you are using Active Server Pages there is a differenc between a component and an object. An instance of a component must b

explicitly created before it can be used. Also components are typically used for more specialized tasks.

Built-in objects

Active Server Pages include six standard objects for global use.

- **The Application object-** The *Application* object is used to share application level information and control settings for the lifetime of the applications; shared among all its users.

- **The Request object-** The *Request* objects can be used to access all information that a user has entered a WML form, from the browser.

- **The Response object-** The *Response* object is used to send information from your scripts to a browser.

- **The Server object-** The *Server* object enables the use of various utility functions on the server. You can also use the *server* object to create instances of other objects.

- **The Session object –** The *Session* object can be used to store and retrieve information about a particular user session. You can use the *session* object to store information that persists over the course of a visit by a user to your WAP site.

The ObjectContext object- The *ObjectContext* object is used to control-to-control Active Server Pages transactions. The Microsoft transaction server (MTS) manages these transactions.

Working with Connections and Data sources

The ActiveX data objects ADO provide an application level interface to data providers such as Microsoft SQL Server or Microsoft Access. We have used the ADO directly within the Active Server Pages to communicate with our database. Here is a brief overview of the three main objects contained in the ADO:

β **Connection object** - The connection object represents all the features of a connection to a data source. A connection has to be opened with the connection object before establishing any communication with database such as Microsoft SQL Server or Microsoft Access.

β **Record set Object** - A *Record set* object represents the rows of data returned from a data source, from SQL query within an ASP script. A *Record set* object can be used to represent a single row, dozens or even millions of rows. Thus the same object is used no matter how much data is returned by a query.

β **Command object** – The command object represents a command that can be executed against a data source. Typically, the command object is used to execute a SQL stored procedure.

MICROSOFT VISUAL INTERDEV

Visual Studio 2000 provides the development environment in which your programming and WAP site packages run. This integrated set of tools runs under Windows 98. With Developer Studio, you can create, test and refine your applications and the WAP compatible sites all in one place.

In Visual Studio 2000, you can work with a greater variety o documents without leaving the development environment. You can creat source files and some other documents by using Developer Studio produc directly. In the Developer Studio, you can also create and edit documen (ActiveX documents) associated with any ActiveX components you ha installed, such as word processing programs or spreadsheet progra Developer Studio includes a text editor, resource editors, project b facilities, an incremental linker, a source code browser, an integr debugger and an online User's Guide, which contains general informatio editing, compiling, linking and debugging.

Phone.com Simulator :

The UP.Link platform

The UP.Link platform, shown in figure below, provides subscribers with secure, wireless access to a wide array of Internet and other network services using data-capable wireless phones or personal digital assistants (PDAs). These specially-enabled handheld devices are called *UP.Phones.*

The UP.Link platform
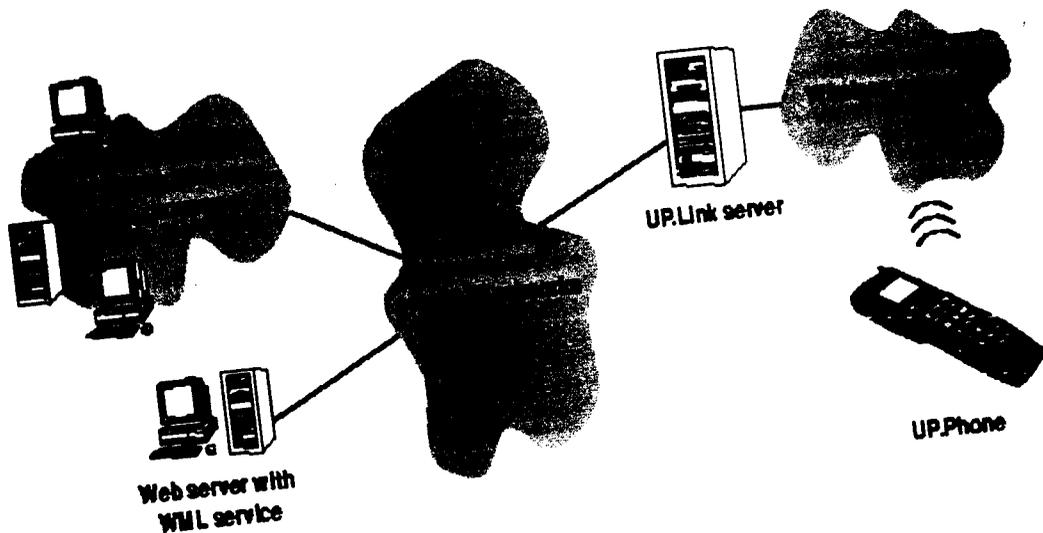


Using an UP.Phone is much like using a conventional Web bro The user presses keys to navigate and request URLs. Unlike sta browsers which use the Hypertext Markup Language (HTML) to information on a computer screen, UP.Phones use the Wireless N Language (WML), an open language developed by the Wireless App Protocol (WAP) Forum to accommodate small handheld device

HTML, WML is tag-based and supports text and image presentation, data input, and forms.

The UP.Phone uses the data capabilities of conventional wireless networks to send user requests to the UP.Link server. The UP.Link server converts these requests into Hypertext Transport Protocol (HTTP) requests and forwards them over the Internet. When the target service responds, the UP.Link server relays that information back to the UP.Phone.

Overview of UP.Phone transaction
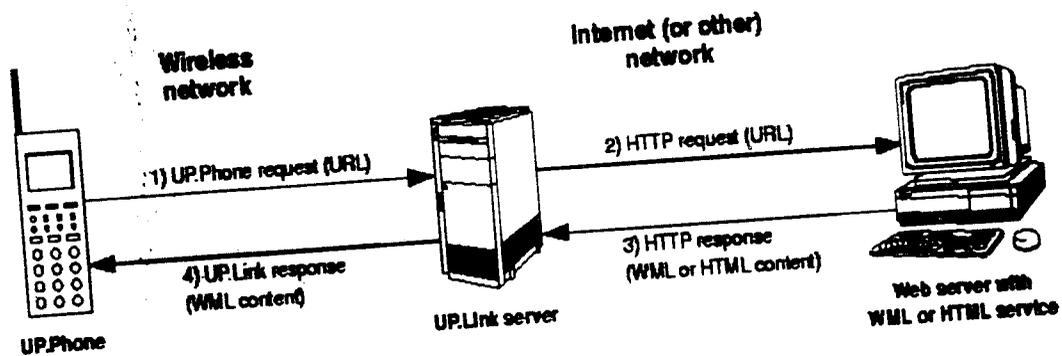
The UP.Link server is the core of the UP.Link platform. Its ability serve as an HTTP proxy for UP.Phones lets subscribers access any site on World Wide Web. Some information providers also offer *WML services* use WML to take advantage of the UP.Phone interface. These services also initiate communication by "pushing" information to the UP.Link ser which, in turn, relays it to an UP.Phone. This process is called *notification*

In addition to HTML translation, the UP.Link server provides a number of other services. It acts as an information gatekeeper by maintaining a database of UP.Phones and their access privileges. It provides optional fax services that let UP.Phone users fax Web site content (including text, Microsoft Word, and Postscript files) to a local fax machine. It also provides configuration parameters that allow administrators to monitor or log transactions.

The final component of the UP.Link platform is the UP.Apps™ suite of WML services. These packages are optional and consist of the following:

- ⊕ UP.Mail, an email system that lets subscribers send, receive, and save email.
- ⊕ UP.Organizer, a Personal Information Manager (PIM) that provides subscribers with integrated calendar, address book, and To Do list tools.
- ⊕ UP.Web, a service that offers subscribers a Web-based interface for performing many of the same tasks they do using their UP.Phones.
- ⊕ UP.Directory, a tool that lets UP.Link operators create directories of WML services that subscribers can access using either their UP.Phones or UP.Web accounts.

UP.Phone features

Although UP.Phone user interfaces vary, all UP.Phones have the following features:

❖ A display with a minimum resolution of three lines of twelve fixed-width characters.

❖ Support for text entry. UP.Phone models typically allow users to enter text by pressing the number keys.

❖ A minimum of two programmable user interface mechanisms--called **ACCEPTS** and **OPTIONS**. Some UP.Phone models implement **ACCEPT** and OPTIONS with function keys; others implement them with a jog shuttle or context-dependent user gestures. Users activate the **ACCEPT** mechanism to acknowledge a message or confirm a choice; they activate the **OPTIONS** mechanism to display context-dependent information or options.

❖ A mechanism for backing up--called **PREV**. Many UP.Phones have a dedicated key for this function, typically labeled with a left arrow or the word **BACK.**
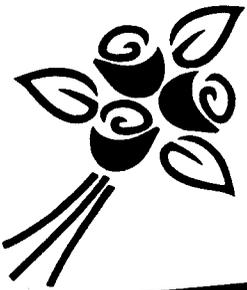
System Design & Development

4.SYSTEM DESIGN AND DEVELOPMENT

4.1 INPUT DESIGN

Input design is the part of the overall system design that requires very careful attention and is the most expensive phase. It is the point of most contact for the users with the computer system and so itself it is prone to error. If data going into the system is incorrect then processing and output will magnify these errors. Objectives during input design are as follows.

- Produce cost effective method of input.

- Achieve high- level accuracy.

- Ensure that the input is free of ambiguity.

Several stages of our input design are:

- Data Recording

- Transfer of data to input form

- Data verification

- Transmitting data to computer

- Data correction

The input design involves converting the user-originated inputs into a computer-based format. The aim of input design is to make the data entry easier, logical and error free. It helps us to filter errors in the input data that otherwise entered into the database might brought in a lot of inconsistency.

It involves procedures for capturing data, verifying it and then passing on to the computer's database. After choosing the input medium, attention is given to the careful design of input stages for error handling, controls, batching and validation procedures.

During application development, care has been taken to make our system extremely user-friendly and organize our screens such as the possibilities of making errors are minimized.

List of possible values, radio buttons etc., are provided to the user f selecting the inputs. This makes the system less prone to errors as the inp texts are to be selected rather than to be typed in by the users.

Alerts for wrong entries such as id duplication, letters in numeric d wrong data format, range exceed have been provided in the application. U this, a well - documented instruction set and navigation maps have been provided for the non-frequent and first –time users to familiarize them our WAP compatible site.

Maximum care has been taken to ensure that the users type i minimum data into the system, for all he or she have to do is to mo

click the button on the mobile phone to select the desired data at the desired position.

INPUT TYPES

One of the early activities of input design is to determine the nature of input data. The different types of input data handled by our system are:

§ **External**   : Prime input to the system

§ **Internal**   : Communication with system

§ **Operational**   : Computer departments communicate with the system

§ **Computerized** : Inputs to the computer media from other internal system

§ **Interactive**   : Inputs entered during a catalogue

4.2 OUTPUT DESIGN

An inevitable activity in the system design is the proper design of and output in a form acceptable to the user. Outputs from the syste required primarily to communicate the result of processing the res processing to users.

Outputs also provide a permanent copy of the results for later consultation. An intelligible output design will improve the system relationships with the user and help in the decision-making process.

The various types of outputs required by most systems are:

☞ **External outputs,** whose destination is outside the organization and which require special attention.

☞ **Internal outputs,** whose destination is within the organization and which require special attention.

☞ **Operational outputs,** whose use is purely within the compute department.

☞ **Interactive outputs,** which involve the user in communicating with computer.

The approach to output design is very dependent on the type of ou and the nature of data. Special attention has to be made to data editing. choice appropriate output medium is also an important task.

The selection may be the following kinds of considerations.

➷ Response time

➷ Location of users

✎ Cost

✎ Software / Hardware available

✎ Suitability of the device for the application concerned

The output design must be specified and documented; data items have to be accurately defined and arranged for clarity and easy comprehension. The other two objectives that were taken were:

✔ The interpretation of the results of the computer part of the system to users in a form that they can understand meets their requirements.

✔ The output design specification is made in such a way that it unambiguous, comprehensive and capable of being translated into programming language.

Screens, which are a major form of output, are designed in various modules the system. These include:

1.BAT MAIL SERVICES

Login card: This card enables the user to login by providing the and password.

User list card: This card presents the list of users and has two types, the existing user or the new user.

Inbox card: This card gives the list of all the mails that are available in the user's inbox, who has just signed in.

Mail card: This card gives the message sent to the user when he wants to see the particular mail and clicks on it. The user has the options here, whereby he can compose a new mail, send a reply to the read mail or delete the current mail.

2. BAT ANALYST

Login card: This card enables the users to login by providing the variou options under which he can enter either as a patient or a doctor.

New/Registered user card: The person entering into this module may either new or already registered. The category may be either a doctor patient, both will enter into this common card and proceed accordingly.

Patient card: This card collects information about the patient and registers him/her as a patient in this site.

Doctor card: This screen collects data from the doctors if they enter as user or displays the list of patients if he/she is already a registered pract Then the physician has to type in the remedies for his patients, which when the patient signs up again.

View report card: This card gives the status of the patient and also the doctor's prescription for the problem.

3.BAT EMPLOYMENT OPPORTUNITIES

Menu card: This card displays the two categories under which the user can enter, namely the end user and the corporate user.

End user card: The end user card is used to get the resume details of the end user and according to his qualification, the list of companies will be displayed.

Corp user card: The corporate user card is quite similar to the end us card except that here the companies have to post in their requirements a the eligible candidates already who have registered with us, will displayed for the industries to view. Then they can intimate those throu mails.

4. CITY CATALOGUE

Menu card: This hold the different links to all the various commodit our Coimbatore city. It gives an overall view of the various entertain education, shopping places and a lot more other information i available. This is like a catalogue of Coimbatore city and any new gets benefitted and gets to know about the city's various places t four WAP compatible site.

A principle that is maintained throughout the output design is that the output design must be consistent. All the WML cards designed for a specific purpose must look the same. For example, all the screens concerned with a module must have the same interface. The consistency with the interface is very important. The users when trained to use a specific screen in the application must be able to use the others with the same ease which will makes it a user-friendly system.

Thus the output design has been done in such a way that the user ca[n] make the best use of the system and that he can familiarize himself with th[e] system in a short span of time.

4.3 DATABASE DESIGN

Database design is one of the most important steps in the system de[sign] phase of the system development. A good design of the database can re[move] problems like redundancy and anomalies and at the same time enf[orce] integrities like referential integrity, domain integrity, etc., Normally data[base] are implemented by Data Base Management System. The concept Relational Data Base Management (RDBMS) is easier to design a da[tabase] that can enforce all the securities and integrities, which leads to a secu[re] consistent database.

DATABASE MANAGEMENT CONCEPTS

Databases are normally implemented by the *Data Base Management System (DBMS)*. DBMS falls into two broad categories.

- Pointer-driven Systems
- Table-driven Systems

Pointer-driven DBMS use techniques such as partitioning and training. These are normally host-language that use high-level language verbs coded within application programs. The design of database using such systems will have a crucial effect on the performance and flexibility of the end result.

Table-driven systems are inverted-file systems that allow the user to set up and maintain a database, which may be searched using a wide range of different keys. These systems are generally straightforward to implement.

The user specifies the records and fields, indicates which of the fields will be the keys and supplies these parameters to the DBMS, which will then set up the database. The effort needed at the design stage is much lesser in this system than pointer-driven systems.

RELATIONAL DATABASE MANANGEMENT SYSTEM

In RDBMS the data are organized consisting of rows and columns There is an explicit pointer stored in rows. Each table has a unique name. T

identify a particular row in a table, a column or combination of columns are used. This is called as a *primary key*.

The relational model stores every information in terms of rows and columns of data. By storing this way the relation is automatically established and so in RDBMS, relation is implicitly understood.

There is no need to explicitly relate entities. This tabular form of representation forms the basis of implementation of relation in RDBMS.

Features of RDBMS

Some of the features and advantages of using the relational model are:

— Redundancy can be reduced.

— Inconsistency can be avoided.

— Data can be shared.

— Standards can be enforced.

— Integrity can be maintained.

— Conflicting requirements can be balanced.

An important step in the database design is the process of *Normalization*. It is the process of breaking up data and storing them in tables in order to reduce redundancy. Though *Normalization* reduces redundancy of data, it is desirable to have some degree of redundancy in some cases. In such cases, we deliberately introduce some elements of redundancy for a highly improved performance. This can be regarded as *De normalization*.

After analyzing all the requirements and inputs, the tables of the system are designed to store the data in a relational manner. Most of the tables in the system are normalized to the extent possible, but a few tables are denormalized in order to reduce the query time and the access time.

Indexes are formed on the combination of keys normally used in queries. The MS Access maintains the indexes on primary keys or unique keys and uses implicitly whenever a query is fired.

WAP DESIGN

WAP- Wireless Application Protocol-is a communication protocol and application environment for the development of information resources, advanced telephony services, and internet access from mobile devices.

WAP and the Wireless World

The new trend in technology is to provide users with the ability to have all they could possibly need in a pocket size device. Smaller and smaller PDAs (Personal Data Assistants), laptop computers and mobile phones are

hitting the market, incorporating brand new features designed to let the users work and access documents in whatever situations they are in.

One of the latest innovations in the field- and the one that has shaken the telecommunications world to its roots - is WAP. It introduces a new way of looking at the wireless phenomenon - letting the application 'follow' their customers and provide them with innovative services.

Mobility

Mobility is a new buzzword in the business world and over time, expectations have risen about exactly what this means. It is the ability t access information and services any time, anyhow, anywhere. This has bee easily brought about by the WAP technology.

Changing the way we look at the net

With the advent of the internet, e-commerce has grown to enorm property; online trading and shopping have proven to be such a success the goal of business has become the provision of services that are avail from *anywhere*. On top of this the mobile phones have become a part of life for many people, and together with a watch, is the only electronic d that many people carry around everywhere with them, all day long.

The graph below is from a report, WAP Market strategies, from ovum (http://www.ovum.com). It compares the forecasted growth of mobile phones, Internet enabled mobile phones and Internet enabled mobile phones that are actually used to access the Internet:
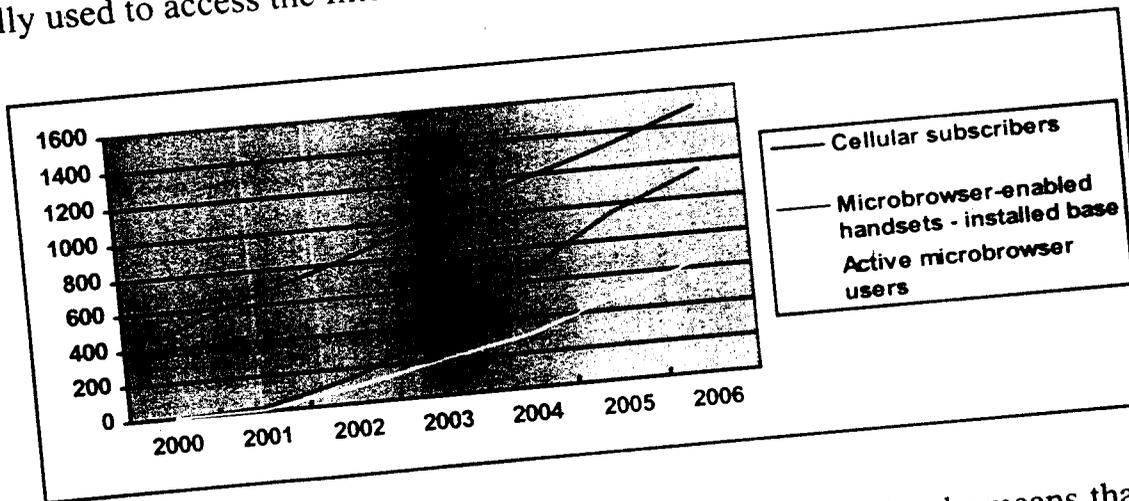
It is time that the Internet moved on from the PC. It simply means tha there is more than one way of accessing information from the Internet, and th method you choose depends on who you are, where you are and what yo want. And, with the advent of cheap, reliable mobile phones capable accessing the Net, there seems to be a major opportunity for a powerful a real mobile data service.

The WAP Forum- A Standard for Wireless Web Access

Back in 1995 Unwired Planet introduced HDML- the Handheld De Markup Language- which is a cut-down version of HTML designed to r wireless devices. And in Japan, the operator NTT DoCoMo introdu service called i-mode in early 1999. They could have kept on focussing j the development of HDML, letting it grow in the US as NTT DoCoM

done with I-mode in Japan. However, they chose instead the major mobile phone manufacturers involved in their project, reckoning that the more devices there were that supported the technology in the world market, the more they could their wireless Internet solutions around the world. Involving others companies, each one with a large customer base in different parts of the world, has helped to promote the newborn technology.

Thus, the **WAP Forum** was created by Phone.com, Ericsson, Nokia and Motorola. Everyone got 'infected' by the WAP virus, with network operators and device manufacturers struggling to offer the new technology to their customers just to stay competitive. The Phone.com WAP gateway-UP.Link-is the most mounted in operator networks. Also, the Phone.com software application- UP.Browser, which allows the mobile phones that it is installed in to receive WAP data-is present in a large fraction of the WAP complaint mobile phones around the world.

WAP Application Architecture

The WAP protocols are designed with the Web protocols in mind. The goal of WAP was to use the underlying Web Structure, but to render communication between content providers and mobile devices more efficient and less time consuming than if the web protocols themselves were used. Since the WAP architecture has been designed to closely follow that of the Web, the Client-Server paradigm used by the Internet has been inherited by WAP. The main difference, however, is the presence of the WAP gateway for translating between HTTP and WAP.
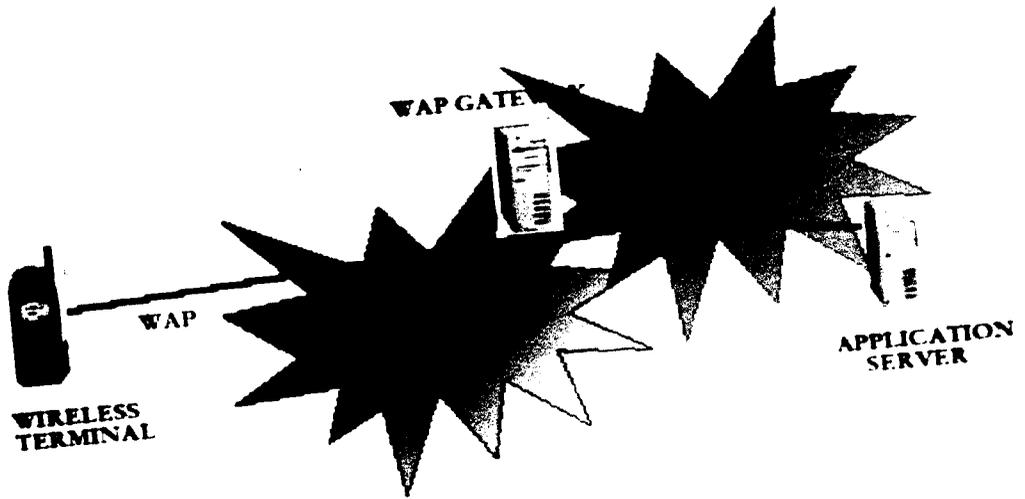
WAP network structure.

Few technical details related to WAP Architecture

WAP device: This term indicates the physical device that you use to access WAP applications and content. It doesn't necessarily have to be mobile phone-it might be a PDA or a hand held computer. More generally, it every WAP compliant device.

WAP client: In a network environment, a client is typically the logi entity that is operated by the user and communicates with the 'server enti In the WAP world, the client is the entity that receives content from Internet via the WAP gateway. This is usually the WAP browser. Comm 'WAP client' and 'WAP browser' are often used interchangeably.

WAP browser: This is software running on the WAP device that interprets the WAP content arriving from the Internet and decides h display it on the screen of the WAP device. WAP browsers are availab

all WAP devices, and are frequently referred to as *microbrowsers*. There are also emulators available for some browsers, which run on PCs.

User Agent: An agent is normally a software that deals with protocols, and WAP is no exception to this. The WAP client contains two different agents: the WAE user agent and the WTA user agent.

WAP Gateway: This is the element that sits between the WAP device and the origin server. It acts as an interpreter between the two, enabling them to communicate. It usually resides within the operator network, but you can also install your own gateway.

Network operator: This is the company or organization that provides carrier services to its subscribers. A network operator enables you to make calls to other phones from your telephone and, in addition, provides you with different services, such as voice mail, call diversion etc.

Bearer services: These are the different ways the mobile phone can communicate with the wireless network. To send and receive data from an application server, mobile phones have to establish some sort of connection with the WAP gateway. A bearer service is the method they use to do this. In GSM networks, for example, we either use SMS (Short Message Service) or CSD (Circuit Switched Data). With the former bearer, the gateway has to divide the information that is to be sent to the phone into a lot of little messages. With CSD, we communicate with the gateway using a data connection, Which is not dissimilar to the way the modem in your computer

communicates with the Internet service provider that you have an account with.

Content/Origin/Application server: These servers denote the element that hosts the Internet content that is sent to clients when they make a request for it. A web server is an origin server, providing HTML content.

WAP Client

The only requirement for a device to be WAP compliant is that it must implement a WAE user agent, a WTA user agent and the WAP stack.

The WAE user agent (Wireless Application Environment user agent) is the micro browser that renders the content for display. It receives the compiled WML, WMLScript and any images from WAP gateway, and executes or displays them on the screen. Even if implementation details are left to the vendor, the browser must implement all the functionality provided by WML and WMLScript. It must also manage the interaction with the user, such as text input, and error or warning messages.

The WTA user agent (Wireless Telephony Applications user agent) receives compiled WTA files from the WTA server and executes them. The WTA server agent includes access to the interface to the phone, and network functionality as number dialing, call answering, phone book organization, message management and location indication services.

The WAP stack implementation allows the phone to connect the WAP gateway using the WAP protocols.

WAP proxy, WAP gateway or WAP server

The functionality difference of the above are given below:

Content/Origin/Application Server: This is the element in the network where the information or web/WAP applications reside.

Proxy: This is an intermediary element, acting both as client and as the server in the network. It is located between clients and origin servers; the client sends requests to it and it retrieves and caches the information needed by contacting the origin servers.

Gateway: This is an intermediary element usually used to connect two different types of network. It receives requests directly from the clients as if actually were the origin server that the clients want to retrieve the information from. The clients are usually unaware that they are speaking to the gateway.

WAP gateway functionality

Whenever you start a WAP session on your mobile phone, the following steps are executed.

୬ A connection is created via WSP (Wireless Session Protocol) between the mobile device and the WAP gateway, which we assume is present in the operator network.

୬ As you enter the address of a WAP site, the gateway is sent a request from the device's microbrowser using WSP. WSP is the WAP protocol in charge of starting and ending the connections from the mobile devices to the WAP gateway.

୬ The gateway translates the WSP request into an HTTP request and sends it to a appropriate origin server.

୬ The origin server sends back the requested information to the gateway via HTTP.

୬ The gateway translates and compresses the information and sends it back to the microbrowser in the mobile device.

WAP Application server

The WAP application/Origin/Content server has exactly the same function as a web server and offers the same features to the clients. The distinction between them is only a logical one, since the two can coexist on the same physical device, and some servers can provide both functions using the same piece of software. The only difference lies, of course, in the content that they store and send back to the clients. While the web server supports files such as HTML, JavaScript, Multimedia, and all types of images, the

WAP application server stores WML, WMLScript and WBMP (Wireless Bitmap) image files.

A WAP server is usually just a WAP application server with gateway functionality added. It will provide all the services a normal origin server provides, but it will also act as a WAP gateway.

WAP internal structure

Protocols

A protocol defines the type and the structure of messages that two devices have to use when they are communicating with each other.

Layers

Since the protocols are functionally and logically divided into different groups of functionality, they are also physically framed into layers, each one providing a specific service to the next layer. One layer may provide methods to send bits down a physical cable; another may supply methods to establish a connection. The *protocol stack* is a set of all the layers that compose the set of protocols.
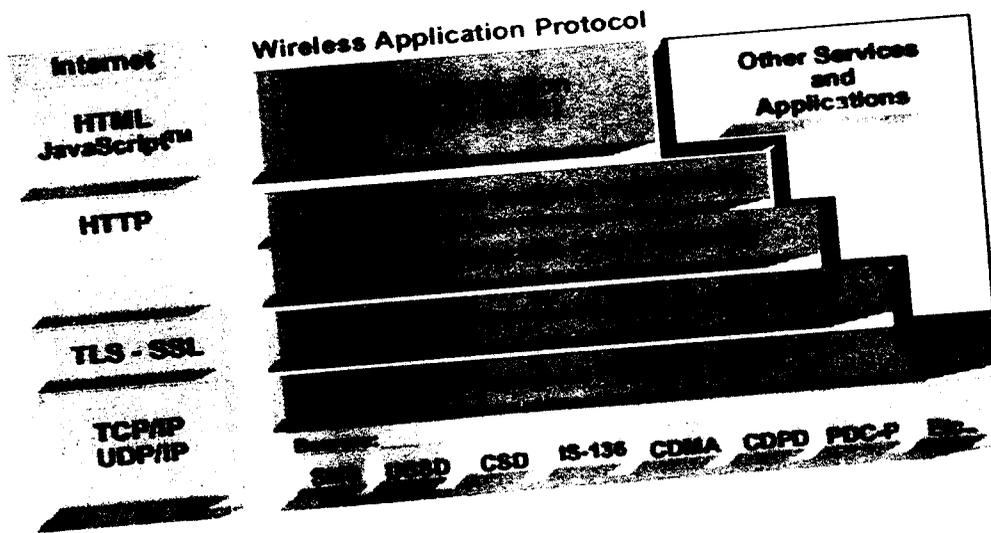
WAP protocol stack

The WAP protocol has four layers:

- Session layer
- Transaction layer

     ▷   Security layer

     ▷   Datagram layer

The following picture illustrates the WAP protocol architecture. For reference, the picture also contains a typical Internet protocol stack.

WAP and Internet protocol stacks.

Wireless Application Environment

The WAE defines the user interface on the phone. application development environment to facilitate the development of ser that support multiple bearers. The WAE contains the Wireless Ma Language (WML), WMLScript - a scripting micro-language simil JavaScript - and the Wireless Telephony Application (WTA).

Wireless Session Protocol

A sandwich layer that links the WAE to two session services - one connection oriented operating above the Wireless Transaction Protocol and a connectionless service operating above the Wireless Datagram Protocol.

Wireless Transaction Protocol

Runs on top of a datagram service such as User Datagram Protocol (UDP); part of the standard suite of TCP/IP protocols, to provide a simplified protocol suitable for low bandwidth mobile stations.

WTP offers three classes of transaction service:

- unreliable one way request,
- reliable one way request
- reliable two way request-respond.

WTP supports Protocol Data Unit concatenation and delayed acknowledgement to help reduce the number of messages sent.

Wireless Transport Layer Security

WTLS incorporates security features that are based upon the established Transport Layer Security (TLS) protocol standard.

- data integrity checks
- privacy on the WAP Gateway to client

&ɔ   and authentication.

Wireless Datagram Protocol

Allows WAP to be bearer independent by adapting the transport layer of the underlying bearer. WDP presents a consistent data format to the higher layers of the WAP protocol stack thereby conferring the advantage of bearer independence to application developers.

Wireless Application Environment (WAE)

WAE defines the framework for network-neutral, wireless applications for narrow-band devices. The main building blocks of WAE are the following:

- ♫ A light weight markup language: WML
- ♫ A light weight scripting language: WMLScript
- ♫ An interface to local services and advanced telephony services: WTA (not yet implemented).

Wireless Markup Language (WML)

WML is analogous to HTML for HTTP applications. It is an XML-based language that is specifically designed to interface with the micro-browsers that exist in WAP-enabled devices. The Wireless Markup Language Specification defines the tags and structure of a WML document.

A WML document is a collection of one or more *cards*. Each card is considered a well defined unit of interaction. The general rule of thumb is that a card carries enough information to fit in one screen of a mobile device. One or more cards can be logically grouped into a *deck* of cards. See Generating WML for information on ways to serve WML documents to mobile clients. Although WML has limited capabilities when compared to HTML, it has nevertheless a wide range of feature:

- **Support for text:** When including text in a card, the programmer can use emphasis elements, line breaks and tables. You should remember, however, that the features each browser implements may vary, and some do not support tables.

- **Support for images:** A few format has been created for displaying images called WBMP. Images compliant with this new standard are currently black and white.

- **User input:** Cards can contain input elements. The browser decodes input tags and then decides the best way to prompt the user for the input requested. WML specifies tags for allowing the user to submit text entries, choose among a list of options, and start a navigation or history Management tasks.

- **Variables:** Variables can be include in the WML code, to keep track of the hidden information and to manipulate user input.

- **Navigation and history stack:** Common navigation and history functionalities are included.

- **International support:** The WML character set is *Unicode*, which uses sixteen bits to represent each character.

⤵ **Optimization for narrow-band:** WML has been designed to adapt to the high-latency and narrow-band characteristics of wireless networks.

The specifications say that connections with the origin server should be avoided unless absolutely necessary. This is accomplished by means of various technologies: variables that last longer than a single deck, cards grouped in decks, and client-side user input validation via WMLScript.

WMLScript (WMLS)

WMLScript provides general scripting capability to the WAP architecture. It is designed to overcome the limitations of narrow-band communication and mobile clients. While many of the services that can be used with small mobile clients can be implemented with WML, the human behavioral compatibility of scripting improves the standard browsing and presentation facilities of WML. WMLScript resides in .wmls files that can be made available to mobile clients by placing them into the document root. The document root is the root directory for files that are publicly available on WebLogic Server. WMLS supplies the programmer with:

- The capability of checking and validating the input submitted by the user before it is sent to the server, thus preventing the transmission of invalid data to the server.
- Access to the device facilities, such as the phone book, calendar and list of messages (WTA).

✓ Methods of interacting with the user without the help of the content server, such as methods for displaying error and warning messages.

4.4 PROCESS DESIGN

A detailed study of the existing system and its problem has been made, and an outline of the new system is drawn. A thorough study revealed the structure of the databases involved. The tables were created after normalizing the fields to the maximum extent possible. Sample values were inserted into the database for checking the consistency of the system. The various constraints are specified for certain fields in the tables according to the necessity. After the database is designed and the various input and output modules are created, the various cards are designed in WML and ASP and thus the WAP compatible pages are created. The necessary lists, messages, warnings, links etc., are created for making the modules more user friendly. The WAP compatible site has four different master modules. Of these some involves a lot of interaction with the users while others are more procedure oriented and does more internal processing.

Each master module contains sub modules designed with a similar interface. They are designed with functions like:

❖ New

❖ Add

❖ Find

❖ Delete

❖ Modify / Update

❖ Save

❖ Clear

The data manipulation is done with the help of these functionality methods. They are all interfaced to the user with the help of buttons and can be accessed with button clicks. In order to make navigation through the site easier, *navigation links* are provided. Using them the mobile users can move forward or backward one or more pages with abundant ease.

All pages associated with a module have similar interfaces that are *extremely user friendly*. All facilities provided are *easily accessible* and *shown explicitly*. The *utilities* provided involve complex internal calculations and manipulations of data. But these intricate details are transparent to the user thus providing both *data* and *logical abstraction*.

In all reports, the data required for the report generation is accepted and with these the appropriate database are searched. The selected data is filtered into a form acceptable by the modules. They are then moved over to the worktables and the reports are generated based on the data from the worktables.
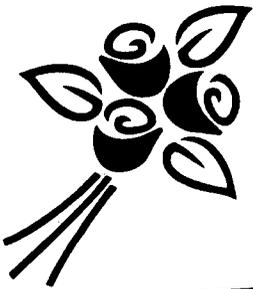
System Implementation & Testing

5.SYSTEM IMPLEMENTATION AND TESTING

5.1 SYSTEM IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned into a working system. At this stage the main workload, the upheaval and the major impact on the existing practice shifts to the user development. If the implementation stage is not carefully planned and controlled, it can cause chaos. Thus it can be considered to be the most crucial stage in achieving a new successful system and in giving the users confidence that the new system will work and be effective. Implementation involves careful planning investigation of the current system and its constraints on implementation design and evaluation of changeover methods. The first task implementation planning, i.e., deciding on the methods and time scale to adopted.

Once the planning has been completed, the major effort in the comp department is to ensure that the programs in the system are working prope At the same time the user department must concentrate on training user s When the staff has been trained, a full system test can be carried involving both the computer and clerical procedures.

Education involves creating the right atmosphere and motivati user. The staff education section should encourage participation fr sides.

5.2 SYSTEM TESTING

Software testing can be looked upon as one among the many processes. This is the last opportunity to correct any possible flaws in the developed system. Software testing includes selection tests data that have more probability of finding errors.

System is the stage of implementation that is aimed at ensuring that the system works accurately and efficiently before live operation commences. In principle, system providing is on - going activity throughout the project.

The logical design and the physical design should be thoroughly and continually examined on paper to ensure that they will work then implemented. Thus the system test in implementation should be a confirmation that all is correct and an opportunity to show that the system works.

The first step in system is to develop a plan that tests all the aspects of the system. Completeness, correctness, reliability and maintainability of the software are to be tested for the best quality assurance – an assurance that the system will meet the specification and requirements for its intended user and performance. System testing is the most useful practical process of executing a program with explicit intention of finding errors that make the program fail.

The following phases were developed.

Module Testing

Each individual program module is tested for any possible errors. They were also tested for specifications, i.e., to see whether they are working as per what the program do and how it should be performed under various conditions.

Concurrence Testing

Since the system is a multi-user it was tested for concurrence problems. The system worked perfectly since the table locking and other security measures were taken with cure by the database itself.

Login Testing

The login process was tested with both authorized and unauthorized login. Access was denied for invalid ids and incorrect passwords. Passwords were changes and the addition and deletion of users were done. The results were as expected.

Insert Update Testing

The insertion and updation was tried on all tables in the database Checking was done whether the corresponding entries were made in th

different tables when a new record was created. Updation of non-existent records and duplicate values were tried. The system was found to check and disallow invalid attempts.

Display Testing

The display procedure was tested since the data displayed is of much importance. The data was input in the different modules and it was checked whether the information is properly displayed in the other dependent modules. The consistency of the display and the attractiveness of the display were also tested.

A testing is an examination with the intent of finding errors. Concentration was more on errors than resting on the glory of apparently perfect outputs. Comments and suggestions from the observers during the test run were later considered. Special care was given to the user-friendliness of the software was well appreciated.

5.3 REFINEMENTS ON FEEDBACK

The feedback from the operators of the mobile phone and all the other visitors of the WAP site is of great importance since it is they who are ultimately going to use the system. This particular WAP compatible site that has been developed had a large user base that positive approach was made to all the suggestions made by all the technical and non-technical reviewers of our project. All the valid suggestions were taken into account and solutions were found for them. The reasons for discarding the other recommendations

were properly explained. Some of the recommendations, which were catered to are explained below.

A change in the design of the city catalogue module was requested. After a detailed discussion with the commentator, a more attractive and user-friendly interface was implemented.

It would be more beneficial to the mobile phone users of the BAT Analyst site if they also could find a way to get their medical condition monitored by a BAT doctor on the WAP site. This suggestion was considered and an option was provided in the main card to accomplish the same. Paying heed to yet another suggestion regarding BAT Hospitals, facility was provided fort visitors by which the status report of them or their friend or relative who has been admitted under the BAT Analyst immediately.

The feedback we received from the viewers of our project was very encouraging and appreciative, their suggestions were made worthwhile and so also were to be seriously considered. To improve our WAP compatible site even after implementation, the user suggestions and comments are always most welcome and will be implemented anytime if found worth enough.

6.CONCLUSION

With the birth of the new technologies, the emergence of the WAP as a major net browsing medium will lead to an increase in the speed of net browsing through WAP phones. Customers receive convenience and timely access to important data by a mobile phone or device. Operators differentiate themselves by launching new and intriguing services. Developers and content providers can access all protocols and carriers using a single set of protocols.

The WAP site has been developed and the stated objectives were achieved. All the operations are invoked easily through meaningful links and direct key strokes. The development and hosting of the WAP site needs substantial effort from the developers' side.

The design and development of such a real time project concerned with the WAP technology has been a wonderful experience for all four of us. We discovered new and interesting facts in the world of mobile commerce, increased our programming skill and helped us get well exposed to the really powerful scripting environment and Active Server Pages. We had an excellent first hand experience of working as a team, under the guidance of able and experienced scholars in the reputed concern like Bharath Advanced Technologies that turned out to be very interesting and informative.

Maximum justification is done to each of the master module in the allotted time span. The system gave the results it was proposed in the earlier

stages and it was designed in such a way that it could be enhanced in future with no problems. Hope this project will surely cater the requirements of all the users at BAT and the future visitors of this site.

7.SCOPE FOR FUTURE DEVELOPMENT

Internet content can be adapted to and leveraged for WAP devices to provide consumers immediate interactive access to information. ISPs can create mobile channels for their existing services, as well as totally new services for their mobile customers. Wireless device users can be made to access their e-mail, calendars, contacts, and other personal information.

Further extensions in the system can be made in order to provide more options like that of handling money transactions over the WAP phone, generating patient status reports in the hospital site so that they could be forwarded to an external hospital when patients are sent there for expert treatment and purchase through WAP phones can also be made possible. The system is a flexible one and any amendment can be made with minor routine modification.

The application developed in the chosen areas is becoming an absolute necessity in the present day environment. The need for faster and efficient business, speedy and accurate world-class services are of vital importance. The list of possible options in the areas concerned is actually very difficult, as the fields taken into the consideration do not have rigid definitions. But the system is extremely adaptive to all such situations that may arise in future.

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URLs :

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www.waplinks.com

www.wap.net

www.wap.com

www.wapspy.com
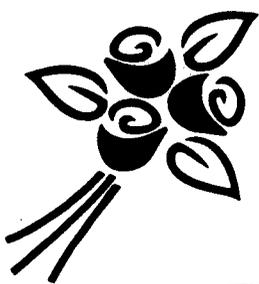
www.wapdrive.com

www.nokia.com

www.phone.com

www.motorola.com

www.ericsson.com

www.slobtrot.com

www.anywhereyougo.com

Annexure

Table 2

Name : corpuser

Description : This table stores the company's information with their requirements for the vacancies available.

Field Names	Data Type	Descriptions
Corpid	Text	Corporate user ID
Corppass	Text	Corporate user Password
Cname	Text	Corporate user Name
Addr	Text	Corporate user Address
Vac	Text	Vacancy Available
Email	Text	Corporate user Email ID
Req	Text	Corporate user Requirements

2.BAT Analyst:

Table 1

Name : doctor

Description : This table holds the doctors' ids and passwords who have registered themselves as BAT Analysts.

Field Names	Data Type	Descriptions
Docid	Text	Registered Doctor's ID
Docpass	Text	Registered Doctor's Password

Table 2

Name   : patient

Description   : This table shows the patients who have registered themselves for online remedy under our BAT Analysts.

Field Names	Data Type	Descriptions
Patid	Text	Patient's ID
Patpass	Text	Patient's Password

3.BAT MAIL SERVICES

Table 1

Name   : usercheck

Description : This table is used to maintain the details of any user who signups under our mail services as a registered user.

Field Names	Data Type	Descriptions
Userid	Text	Mail user ID
Password	Text	Mail user Password
Name	Text	Mail user Name
Sex	Text	Male / female
Occu	Text	Occupation of the user
City	Text	City of the user

Table 2

Name : common

Description : This table collects the information about the messages, the sender, the receiver and the subject of the mail.

Field Names	Data Type	Descriptions
Frm	Text	Senders Email ID
To	Text	Receivers Email ID
Sub	Text	Subject of the mail
Msg	Text	Message content
Flag	Text	Flag indicating whether unread or read mail

Table 3

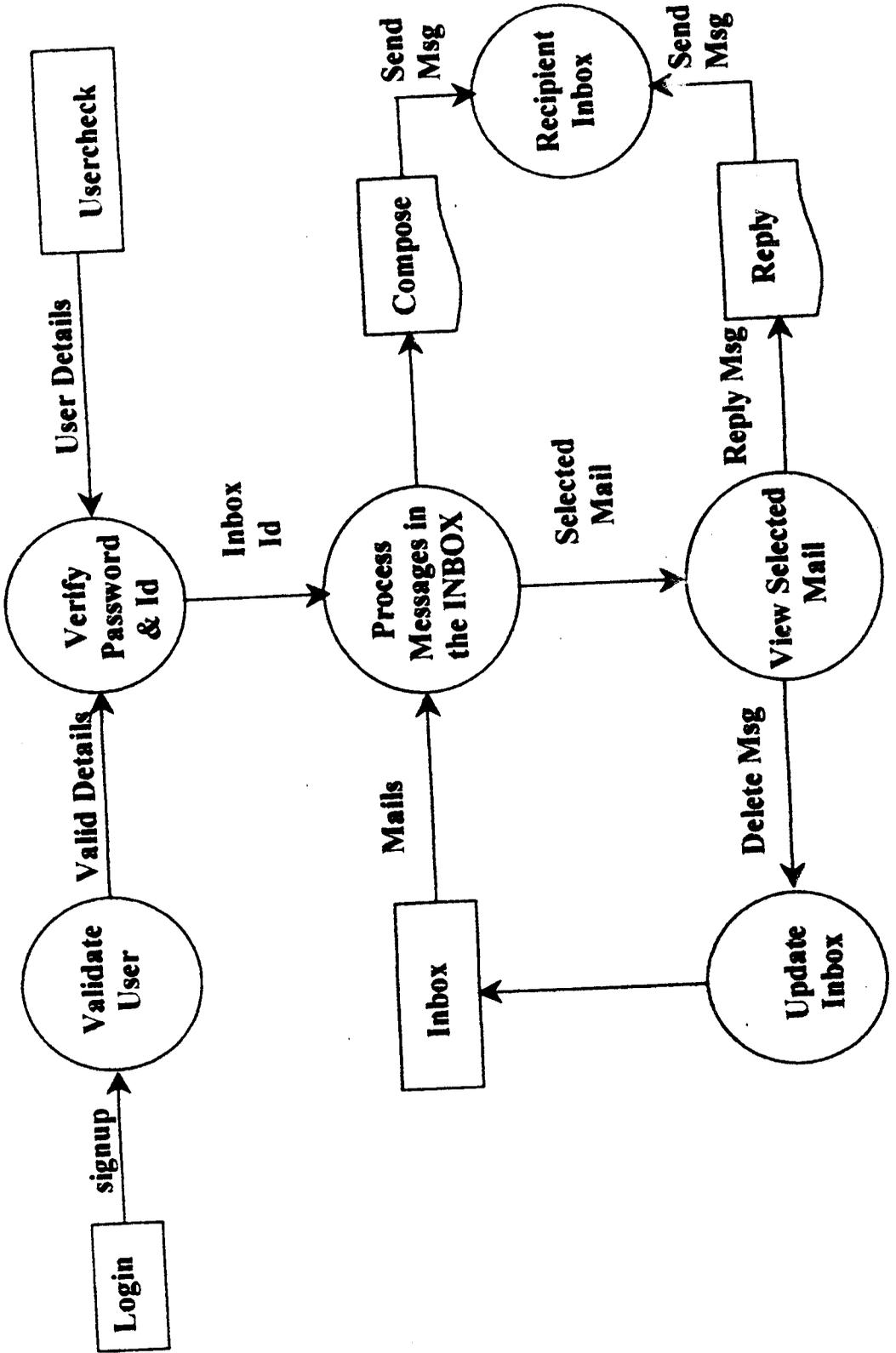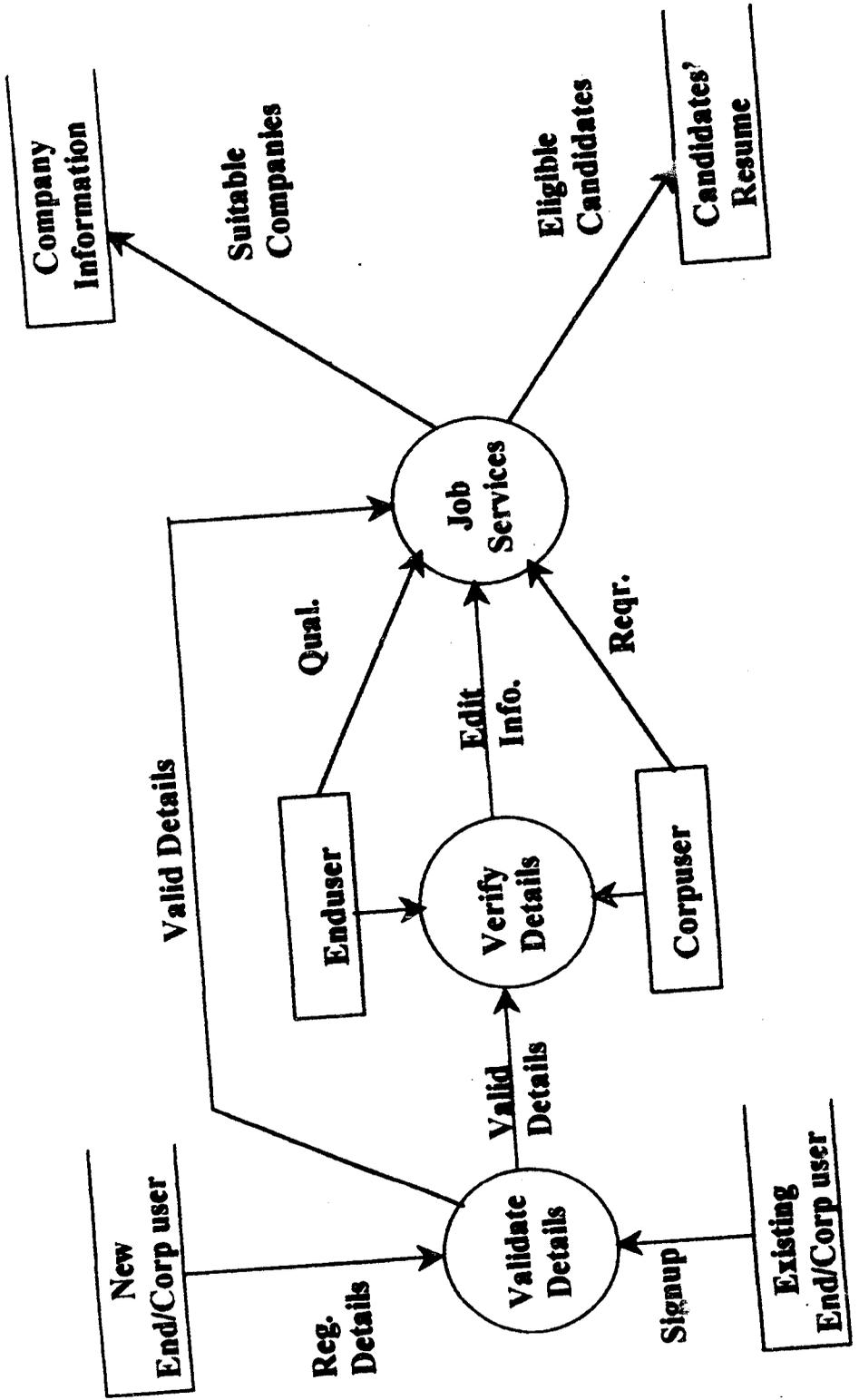**Name** : "username"-INBOX

Description : This table is unique in the way that it is created every time any user registers under us, and this holds the user's id itself as its name. It also holds the details about the user's messages received and also the status whether the mail was read or not.

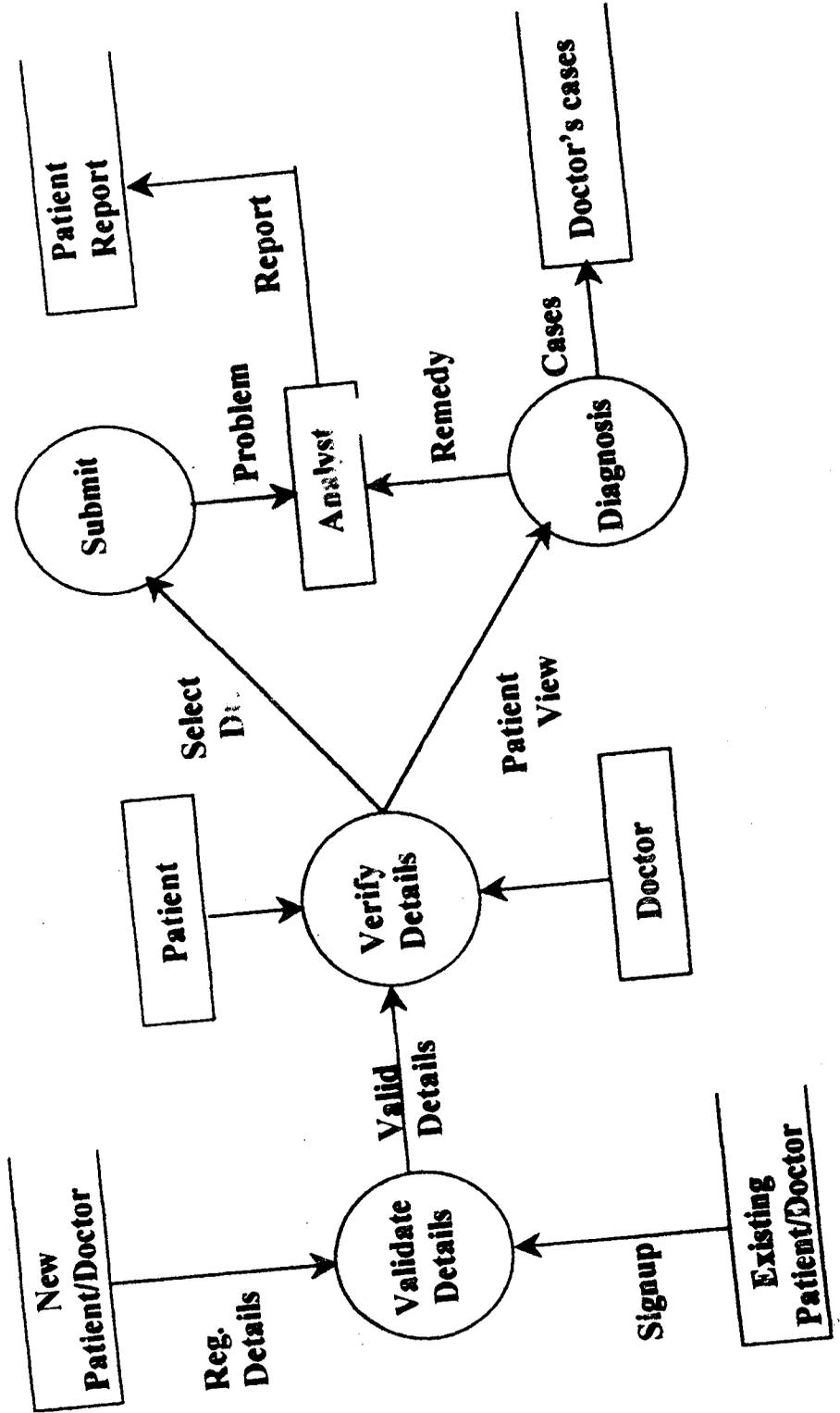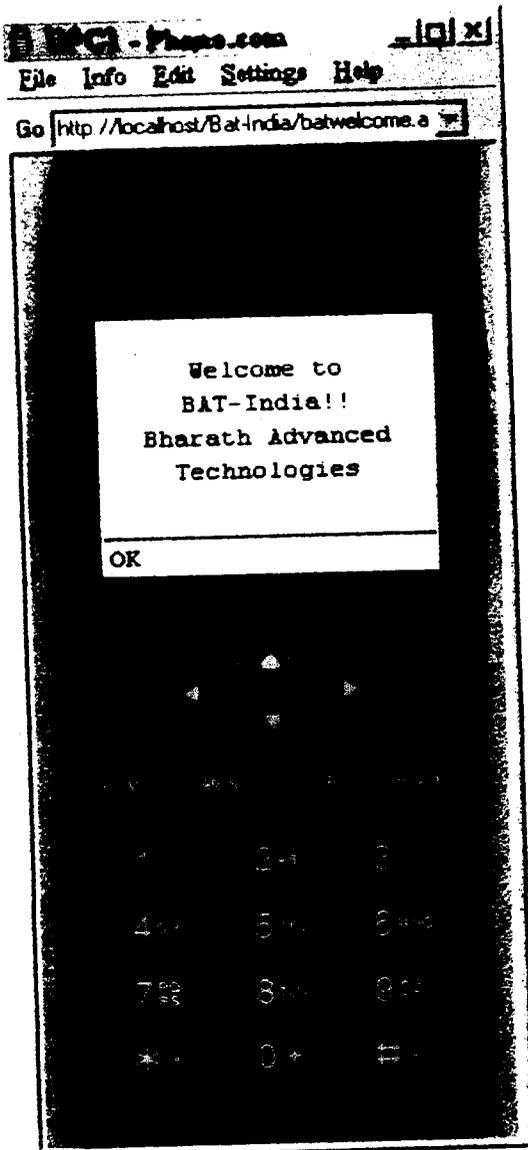| Field Names	Data Type	Descriptions
Frm	Text	Senders Email ID
Sub	Text	Subject of the mail
Msg	Text	Message content
Flag	Text	Flag indicating whether unread or read mail

1. BAT Mail Services

2. BAT Job Services

Data flow diagram showing:

- **New End/Corp user** → Reg. Details → **Validate Details**
- **Existing End/Corp user** → Signup → **Validate Details**
- **Validate Details** → Valid Details → **Verify Details**
- **Validate Details** → Valid Details → **Job Services**
- **Enduser** → **Verify Details**
- **Corpuser** → **Verify Details**
- **Verify Details** → Qual. → **Job Services**
- **Verify Details** → Edit Info. → **Job Services**
- **Verify Details** → Reqr. → **Job Services**
- **Job Services** → Suitable Companies → **Company Information**
- **Job Services** → Eligible Candidates → **Candidates' Resume**

3. BAT Analyst

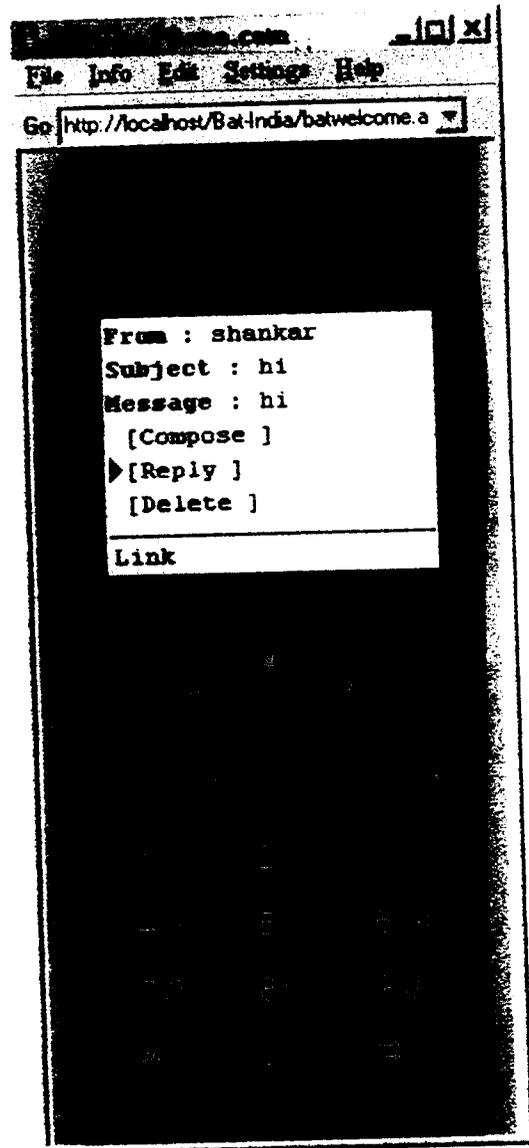# 4. BAT City Catalog

Viewer

Enters

Select From Catalog

City Info

City Details

Catalog List
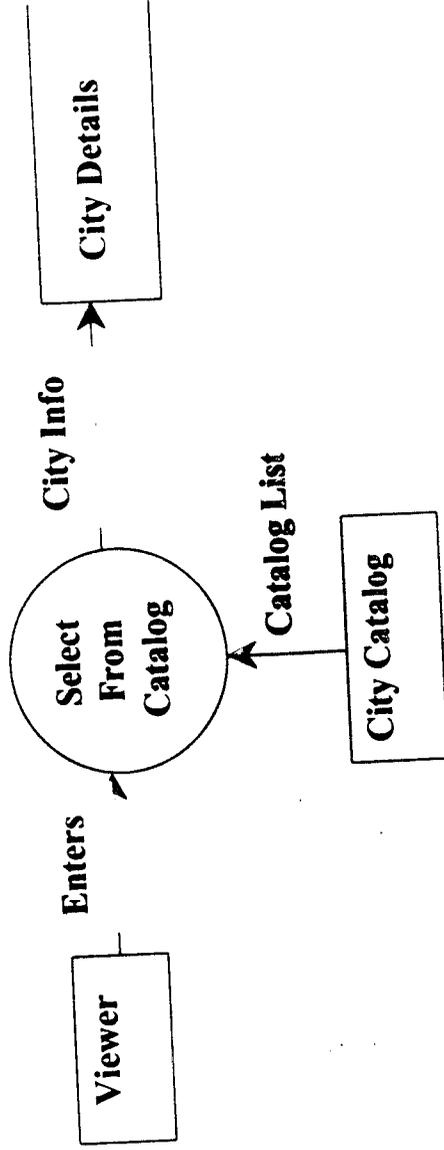
City Catalog

Welcome Splash Screen

Inbox-Sample mail


```
Welcome to
BAT-India!!
Bharath Advanced
Technologies

OK
```



```
From : shankar
Subject : hi
Message : hi
 [Compose ]
▶[Reply ]
 [Delete ]

Link
```

Job Services

City Catalog

Job Services screen:

```
          Phone.com          _|□|x|
File   Info   Edit   Settings   Help
Go  http://localhost/Bat-India/batwelcome.a ▼

      Welcome Cybernet
      List Of Eligible
      Candidates:

      1▶Gayathri
      2 Rajsekar
      ─────────────────
      home
```

City Catalog screen:

```
          .com          _|□|x|
File   Info   Edit   Settings   Help
Go  http://localhost/Bat-India/batwelcome.a ▼

      1▶Auto Components
      2 Medical and Health
      3 Hotels and Cuisine
      4 Educational Inst.
      5 Entertainment
      6 Dept Shopping
      ─────────────────
      OK
```

Sample Code

d. Source Code

VIEW OF AN INBOX

```
<%  Response.ContentType = "text/vnd.wap.wml"
    Response.Expires=-1
    Response.AddHeader "Pragma","no-cache"
    Response.AddHeader "Cache-Control","no-cache,must-revalidate"
%>


<?xml version="1.0" ?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.1.xml">


<%
    Dim conn1,rs,i
    Set conn1 = Server.CreateObject("ADODB.Connection")
    conn1.open "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=" &
    Server.Mappath("mail.mdb")
    i=1
%>


<wml>
<card id="card1" title="Login">
<p>
<b><%=Request.QueryString("inbox")%></b><br/>
```

```
<b>Welcome To Your Inbox </b>
<anchor>Compose
<go href="http://localhost/Bat-
India/compose.asp?frm=<%=Request.QueryString("inbox")%>"/>
</anchor>
<%  set rs=conn1.Execute("SELECT * FROM Request.QueryString("inbox"))
      If not rs.EOF then
%>


<select name="mail" title="Messages">
<% Do while  not rs.EOF %>
<option
onpick="http://localhost/BatIndia/maildisp.asp?inbox=<%=Request.QueryStri
ng("inbox")%>  &amp;cd=$(mail)"  value= <%="""" & i & """"%>>
<%=rs("frm")%>
</option>
<%
      rs.MoveNext
      i=i+1
      Loop
%>
</select>
<%
    else
    Response.write "<br/> No Messages In Your Inbox"
    end if
%>
```

```
<do type="accept" label="Home">
<go href="http://localhost/Bat-India/menu.asp"/>
</do>
</p>
</card>
</wml>
```
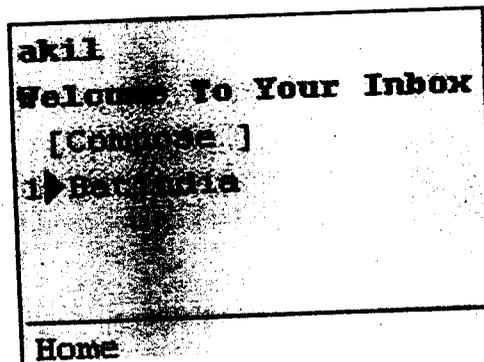

DISPLAY OF THE COMPANIES SUITING YOUR CRITERIA

```
<% Response.ContentType = "text/vnd.wap.wml"
    Response.Expires=-1
    Response.AddHeader "Pragma","no-cache"
    Response.AddHeader "Cache-Control","no-cache,must-revalidate"
    Dim conn
    Set conn = Server.CreateObject("ADODB.Connection")
    conn.open "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=" &
    Server.Mappath("batdb.mdb")
    Dim rs,rs1
%>
```

```
<?xml version="1.0" ?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
<card id="hello" title="view">
<p>
      hello
</p>
</card>


<card id="abc" title="Resume">
<p>
<%
      conn.Execute("UPDATE enduser SET name=" & """" &
Request.QueryString("name") & """,age=""" & Request.QueryString("age")
& """,sex=""" & Request.QueryString("sex") & """,exp=""" &
Request.QueryString("exp") & """,qual=""" & Request.QueryString("qual")
& """,email=""" & Request.QueryString("email") & """,area=""" &
Request.QueryString("area") &"""" & "WHERE endid="& """" &
Request.QueryString("Id") & """")
%>

Welcome <%=Request.QueryString("name")%><br/>
Companies Suiting Your Resume::<br/>
```

```
<%
    Set rs1=conn.Execute("Select qual from enduser where endid="
    &""""& Request.QueryString("Id") & """" )
    if not rs1.eof then
      Set    rs=conn.Execute("SELECT    *    FROM    corpuser    where
      corpuser.req=" & """" & rs1("qual") & """")
    If not rs.EOF then
%>


<select name="comp" title="Companies">
<%
    Do while  not rs.EOF
%>
<option  onpick  ="http://localhost/Bat-India/full.asp?cd=$(comp)"  value=
<%="""" & rs("cname") & """"%>><%=rs("cname")%>
</option>
<%
    rs.MoveNext
    Loop
%>
</select>
<% else
    Response.write "Sorry! No Companies suiting your resume currently
    available"
    end if
    else
%>
```

No match found...

```
<%end if%>


</p>
<do type ="accept" label="home" >
<go href="http://localhost/Bat-India/menu.asp"/>
</do>
</card>
</wml>
<%
        conn.close
        set conn = Nothing
%>
```
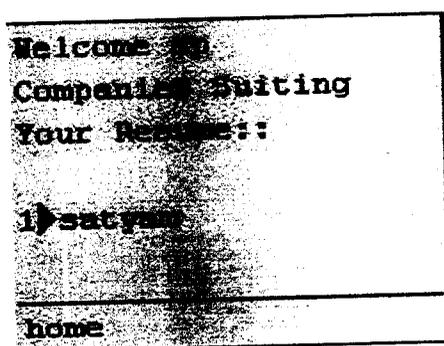
```
<%
        conn.Execute("UPDATE enduser SET name=" & """" &
Request.QueryString("name") & """,age=""" & Request.QueryString("age")
& """,sex=""" & Request.QueryString("sex") & """,exp=""" &
Request.QueryString("exp") & """,qual=""" & Request.QueryString("qual")
& """,email=""" & Request.QueryString("email") & """,area=""" &
Request.QueryString("area") &"""" & "WHERE endid="& """" &
Request.QueryString("Id") & """")
%>
```

Welcome <%=Request.QueryString("name")%>

Companies Suiting Your Resume::

```
        Set rs1=conn.Execute("Select qual from enduser where endid=" & """"
        & Request.QueryString("Id") & """" )
        if not rs1.eof then
        Set rs=conn.Execute("SELECT * FROM corpuser where
        corpuser.req=" & """" & rs1("qual") & """")
        If not rs.EOF then
  %>
  <select name="comp" title="Companies">
  <%
        Do while not rs.EOF
  %>
  <option onpick ="http://localhost/Bat-India/full.asp?cd=$(comp)" value=
  <%="""" & rs("cname") & """"%>><%=rs("cname")%>
  </option>
```

```
<%
    rs.MoveNext
    Loop
%>
</select>


<%
    else
        Response.write "Sorry! No Companies suiting your resume currently
        available"
    end if
    else
%>


No match found...
<%
    end if
%>


</p>
<do type ="accept" label="home" >
<go href="http://localhost/Bat-India/menu.asp"/>
</do>
</card>
</wml>
```