INTERNET EMAIL SERVICE PROVIDER SYSTEM

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BONAFIDE CERTIFICATE

Certified that this project report titled

INTERNET EMAIL SERVICE PROVIDER SYSTEM

is the bonafide work of

Mr. V.RAMESH KUMAR (Reg. No: 71202621033)

Who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Project Guide

Head of the Department

We examined the Candidate with University Register No. 71202621032 in the project Viva-Voce examination held on 24/06/2005

Internal Examiner

External Examiner 24/6/05

ABSTRACT

This project titled **"Internet Email Service Provider System"** is named as **iMail.** iMail is used to enable the users from different region to communicate each other. It satisfies the user's communication needs by sending and receiving mails across Internet. This project is developed for **Pearlsoft.**

The major goal of the system is to develop the effective emailing environment for sending and receiving mails, Backup the mails, Search mails and Spam Protection mechanisms. And it is capable of running both intranet and internet.

This system builds up with SMTP and POP3 protocols. Simple Mail Transfer Protocol (SMTP) used to transport and deliver messages to user mailboxes across the Internet. And Post Office Protocol (POP3) used to receiving mails from appropriate user mailboxes.

Mail backup facility of this system automatically downloads the mails from mailboxes and stores these mails in local disk. The advanced mail search option enables the users to find the mails from mail folders by just passing the search query. This system is capable of protecting the users from unwanted mass mails by using AntiSpam methods.

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LIST OF ABBREVATIONS

iMail	Internet Email Service Provider System
SMTP	Simple Mail Transfer Protocol
POP3	Post Office Protocols Version 3
CLR	Common Language Runtime
CTS	Common Type System
CLS	Common Language Specification
XML	Extensible Markup Language
HTTP	Hyper Text Transfer Protocol
NGWS	Next Generation Windows Services
OLTP	On-Line Transaction Processing
SQL	Structured Query Language
RFC	Request For Comments
MSIL	Microsoft Intermediate Language
ADO	ActiveX Data Objects
ASP	Active Server Pages
TCP	Transmission Control Protocol
TLS	Transport Layer Security
IP	Internet Protocol
IMAP	Internet Message Access Protocol

CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

Internet Email Service Provider System

The Internet Email Service Provider System (**iMail**) is developed to implement the Email communication across Internet. It satisfies the user communication needs by sending and receiving mails. And it mainly focuses on Mail backup, Search and Spam protection mechanisms.

Major Modules in iMail are

- User Administration Module
- Mail Transfer Module
- Mail Receive Module
- Mail Backup Module
- Mail Search Module
- Spam Protection Module

Email Client

An Email client is the application program that is used to read, write and send email. In simple terms it is the user interface to the email system.

The client usually consist of mail compose, mail read, address book maintenance, mail settings programs. Text editor is used to compose mails and it usually includes spell checking and color settings facilities. The address book allows the users to store frequently used email addresses and important email addresses. This is reducing the chance of addressing errors.

Mail Server

Mail servers move mails from client program through the internet to its destination hosts and store it until it received. A mail server usually consists of a storage area, a list of users and a series of communication modules. The storage area is where mail is stored. The communication modules are the components that actually handle the transfer of mails to and other mail servers and mail clients.

The aim of the project is to develop an Internet Email Service Provider System for global users. This system is designed to satisfy all the user needs across internet. It build up with SMTP (Simple Mail Transfer Protocol) and POP3 (Post Office Protocol v.3) Protocols. First one handles the mail transfer across internet and last one handles the mail receiving.

This system developed with various features like Mail Backup facilities, Search and Spam protection mechanisms. And it provides the user friendly environment for mailing.

1.2 ORGANIZATION PROFILE

Pearlsoft is a worldwide provider of information technology services situated in Coimbatore.

Vision

To endure the challenges of evergreen Global demands.

Focus

- Web Technologies
- Windows Application Development
- Testing

Services

Pearlsoft is implementing software varying from real-time mission critical systems to scalable, interoperable and high availability web resulting solutions. The company has the expertise to comprehend the client needs to their utmost satisfaction. The company uses the best technologies practiced in the industry today.

They deal with advanced Microsoft technologies in windows and web applications, Such as .Net Framework (VB.Net, ASP.Net, and C #.Net), XML web services.

CHAPTER 2

SYSTEM REQUIREMENT AND SPECIFICATION

The Software Requirements Specification is a technical specification of requirements for the software product. The goal of software requirements definition is to completely and consistently specify the technical requirements for the software products in a concise and unambiguous manner.

The Software Requirements Specification is based on the system definition high-level requirements specified during initial planning are elaborated and more specific in order to characterize the features that the software product will incorporate the requirement specification is primarily concerned with functional and a performance aspect of the software product and emphasis is placed on specifying product characteristics is placed on specifying product characteristics without implying how the product will provide those characteristics.

Desirable properties of a Software Requirement Specification

- Correct
- Complete
- Consistent
- Unambiguous
- Functional
- Verifiable
- Traceable.

2.1 HARDWARE REQUIREMENTS

- Processor : Intel Pentium IV
- Processor : 2GHz
- Memory : 256 MB RAM
- Hard Disk : 40 GB

2.2 SOFTWARE REQUIREMENTS

- Operating System : Windows 2000 Server/Exchange Server/NT Server/2003 Server
- Programming Language : ASP.NET, VB.NET
- Database Server : Microsoft SQL Server 2000

2.3 SOFTWARE OVERVIEW

What Is Microsoft .NET?

Microsoft .NET is software that connects information, people, systems, and devices. It spans clients, servers, and developer tools, and consists of:

- The .NET Framework used for building and running all kinds of software, including Web-based applications, smart client applications, and XML Web services—components that facilitate integration by sharing data and functionality over a network through standard, platform-independent protocols such as XML (Extensible Markup Language), SOAP, and HTTP.
- Developer tools, such as Microsoft Visual Studio® .NET 2003 which provides an integrated development environment (IDE) for maximizing developer productivity with the .NET Framework.

- A set of servers, including Microsoft Windows® Server 2003, Microsoft SQL Server™, and Microsoft BizTalk® Server, that integrates, runs, operates, and manages Web services and Web-based applications.
- Client software, such as Windows XP, Windows CE, and Microsoft Office XP, that helps developers deliver a deep and compelling user experience across a family of devices and existing products.

What is the .NET Framework?

The .NET Framework is a development and execution environment that allows different programming languages & libraries to work together seamlessly to create Windows-based applications that are easier to build, manage, deploy, and integrate with other networked systems.

The .NET Framework consists of:

- **The Common Language Runtime (CLR)**

The common language runtime (CLR) is responsible for run-time services such as language integration, security enforcement, and memory, process, and thread management. In addition, the CLR has a role at development time when features such as life-cycle management, strong type naming, cross-language exception handling, and dynamic binding reduce the amount of code that a developer must write to turn business logic into a reusable component.

- **The Framework Class Libraries (FCL)**

A consistent, object-oriented library of prepackaged functionality Base classes provide standard functionality such as input/output, string

manipulation, security management, network communications, thread management, text management, and user interface design features.

The ADO.NET classes enable developers to interact with data accessed in the form of XML through the OLE DB, ODBC, Oracle, and SQL Server interfaces. XML classes enable XML manipulation, searching, and translations. The ASP.NET classes support the development of Web-based applications and Web services. The Windows Forms classes support the development of desktop-based smart client applications.

Together, the class libraries provide a common, consistent development interface across all languages supported by the .NET Framework.

Reasons for Using ASP.NET

- **Compatibility**

  Microsoft has designed ASP+ (ASP.NET) to run along side regular ASP, so there's no need to worry that your existing applications will break with the next release of Internet Information Services (IIS). ASP.NET files come with a new extension (aspx), so you can easily separate the old from the new.

- **Compiled Code**

  ASP+ has the benefit of access to compiled languages, such as Visual Basic, C++, and even MS's new C#. You can now program Active Server Pages in any language you wish, as all code is now compiled when requested. Even VBScript and JavaScript are now compiled.

- **COM Objects**

  We are all aware of the problems with COM when using typical ASP.

Now with the Next Generation Windows Services (NGWS), you don't have to worry about this anymore. You can simply copy the source files for your component, paste them wherever you want, and it will work. No DLL registering, no headaches.

- **XML Configuration**

With the NGWS framework, all metabase and configuration information is stored in XML files. This means you no longer have to fool around with IIS to change the settings. In fact, you could change the XML file from anywhere, and ftp the changes to the server. No need for any type of remote PC control.

- **Web Forms and Web Controls**

ASP+ (ASP.NET) introduces the ability for forms to be linked to the server, so you can process requests more easily. Web controls offer similar functionality, and provide a web developer with additional functionality versus the regular HTML controls.

- **Caching**

ASP+ allows objects and output to be cached, which should increase speed, since subsequent users won't have to make more requests to the server. The ASP+ caching system is very advanced, allowing you to specify what needs to be cached and what doesn't, and when to recall the cached information versus performing a new request.

- **Scalability**

ASP+ has some great scalability features built into it, including maintaining session state across servers, and multi-processor balancing. The ASP+ runtime also monitors processes, so when one goes haywire, ASP+ will shut it down and restart it for you, and send old requests to the new process.

Database Design

Internet Email Service Provider System uses Microsoft SQL Server 2000 as its Backend. Microsoft Extends the Performance, reliability, quality and ease- of-use of Microsoft SQL Server version 7.0. Microsoft SQL Server 2000 includes several new features that make it an excellent database platform for large-scale online transactional processing (OLTP), data warehousing, and e-commerce Application.

Features of SQL Server 2000

- **Internet Integration**.

The SQL Server 2000 database engine includes integrated XML support. It also has the scalability, availability, and security features required to operate as the data storage component of the largest Web sites. The SQL Server 2000 programming model is integrated with the Windows DNA architecture for developing Web applications, and SQL Server 2000 supports features such as English Query and the Microsoft Search Service to incorporate user-friendly queries and powerful search capabilities in Web applications.

- **Scalability and Availability.**

The same database engine can be used across platforms ranging from laptop computers running Microsoft Windows® 98 through large, multiprocessor servers running Microsoft Windows 2000 Data Center Edition. SQL Server 2000 Enterprise Edition supports features such as federated servers, indexed views, and large memory support that allow it to scale to the performance levels required by the largest Web sites.

- **Enterprise-Level Database Features.**

The SQL Server 2000 relational database engine supports the features required to support demanding data processing environments. The database engine protects data integrity while minimizing the overhead of managing thousands of users concurrently modifying the database. SQL Server 2000 distributed queries allow you to reference data from multiple sources as if it were a part of a SQL Server 2000 database, while at the same time, the distributed transaction support protects the integrity of any updates of the distributed data. Replication allows you to also maintain multiple copies of data, while ensuring that the separate copies remain synchronized.

Tables can be created in either two ways

1. **SQL Query Analyzer.**
2. **SQL Enterprise Manager.**

Microsoft SQL Server 2000 SQL Query Analyzer is a graphical tool that allows you to:

- Create queries and other SQL scripts and execute them against SQL server databases.
- Quickly create commonly used database object from predefined scripts.
- Quickly copy existing database objects.
- Debug and Execute stored procedures.
- Quickly insert, update, or delete rows in a table.(Open Table Window)

Microsoft SQL Server Enterprise Manager is the primary administrative tool for Microsoft SQL Server 2000 and provides a Microsoft management

Console (MMC)-Compliant user interface that allows user to:

- Define groups of servers running SQL Server.
- Configure all SQL Server options for each registered server.
- Create and administer all Server databases, objects, logins, users and permissions in each registered server.
- Define and execute all SQL Server administrative tasks on each registered server.

Design and test SQL statements, batches and scripts interactively by invoking SQL Query Analyzer

2.4 SPECIFICATION

Platform Specification

Operating System

An Operating System is a Collection of Computer program that control, how the computer works. It can also be defined as the software, which acts as a traffic cop, directing requests and information to add from the various devices within a single PC. The OS handles disk requests (read and write) keyboard translations, memory accesses, peripheral accesses and much other function.

Windows NT

This is a network operating system. This is based on the Client-Server architecture. Benefits of Windows NT are;

- More intuitive interface.
- Better multitasking and multithreading.
- Clients can be attached to workstations.
- Higher level of security.
- NTFS-a powerful NT File System.

Windows 2000 Server/NT Server/2003 Server

Microsoft Windows 2000 Server/NT server is a multipurpose server operating system. A multipurpose operating system integrates a variety of network services.

The services it provides are designed to address customer requirements and are managed in a single way. It offers a complete end-to-end solution. It gives the ability to exploit the popularity of compatible third party products and such application as Active Server pages, for dynamic content web pages or Server for Specialized database tasks and web server for web services.

Microsoft 2003 server provides the family of servers that varies in Standard, Enterprise and Web edition.

CHAPTER 3

SYSTEM ANALYSIS

3.1 EXISTING SYSTEMS

The existing Email system in **Pearlsoft** only used to connect intranet users. It was only used to send and receive the mails within an intranet. It only supports text based mailing. It could not support HTML format mails (Mails are send as HTML documents with the same font, colors and images).

Disadvantages

- Only used for intranet users.
- Text based mailing.
- Not interactive.
- Could not support anti Spam facilities.
- There was no mail search option.
- It took lots of time to retrieve the information from the database.
- Supports limited users only.

These are all the main disadvantages why we needs to go for new email system.

3.2 PROPOSED SYSTEM

The proposed system **Internet Email Service Provider System** is developed to overcome the difficulties in existing system. It is developed using ASP.NET, VB.NET and Microsoft SQL Server 2000 as a database.

Advantages of Proposed system

- The main features that is included in this proposed system are
  - ❖ Mail backup facilities
  - ❖ Anti Spam facilities and
  - ❖ Mail Search option

- It can be used to implement the Email communication for internet users.
- And it is capable of running intranet also.
- It supports both
  - ❖ Text based mailing and
  - ❖ HTML format mailing

- Fast retrieval of data from the database.
- Interactive mailing environment for users.
- There is no limitation in number of users.
- Users have an option to view their previous logon session status and it display the last logon status at the start of every new user session.

3.3 PROTOTYPING

Planning the software development process involves several important considerations. The most important consideration is to define a product life cycle.

The software life cycle encompasses all activities required to define, develop, test, deliver, operate, and maintain a software product. Different models emphasize different aspect of the life cycle, and no single life-cycle model is appropriate for all software products. Life-cycle models used are the phased model, the cost model, the prototype model and the successive versions model.

The Prototype Life-cycle Model

Prototype is a mock-up or model of a software product. A prototype incorporates components of the actual product. Typically, a prototype exhibits limited function capabilities, low reliability, and inefficient performance.

There are several reasons for developing a prototype:

- To illustrate input date formats, message, reports, and interactive
- Dialogues for the customer. This is used to explain various processing option to the customer and to gain better understanding of the customer's needs.
- To explore technical issues in the proposed product.

New versions of existing products can most likely be developed using the phased life-cycle model with little or no prototyping. Development of a totally new product will probably involve some prototyping during the planning and analysis phase or iterating through a series of successive designs and implementations may develop the product.

CHAPTER 4

SYSTEM DESIGN

4.1 DESIGN PRINCIPLES

The process of design involves "conceiving and planning out in mind" and "making a drawing, pattern, or sketch of". In software design, there are three distinct types of activities: external design, architectural design detailed design. Architectural design and detailed design are collectively called internal design.

External design of software involves conceiving, planning out, and specifying the externally observable characteristics of a software product. These characteristics include user displays and report formats, external data sources and data sinks, and the functional characteristics, performance requirements and high level process structure for the product. External design begins during the analysis phase and continues into the design phase. Requirements definition is concerned with specifying the external, functional and performance requirements for a system. External design is concerned with refining those requirements and establishing the high level structural view of the system.

Internal design involves conceiving, planning out and specifying the internal structure and processing details of the software product. The goals of internal design are to specify internal structure and processing details, to record design decisions and indicate why certain alternatives and trade-offs were chosen, to elaborate the test plan, and to provide a blueprint for implementation, testing and

maintenance activities. The work products of internal design include a specification of architectural structure, the details of algorithms and data structures, and data structures, and the test plan.

Design for Internet Email Service Provider System

Internet Email Service Provider System mainly used to enable the email communication among the internet users. This is done by sending and receiving mails across internet. Normally Email system has required two modules to establish a communication that are Email client and the Email server.

Email clients are nothing but a browser or software required to compose, view and send mails. Email server is a module that resides in a server computer. It is responsible for transferring mails from client to the appropriate user mailbox and retrieving the mails from mailbox and displays it to a proper user client. Server is responsible for creating the mailboxes for each and every user who are signed up in this system.

Requirement Definition

What is Internet Email System?

Email System is an electronic mailing system that can be used to send the e-letters (mails) across the internet. This is used to establish the communication among different users from different regions. This mailing system requires two important protocols to implement a communication. Those are

- SMTP Protocol
- POP3 Protocol

SMTP Protocol

Microsoft SMTP Service uses the Internet-standard Simple Mail Transfer Protocol (SMTP) to transport and deliver messages based on specifications in Request for Comments (RFC) 821 and RFC 822. Mail delivery is a common feature of Internet sites. Internet messages are generally transmitted and delivered using the Simple Mail Transfer Protocol (SMTP). You can use Microsoft SMTP Service to configure your hardware to deliver messages over the intranet or Internet.

Normally SMTP protocol is resides in the application layer of the OSI model. The SMTP protocol connects using TCP on default port 25 for transferring and delivering mails across internet. There are 4 mail folders under the mailroot.

Folder	Description
Badmail	Stores undeliverable messages that cannot be returned to the sender.
Drop	Receives all incoming messages for all of the domains hosted on the computer. You can assign any directory to be the Drop directory, except one that has already been designated as the Pickup directory.
Pickup	Processes outgoing messages that are created as text files and copied to the directory. As soon as a properly formatted RFC 822 message is copied to the Pickup directory, Microsoft SMTP Service collects it and initiates delivery.
Queue	Holds messages for delivery. If a message cannot be delivered because the connection is busy or down, the message is stored in the queue and sent again at designated intervals.

Key Features of SMTP

Standard Internet Protocol Support

Microsoft SMTP Service provides full support for simple mail transfer protocol (SMTP) and is compatible with SMTP mail clients.

Scalability

You can configure multiple domains for one server to support hundreds of client connections in a single-server configuration.

Easy Administration and Microsoft Windows 2000 Server Integration

Microsoft SMTP Service uses Microsoft Management Console for administration. This tool is included with IIS. Administrators can use other Windows 2000 Server administration features including Simple Network Management Protocol (SNMP), event logs, and transaction logs to collect usage statistics, track messages and transactions, or examine usage patterns.

Advanced Security

Microsoft SMTP Service supports use of Transport Layer Security (TLS) for encrypting transmissions.

Directed Mail Drop and Pickup

For the default domain, Microsoft SMTP Service supports placing all incoming messages directly into a Drop directory. This allows Microsoft SMTP Service to be used as a mail receiver for other applications.

In addition to connecting to a TCP port to send messages, applications can also use a Pickup directory. After a message formatted as a text file is copied to the Pickup directory, Microsoft SMTP Service delivers it.

POP3 Protocol

POP3 (Post Office Protocol 3) retrieves mail from mailboxes on a remote server. The server retains messages until the client requests them. POP was designed to support "offline" mail processing. In the offline paradigm, mail is delivered to a (usually shared) server, and a personal computer user periodically invokes a mail "client" program that connects to the server and downloads all of the pending mail to the user's own machine. Thereafter, all mail processing is local to the client machine.

The offline access mode as a kind of store-and-forward service, intended to move mail (on demand) from the mail server (drop point) to a single destination machine, usually a PC or Mac. Once delivered to the PC or Mac, the messages are then deleted from the mail server. Although the limitations of offline access have triggered interest in using POP in online mode, POP simply doesn't have some of the functionality needed for high-quality online (or disconnected) operation.

Indeed, Pop's "pseudo online" mode of operation, wherein client programs leave mail on the server, often depends on pervasive availability of a remote file system protocol in order for the mail client to access or update saved-message folders or message state information such as status flags.

Characteristics of POP3 Protocol

- It can support offline operation.
- Mail is delivered to a shared, "always up" mail server.
- New mail accessible from a variety of client platform types.
- New mail accessible from anywhere in network.
- Protocols are open; defined by Internet RFCs.
- Internet oriented; no SMTP mail gateways required.
- Protocols deal with access only; it relies on SMTP to send.

4.2 ARCHITECTURAL DESIGN

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

Internet Email Provider System: Modules Overview

iMail consist of six modules

- User Management Module
- Mail Transfer Module
- Mail Receiving module
- Mail Search Module
- Mail Backup Module
- Spam Protection Module

User Management Module

User management module is responsible for creating user accounts and maintaining the user accounts. In this module

- Tables are created for each and every new user when they signed up.
- Login session management done at this level.
- Password entered by user is encrypted using MD5 hash encryption algorithm.
- Create the mailboxes for each user. Mails delivered by SMTP stores on these mailboxes.

Mail Transfer Module

Mail transfer module allows us to send the mails to correct users across internet. This module fully focuses on Simple Mail Transfer Protocol (SMTP). SMTP is responsible for transferring mails through the network and delivering the mails to appropriate mail store.

It provides two options to send a mail in an internet. The first option sends the mail as a Text message and another one send message as a HTML document. And also we can attach a file along with the mails.

Mail Receiving Module

Mail receiving module allows the client program (Browser) to download a mails from a server. Normally mails delivered by the SMTP are stored on the appropriate mailboxes. POP3 can be used to retrieve the mails from the remote mailboxes.

This module fully focuses on POP3 services. There are three state involving in the pop3 retrieval.

- Authorization state
- Transaction state
- Update state

Authorization state verifies the user name and password for the appropriate mail boxes. Transaction state retrieves the mails from the mailboxes and displays it in a client browser. Transaction state processes are

- Get the message count
- Retrieve the message headers
- Retrieve the messages.

Update state deleting the messages from mailbox after retrieving it. These

Mail Search Module

Mail search module is used to find the correct mails from an appropriate mail folder. The user can find the correct mail from mass mails by just passing the simple search query to the search engine. The search query passed either one of these types

- Passing the subject as a search query
- Passing the mail id as a search query
- Passing the mail size as a search query
- Passing the date as a search query
- Passing the content as a search query

Mail Backup Module

Mail backup module allows users to backup the entire inbox without affecting the original image of a mail. This mail backup done in either two ways

- Automatically downloads the entire inbox and store the mails in a local hard disk when user logged out.
- User can manually download the mails by just click the backup button.

It stores the mails as a one of the following two formats, First one is mails are stored in a text format and another one is mails are stored as its original HTML format.

Spam Protection module

Spam protection module restricts the unwanted mails to enter the mail store. This is the important mechanism to keep your session fully private and avoid the unwanted mass mails. This module provides the three way of spam protection mechanisms

- Mail blocking
- Domain blocking
- Content filtering

Mail blocking restricts the mails from a particular mail id (For e.g. test@xxx.com); Domain blocking avoids the mails from complete domain (For e.g. xxx.com) and content filtering filters the unwanted contents (text) in mails.

4.3 TABLE DESIGN

4.3.1 TAB_master

Field Name	Key	Data Type
Username		Varchar
Mailid	Primary key	Varchar
Password		Varchar
Reflection_pwd		Varchar
Userno		Int

4.3.2 TAB_user

Field Name	Key	Data Type
First_name		Varchar
Last_name		Varchar
Userid	Foreign key	Varchar
Sex		Varchar
DOB		Datetime
Country		Varchar
State		Varchar
City		Varchar
Zip		Int
Phone_no		Int
Alternate_mail		Varchar
Company		Varchar
Designation		Varchar

4.3.3 TAB_backup

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Backup_type		Varchar
Backup_method		Varchar
Backup_locate		Varchar
Attach_backup		Varchar

4.3.4 TAB_user_login

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Login_date		Datetime
Logout_time		Datetime
Tot_mail_sent		Int
Tot_mail_received		Int

4.3.5 TAB_user_inbox

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Subject		Varchar
Date_received		Datetime
Attachments		Char
Size		Int
Flag_read		Char

4.3.6 TAB_user_draft

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Mail_from		Varchar
Subject		Varchar
Date_received		Datetime
Attachments		Char
Size		Int
Date_drafted		Datetime
Flag_read		Char

4.3.7 TAB_user_sent

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Mailto		Varchar
CC		Varchar
Subject		Varchar
Date_sent		Datetime
Attachments		Char
Delievery_status		Char
Size		Int

4.3.8 TAB_user_trash

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Mail_from		Varchar
Subject		Varchar
Date_received		Datetime
Attachments		Char
Date_trashed		Datetime
Size		Int

4.3.9 TAB_user_address

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Contact_name		Varchar
Nick_name		Varchar
Contact_mail		Varchar
Contact_address		Varchar
Phone_no		Int
Alternate_mail		Varchar

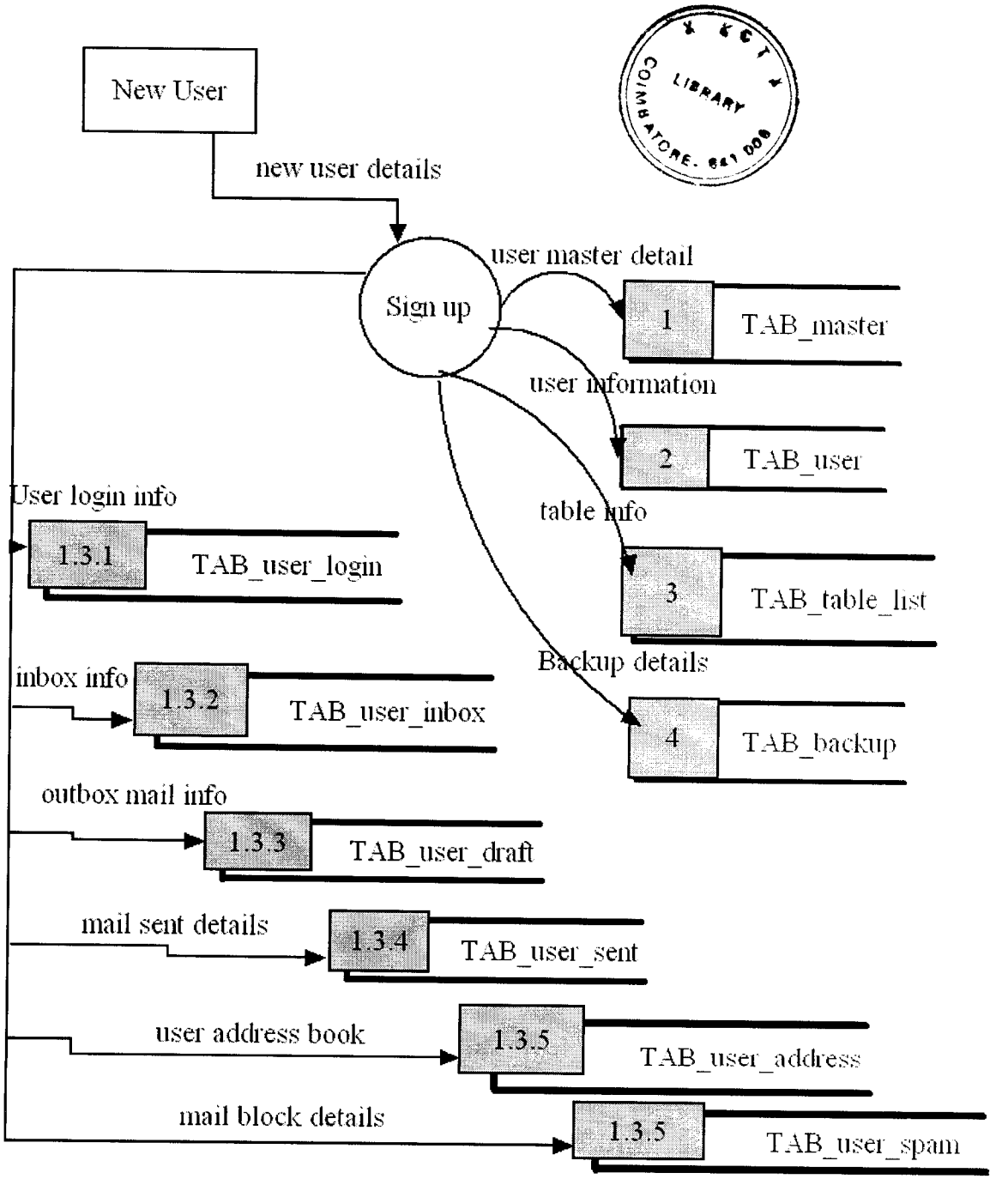
4.3.10 TAB_user_spam

Field Name	Key	Data Type
Mailid	Foreign key	Varchar
Mail_from		Varchar
Mail_block		Varchar
Domain_block		Varchar
Content_filter		Varchar

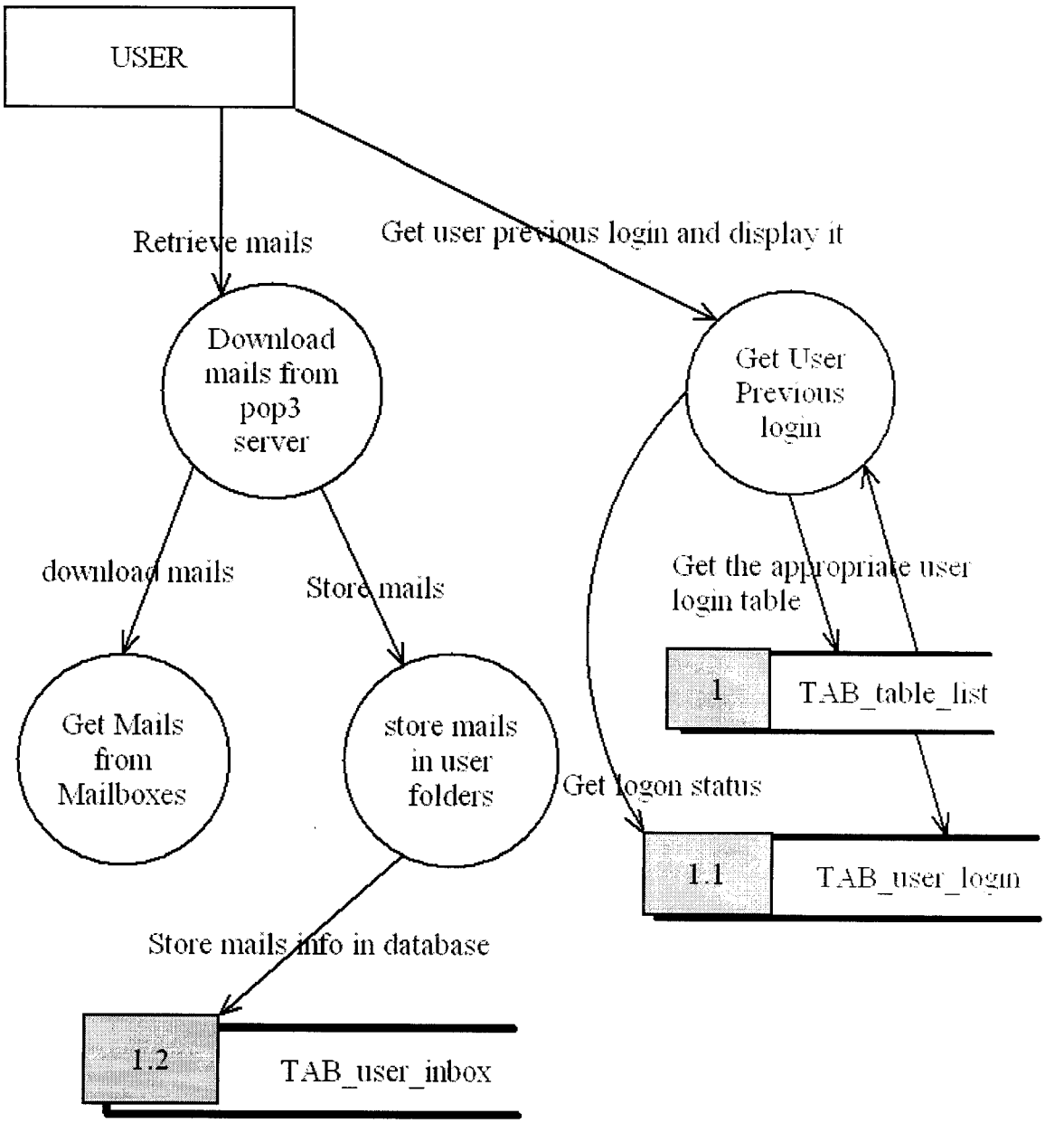
4.4 DATA FLOW DIAGRAM

Data flow diagram is commonly used during problem analysis and design. A DFD shows the flow of data through a system. It views the system as a function that transforms the inputs into desired outputs. A DFD aims to capture the transformation that takes place within a system into output data so that eventually the output data is produced. The agent that performs the transformation of data from one state to another is called a process (Bubble). Named circles show the processes and dataflow are represented by named arrows. A square defines a source or destination of system data. An open rectangle is a data source.

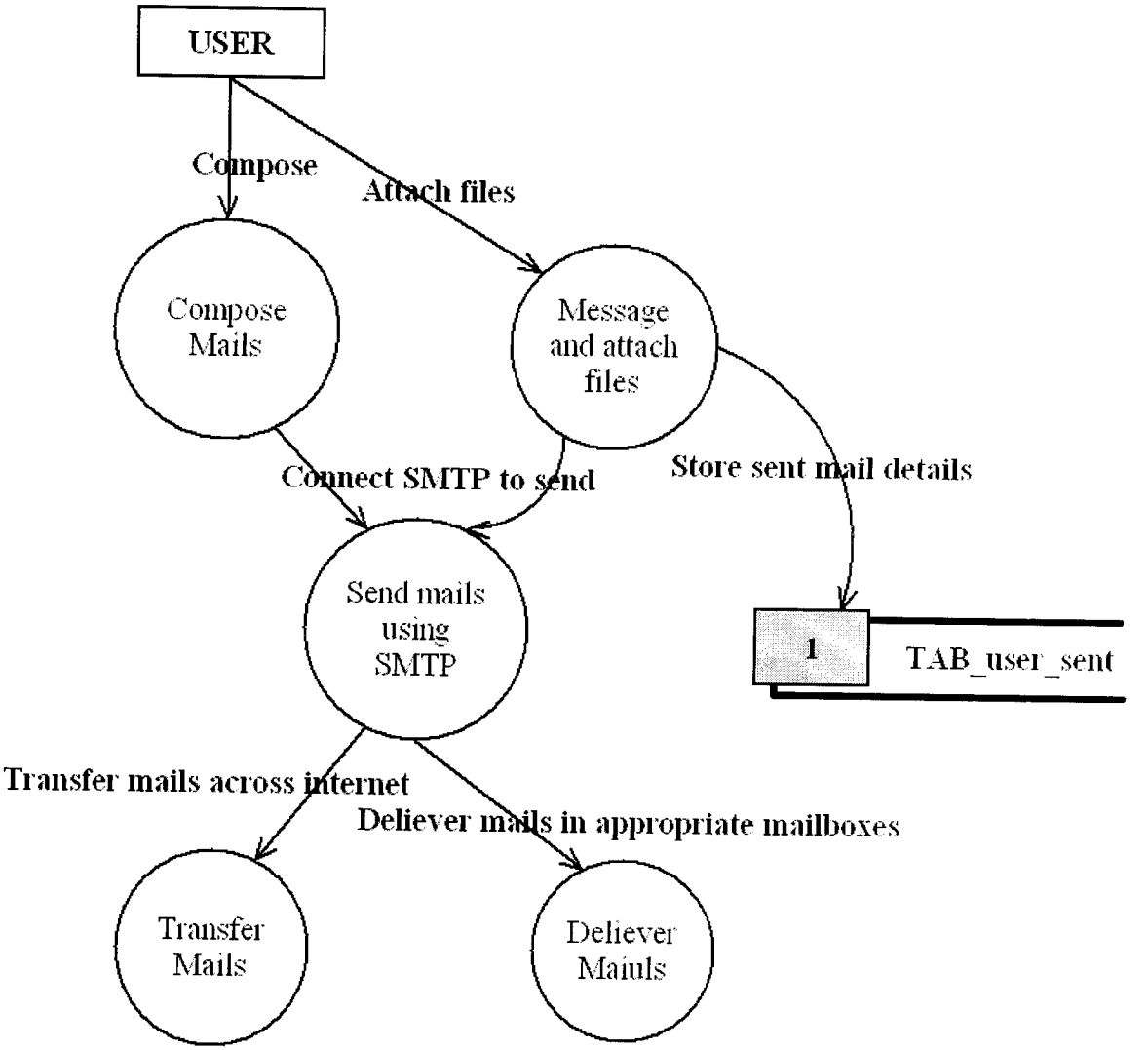
4.4.1 New User Signup



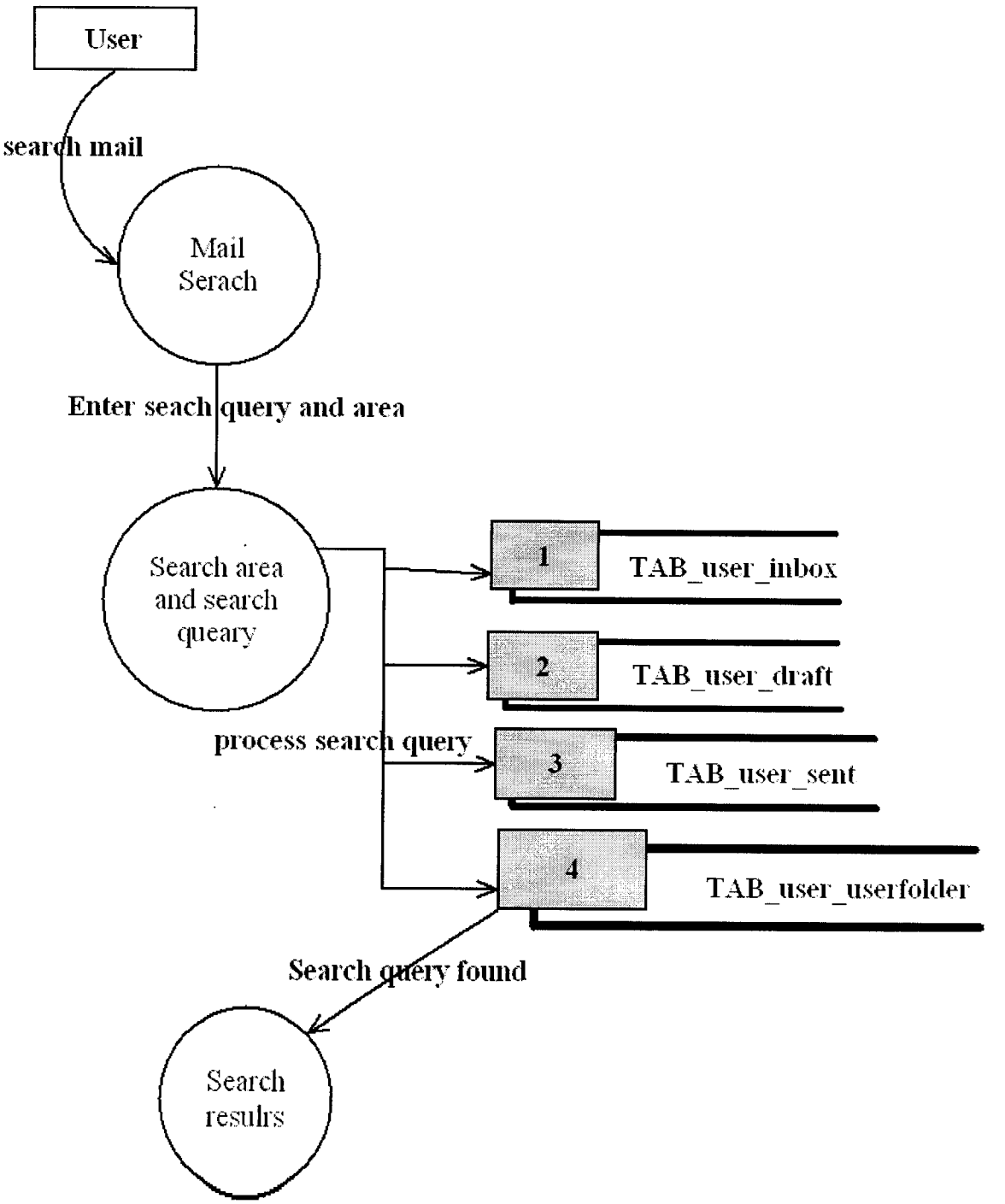
4.4.2 Mail Retrieval



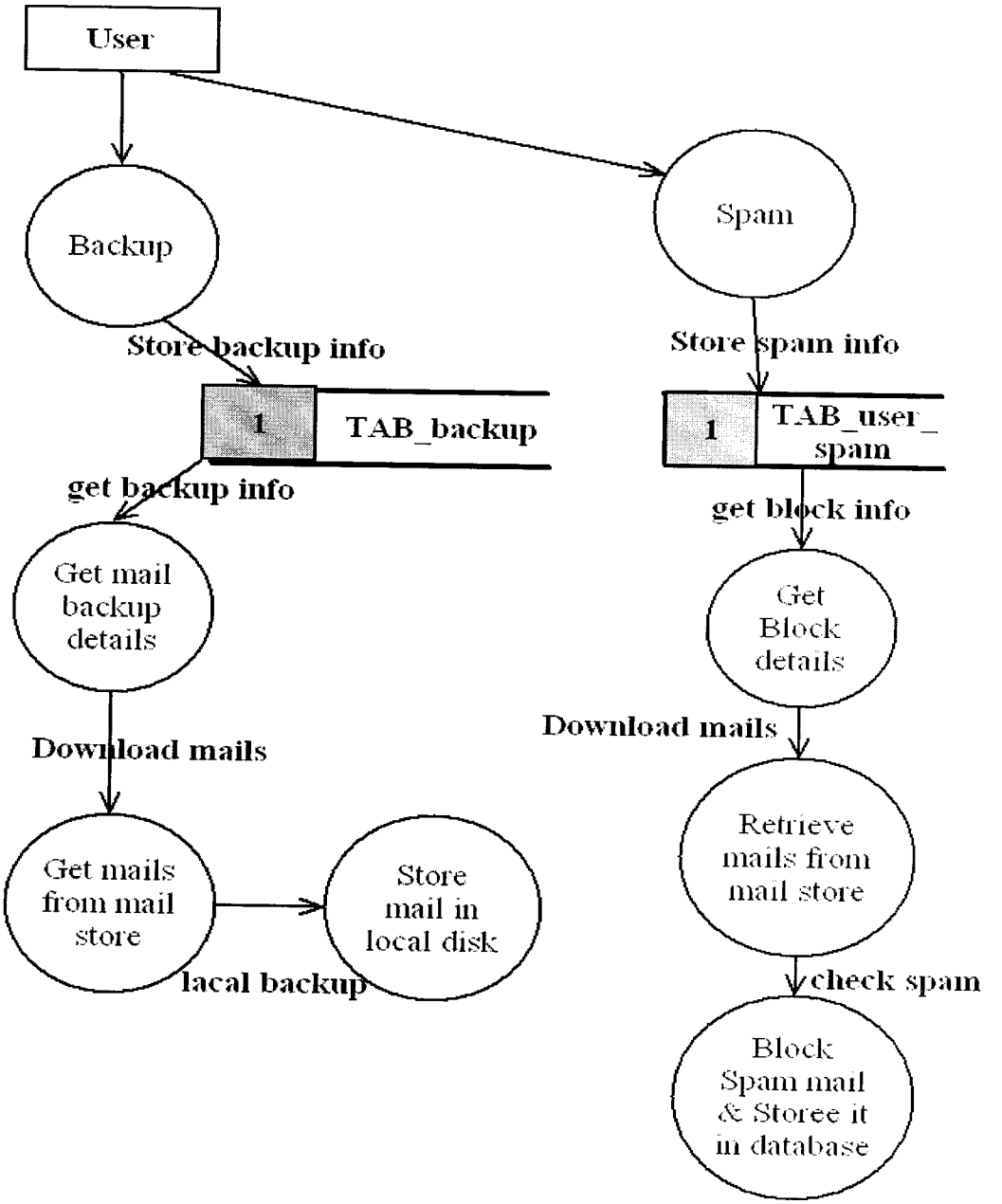
4.4.3 Mail Send



4.4.4 DFD – Mail search



4.4.5 DFD - Backup and Spam Protection



CHAPTER 5

SYSTEM TESTING AND IMPLEMENTATION

The system testing deals with the process of testing the system as a whole. This is done after the integration process. Moving through each module from top to bottom tests the entire system. The verification and validation processes are then carried out. The errors that occur at testing phase are eliminated and a well functioning system is developed.

Test case design focuses on a set of techniques, which meets all testing objectives, which are mentioned below.

1. Testing is a process of executing a program with the intent of finding an error.
2. A successful test is one that uncovers an as yet undiscovered error.

Testing demonstrates that software functions work according to specifications. In addition data collected from testing provides a good indication of software reliability and some indication of software quality as a whole.

Testing results are used for detecting errors. Critical modules are tested as early as possible. The following tests are carried out.

5.1 TESTING METHODS

Unit Testing

It focuses verification efforts on the smallest unit of software design, the module. This is also known as **Module Testing.** The modules are tested separately. This testing is carried out during programming stage itself.

Validation Testing

Validation testing can be defined in many ways but a simple definition is that validation succeeds when the software functions in a manner that can be reasonably expected by the users.

After validation test has been conducted one of the two possible conditions exist

1. The function or the performance characteristics confirm to specification and are accepted
2. A derivation from specification is uncovered and a deficiency list is created.

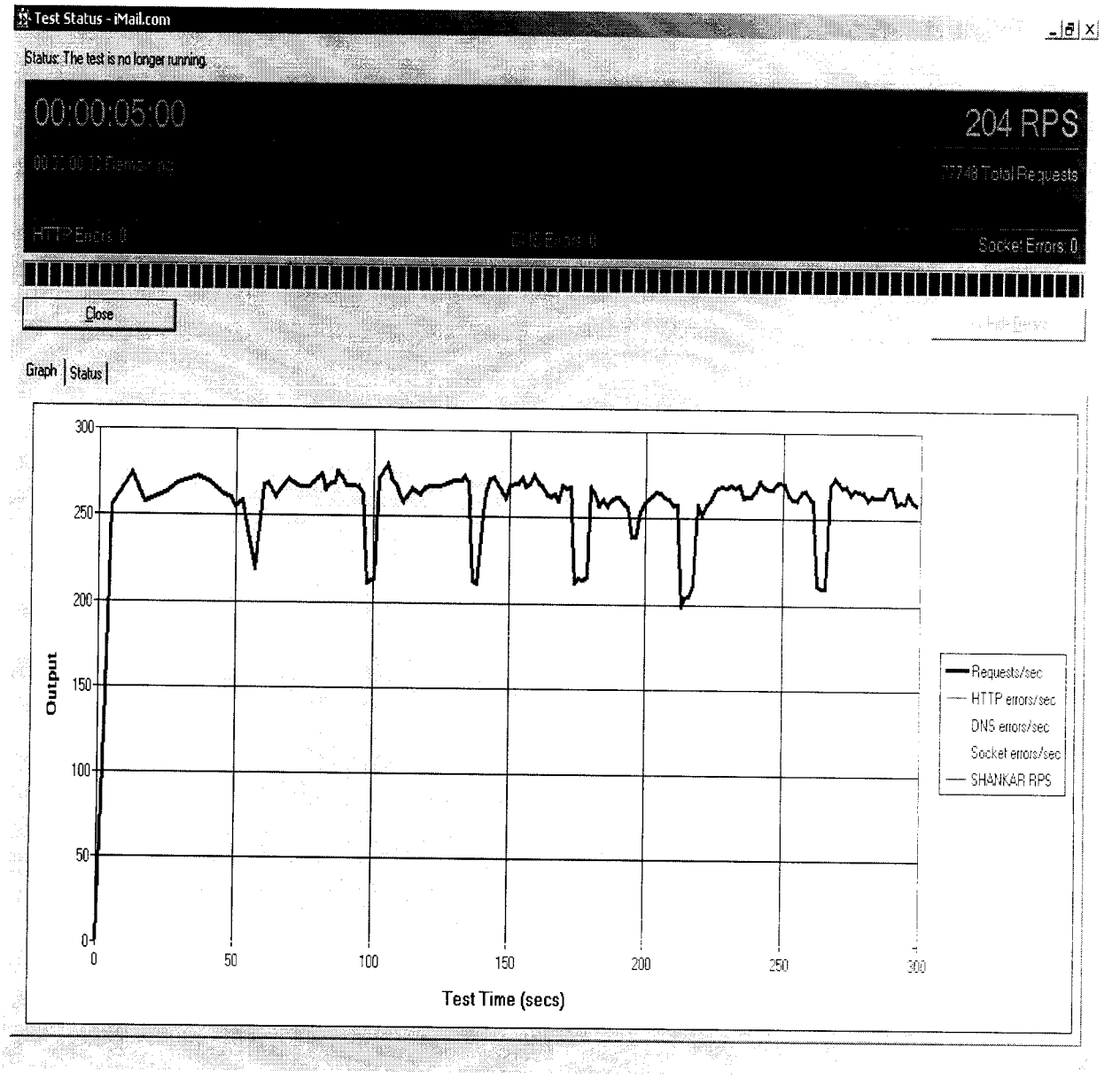
Output Testing

After performing the validation testing the next step is output testing of the proposed system since no system is useful if it does not produce the required output in the specific format. Asking the users about the formats required by them tests the outputs generated or displayed by the system under consideration.

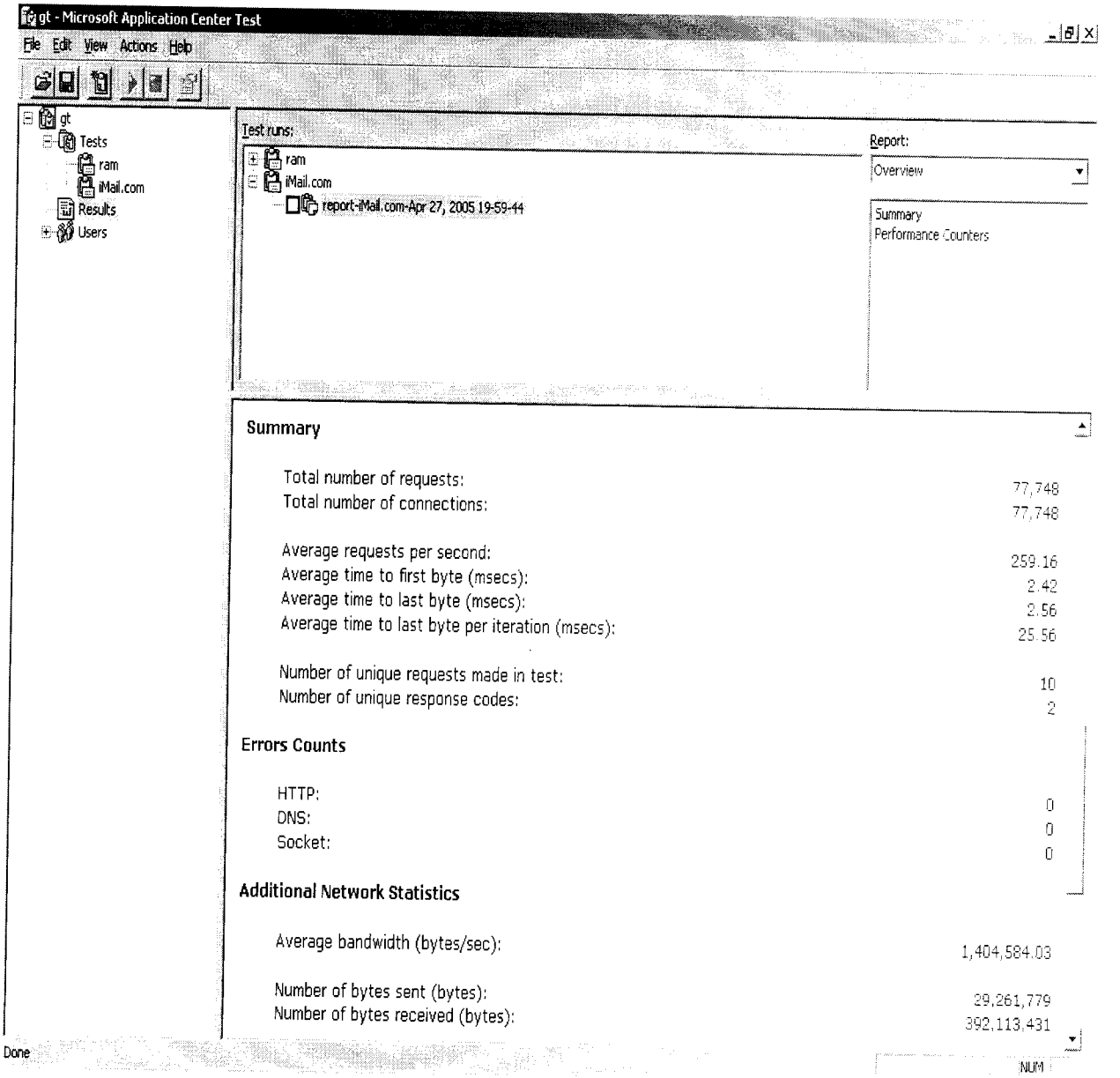
User Acceptance Testing

User acceptance of a system is a key factor for the success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with prospective system users at the time development and making changes whenever required.

5.1.1 Performance Test Chart



5.3.2 Test Result



5.2 IMPLEMENTATION

The implementation phase of software development is concerned with translating design specification into source code. The primary goal of implementation is to raise source code and internal documentation so that conformance of the code to its specification can be easily verified, and so that debugging, testing and modification are eased. This goal can be achieved by making the source code as clear and straightforward as possible. Simplicity, clarity and elegance are the hallmarks of good programs; obscurity, cleverness and complexity are indication inadequate design and misdirected thinking.

Source code clarity is enhanced by structured coding techniques, by good coding style, by appropriate supporting documents, by good internal comments and by the features provided in modern programming languages.

The goal structured coding is to liberalize control flow through a computed program so that the execution sequence follows the sequence in which the code is written. The dynamic structure of a program as it executes then resembles the static structure of the written text. This enhances readability of code, which eases understanding, debugging, testing, documentation and modification of programs. It also facilitates formal verification of programs. The structure coding techniques are as follows:

- Single entry, Single exit constructs
- Efficiency considerations
- Data Encapsulation
- Recursion

5.3 MAINTENANCE

Maintenance is the enigma of system development. It holds the software industry captive typing up programming resources. It could be described as the symmetric process of changing the software that is already in operation in order to prevent system failures and to improve the performance. Software maintenance involves keeping software interfaces simple and standard, paying particular attention to troublesome modules, replacing faulty components and generally planning to replace components that are ole, obsolete, faulty, or at risk for imminent failure.

There are several factors that require to be maintained. They are

- Hardware platforms change or become obsolete.
- Operating system change.
- Compiler change
- Language standard's change.
- Communication standard's change
- Graphical user interface change.
- Related application software package change.

Maintenance can be classified into

- Adaptive maintenance
- Perceptive maintenance
- Preventive maintenance
- Corrective maintenance

Adaptive Maintenance

It deals with adapting software change in the environment. It does not lead to changes in the system functionality.

Perceptive Maintenance

It mainly deals with accommodating new or changed users requirements. It also includes activities to increase the system performance or to enhance its user interface. The objective of perceptive maintenance should be to prevent failures and optimize the software.

Preventive Maintenance

Preventive maintenance concerns activities aimed at increasing the system's maintainability such as updating documentation adding comments, improving modular structure of the system.

Corrective Maintenance

This deals with the repair of faults found. Some of the major causes of maintenance problems are:

- Unstructured code
- Maintenance programmers having insufficient knowledge of the system and on application domain.

CHAPTER 6

CONCLUSION

Internet Email Service Provider System is successful mailing system with all the requirements being satisfied. This software has successfully achieved the functionality that was expected. The proposed modules were tested with the sample data using the Microsoft Application Center Test and the expected result was found.

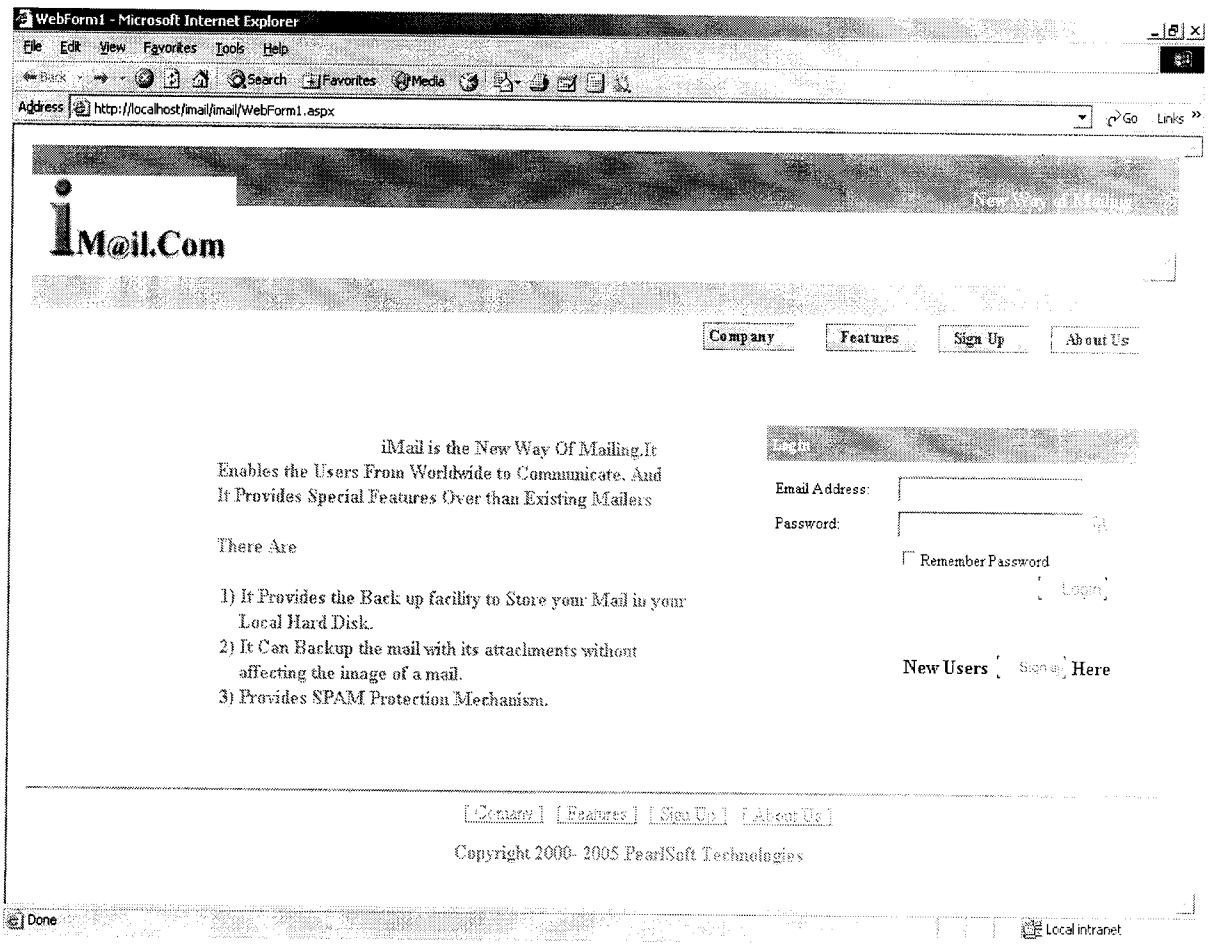
This system is capable of carrying minimum of 206 user requests to maximum of 271 user requests per second. Totally this system is carrying 77,748 requests in 5 minutes. And the result was satisfying the expectation.

Further Enhancements

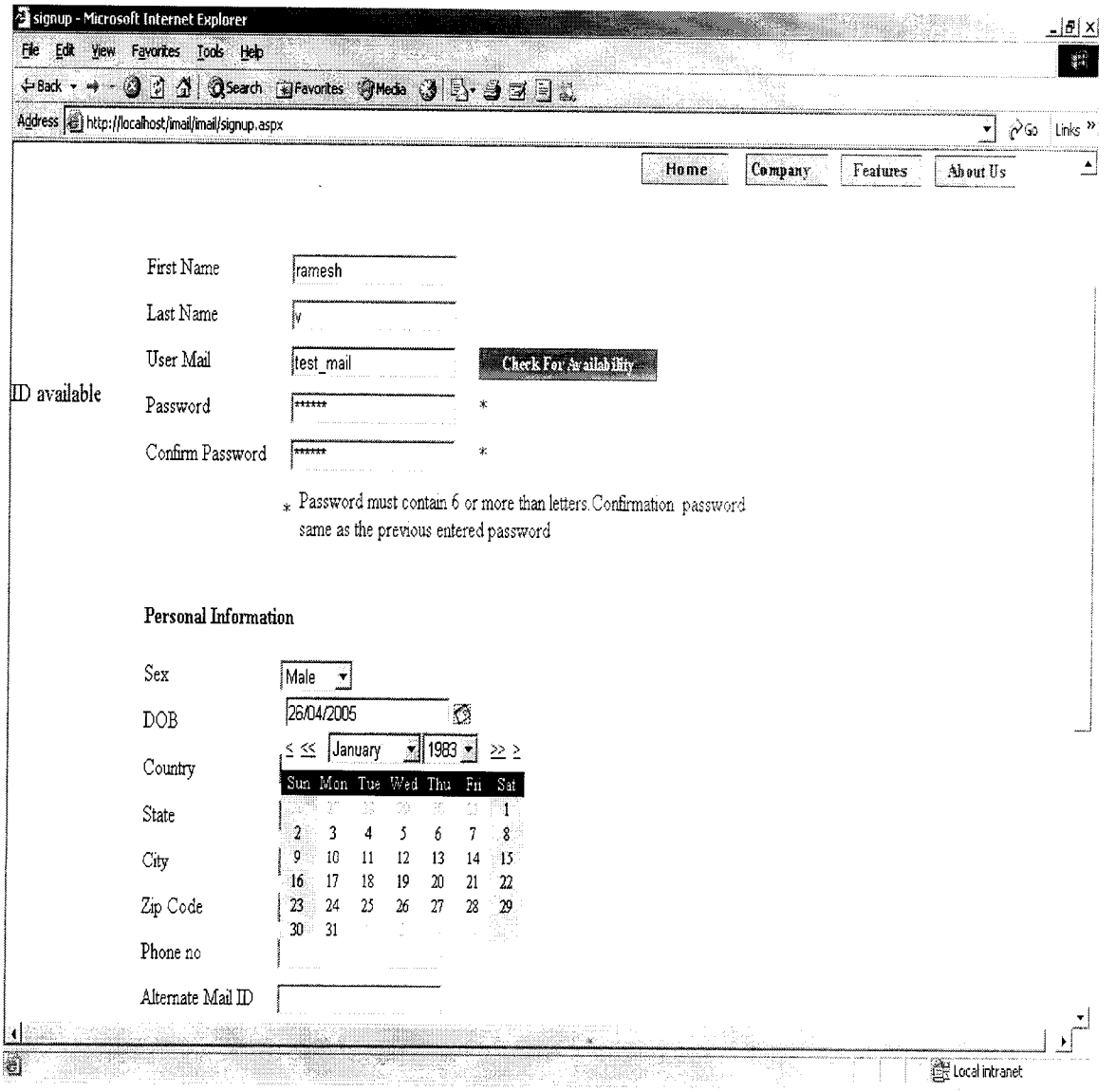
- To make this project compatible to work on WAP enabled mobiles.
- Change the Protocol model from POP3 (Post Office Protocol Version 3) to IMAP (Internet Message Access Protocol). IMAP is the Super set of POP3.

APPENDIX – SCREEN LAYOUT

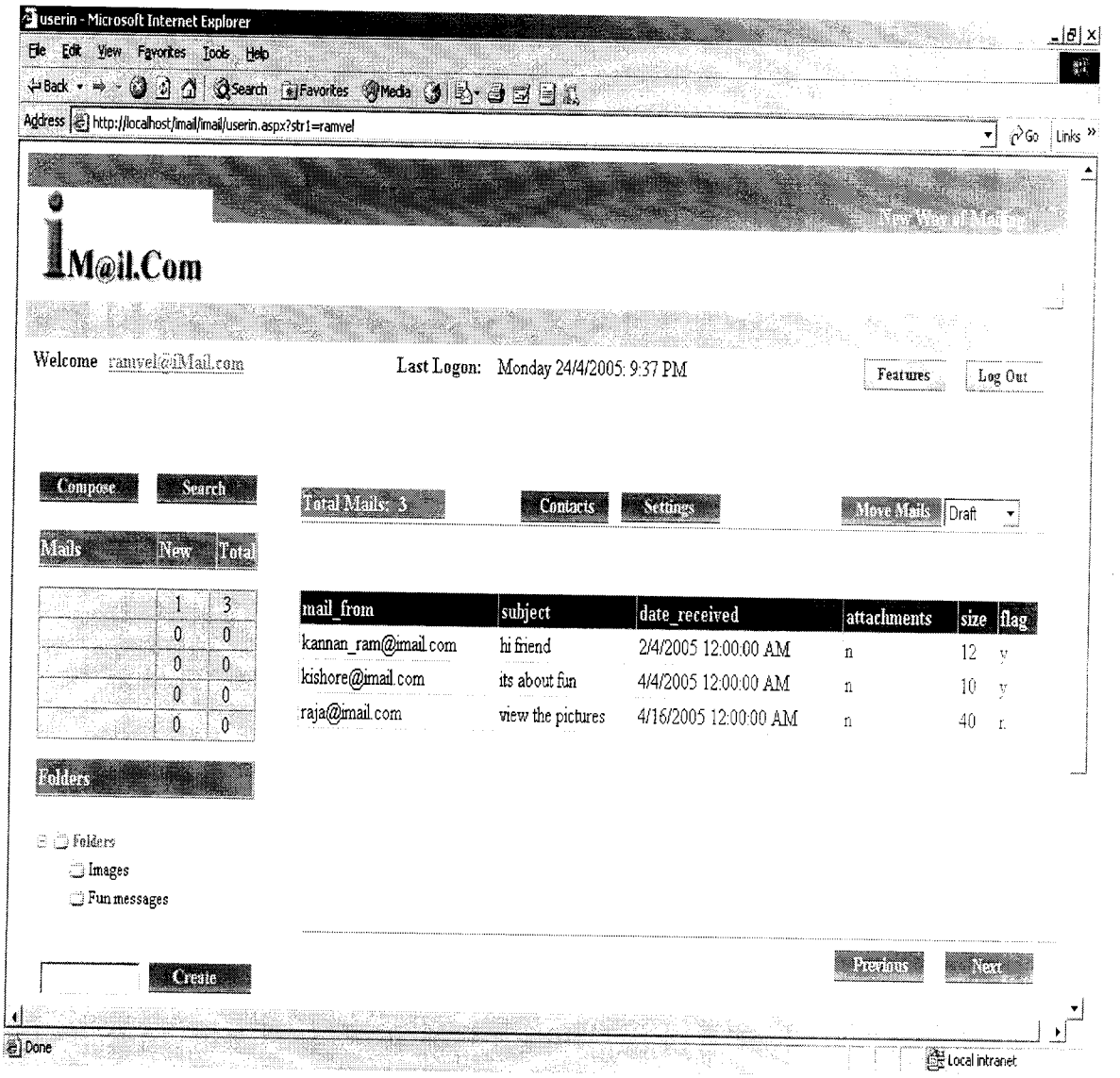
Home Page – Login Screen



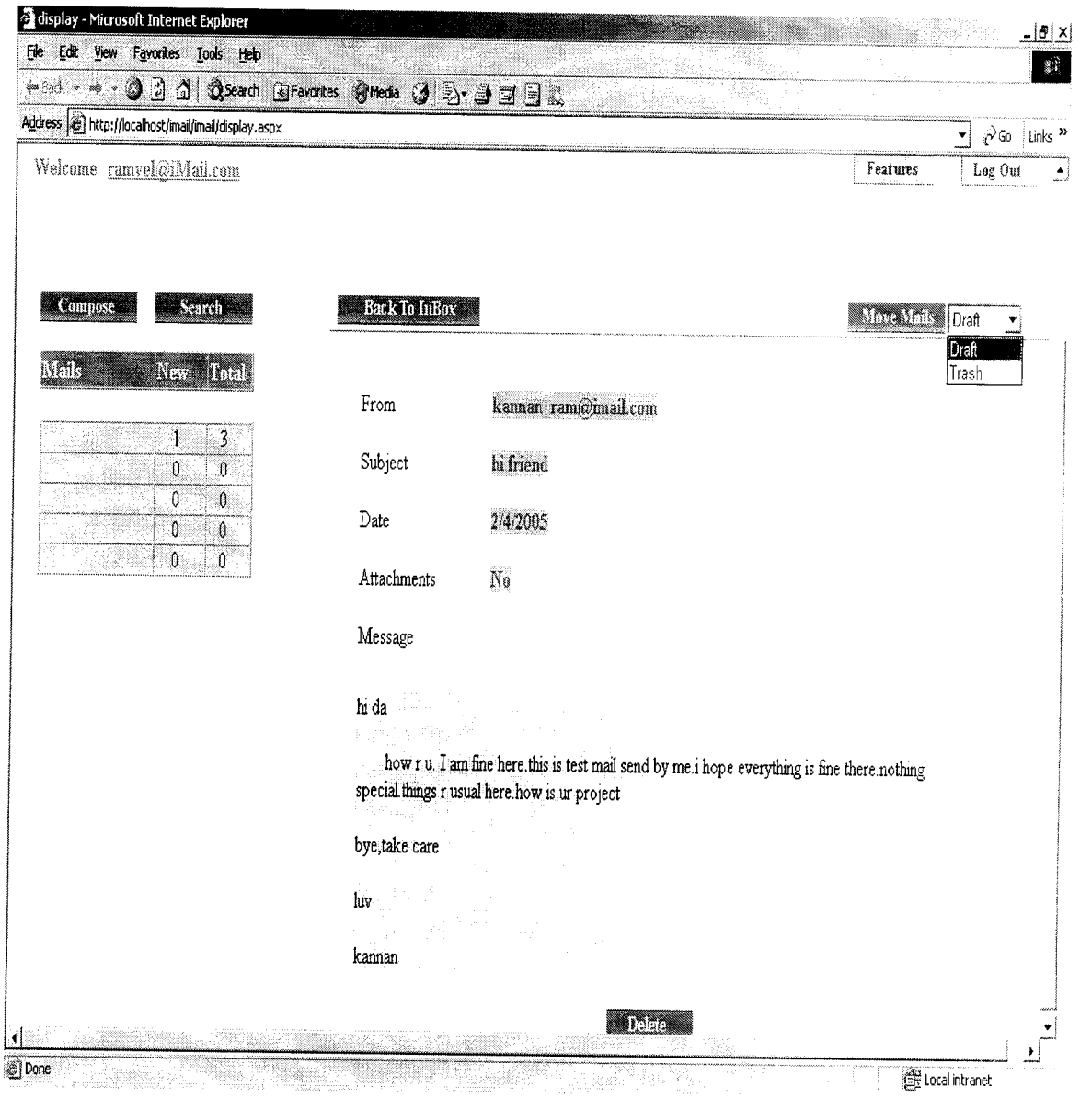
New User Signup Screen



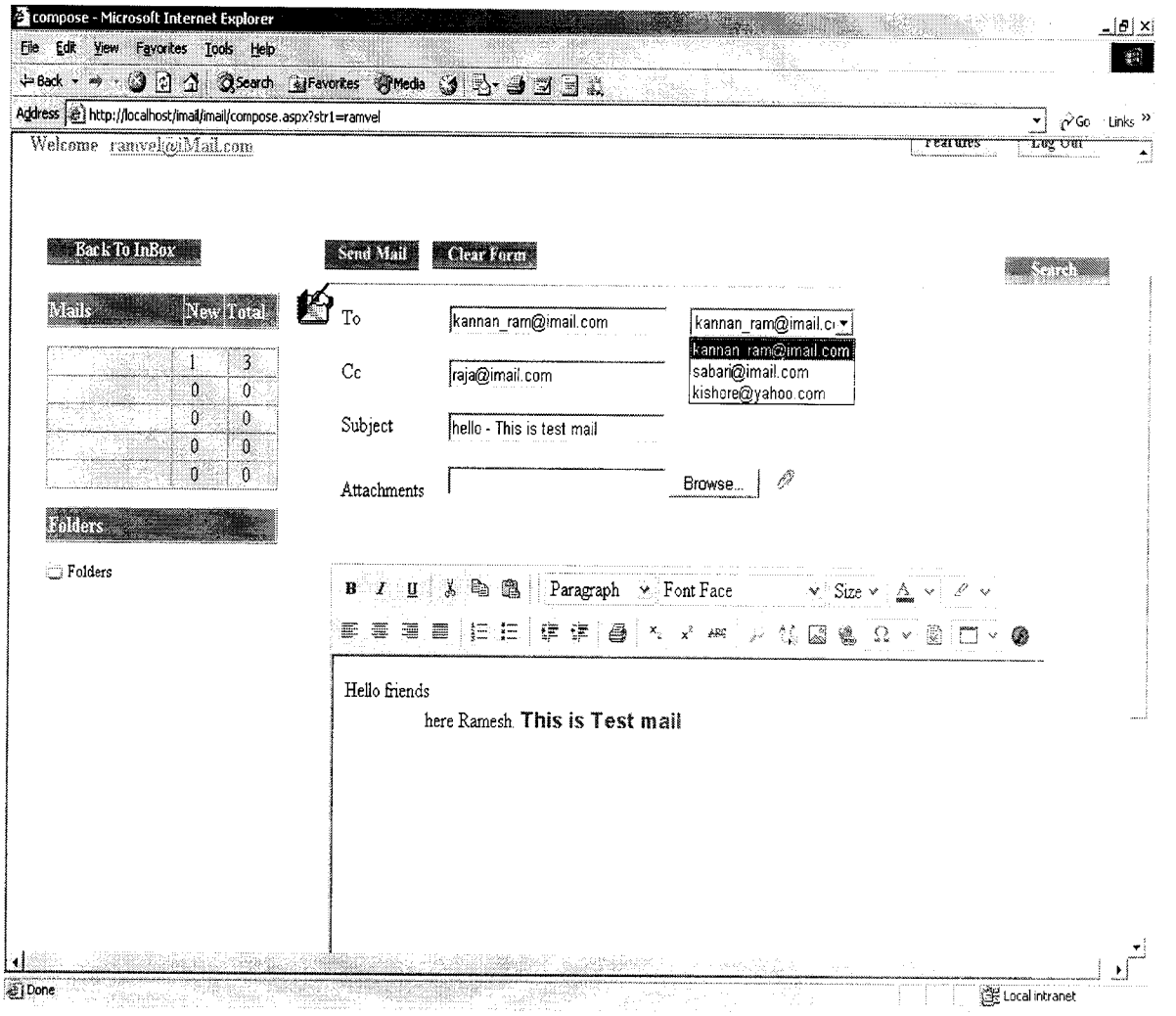
Inbox Screen



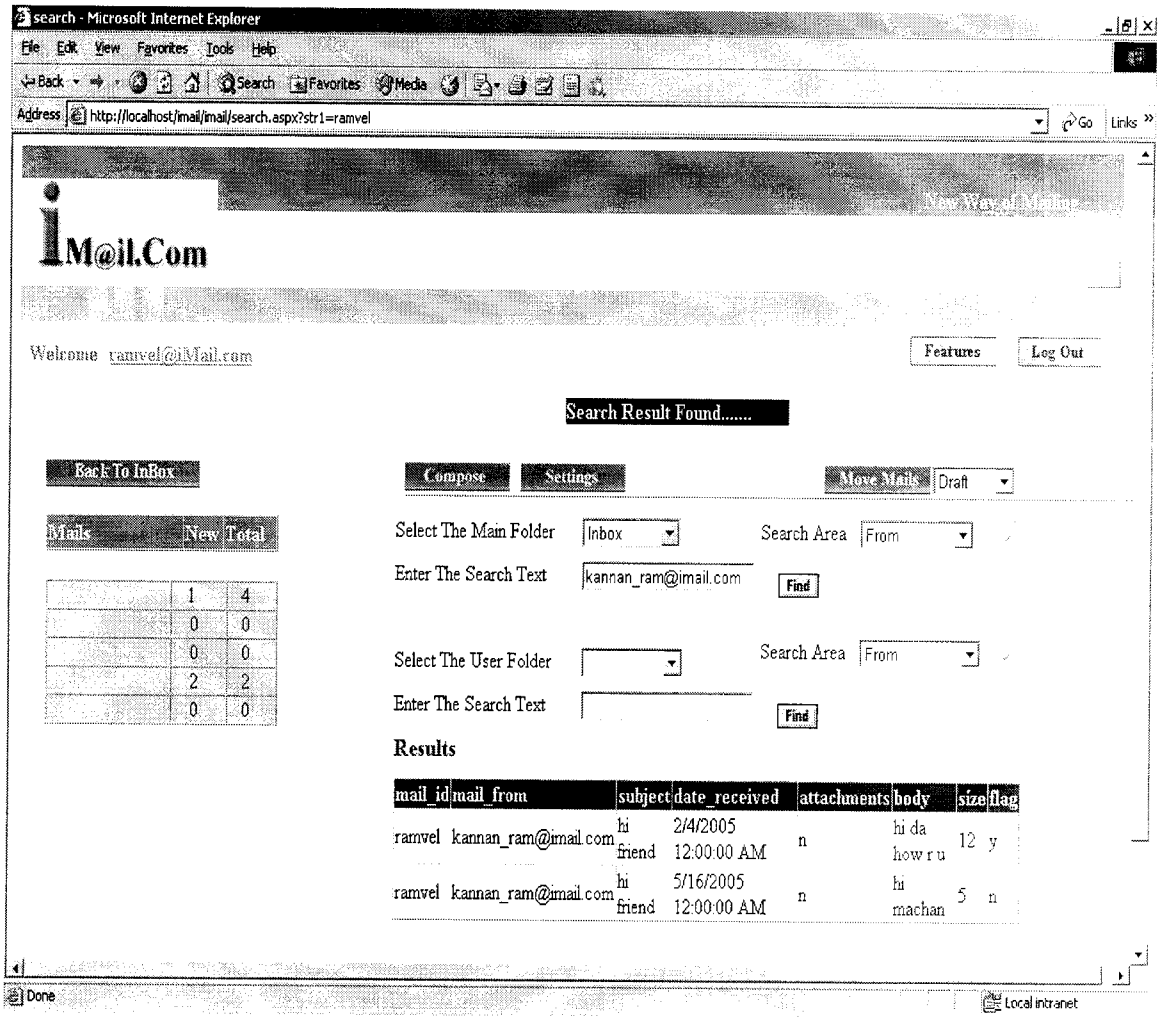
Mail Display Area



Mail Compose Screen



Mail Search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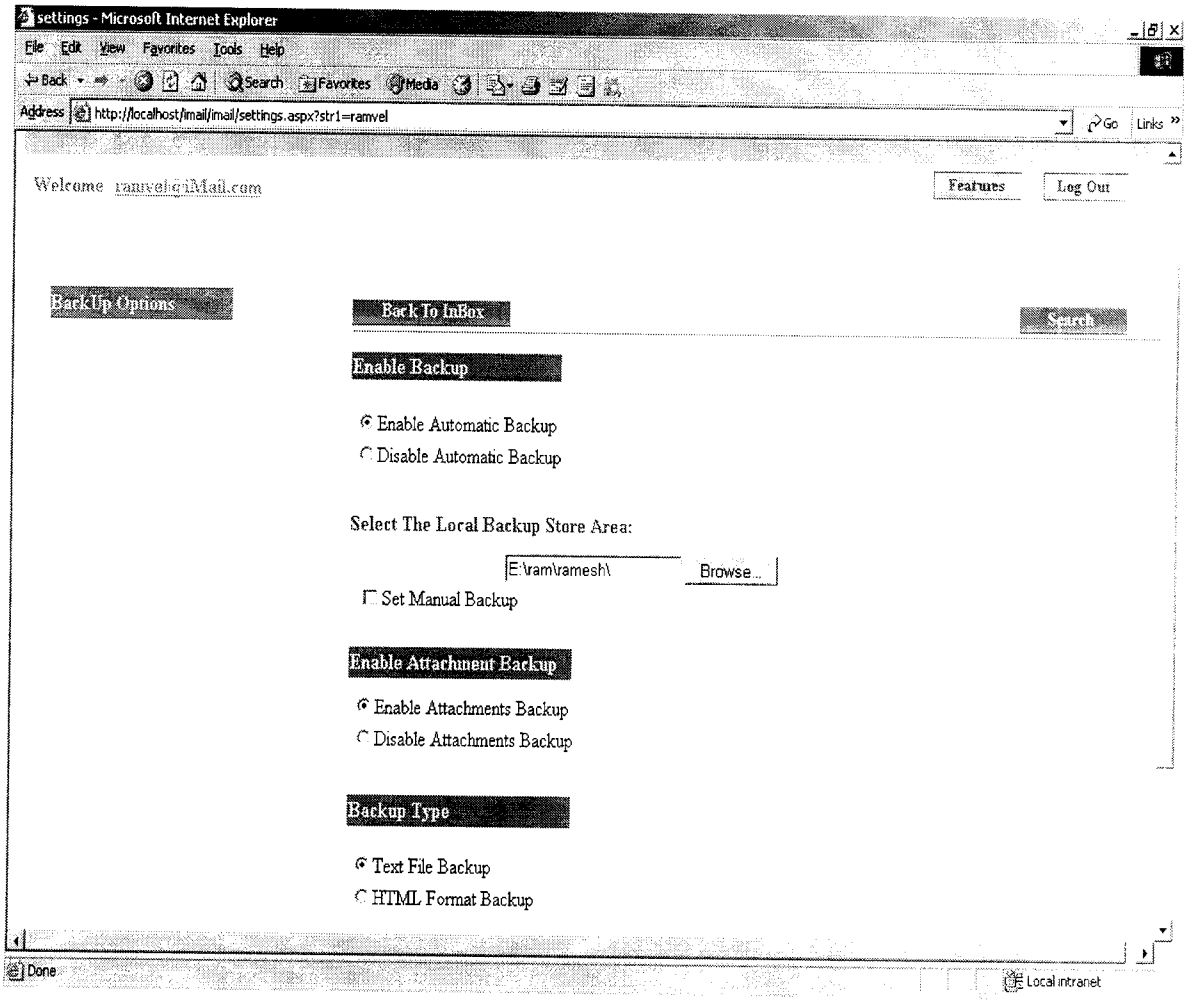
Mail Backup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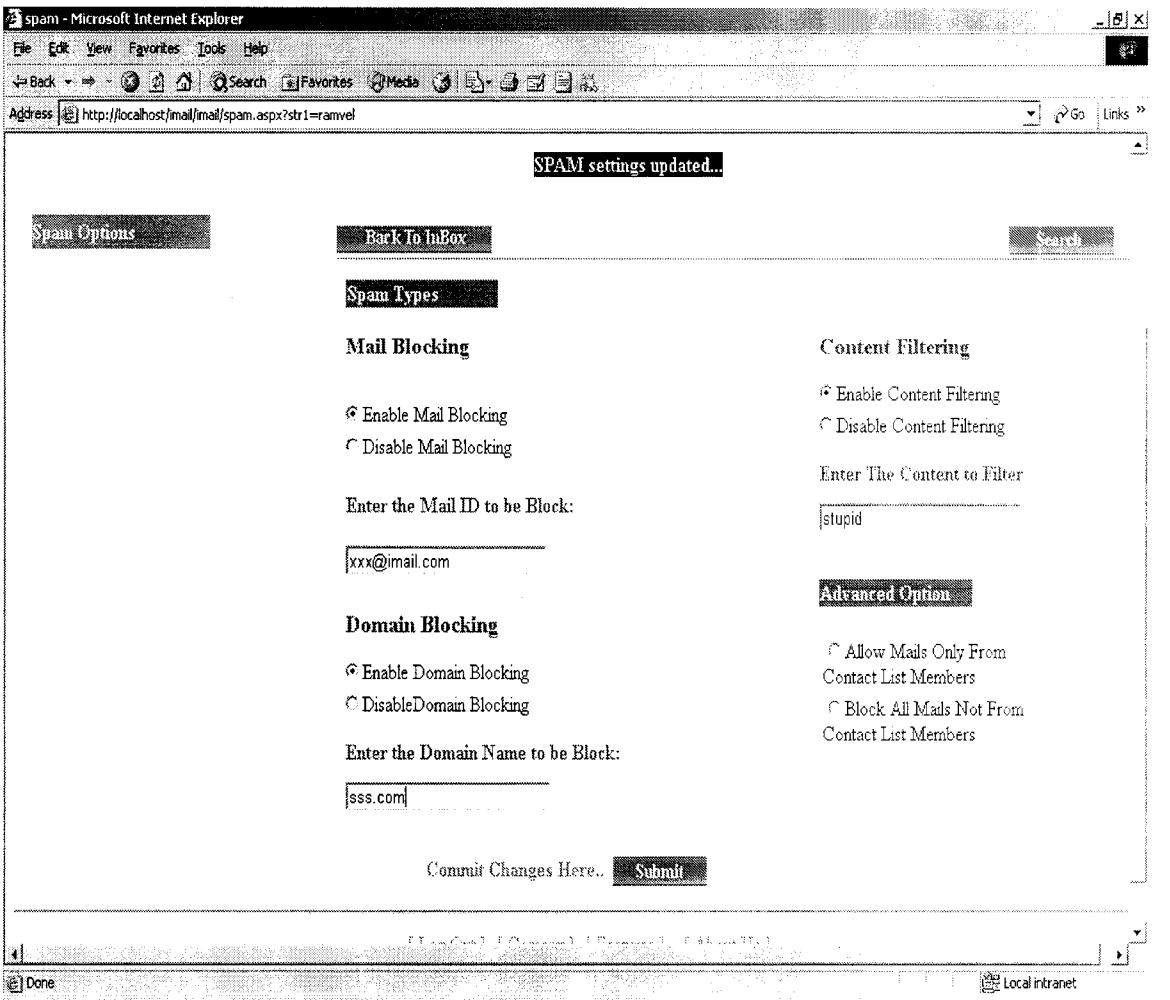
Spam Protection Screen



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