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## **MINPURAA : A Truly Multilingual E-mail System Based on PANDITHAM**

**P. Navaneethan, J. Ramesh, N. Pradeep,  
Sudhir Sharma, Selvaraj, and T. Madan Kumar**

*Department of Computer Applications  
PSG College of Technology, Coimbatore - 641 004.  
e-mails: pa\_naveen@vsnl.net, rameshj@msdc.hcltech.com*

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### **1.0 Introduction**

Multilingual computing is going to dominate the next era of Information Technology. Many Multilingual products are available in the market today. But, unfortunately most of the products are font based and not language based. We know that the E-mail facility is now being used extensively. But, unfortunately the usage of E-mail is limited within the people who know English. Even though some E-mail service providers offer Multilingual E-mail, the user name, password and the interface to the mail service are provided only in English. This disables the usage of E-mail service for the people who do not know English.

Existing Multilingual E-mail facilities support sending mails in MIME format (Rich Text Format and Image Format) and are not character oriented, and hence it is considered to be very costly. Mostly they rely on fonts and not on the language. But, a true Multilingual E-mail system must support the concept of language and should be capable of providing Multilingual user names and passwords. Keeping this in mind, this project aims in bringing out a truly Multilingual E-mail System, making use of the character-oriented protocol PANDITHAM (A **P**rotocol for **A**pplicatio**N**s **D**evelopment **I**n **T**HAmizh and **M**ultilingual computing).

### **2.0 Features of MINPURAA**

Various features of this system are presented in this section. Facilities available in both the MINPURAA Mail Server and the Client are explained.

#### **2.1 MINPURAA Mail Server**

Minpuraa is designed in such a way that it can understand Multilingual strings. The user can register his/her name in Multilingual form. The Password can be Multilingual; i.e., a user who knows only Tamil and who is comfortable with the Tamilnet '99 key board can remember any Tamil word as a password. Options are provided to remove the password of a user. But, only the administrator can do this. Multiple clients can be handled by the server at the same time, and this is any way the primary requirement of a mail server.

Another tool, Client Monitor is provided in the server. It can be used to monitor the registered users of this server. If a client connects with the server, it can be monitored using this feature. It also maintains a history of clients, which will show the name of the user, domain from which he/she connected, on time, and off time. A provision is provided to take hard copy of all the outputs.

The server supports certain unique features like URGENT and DELETE ON READ mails. A detailed explanation about this feature is given in the following section.

## **2.2 MINPURAA Mail Client**

This is the Client program, which can be used to connect with the MINPURAA Server. It provides Multilingual User Interface. Provision is there to set the default interface language. This client can also be used to register a new user with the server. The following facilities are provided to a registered user. A registered user can send Multilingual mails to another registered user of the server. As mentioned already, the server supports urgent and delete on read mails. If an URGENT mail is sent to a user, it will be indicated in Red colour in the inbox. If DELETE ON READ mail is sent to a user, this mail will be deleted automatically after the user reads this mail. Facilities are provided to view the inbox and the mails in inbox. An option is provided to delete mails listed in the inbox. Reply option is given after reading a mail. Provision is given to take hard copy of the Multilingual mail. A registered user is allowed to send E-mail in English to mail servers other than MINPURAA. In that case, the MINPURAA Mail Server maintains an alternate e-mail id of the user to avoid misuse of this facility. Multilingual mails can be sent to other mail servers, if that mail server is PANDITHAM enabled. There is a provision for a registered user to change his/her password.

Another important feature of this client program is that it allows reading POP3 mails from other servers, which support POP3 mail facility. This is open to all users of this MINPURAA Mail Client. Users are allowed to set the default interface language, domain of POP3 mail server, and the domain of SMTP mail server. These settings are written in a separate file. This file is read and corresponding settings are made to the Client when it is loaded every time.

This Mailing system has evolved through versions. The first two versions are described in the next two sections.

## **3.0 MINPURAA Version 1.0**

In this Mail Architecture, there is only one Mail server, and N number of Mail clients, as depicted in Fig.3.1. Each and every Minpuraa Mail user is assigned a Mail Box, and this box is kept in the Server. Though, any user can have access to his/her mail box from any of the client machines, the main problem with this Single server architecture is that the addresses tend to be FLAT in nature. This kind of problem exists even in Mail Servers like Yahoo.com and Hotmail.com. But some kind of HIERARCHICAL Addressing is implicit in these servers, when considered as a whole, as they are heterogeneous in nature. That is, selva@yahoo.com and selva@hotmail.com can co-exist in this Internet Mailing system. To allow for more selvas within, say, Yahoo mail server, one resorts to addresses like selva1@yahoo.com and selva2@yahoo.com.

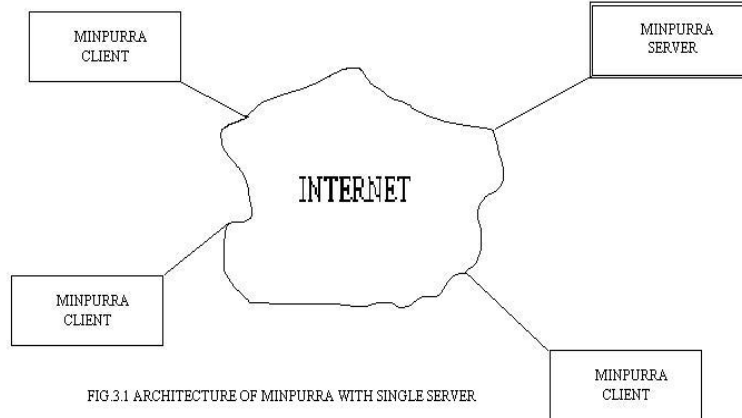


FIG.3.1 ARCHITECTURE OF MINPURRA WITH SINGLE SERVER

The next version of MINPURAA addresses Hierarchical Addressing Scheme, which is very similar to the one in our Postal System.

#### 4.0 MINPURAA Version 2.0

This Mailing Architecture differs from the existing Internet Mailing System comprising of heterogeneous servers in that there are homogeneous MINPURAA Servers located at logically different places (possibly, physically too), may be referred to as Singapore Server, Chennai Server, Kovai Server etc. That is, this MINPURAA Server can be installed on different Hosts, say, named KOVAI, CHENNAI, SINGAPORE, TRICHY etc. and these can be in Tamil itself, thus bringing in True Multilingual Domain Names. This, typically, results in hierarchical e-mail addresses like selva@Singapore, selva@Trichy etc. Such an Architecture is shown in Fig.4.1.

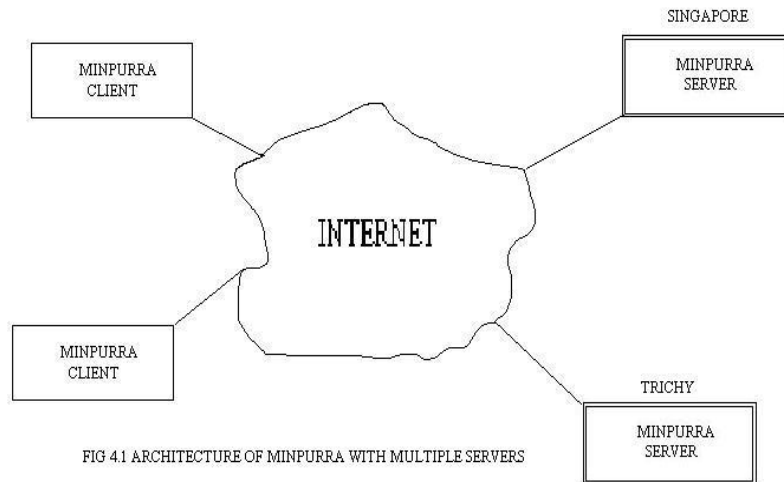


FIG.4.1 ARCHITECTURE OF MINPURRA WITH MULTIPLE SERVERS

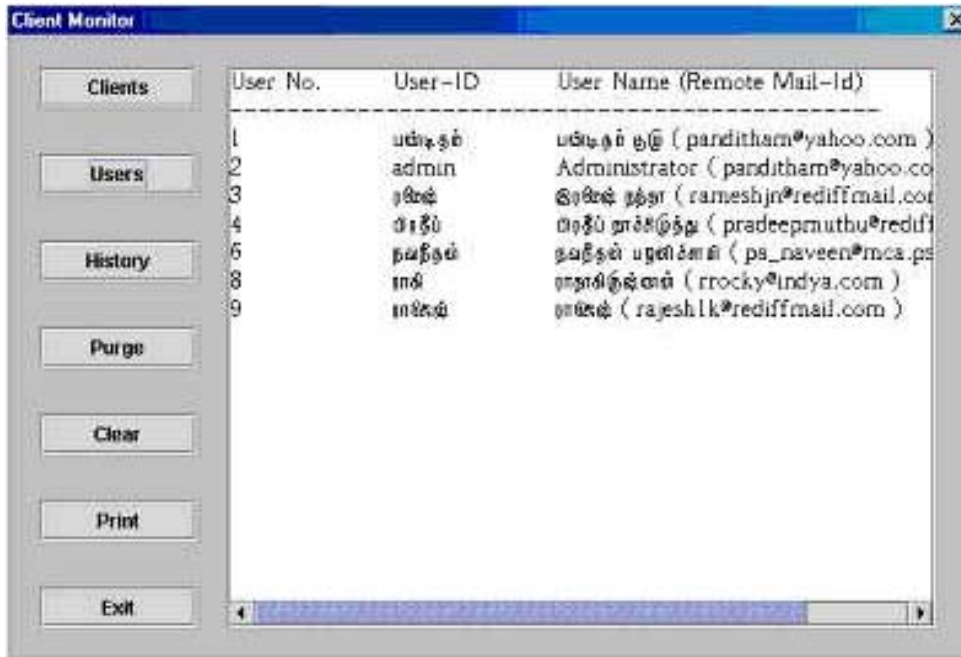
In this architecture, selva@Trichy can login to any of the clients in the Internet and send mails to selva@Singapore. In this, whatever mail that is dispatched by selva@Trichy will first be accepted by the Minpuraa Server at Trichy, and it then forwards the mail to the mail box of selva@Singapore in the Minpuraa Server at Singapore.

### 5.0 SAMPLE SCREENS

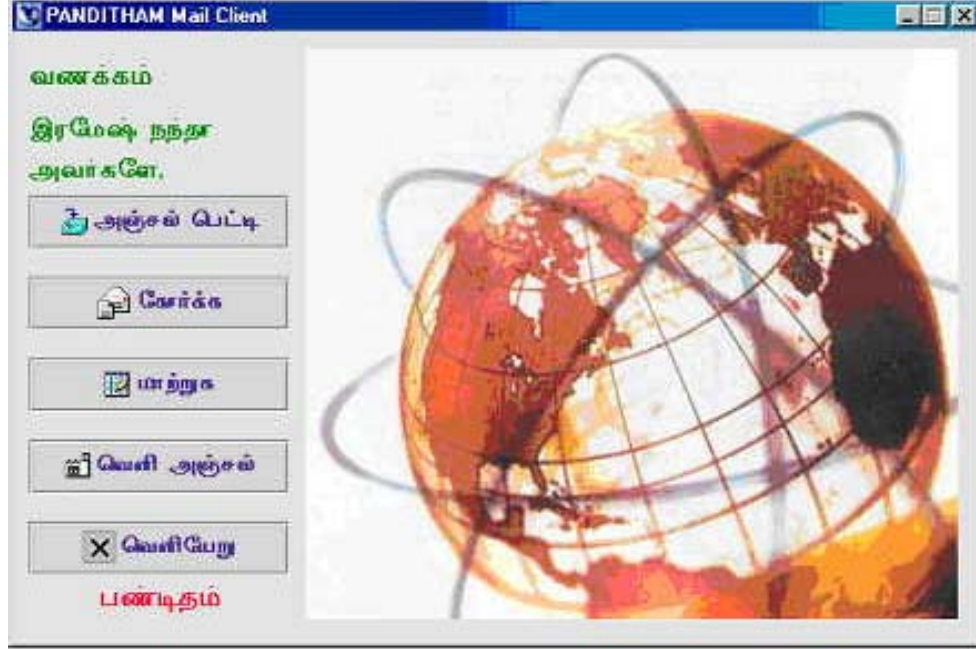
Main screen of PANDITHAM mail server is shown in Screen 5.1. Screen 5.2 shows the Client Monitor feature of PANDITHAM mail server. Screen 5.3 is the main screen after login of a user in Minpuraa mail client. Screen 5.4 shows the Inbox screen snapshot of the Minpuraa Mail Client and Screen 5.5 shows the interface of reading a mail.



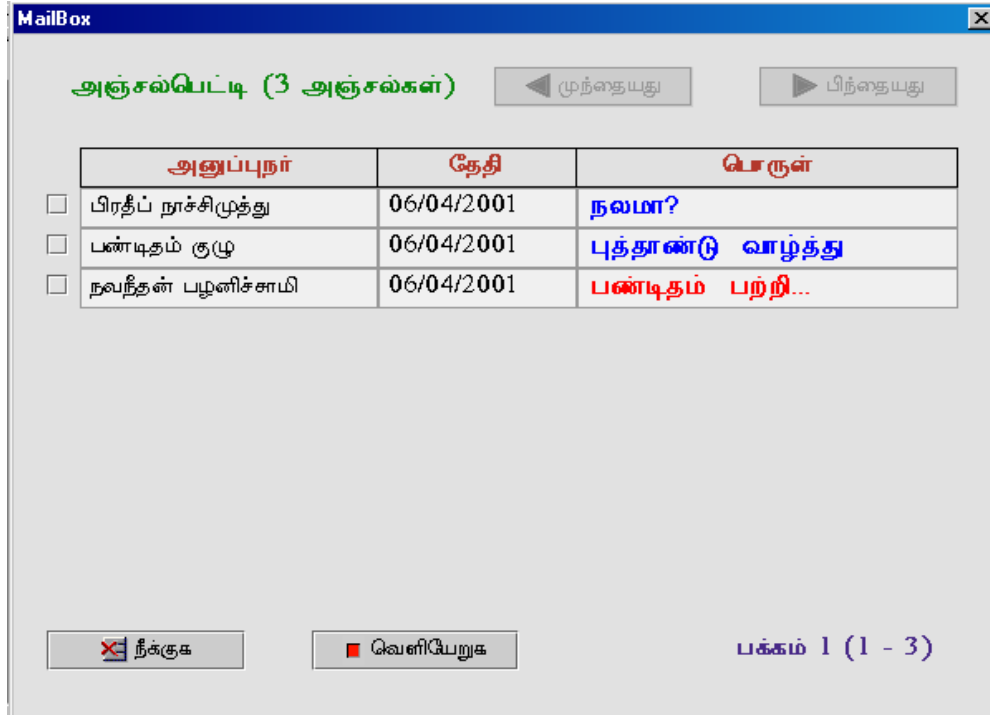
Screen 5.1 PANDITHAM Mail Server (Minpuraa)



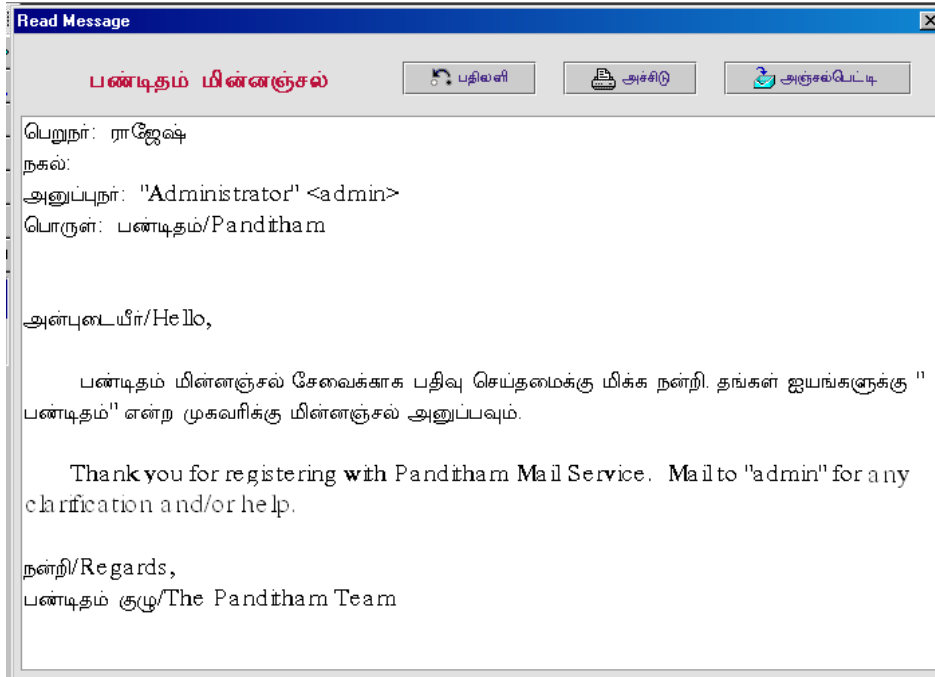
Screen 5.2 Client Monitor of the PANDITHAM Mail Server



Screen 5.3 Main screen after Login of a user



Screen 5.4 Inbox for a user



Screen 5.5 Reading a Mail

Main screen of PANDITHAM mail server is shown in Screen 5.1. Screen 5.2 shows the Client Monitor feature of PANDITHAM mail server. Screen 5.3 is the main screen after login of a user in Minpuraa mail client. Screen 5.4 shows the Inbox screen snapshot of the Minpuraa Mail Client and Screen 5.5 shows the interface of reading a mail.

## 5.0 Conclusion

The PANDITHAM based E-mail system developed, namely, MINPURAA is found to satisfy most of the multilingual features identified. The product is developed with a core concentration of exhibiting true multilinguality apart from displaying in multiple languages. Basic features of E-mail are incorporated in the product. The reliability of multilinguality is of high standard as the core engine of the Mail Client is based on PANDITHAM. It has been successfully tried to have the MINPURAA Server loaded on different hosts, and MINPURAA clients can at will send Multilingual Mails to say Kaveri@Erode, as well as Kaveri@Mysore, bringing in True Multilingual Domain Names.

By implementing, Multilingual Domain Name Resolvers, it should be possible to think of addresses like, girish@Gobi.Erode, suresh@Sivakasi, Virudunagar etc.

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