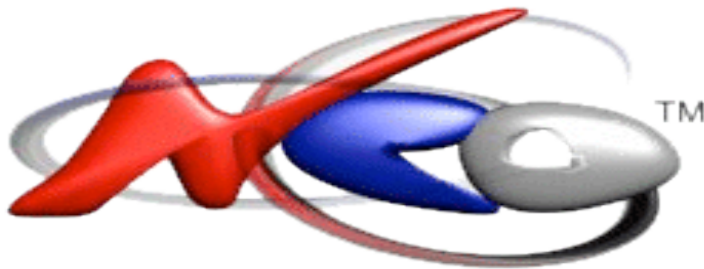# CS601 Semester Project

Web Mail Server

By Nabeeh Ghanem

Project Overview

WebMail server is a web-based email client server like hotmail. Besides the basic Functions: pull mails from pop server, compose and send mails, WebMail requires us to add as many functions as possible.

Features :

User registration:

Users can register with their User name and desired password and Email Address. User ids are checked with the database to see if it already exists or not.
Users can have multi Email Addresses that they can pull mail from, All servers(Emails) has their own Inbox, Spam, Trash, Draft and sent folders, created at user registration, in addition to other folders created by the User.

User log in/out:

Users can log in to the system with their user id and password and a session will be created for that user. In order to access any page in the system, the user should have a valid session or else will be directed to the login page.

Forgotten Password:

The User Can Change his forgotten password by providing the right user/security question and security answer.

User preferences:

Users can change their password entries in the system. In addition to that they can add new Email to their account or change the Password for their existing Emails Account and they can Delete any Exist Email Account.

Receiving Mail:

With the Check Mail link generated for the server selected to work with, the user can check the new mails. This function connects to the POP3 server and downloads all emails to the Database, Then Delete the Emails on the POP3 server.

Sending Mail:

With the Compose link generated for the server selected to work with, the User can Send, Reply, Reply All, Foreword Mail, in addition User can save Email as Draft.

Lucene Search Engine:

With Lucene Search Engine, User can search mails by From, To, Cc, Subject, and Content and display The Result.

Sorting Mails:

Webmail system is able to sort all mail folders by From, Subject and Date and Size. The mails are sorted by date in the descending order by default. The user can click on other column headers to sort it by that field.

Delete Mail:

Users can delete their emails, which results in moving those emails to the Trash folder. The users can also empty their trash folder associated with the server they are working on with the Empty Trash link generated for that server.
The User can move back the Email to The Inbox Folder.

Folders:

Users can add new folders for each server. Since every server has a different folder group, the User may have same named folders in all servers.
The User can Also Delete Added Folders, in Addition he can move Emails between Existed Folders.

Attachments:

Webmail system is able to download emails with attachments and show it to the user. The attachments can be downloaded from the page the emails are viewed. Users can also send emails with attachments.

Smart Folders:

Emails can directly go to any Folder created by the User depend on the following:
1. UnRead Emails.
2. specific email address.
3. Chosen words includes in Email's Content.
4. Chosen words includes in Email's Subject.
The User also can delete any created Folder.

Address Book:

Every User can create his own contact List, including Black List, Normal List AND White List.
Every incoming email will automatically add the Email address to Contact List.

Mark read/unread

User can mark the Email as Read/Unread.

Spam Filter:

I tried to work on spam filter by Bayesian Network. Not Sure about the accuracy percentage , but we can always mark some spam emails as spam so we can train the spam filter to work better based on its own mistake. May after I take the Artificial intelligence course I will know better how to deal with spam Filter

HTML Mail:

Webmail system is able to receive and send HTML emails via the embedded HTML editor into the system.

Multiple Server/Accounts:

Webmail system allows users to define multiple servers or if desired same server with different accounts since servers are differentiated with their names. Users can pick a default server and change the server the want to view the mails from in the inbox page.

Data Base:

USER Table

Field	Type	Length	Null	Key	Extra
User_ID	INT	11	NO	PRI	Auto_Increment
User_Name	VARCHAR	50	NO		
User_Password	INT	11	NO		

Email Table

Field	Type	Length	Null	Key	Extra
Email_ID	INT	11	NO	PRI	Auto_Increment
Email_Name	VARCHAR	50	NO		
Email_Password	INT	11	NO		

Security Table

Field	Type	Length	Null	Key	Extra
Security_ID	INT	11	NO	PRI	Auto_Increment
Security_Question	VARCHAR	50	NO		
Security_Answer	INT	11	NO		
User_Name	VARCHAR	50	NO		

Contact Table

Field	Type	Length	Null	Key	Extra
Contact_ID	INT	11	NO	PRI	Auto_Increment
Contact_Name	VARCHAR	50	NO		
Contact_Email	INT	11	NO		
Contact_Type	INT	11	NO		
Contact_User_ID	INT	11	NO		

Folder Table

Field	Type	Length	Null	Key	Extra
Folder_ID	INT	11	NO	PRI	Auto_Increment
Folder_Name	VARCHAR	50	NO		
Folder_Email_ID	INT	11	NO		

Smart Folder Table

Field	Type	Length	Null	Key	Extra
Smart_Folder_ID	INT	11	NO	PRI	Auto_Increment
Smart_Folder_Name	VARCHAR	50	NO		
Smart_Folder_Query	INT	11	NO		
Smart_Folder_Email_ID	INT	11	NO		

Attachment Table

Field	Type	Length	Null	Key	Extra
Attachment_ID	INT	11	NO	PRI	Auto_Increment
Attachment_Name	VARCHAR	50	NO		
Attachment_Content	INT	11	NO		
Attachment_Mail_ID	INT	11			

Mail Table

Field	Type	Length	Null	Key	Extra
Mail_ID	INT	11	NO	PRI	Auto_Increment
Mail_From	VARCHAR	50	NO		
Mail_To	VARCHAR	50	NO		
Mail_Cc	VARCHAR	300	NO		
Mail_Bcc	VARCHAR	300	NO		

Mail_Subject	VARCHAR	300	NO		
Mail_Content	VARCHAR	60000	NO		
Mail_Date	VARCHAR	50	NO		
Mail_Size	INT	11	NO		
Has_Attachement	TINYINT	1	NO		
Folder_ID	INT	11	NO		
Email_ID	INT	11	NO		

Mail support Table

Field	Type	Length	Null	Key	Extra
MailS_ID	INT	11	NO	PRI	
Mail_lenght	INT	11	NO		
HasUnread	TINYINT	1	NO		

Folder Mail Support

Field	Type	Length	Null	Key	Extra
Mail_ID	INT	11	NO		
Folder_Number	INT	11	NO		

Spam table

Field	Type	Length	Null	Key	Extra
Spam_word	VARCHAR	50	NO	PRI	Auto_Increment
Spam_frequesncy	DOUBLE		NO		

Spam Frequency Table

Field	Type	Length	Null	Key	Extra
Spam_word	VARCHAR	50	NO	PRI	
Frequency	INT	11	NO		

Train Size Table

Field	Type	Length	Null	Key	Extra
TrainSize_ID	INT	11	NO	PRI	Auto_Increment
Ham_Size	Double		NO		
Spam_Size	Double		NO		

Ham Frequency Table

Field	Type	Length	Null	Key	Extra
Ham_word	VARCHAR	50	NO	PRI	
Frequency	INT	11	NO		

System Design:

Component Relationship:
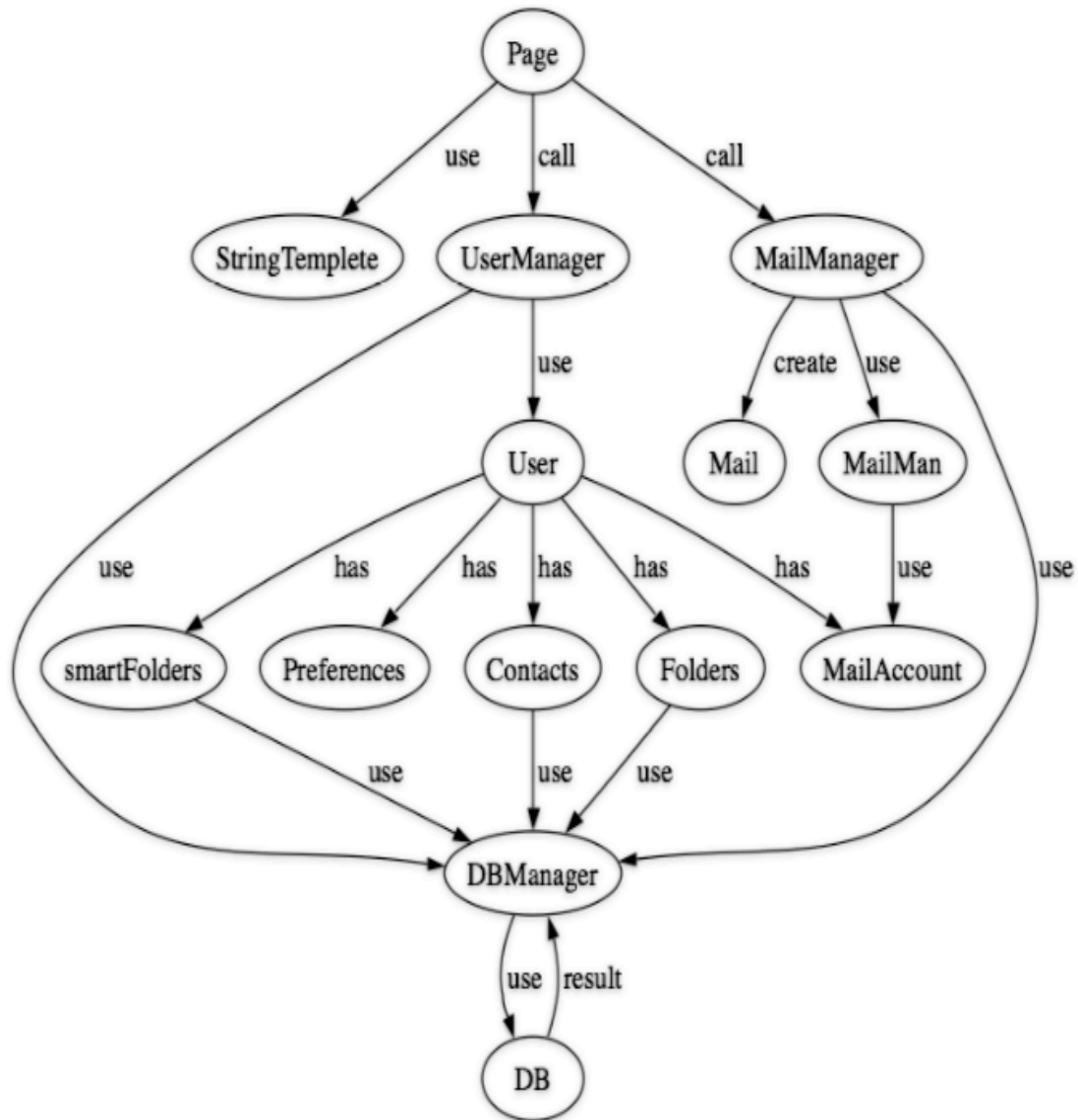
Page Flow:
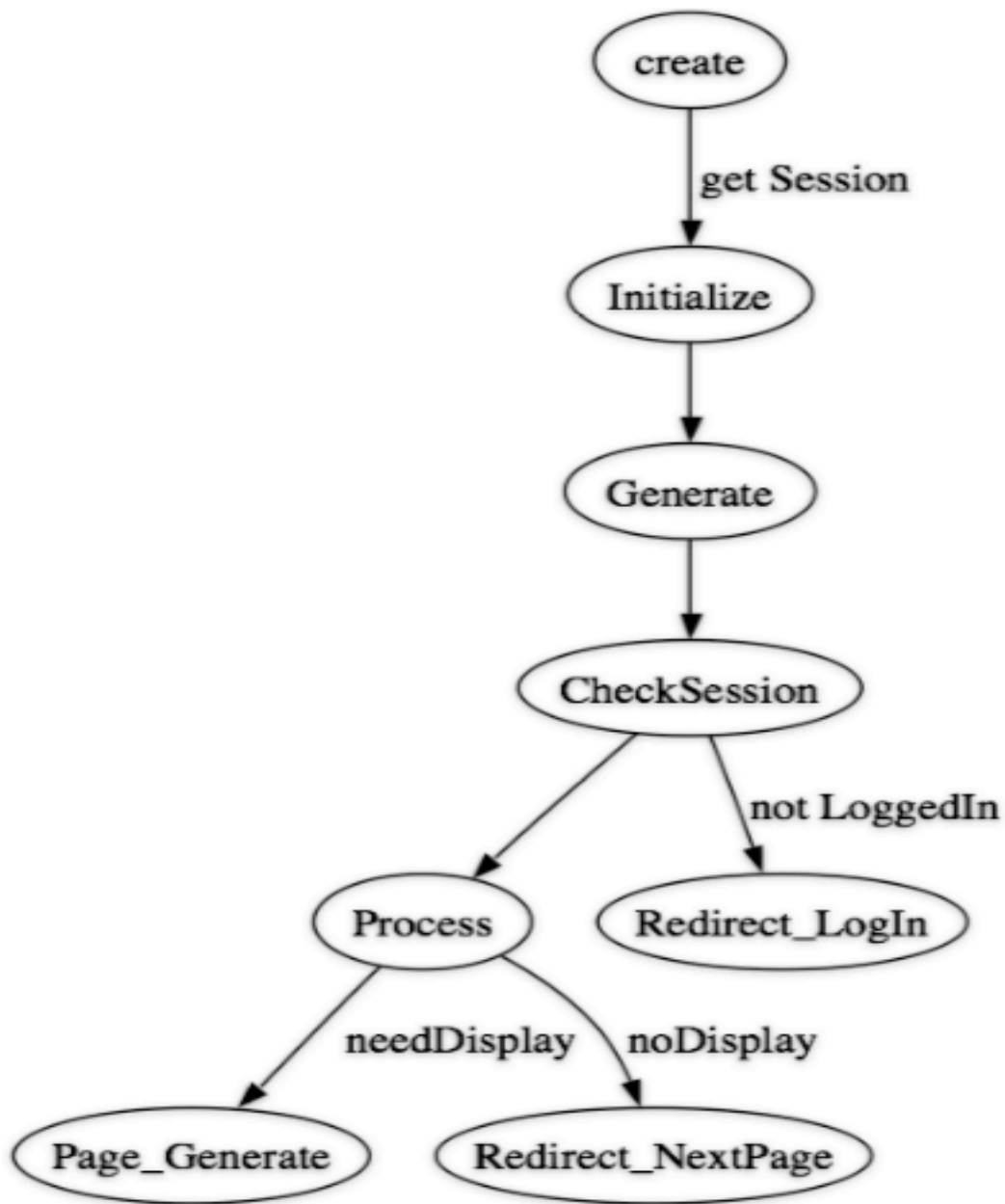
In class Page, HttpRequest and HttpRespnse object is obtained. In AuthenticatedPage.initializ(), HttpSession is checked for login.

AuthenticatedPage can be used as a View generator or a
pure controller. When generate() method is called, Page
object simply set attributes to the StringTemplate.
AuthenticatedPage check session first. If not logged in,
the browser will be redirected to login page. If login test is
validated, process() method is called.

Formal view of pages connectivity:
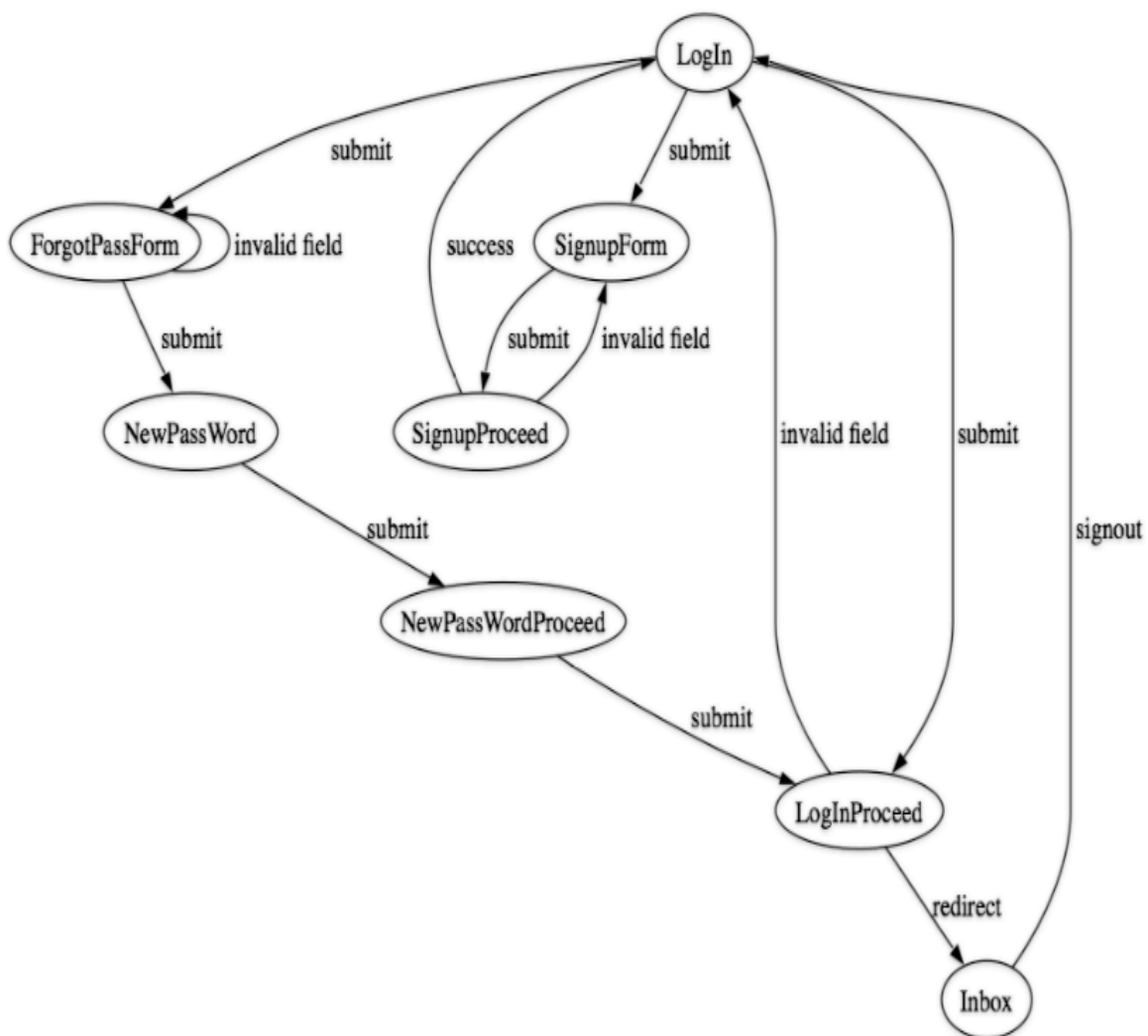
System Design Figure-1
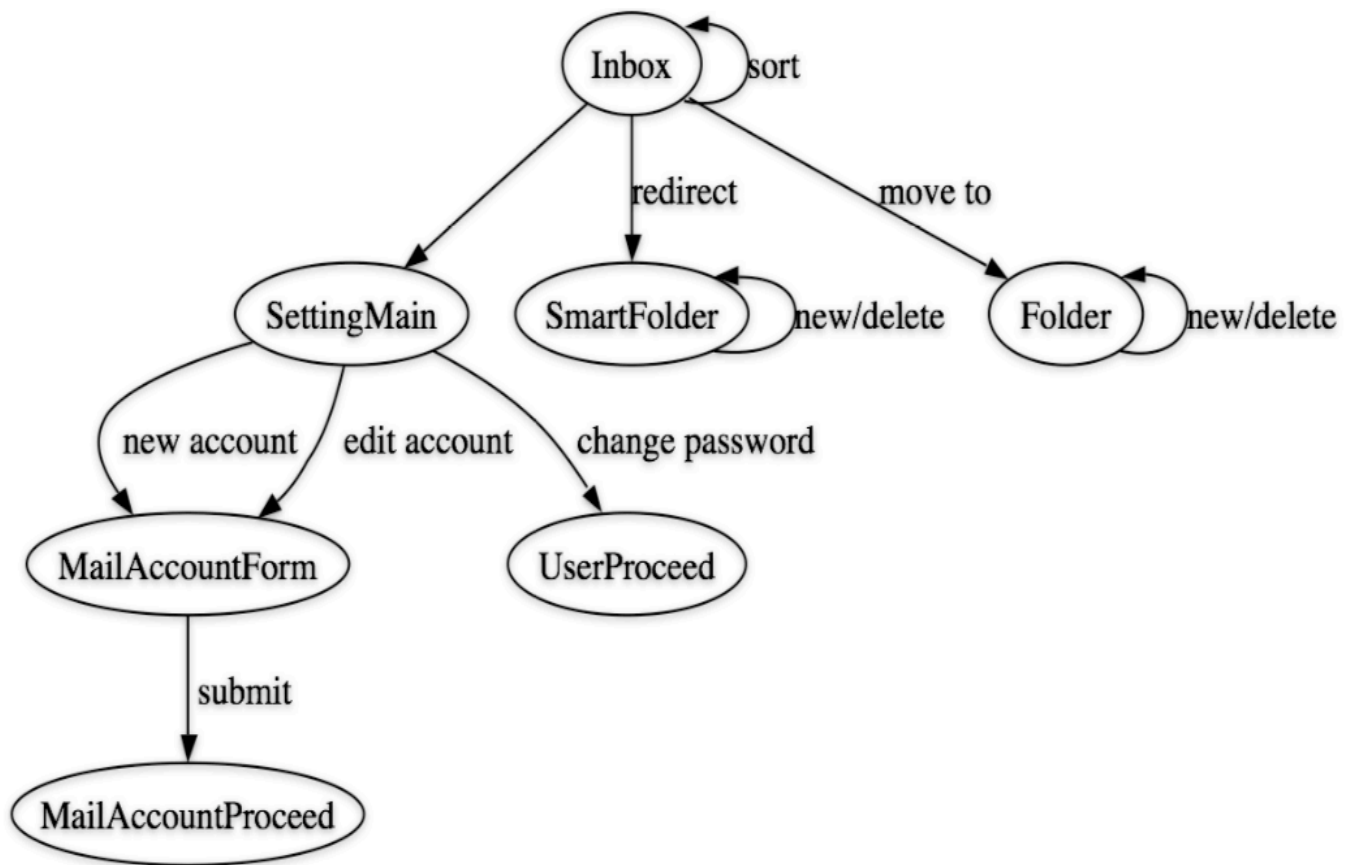
System Design Figure -2
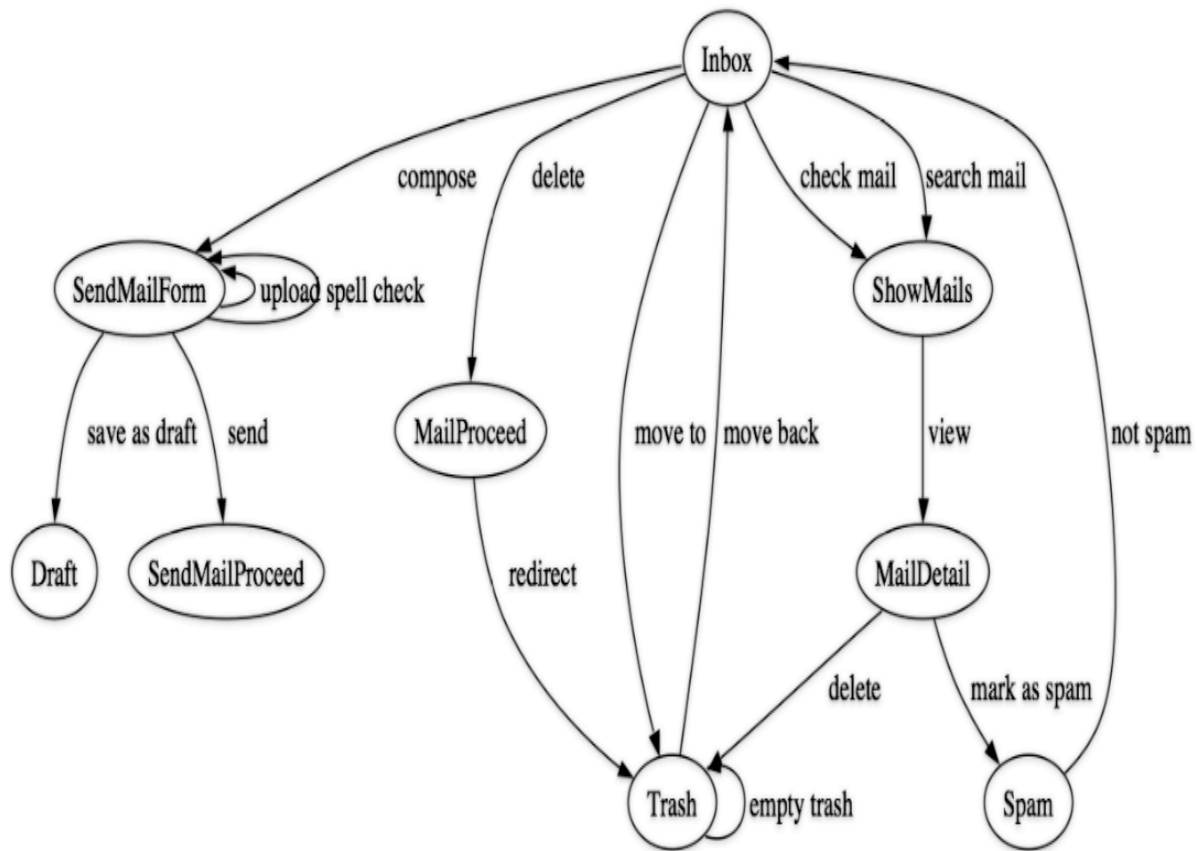
System Design Figure -3

System Preview:

Login page
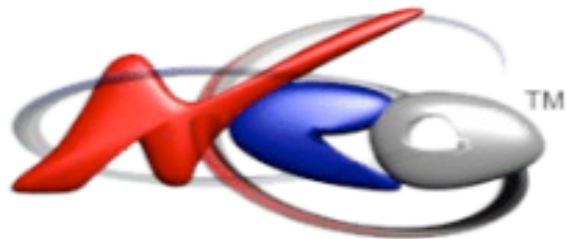
Signup page

Forgotten password page

Enter your User Name:

Security Question :

What is the last name of your favorite musician?

Your Answer:

Enter

Inbox page

		From	Subject	Date	Size
		user14@cs.usfca.edu	12345	Fri May 08 14:42:11 PDT 2009	163
		user16@cs.usfca.edu	with attachment	Fri May 08 14:35:44 PDT 2009	3144
		user16@cs.usfca.edu (2)	spam mark as spam	Thu May 07 18:50:22 PDT 2009	190
		user16@cs.usfca.edu	llo	Thu May 07 19:19:23 PDT 2009	164
		user14@cs.usfca.edu	from user14	Thu May 07 17:41:32 PDT 2009	177
		user13@cs.usfca.edu	hello	Thu May 07 17:13:22 PDT 2009	167
		user14@cs.usfca.edu	test2	Wed May 06 15:52:15 PDT 2009	172
		user13@cs.usfca.edu	test1	Wed May 06 15:49:58 PDT 2009	182

user13@cs601.cs.usfca.edu

SelectAll DeselectAll Delete Mark As Read Mark As Unread Report Spam Move to... Search By: From search

Check Mail
Compose

Folders

Draft
Inbox(4)
Spam
Trash
Sent
champ

Smart Folders

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

Compose Page:

Check Mail
Compose

Folders

Draft
Inbox(1)
Trash
Spam
Sent
test folder

Smart Folders

unread emails
content hello
subject hi
user14@cs.usfca.edu

Contacts
nabeeh1
nabeeh2
user155
user14@cs.usfca.edu

To:
Cc:
Bcc:
Subject:

[address book] [save as draft]

[Add]

[Choose File] no file selected

[send]

View mail

Check Mail
Compose

Folders

Draft
Inbox(3)
Spam
Trash
Sent
champ
cs601 mails

Smart Folders

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

(Delete) (Move to... ⇅) (Mark As Read) (Mark As Unread) (Report As Spam)

Subject: with attachment

(Reply) (Reply All) (Forward) (Delete)

From: user16@cs.usfca.edu
To: user13@cs.usfca.edu
Cc: null
Bcc: null
Date: Fri May 08 14:35:44 PDT 2009
Attachment TestCalculator.java
Test.java

try it

Account Setting Page

Check Mail
Compose

Folders

Draft
Inbox(4)
Spam
Trash
Sent
champ
cs601 mails

Smart Folders

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

Change Password:
Password:

(confirm)

Exist Email Account:
Email Address: user15@cs601.cs.usfca.edu
Password:

(confirm) (delete)

Email Address: user13@cs601.cs.usfca.edu
Password:

(confirm) (delete)

Email Address: user14@cs601.cs.usfca.edu
Password:

(confirm) (delete)

Add New Email Account:
Email Address:
Password:

(Confirm)

Folder Page

Check Mail
Compose

selectAll deselectAll delete

Folder Name

Folders

☐ champ
☐ cs601 mails

Draft
Inbox(4)
Spam
Trash
Sent
champ
cs601 mails

create

Smart Folders

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

Smart Folder Page

Check Mail
Compose

selectAll deselectAll delete

Folder Name

Folders

☐ user14
☐ unread
☐ user13
☐ test
☐ nabeeh
☐ word
☐ subject llo

Draft
Inbox(4)
Spam
Trash
Sent
champ
cs601 mails

Smart Folders

Folder Name: _____

From ▼

user13@cs.usfca.edu ▼

create

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

Contact Page

Check Mail
Compose

Folders

Draft
Inbox(4)
Spam
Trash
Sent
champ
cs601 mails

Smart Folders

user14
unread
user13
test
nabeeh
word
subject llo

Contacts
user13@cs.usfca.edu
user14@cs.usfca.edu
nabeeh
user15
user155
user16@cs.usfca.edu

(selectAll) (deselectAll) (delete)
Type Description: Black List: 1 White List: 2 Normal List: 3

	Name	Email Address	Type
☐	user13@cs.usfca.edu	user13@cs.usfca.edu	3
☐	user14@cs.usfca.edu	user14@cs.usfca.edu	3
☐	nabeeh	nabeeh980@hotmail.com	3
☐	user15	user15@cs601.cs.usfca.edu	1
☐	user155	user15@cs.usfca.edu	1
☐	user16@cs.usfca.edu	user16@cs.usfca.edu	3

Name	Email	Type
		Normal ▼

(create)

Address Book Page

Check Mail
Compose

Folders

Inbox(1)
Trash
Spam
Draft
Sent
test folder

Smart Folders

unread emails
content hello
subject hi
user14@cs.usfca.edu

Contacts
nabeeh1
nabeeh2
user155
user14@cs.usfca.edu

To Cc Bcc	Name	Email
☐ ☐ ☐	nabeeh1	nabeeh980@hotmail.com
☐ ☐ ☐	nabeeh2	nabeeh.ghanem@gmail.com
☐ ☐ ☐	user155	user15@cs.usfca.edu
☐ ☐ ☐	user14@cs.usfca.edu	user14@cs.usfca.edu

(confirm)

Libraries used:

-String Templates: This Engine, written by Prof. Parr, is used to render the HTML page while ensuring strict MVC separation.
-MYSQL for Data Base.
- Lucene: Powerful search engine!
- JavaMail: Used to handle POP3 and SMTP protocol. Initially the $\mathcal{NEO}$ project had to handle these protocols "by hand". JavaMail is now used to get more powerful features.

Conclusion

I had many other features to do for this project, I started some Of them, like spell checker, and I wanted to complete the spam filter, add more pop server to work with, etc..