A Project Report on Omni Access

Course: Software Lab (CS699)
Instructor: Prof. G Sivakumar

Submitted by :
Manan Shah 08305004
Vishal Parajapati 08305030
Harshad Inarkar 08305066

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1 Introduction

Our project "Omni Access" is an online File Sharing system developed using Ruby on Rails framework. It encompasses all the standard features expected from a typical File Sharing system such as User Registration, Log in, Authentication, File Uploading and Downloading, Sharing files on a per-user and Group basis, Creation and maintenence of groups, File Search, etc. In addition to the standard web application, we have also attempted to develop a similar WAP application for the mobile devices. It is basically a stripped down of the web site taking into consideration the display capabilities of the mobile devices in general. In the WAP site, if a user asks for downloading a document, we provide an option to the user to download it as a series of JPEG images rather than the original format so that the user can view it on any mobile device.

2 Design

2.1 Models and Controllers

The basic framework of our application consists of the follwing entities for which we have created models and controllers:

1. **User**: It stores the personal information of the users registered with the system.
2. **File_User**: It manages the information regarding the files uploaded by the users onto their web account such as the size of the file and the owner of the file.
3. **Group**: It manages the information regarding the different the groups created by the users of the system such as the group name and the group owner.
4. **User_Group**: It manages the information regarding which user belongs to which group of the system.
5. **Single_Share**: It manages the information regarding the files mutually shared amongst the users of the system such as the ID of the file, the user with whom the file is being shared, whether the user is allowed to again reshare the file or not.
6. **Group_Share**: It manages the information regarding the files shared via the group sharing mechanism of the system such as the ID of the file and the group with which the file is being shared.

2.2 Database Design

In accordance with the above specified models and controllers, we have created the following tables in our database:

Users

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
username	varchar(255)	YES		NULL	
password	varchar(255)	YES		NULL	
fname	varchar(255)	YES		NULL	
lname	varchar(255)	YES		NULL	
mobile_no	varchar(255)	YES		NULL	
e-mail	varchar(255)	YES		NULL	

File_User

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
filename	varchar(255)	YES		NULL	
username	varchar(255)	YES		NULL	
size	int(11)	YES		NULL	

Group

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
groupname	varchar(255)	YES		NULL	
desc	varchar(255)	YES		NULL	
owner	varchar(255)	YES		NULL	

User_Group

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
groupname	varchar(255)	YES		NULL	
username	varchar(255)	YES		NULL	

Single_Share

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
fileid	int(11)	YES		NULL	
username	varchar(255)	YES		NULL	
reshare	varchar(255)	YES		NULL	

Group_Share

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto-increment
fileid	int(11)	YES		NULL	
groupname	varchar(255)	YES		NULL	
reshare	varchar(255)	YES		NULL	

2.3 Diagrams

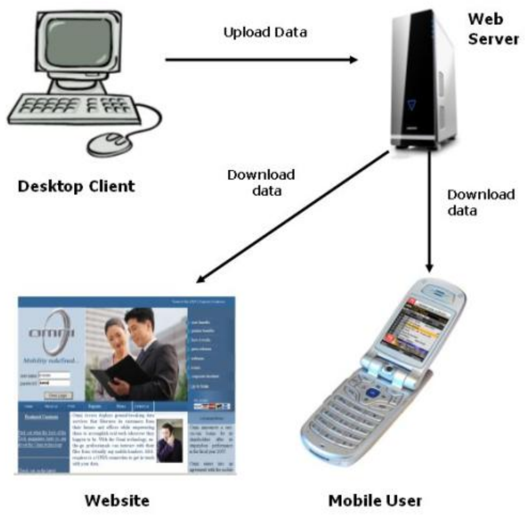


Figure 1: BLOCK DIAGRAM

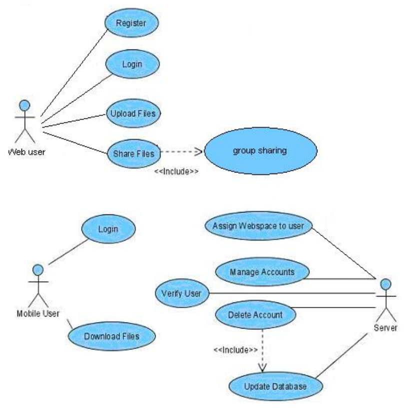


Figure 2: USE CASE DIAGRAM

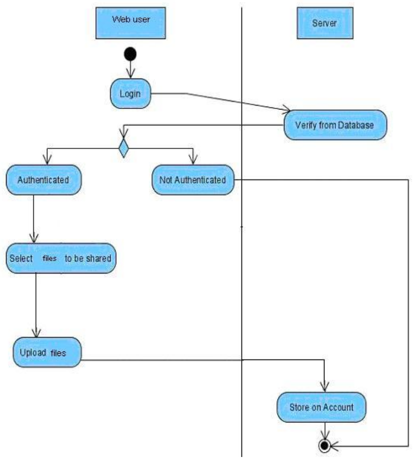


Figure 3: Activity Diagram for Uploading Files

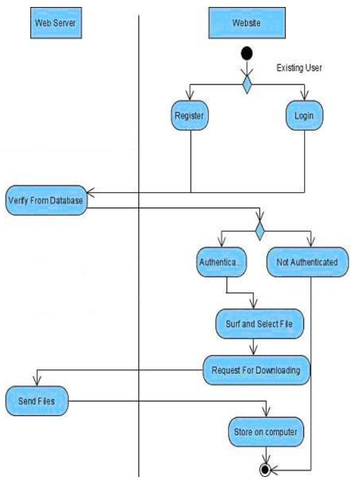


Figure 4: Activity Diagram for Downloading files on a PC

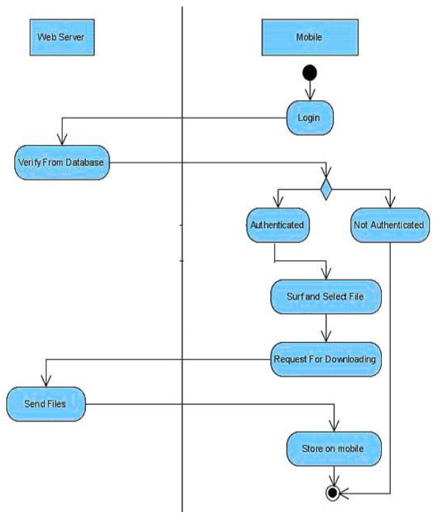
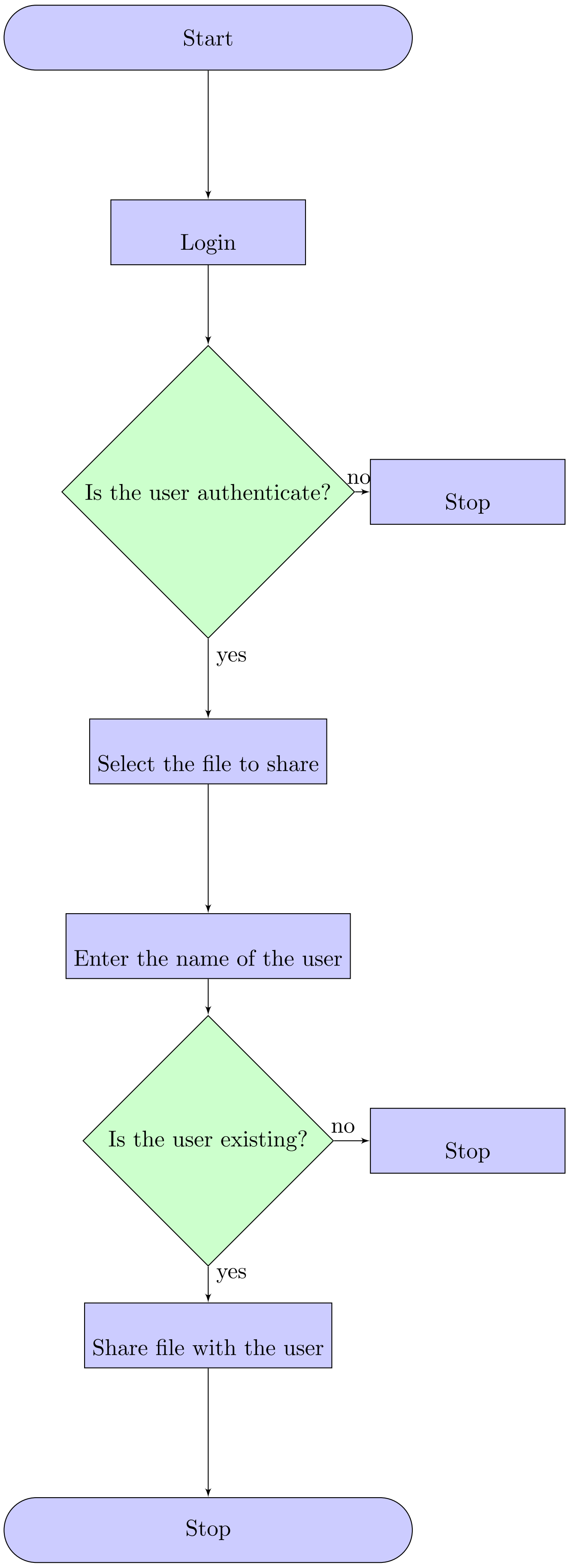
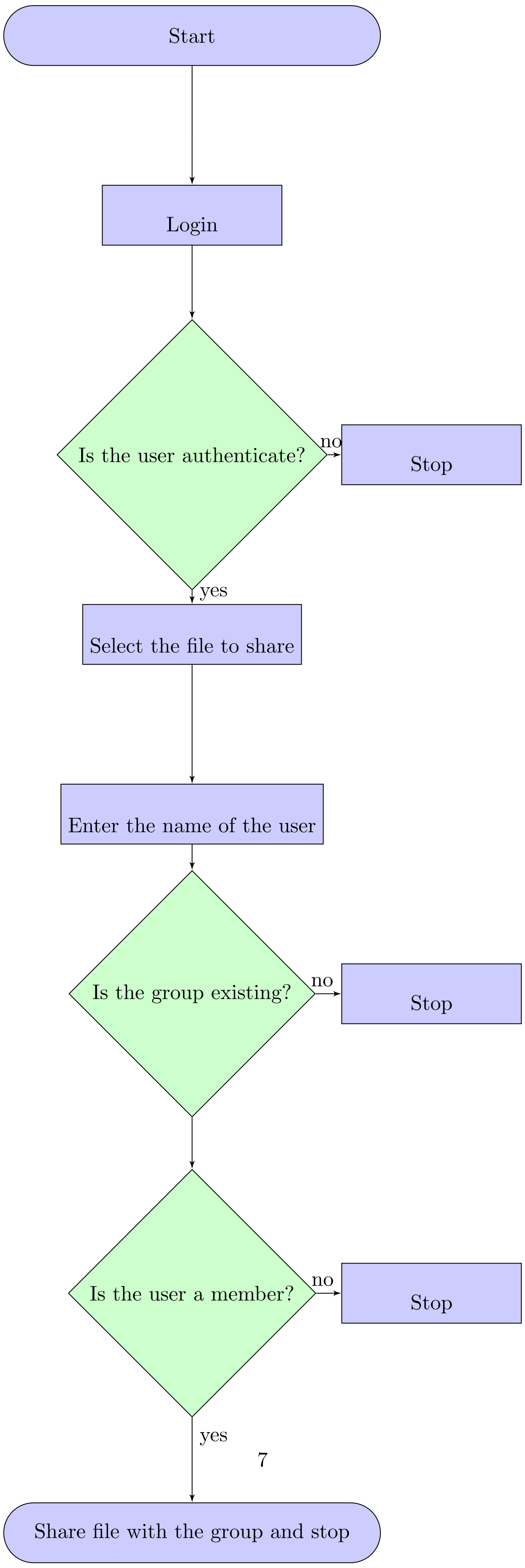


Figure 5: Activity Diagram for Downloading files on mobile

In the following two pages we will be showing the Flowcharts for the single user file sharing and the group level file sharing respectively


Start
Login
Is the user authenticate?
no
Stop
yes
Select the file to share
Enter the name of the user
Is the user existing?
no
Stop
yes
Share file with the user
Stop


Start
Login
Is the user authenticate?
no
Stop
yes
Select the file to share
Enter the name of the user
Is the group existing?
no
Stop
Is the user a member?
no
Stop
yes
Share file with the group and stop

2.4 Complexity

While coding of the controllers of our project, the task that we felt was the most challenging was maintaining the consistency of the database. For eg. when the user A shares a file with another user/group B, first of all we needed to check whether the user/group B exists or not. Then we needed to check whether A has already shared the file with B or not. If not, then whether this file is owned by A himself or has he received the file via sharing (either by single user sharing or group sharing). If he is not the owner of the file, then whether he has been given reshare permission to share file with others. If yes, then only allow the file to be shared otherwise give user A an appropriate error message. Any mistake in the above procedure results in the database being in an inconsistent state which is completely undesirable. It took us around 200 lines of ruby code to implement this fairly complex logic

3 Analysis And Future Work

3.1 Analysis

We feel that we have created a pretty decent and robust file sharing system. The place that we feel where we could still perform better is client-side scripting. Currently we have not used client-side scripting in our code (Javascript) and we are relying on server side scripting for error checking. However we feel that this can degrade performance of the system under high load conditions and hence is not a good idea. Currently, during the file upload, we are not showing the progress of the upload. But this can be done either by using plugins or with some anount of coding. Since this system is just a prototype of a full fledged file sharing system, we have currently not implemented any restrictions on the user's account spaces. But this can be accomplished without much difficulty. All that is needed is to keep checking the account size during each file upload and give an error message when the user exceeds his quota.

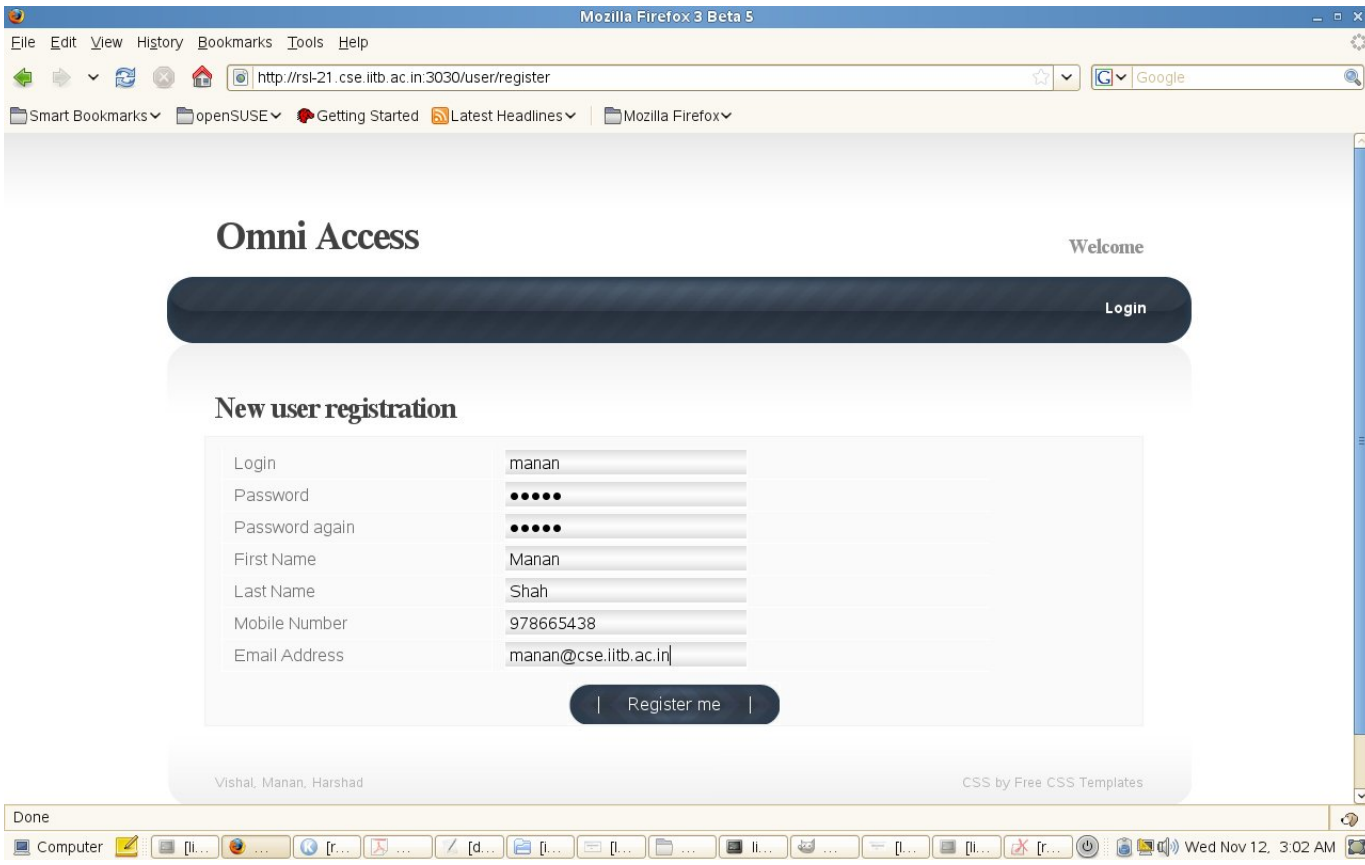
3.2 Future Work

As regards the future scope of this project, we feel that the primary enhancement that can be done is enabling sharing on a folder basis rather than file basis. This will free the user of having to repeatedly upload or share files. Also, currently we have only supported pdf to jpeg conversions for mobile users which can be extended also for other types of files like .doc, .ppt, etc. Last but not the least, given a chance to do the project gain, we would like to make the WAP site much more functional and secure by deploying a J2ME application on the user's mobile phone which will establish a secure connection to our web server before beginning file transfers.

3.3 Learning Experience

We feel that this project has been a great learning experience for us. It really honed our skills in database based web coding. We learned of many new elements of the Ruby on Rails framework like uploading files by setting multipart=true in the form tag, downloading files using the send_file method, etc. Also it taught us to be more imaginative while thinking of all the possible scenarios and hence be able to test the boundary conditions in a much better and complete way.

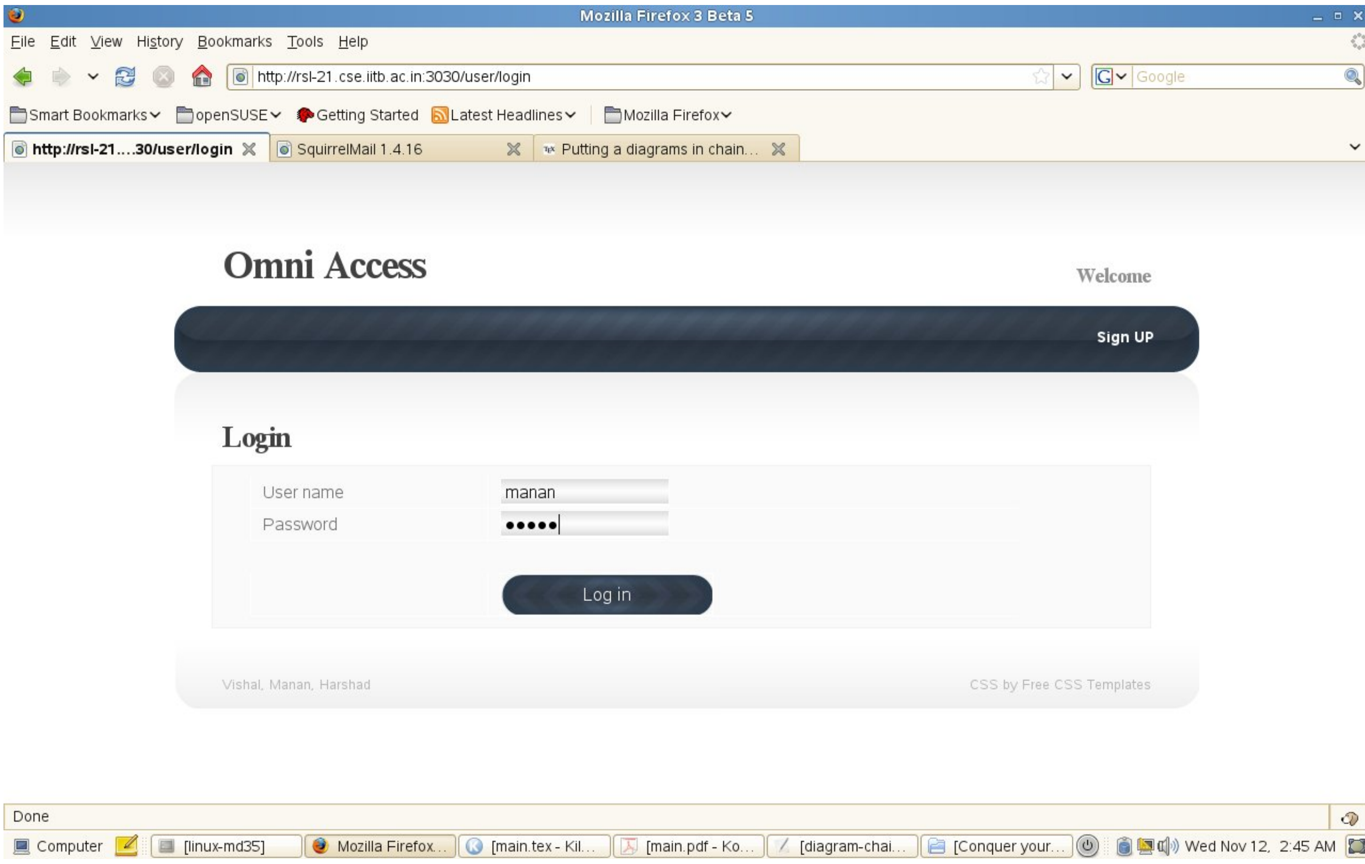
4 Screenshots


Mozilla Firefox 3 Beta 5
File Edit View History Bookmarks Tools Help
http://rsl-21.cse.iitb.ac.in:3030/user/register
Smart Bookmarks openSUSE Getting Started Latest Headlines Mozilla Firefox
Omni Access
Welcome
Login
Register me
Vishal, Manan, Harshad
CSS by Free CSS Templates
Done
Computer
Wed Nov 12, 3:02 AM

New user registration

Login	manan
Password	●●●●●
Password again	●●●●●
First Name	Manan
Last Name	Shah
Mobile Number	978665438
Email Address	manan@cse.iitb.ac.in

Figure 6: SIGN UP



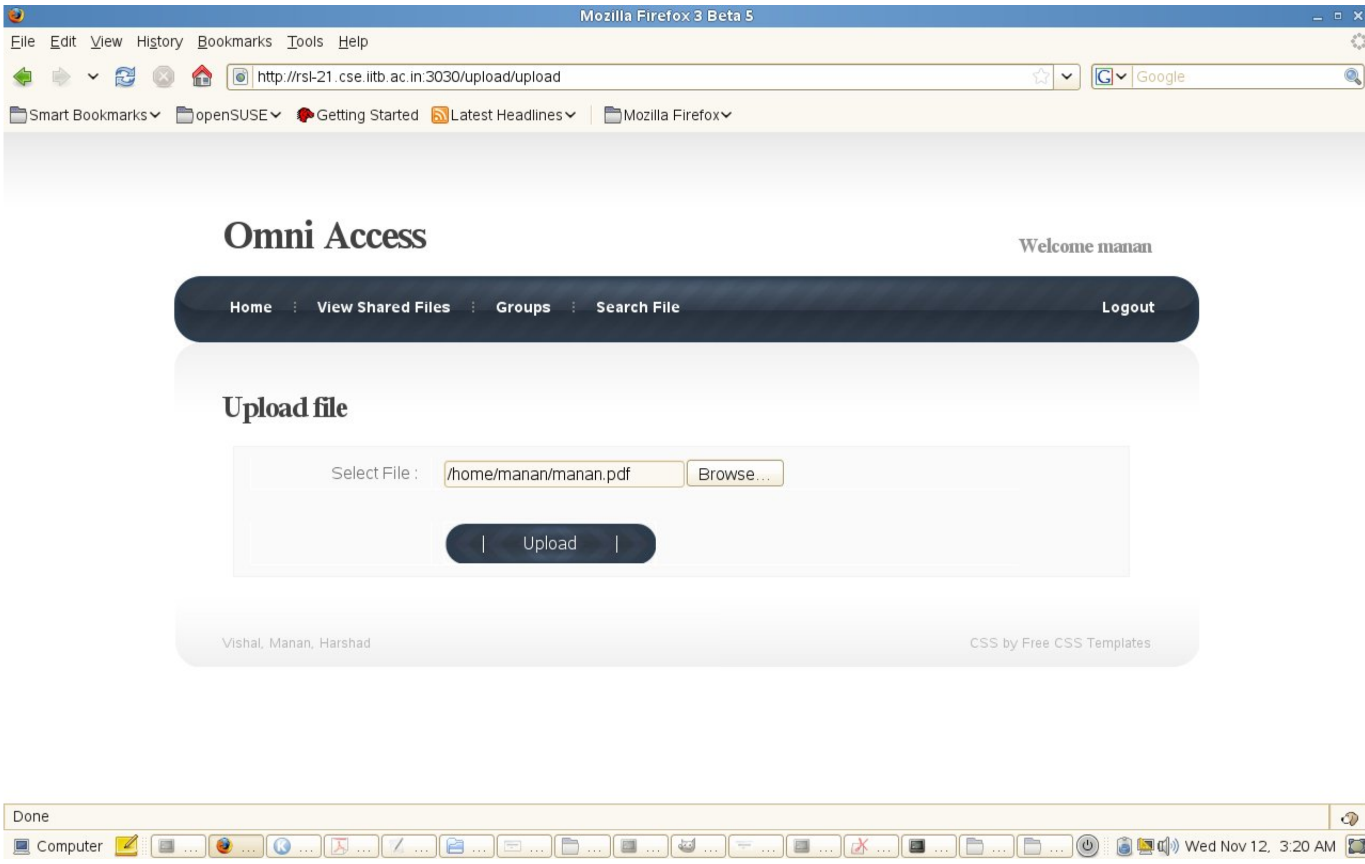
http://rsl-21.cse.iitb.ac.in:3030/user/login

Omni Access

Login

User name	manan
Password	●●●●●

Figure 7: LOGIN


Mozilla Firefox 3 Beta 5
File Edit View History Bookmarks Tools Help
http://rsl-21.cse.iitb.ac.in:3030/upload/upload
Google
Smart Bookmarks openSUSE Getting Started Latest Headlines Mozilla Firefox
Home View Shared Files Groups Search File Logout
Upload
Browse...
Done
Computer
Wed Nov 12, 3:20 AM

Omni Access

Welcome manan

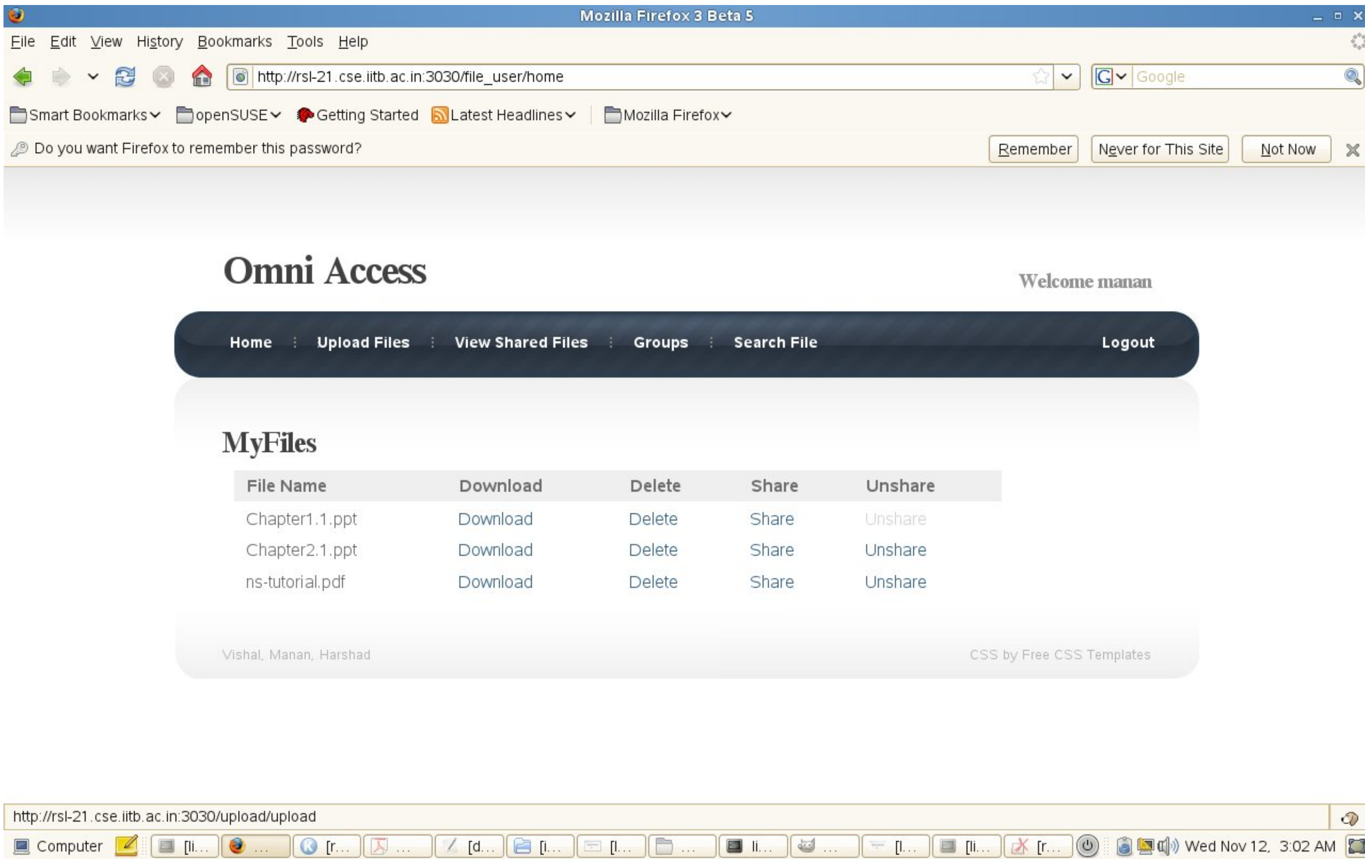
Upload file

Select File : /home/manan/manan.pdf

Vishal, Manan, Harshad

CSS by Free CSS Templates

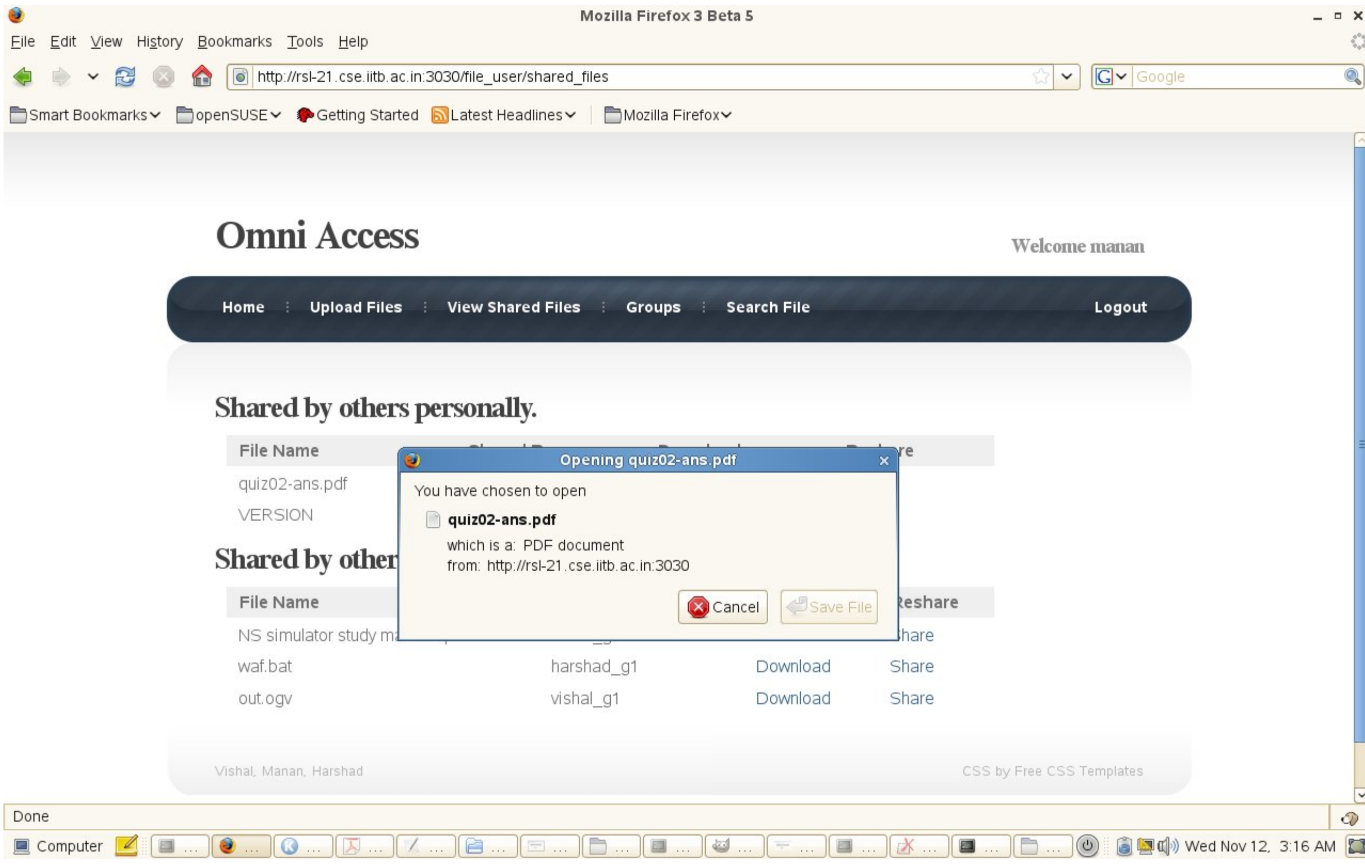
Figure 8: UPLOAD


Mozilla Firefox 3 Beta 5
File Edit View History Bookmarks Tools Help
http://rsl-21.cse.iitb.ac.in:3030/file_user/home
Smart Bookmarks openSUSE Getting Started Latest Headlines Mozilla Firefox
Do you want Firefox to remember this password?
Remember Never for This Site Not Now
Omni Access
Welcome manan
Home Upload Files View Shared Files Groups Search File Logout
Vishal, Manan, Harshad
CSS by Free CSS Templates
http://rsl-21.cse.iitb.ac.in:3030/upload/upload
Computer
Wed Nov 12, 3:02 AM

MyFiles

File Name	Download	Delete	Share	Unshare
Chapter1.1.ppt	Download	Delete	Share	Unshare
Chapter2.1.ppt	Download	Delete	Share	Unshare
ns-tutorial.pdf	Download	Delete	Share	Unshare

Figure 9: MY FILES


Mozilla Firefox 3 Beta 5

File Edit View History Bookmarks Tools Help

http://rsl-21.cse.iitb.ac.in:3030/file_user/shared_files

Omni Access

Welcome manan

Home | Upload Files | View Shared Files | Groups | Search File | Logout

Shared by others personally.

File Name
quiz02-ans.pdf
VERSION

Opening quiz02-ans.pdf

You have chosen to open

quiz02-ans.pdf

which is a: PDF document
from: http://rsl-21.cse.iitb.ac.in:3030

Cancel | Save File

Shared by other

File Name			Reshare
NS simulator study ma			hare
waf.bat	harshad_g1	Download	Share
out.ogv	vishal_g1	Download	Share

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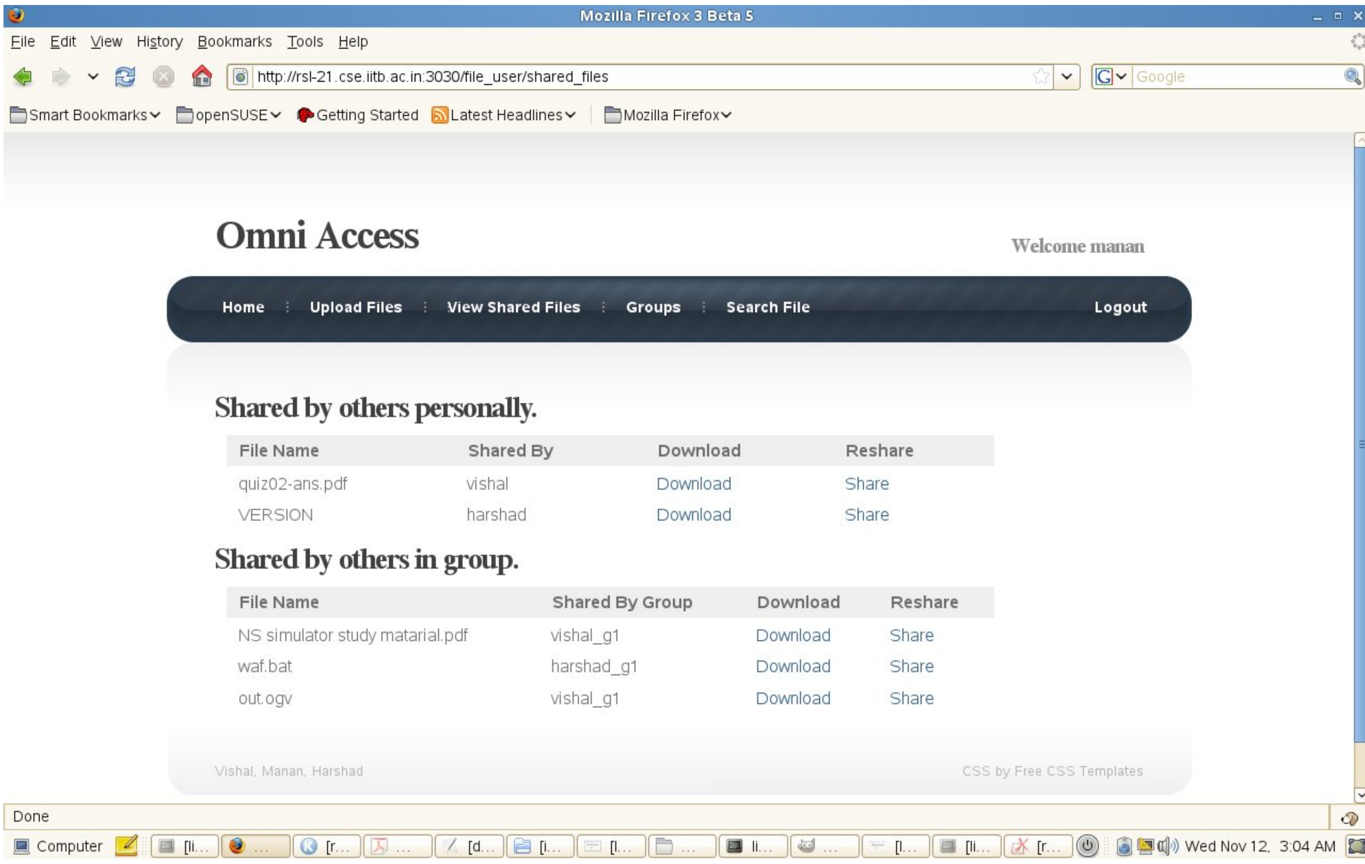
CSS by Free CSS Templates

Done

Computer

Wed Nov 12, 3:16 AM

Figure 10: DOWNLOAD FILES



Mozilla Firefox 3 Beta 5
File Edit View History Bookmarks Tools Help
http://rsl-21.cse.iitb.ac.in:3030/file_user/shared_files
Smart Bookmarks openSUSE Getting Started Latest Headlines Mozilla Firefox
Home Upload Files View Shared Files Groups Search File Logout
Done
Computer
Wed Nov 12, 3:04 AM

Omni Access

Welcome manan

Shared by others personally.

File Name	Shared By	Download	Reshare
quiz02-ans.pdf	vishal	Download	Share
VERSION	harshad	Download	Share

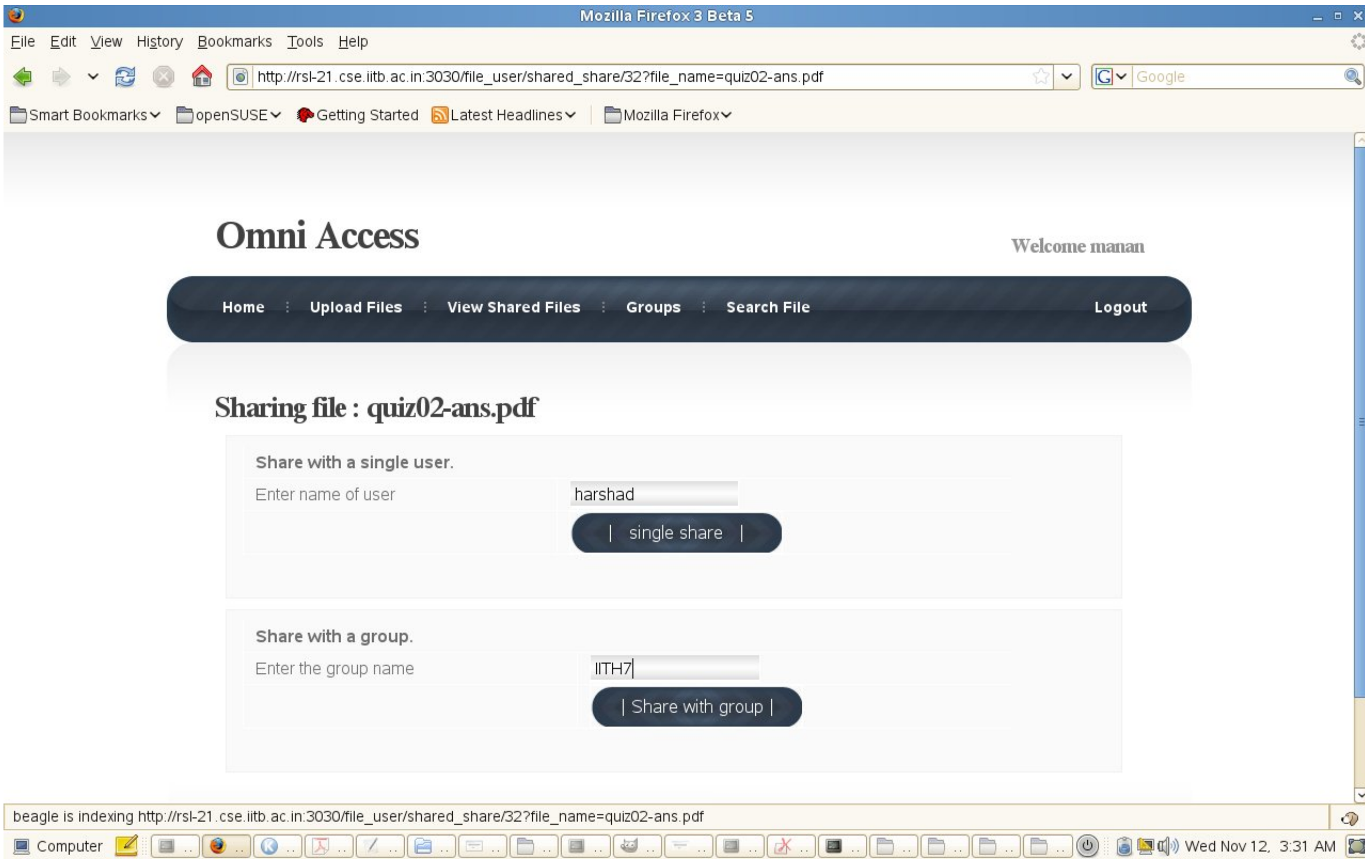
Shared by others in group.

File Name	Shared By Group	Download	Reshare
NS simulator study matarial.pdf	vishal_g1	Download	Share
waf.bat	harshad_g1	Download	Share
out.ogv	vishal_g1	Download	Share

Vishal, Manan, Harshad

CSS by Free CSS Templates

Figure 11: SHARED FILES


Mozilla Firefox 3 Beta 5
File Edit View History Bookmarks Tools Help
Smart Bookmarks openSUSE Getting Started Latest Headlines Mozilla Firefox
Home Upload Files View Shared Files Groups Search File Logout
| single share |
| Share with group |
Computer
Wed Nov 12, 3:31 AM

http://rsl-21.cse.iitb.ac.in:3030/file_user/shared_share/32?file_name=quiz02-ans.pdf

Omni Access

Welcome manan

Sharing file : quiz02-ans.pdf

Share with a single user.

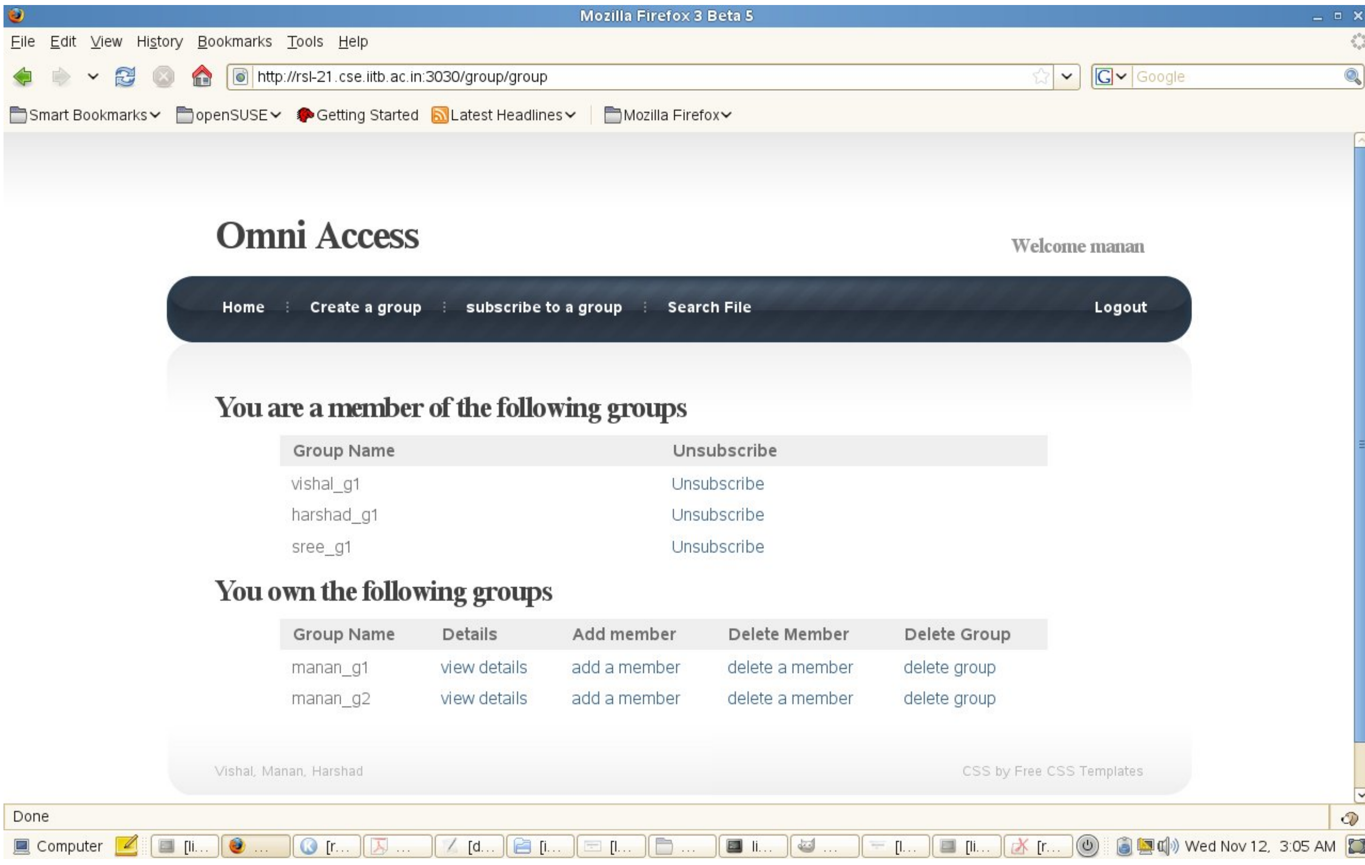
Enter name of user: harshad

Share with a group.

Enter the group name: IITH7

beagle is indexing http://rsl-21.cse.iitb.ac.in:3030/file_user/shared_share/32?file_name=quiz02-ans.pdf

Figure 12: SHARE FILE



You are a member of the following groups

Group Name	Unsubscribe
vishal_g1	Unsubscribe
harshad_g1	Unsubscribe
sree_g1	Unsubscribe

You own the following groups

Group Name	Details	Add member	Delete Member	Delete Group
manan_g1	view details	add a member	delete a member	delete group
manan_g2	view details	add a member	delete a member	delete group

Figure 13: GROUPS