FILE SHARING SYSTEM

PROJECT REPORT
COMP 353 - DATABASES

Team 7

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1. PROJECT DESCRIPTION

The Comp 353 File Management System is a file sharing system in the vein of the Concordia CrsMgr. It is built using MySQL, and supports all queries and operations by a file sharing system for users who are developing a software system, or working on a group project. It uses a collection of MySQL tables, with a user interface coded in JavaScript, HTML, CSS and PHP. The application can easily be used to share files between users, as any member of a team can upload a file, or replace a previously uploaded file with a new version. Deleting files, recovering a deleted file within 24 hours and making sure that it is not possible to overwrite a newer file version with an older one are all features of the Comp 353 FSS. It keeps tracks of who downloaded which file, and keeps the information of all uploads in the database, such as upload date, file size, etc.

2. ASSUMPTIONS

The assumptions for this design are as follows:

A. *Each group can hold up to six people.*

As per the policies of our COMP 353 course this semester, we set the maximum number of people in a group to 6.

B. *The FSS is only implemented for COMP 353 course.*

As the CRSMGR system used in this class is specifically for COMP 353 - we also only implemented the FSS on a class-by-class basis. (ie - our project is only designed for this section of the COMP 353 course)

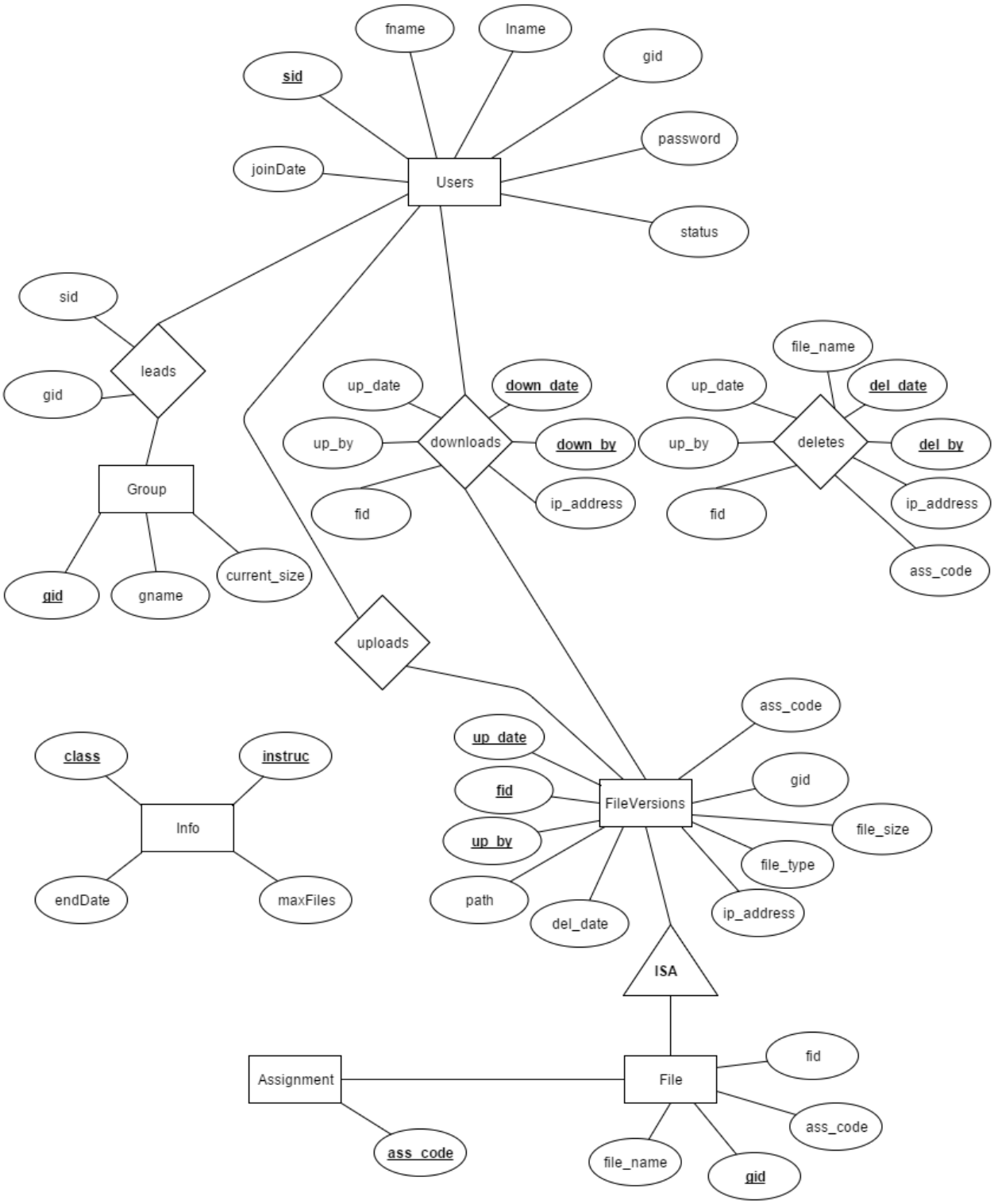
C. *Users that are Professors or TAs are added manually by the course administrator through SQL.*

As the number of TAs and Professors allocated to a given course is reasonably small - we assumed that these special positions would be manually entered by the course administrator.

D. *Default password for new Students is set to 'pass123'*

Just as we were given a default password when we were signed up for the CRSMGR site, Students within our FSS are also given a default password. Once logged in, Users can change their password (provided it meets requirements - which we assumed to be 6 or more numbers and letters).

3. E-R DIAGRAMS AND RELATIONAL DATABASE DESIGN



List of relations:

primary key | foreign key

Assignment (**ass_code:varchar**)
FileVersions (**fid:int** , **up_date:datetime** , **up_by:int** , ass_code:varchar , gid:int , file_size:float , file_type:varchar , path:varchar , ip_address:varchar , del_date:datetime)
Files (fid:int , ass_code:varchar , gid:int , file_name:varchar)
Groups (**gid:int** , gname:varchar , current_size:int)
Info (**instruc:int** , maxFiles:int , endDate:date , **class:varchar**)
Users (**sid:int** , fname:varchar , lname:varchar , gid:int , password:varchar , status:int , joinDate:datetime)
del (**del_date:datetime** , **del_by:int** , up_date:datetime , fid:int , up_by:int , ip_address:varchar , file_name:varchar , ass_code:varchar)
down (**down_date:datetime** , **down_by:int** , up_date:datetime , fid:int , up_by:int , ip_address:varchar)
leads (sid:int , gid:int)

Functional dependencies:

Assignment {}
FileVersions {fid, up_date, up_by → ass_code, gid, file_size, file_type, path, ip_address, del_date}
Files {fid, ass_code, gid → file_name}
Groups {gid → gname, current_size}
Info {class → instruc, maxFiles, endDate}
Users {sid → fname, lname, gid, password, status, joinDate}
del {del_date, del_by, up_date, fid → up_by, ip_address, file_name, ass_code}
down {down_date, down_by, up_date, fid → up_by, ip_address}
leads {sid → gid | gid → sid}d

4. ACCESSING WEBSITE

URL: https://qoc353_1.encs.concordia.ca/
ACCOUNT: qoc353_1
PASSWORD: dbsu2016
DUMMY STUDENT: 27046677 - pass123
DUMMY TA: 99999999 - pass123
DUMMY TEACHER: 88888888 - pass123

5. CONTENTS OF TABLES, QUERIES AND SCREENSHOTS

SHOW tables:

```
mysql> show tables;
+--------------------+
| Tables_in_qoc353_1 |
+--------------------+
| Assignment         |
| FileVersions       |
| Files              |
| Groups             |
| Info               |
| Users              |
| del                |
| down               |
| leads              |
+--------------------+
9 rows in set (0.00 sec)
```

Table Assignment:

SHOW CREATE TABLE Assignment:

```
mysql> show create table Assignment;
+------------+--------------------------------------
| Table      | Create Table
+------------+--------------------------------------
| Assignment | CREATE TABLE `Assignment` (
  `ass_code` varchar(25) NOT NULL,
  PRIMARY KEY (`ass_code`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
+------------+--------------------------------------
1 row in set (0.00 sec)
```

Table FileVersions:

SHOW CREATE TABLE FileVersions:

```
| FileVersions | CREATE TABLE `FileVersions` (
  `fid` int(11) NOT NULL,
  `up_date` datetime NOT NULL,
  `up_by` int(8) NOT NULL,
  `ass_code` varchar(25) NOT NULL,
  `gid` int(11) NOT NULL,
  `file_size` float NOT NULL,
  `file_type` varchar(5) NOT NULL,
  `path` varchar(200) NOT NULL,
  `ip_address` varchar(15) NOT NULL DEFAULT '000.000.000.000',
  `del_date` datetime DEFAULT NULL,
  PRIMARY KEY (`fid`,`up_date`,`up_by`),
  KEY `up_by` (`up_by`),
  KEY `ass_code` (`ass_code`),
  KEY `gid` (`gid`),
  KEY `fid` (`fid`),
  KEY `up_date` (`up_date`),
  CONSTRAINT `FileVersions_ibfk_1` FOREIGN KEY (`up_by`) REFERENCES `Users` (`sid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `FileVersions_ibfk_2` FOREIGN KEY (`ass_code`) REFERENCES `Assignment` (`ass_code`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `FileVersions_ibfk_3` FOREIGN KEY (`gid`) REFERENCES `Groups` (`gid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `FileVersions_ibfk_4` FOREIGN KEY (`fid`) REFERENCES `Files` (`fid`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

Table Files;

SHOW CREATE TABLE Files:

```
| Files | CREATE TABLE `Files` (
  `fid` int(11) NOT NULL AUTO_INCREMENT,
  `ass_code` varchar(25) NOT NULL,
  `gid` int(11) NOT NULL,
  `file_name` varchar(100) NOT NULL,
  PRIMARY KEY (`fid`,`ass_code`,`gid`),
  KEY `gid` (`gid`),
  KEY `ass_code` (`ass_code`),
  CONSTRAINT `Files_ibfk_1` FOREIGN KEY (`gid`) REFERENCES `Groups` (`gid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `Files_ibfk_2` FOREIGN KEY (`ass_code`) REFERENCES `Assignment` (`ass_code`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB AUTO_INCREMENT=412 DEFAULT CHARSET=latin1 |
```

Table Groups:

SHOW CREATE TABLE Groups:

```
| Groups | CREATE TABLE `Groups` (
  `gid` int(11) NOT NULL,
  `gname` varchar(10) NOT NULL,
  `current_size` int(11) NOT NULL DEFAULT '0',
  PRIMARY KEY (`gid`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

Table Info:

SHOW CREATE TABLE Info:

```
| Info  | CREATE TABLE `Info` (
  `instruc` int(11) NOT NULL,
  `maxFiles` int(11) NOT NULL,
  `endDate` date NOT NULL,
  `class` varchar(7) NOT NULL,
  PRIMARY KEY (`class`),
  KEY `instruc` (`instruc`),
  CONSTRAINT `Info_ibfk_1` FOREIGN KEY (`instruc`) REFERENCES `Users` (`sid`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

Table Users:

SHOW CREATE TABLE Users:

```
| Users | CREATE TABLE `Users` (
  `sid` int(8) NOT NULL,
  `fname` varchar(25) NOT NULL,
  `lname` varchar(25) NOT NULL,
  `gid` int(11) DEFAULT '0',
  `password` varchar(20) NOT NULL,
  `status` int(1) NOT NULL DEFAULT '2',
  `joinDate` datetime NOT NULL DEFAULT CURRENT_TIMESTAMP,
  PRIMARY KEY (`sid`),
  KEY `gid` (`gid`),
  CONSTRAINT `Users_ibfk_1` FOREIGN KEY (`gid`) REFERENCES `Groups` (`gid`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

Table del:

SHOW CREATE TABLE del:

```
| del   | CREATE TABLE `del` (
  `del_date` datetime NOT NULL DEFAULT CURRENT_TIMESTAMP,
  `del_by` int(8) NOT NULL DEFAULT '0',
  `up_date` datetime NOT NULL,
  `fid` int(11) NOT NULL,
  `up_by` int(8) NOT NULL,
  `ip_address` varchar(15) NOT NULL DEFAULT '000.000.000.000',
  `file_name` varchar(100) NOT NULL,
  `ass_code` varchar(25) NOT NULL,
  PRIMARY KEY (`del_by`,`del_date`,`up_date`,`fid`),
  KEY `up_date` (`up_date`),
  KEY `fid` (`fid`),
  KEY `up_by` (`up_by`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

Table down:

SHOW CREATE TABLE down:

```
| down  | CREATE TABLE `down` (
  `down_date` datetime NOT NULL DEFAULT CURRENT_TIMESTAMP,
  `down_by` int(8) NOT NULL DEFAULT '0',
  `up_date` datetime NOT NULL,
  `fid` int(11) NOT NULL,
  `up_by` int(11) NOT NULL,
  `ip_address` varchar(15) NOT NULL DEFAULT '000.000.000.000',
  PRIMARY KEY (`down_by`,`down_date`,`up_date`,`fid`),
  KEY `up_date` (`up_date`),
  KEY `fid` (`fid`),
  KEY `up_by` (`up_by`),
  CONSTRAINT `down_ibfk_1` FOREIGN KEY (`down_by`) REFERENCES `Users` (`sid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `down_ibfk_2` FOREIGN KEY (`up_date`) REFERENCES `FileVersions` (`up_date`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `down_ibfk_3` FOREIGN KEY (`fid`) REFERENCES `FileVersions` (`fid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `down_ibfk_4` FOREIGN KEY (`up_by`) REFERENCES `FileVersions` (`up_by`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

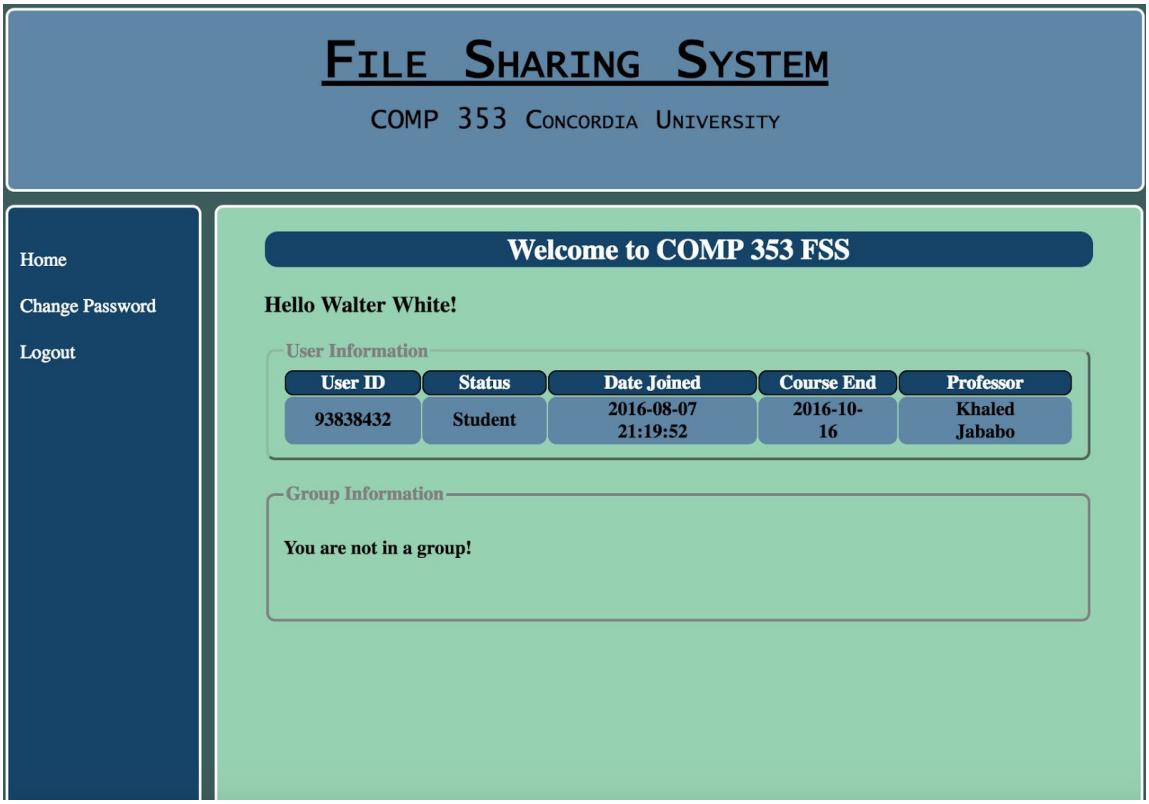
Table leads:

SHOW CREATE TABLE leads:

```
| leads | CREATE TABLE `leads` (
  `sid` int(11) NOT NULL,
  `gid` int(11) NOT NULL,
  PRIMARY KEY (`sid`,`gid`),
  KEY `leads_ibfk_2` (`gid`),
  CONSTRAINT `leads_ibfk_2` FOREIGN KEY (`gid`) REFERENCES `Groups` (`gid`) ON DELETE CASCADE ON UPDATE CASCADE,
  CONSTRAINT `leads_ibfk_1` FOREIGN KEY (`sid`) REFERENCES `Users` (`sid`) ON DELETE CASCADE ON UPDATE CASCADE
) ENGINE=InnoDB DEFAULT CHARSET=latin1 |
```

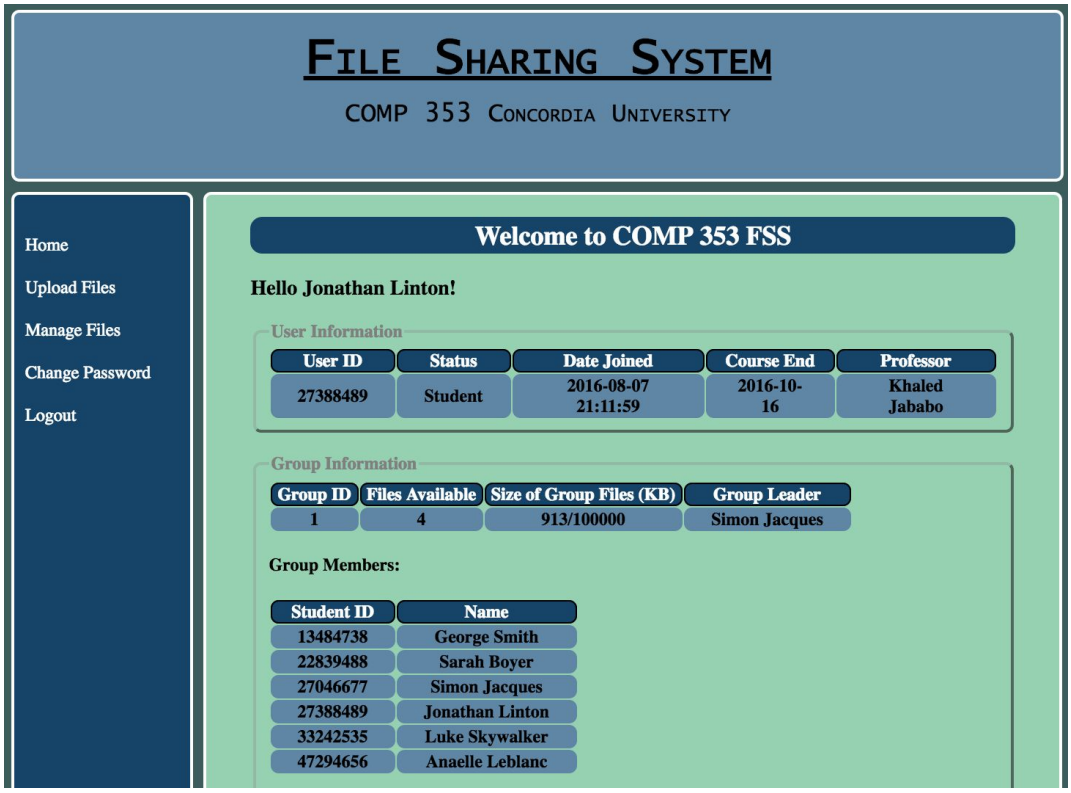
INTERFACE PICTURES

USER NOT IN ANY GROUP:



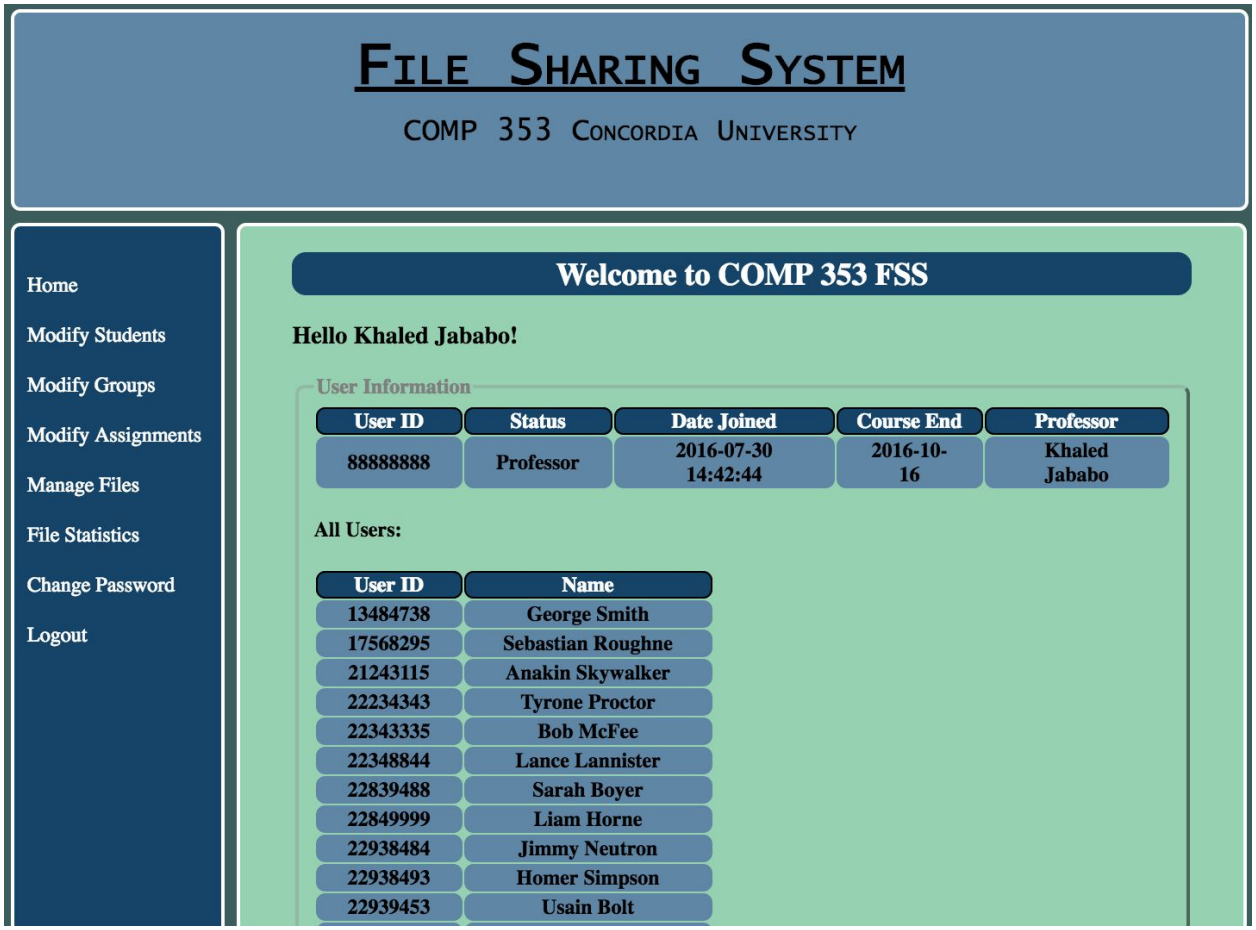
This is the most basic user interface in our system. The user is not part of any group and so the only pages available to them are the home page resuming their status, the password change page and the logout option.

STUDENT:



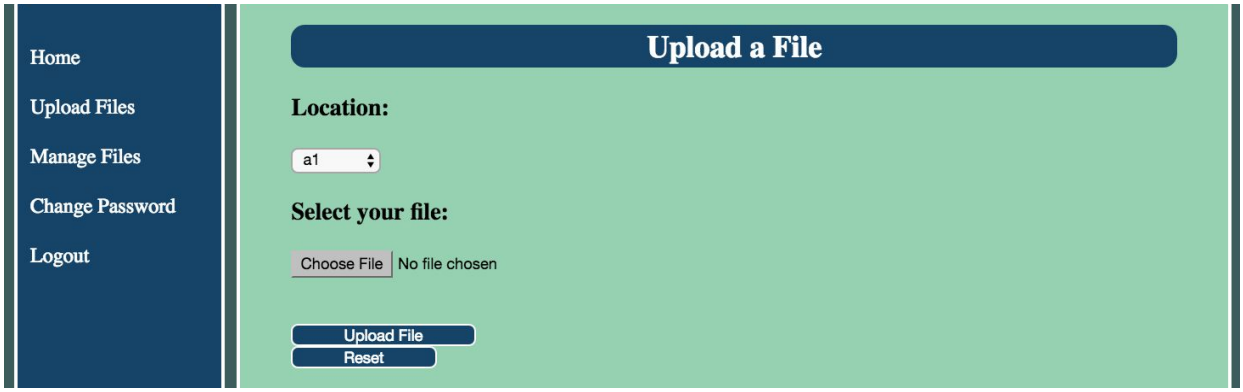
This is the student interface. Because they are part of a group, students can upload and manage files. Managing files includes downloading and deleting them for any team member, in addition to being able to rollback to previous versions for the team leader.

PROFESSOR:

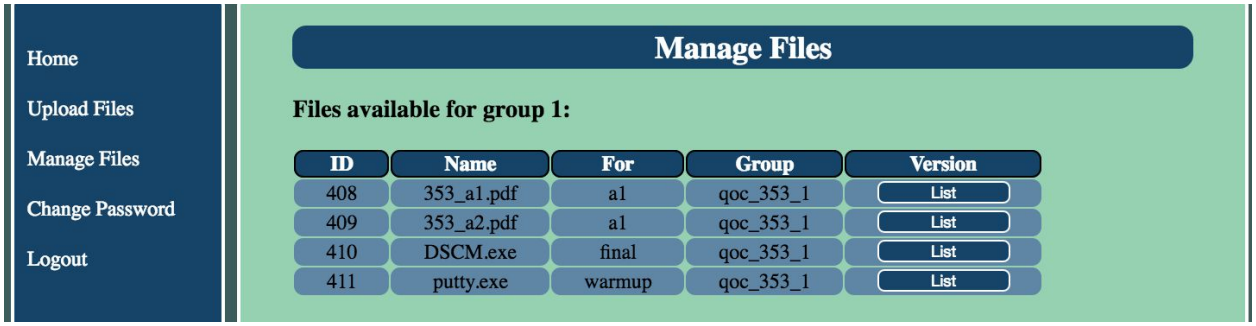

FILE SHARING SYSTEM
COMP 353 CONCORDIA UNIVERSITY
Home
Modify Students
Modify Groups
Modify Assignments
Manage Files
File Statistics
Change Password
Logout
Welcome to COMP 353 FSS
Hello Khaled Jababo!
User Information
User ID
Status
Date Joined
Course End
Professor
88888888
Professor
2016-07-30 14:42:44
2016-10-16
Khaled Jababo
All Users:
User ID
Name
13484738
George Smith
17568295
Sebastian Roughne
21243115
Anakin Skywalker
22234343
Tyrone Proctor
22343335
Bob McFee
22348844
Lance Lannister
22839488
Sarah Boyer
22849999
Liam Horne
22938484
Jimmy Neutron
22938493
Homer Simpson
22939453
Usain Bolt

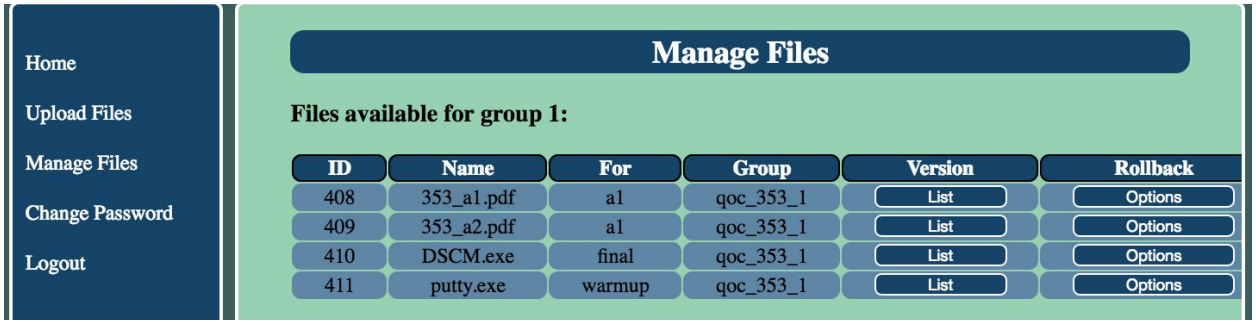
This is the professor page. Teachers can add students to the class, create groups, add students to groups, and remove them from said groups. They can also add, rename and remove assignment categories. Teachers can download all files uploaded by the students and have access to file statistics per student. They can of course also change their password and logout.

FEATURES:



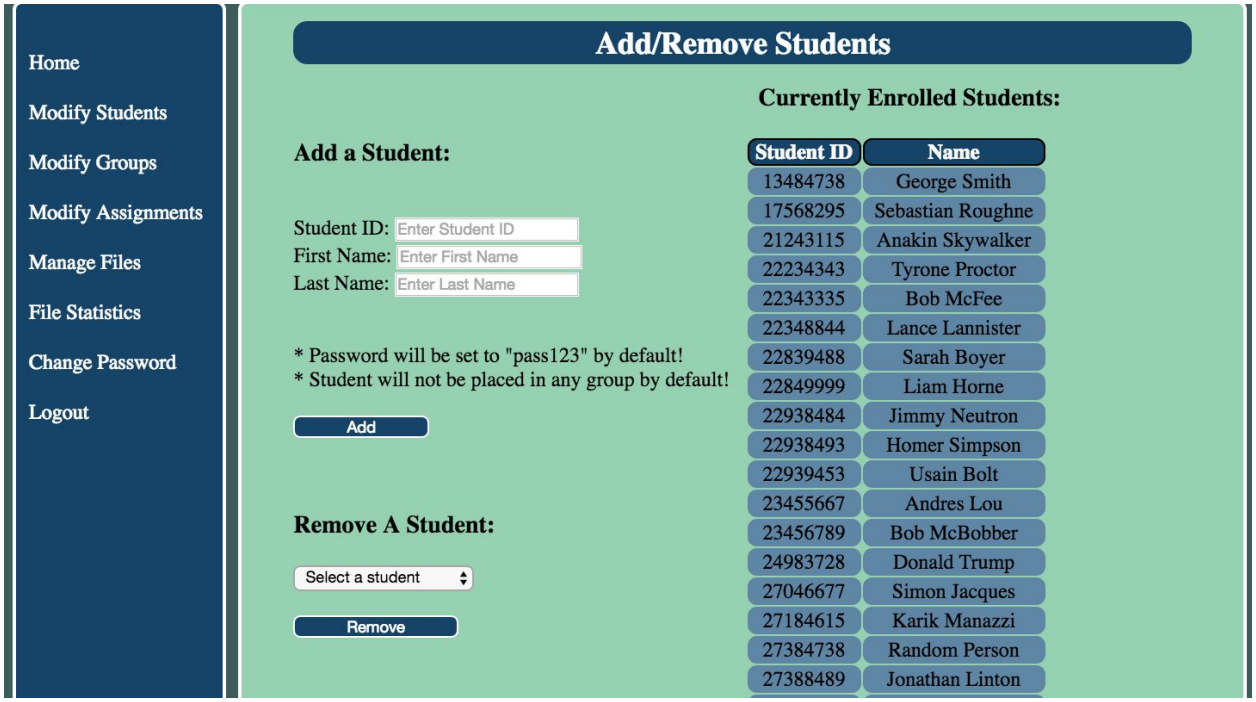
This is the file upload page. The user picks a category and a file to upload, and uploads the file.



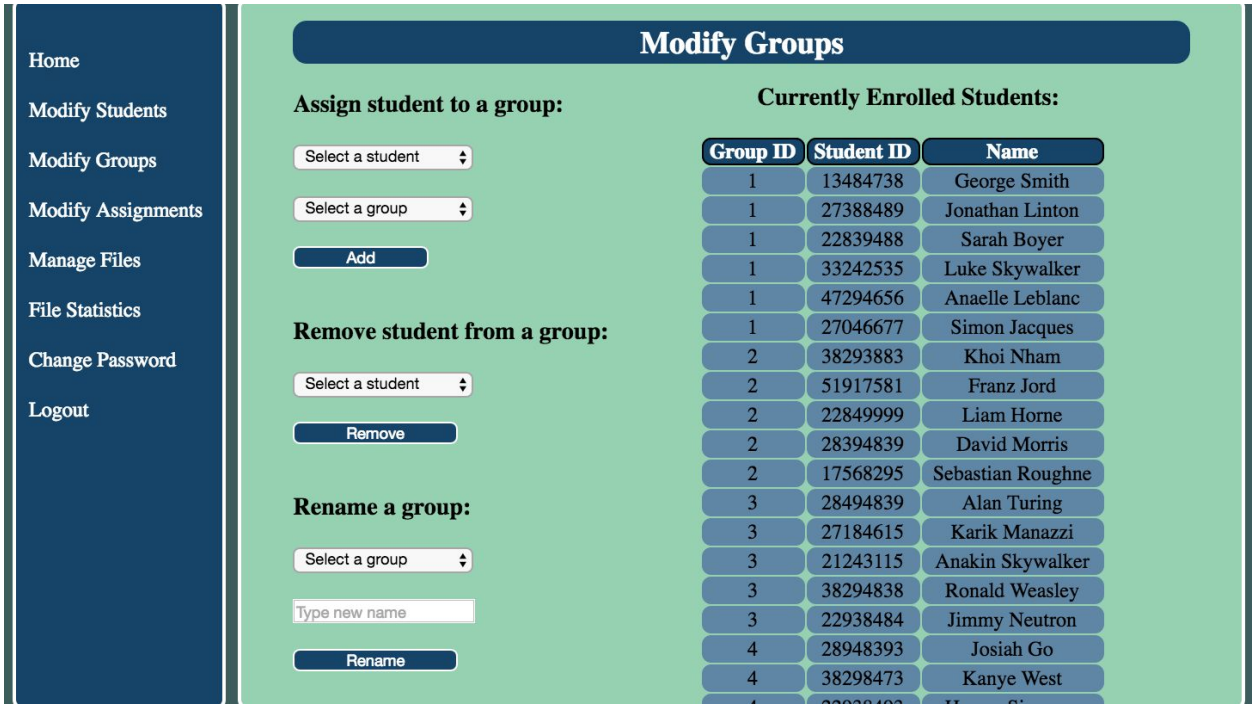


This is the manage file page. A student can see here all the files uploaded by their team and download them. If they are the team leader, they can rollback to a previous version of the file.

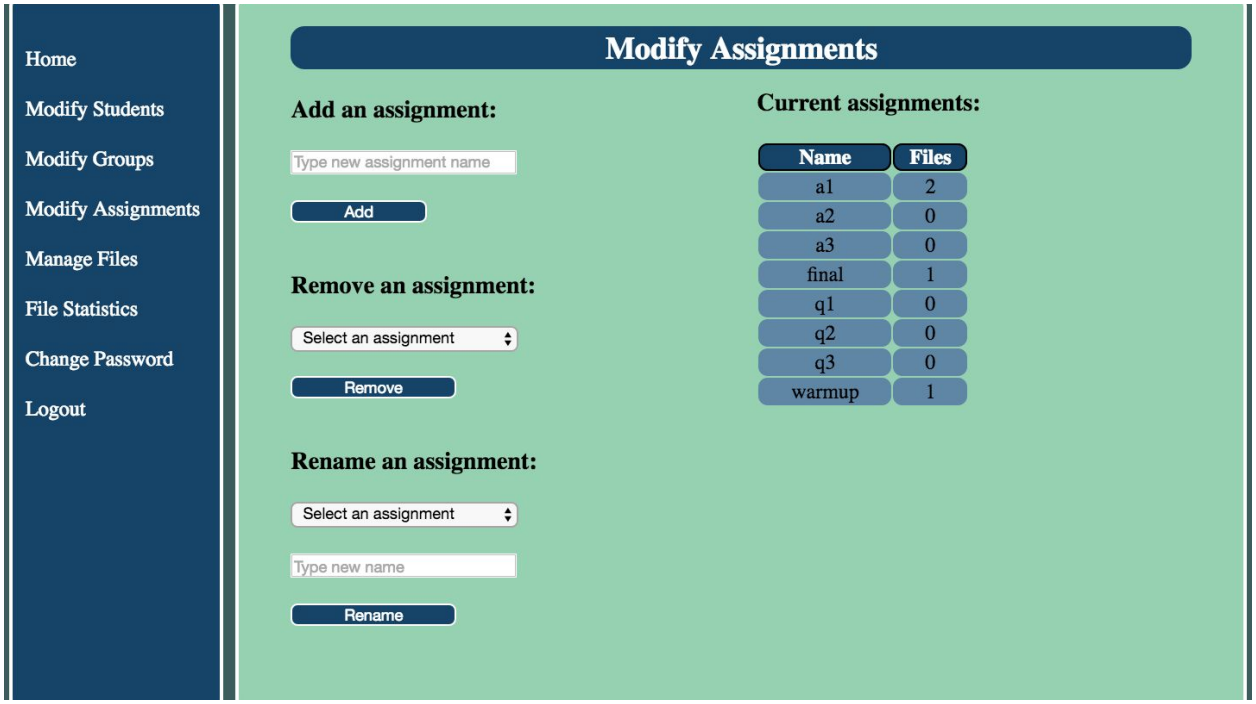
This is the password change page. Users can change their password here. Checks are made so that the new password is different, and contains letters and numbers.



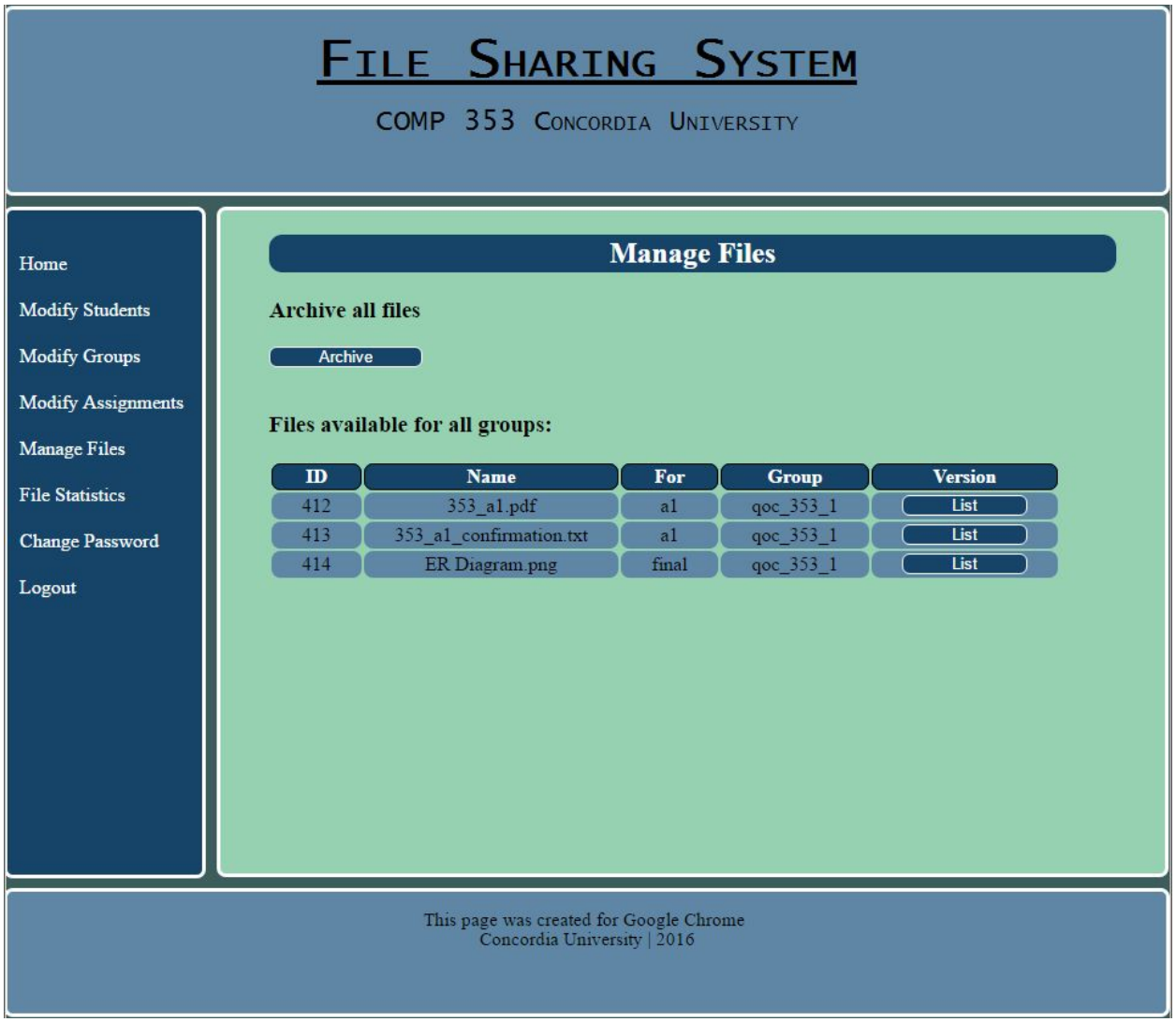
This is the add/remove student page. The teacher can use it to add and remove students from his class. The student ID is checked so that it is exactly 8 digits.



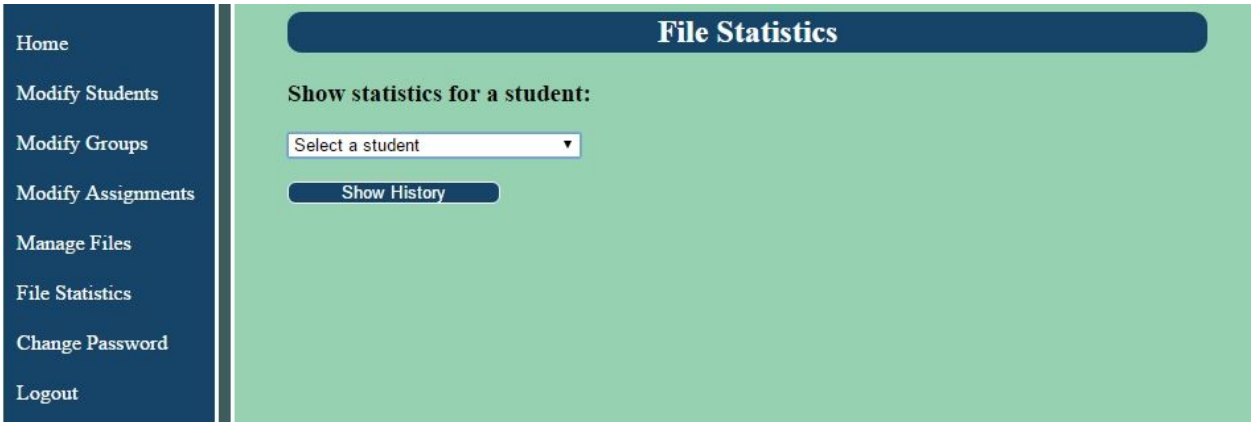
This is the modify groups page. The teacher can use it to assign and remove students from groups (respecting the group size limit). The professor can also rename groups.

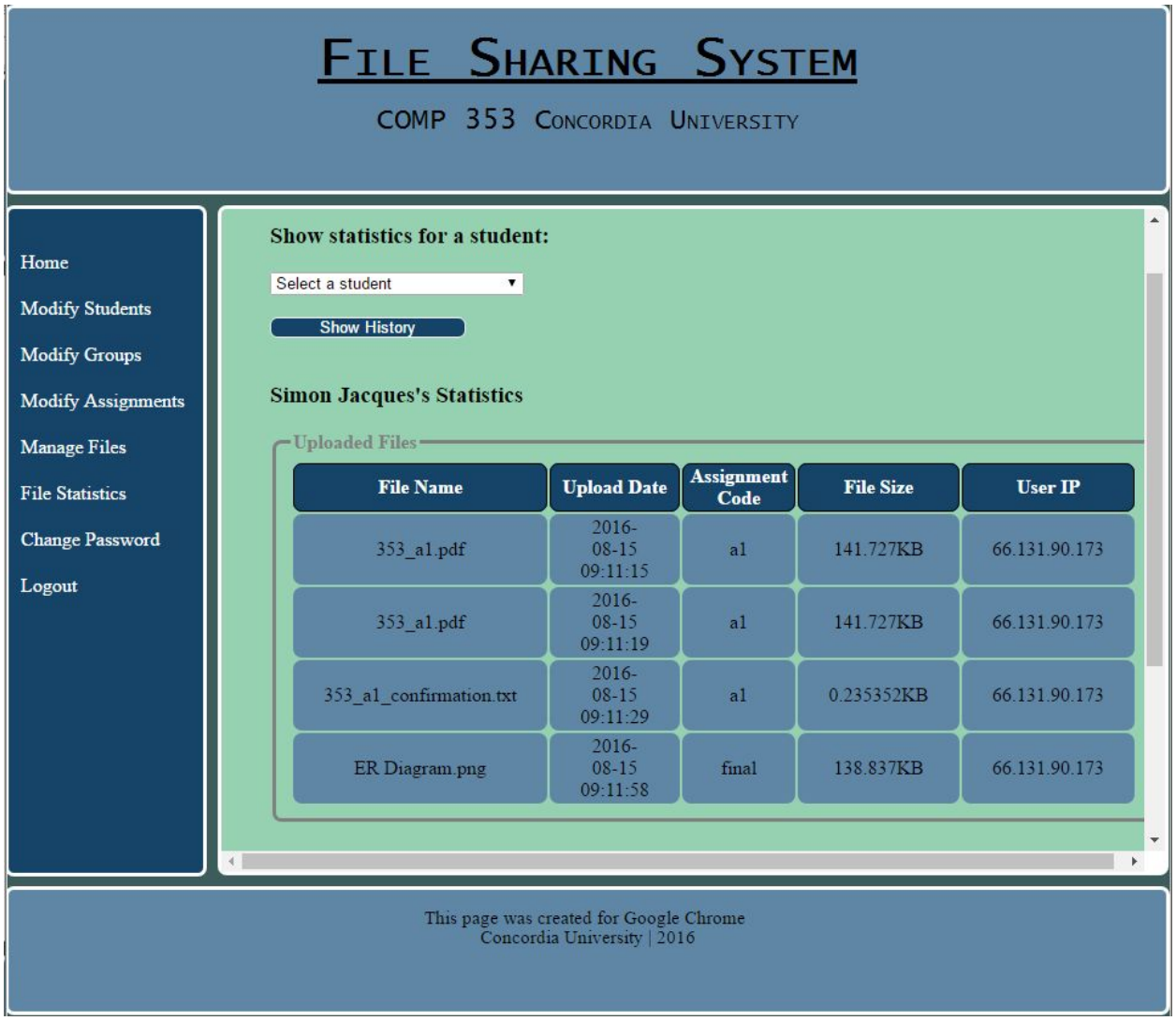


This is the modify assignments page. The professor can add, remove, and rename assignment categories.



This is the Professor's manage files page. They are permitted to download any file, view different versions as well as archive the course.

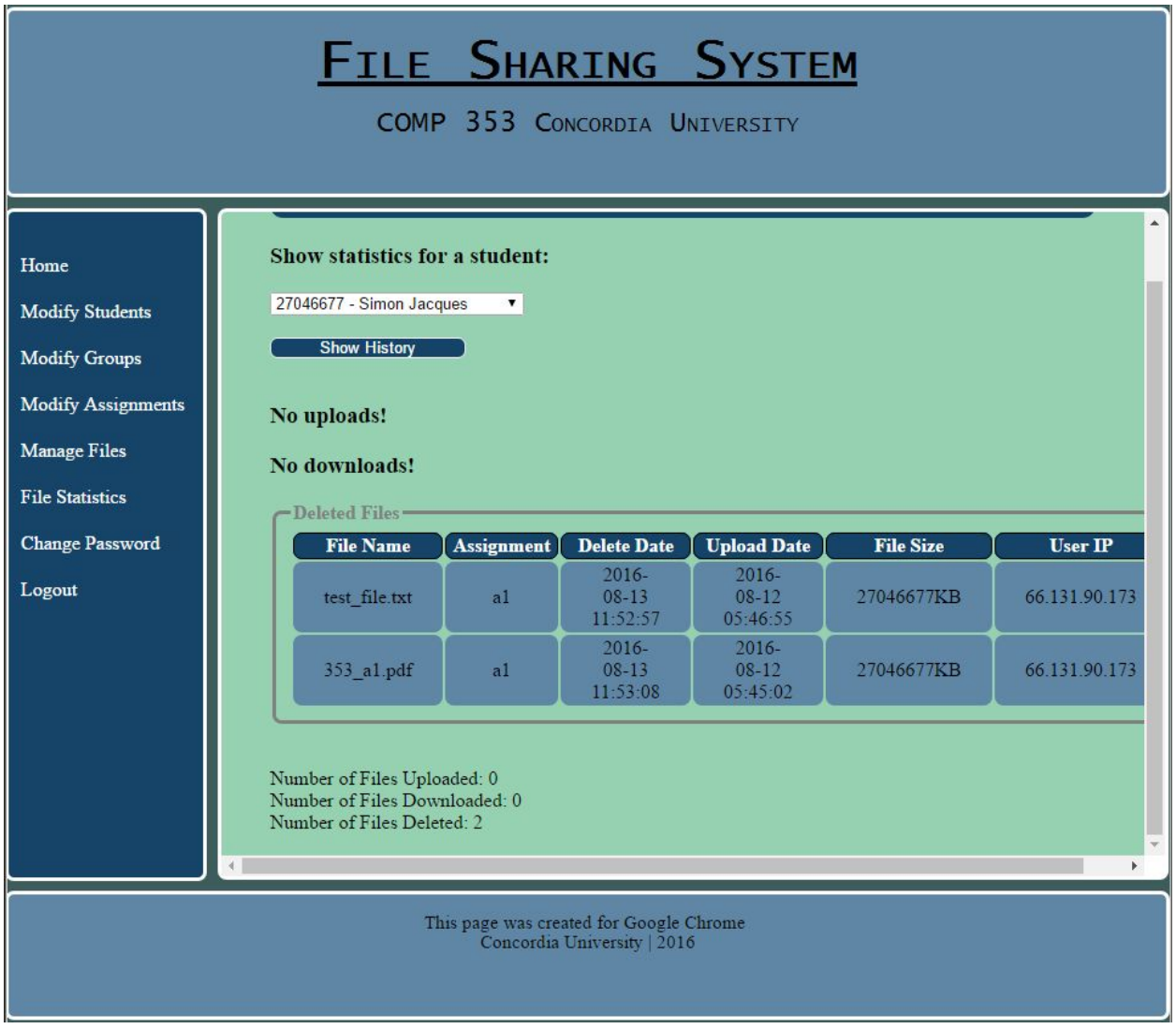




This is the file statistics page. The teacher selects a student, and a whole history of uploads, downloads and deletions is displayed for that student.

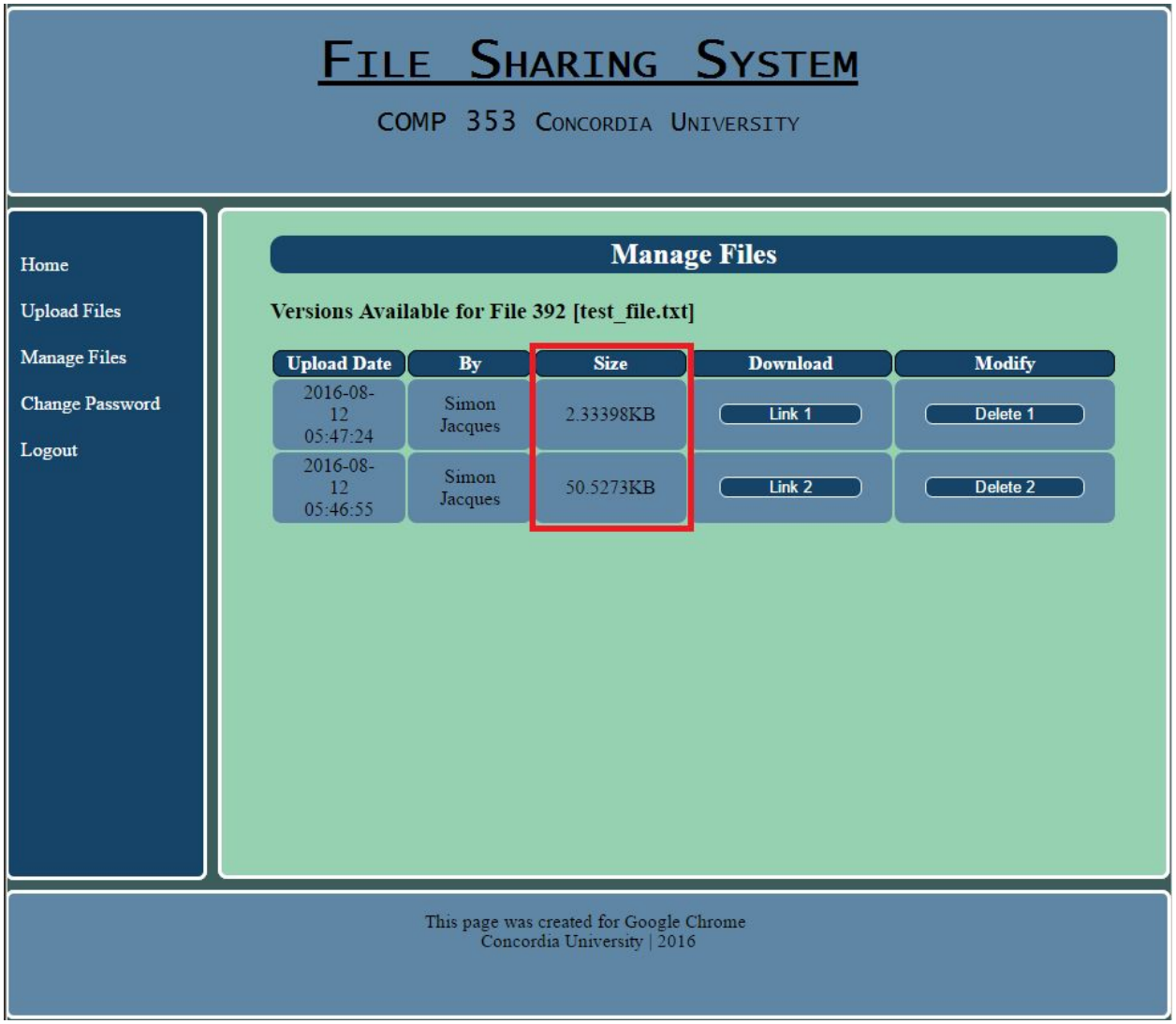
6. ADDITIONAL FEATURES

REMOVE ENTRIES FROM DELETE TABLE



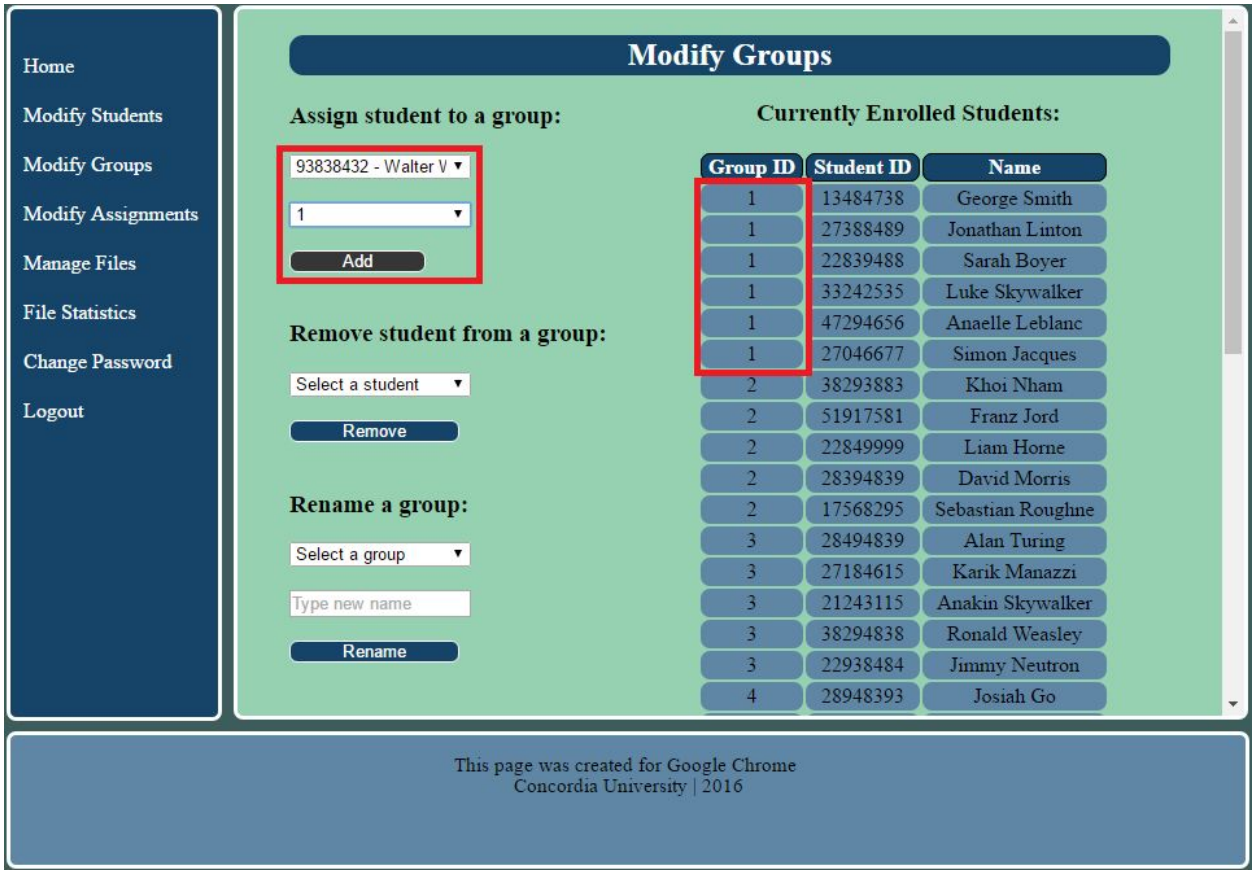

```
$query = "  DELETE FROM del;";

mysql_query($query);
```

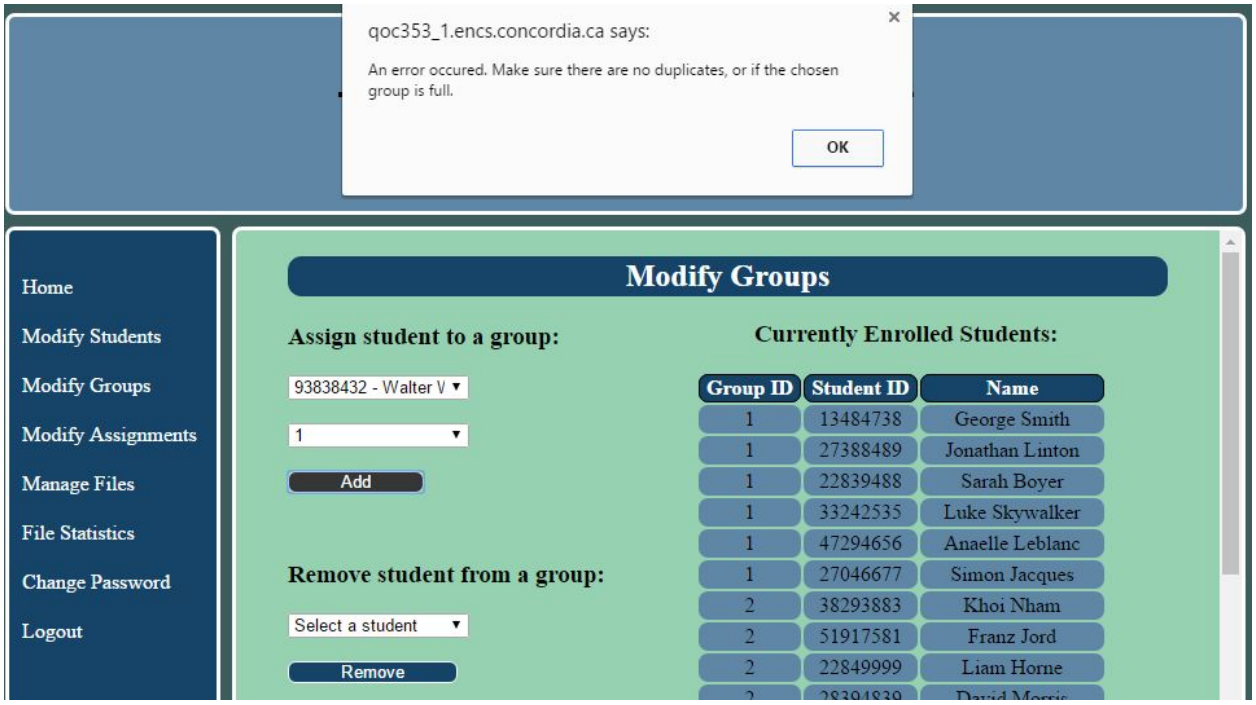
DISPLAY SIZE OF DIFFERENT VERSIONS OF A FILE




```
print('      </td>
           <td>'); // Print file size
               $size = mysql_result($result, $i, 'file_size');
               print($size . "KB");
print('      </td>
```

TRIGGERS TO TEST FOR GROUP SIZE





```
| CapacityTrigger | UPDATE | Users | BEGIN
SET @cap = NULL;
SELECT COUNT(*) INTO @cap FROM Users WHERE gid = NEW.gid;
IF @cap > 6 THEN
SIGNAL SQLSTATE '45000' SET message_text = 'The chosen group is full!';
UPDATE Users SET gid = 0 WHERE sid = NEW.sid;
END IF;
END | AFTER  | NULL    | STRICT_TRANS_TABLES,NO_ENGINE_SUBSTITUTION | goc353_1@132.205.%.% | utf8
```

Group Member:	**Contributions:**
Jonathan Cardone	● Modify Students Page ○ Add/Remove Students ○ SQL Queries in PHP ○ CSS/HTML design ● Modify Assignments Page ○ Add/Remove/Rename Assignment type ○ SQL Queries in PHP ○ CSS/HTML design ● Modify Groups Page ○ Add/Remove Students to Groups ○ Rename a Group ○ Designate a Group Leader ○ SQL Queries in PHP ○ CSS/HTML Design ● ER Diagram design ● SQL table design
Simon Jacques	● Download Pages (Manage Files) ○ “Archive Course” Functionality ○ Display all unique File names ○ Link from unique name to all File Versions ○ Delete File Functionality ○ Rollback File Functionality (for Leaders only) ○ SQL Queries in PHP ○ HTML/CSS Design ● Upload Page ○ Select Assignment type ○ Choose File dropdown selection ○ Upload file functionality ○ SQL Queries in PHP ○ HTML/CSS Design ● SQL Trigger ○ Triggers when a group is full (6 people) ● ER Diagram design ● SQL table design

Jonathan Linton	● Home Page ○ Display User Info ○ Display Group Info (including Leader, Group members, and Available Files) ○ SQL Queries in PHP ○ HTML/CSS Design ● File Statistics Page ○ Select a student dropdown selection ○ Display all Files a user has uploaded/downloaded/deleted ○ Display count of each type of File interaction ○ SQL Queries in PHP ○ HTML/CSS Design ● General HTML/CSS of website ○ Colour scheme ○ Navigation bar design ○ Header/Footer Design ● Login & Logout Pages / Session work ○ Setting/Checking User information ○ Registering Session Variables ○ Permissions based on User status (Prof, TA or Student) ○ SQL Queries in PHP ○ HTML/CSS design ● Validation page (to prevent attacks) ○ isDangerous() method ○ Checks if any dangerous text is being inputted ● ER Diagram design ● SQL table design
Clément Hennebelle	● Change Password Page ○ Check if old password is valid ○ Validate new password format ○ Display error messages ○ Store new password in PHP ○ SQL Queries in PHP ● Javascript Form validation ○ Check for proper format/syntax ● Functional Dependencies / 3NF work ● ER Diagram design ● SQL table design