

# CodeBase

**- Share your ideas -**

**Developed by**

Giorgio Stefanoni  
4796

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## **Vision:**

CodeBase is the outcome of the second semester's course called Internet Technologies. The aim of the project is to develop a dynamic website that is able to manage resources, users and comments. The idea behind CodeBase is to give the possibility to developers to share the basic units of abstraction of the object oriented model, i.e classes. These classes will be categorized by the developer and other users will have the possibility to search inside these categories to find the class they need. Resources can be downloadable by everyone or just by a subset of the user. The user will be split among three different groups and they will possibly have the rights of posting resources, posting comments and to download party resources. CodeBase will be an open repository, thus also external user will have the right to access the resources, with the only restriction regarding the download and the comments.

## **About The System:**

The system has been developed using:

- J2EE technologies (jsp, servlets and JavaBeans)
- XHTML Strict 1.0
- Cascading Style Sheets
- HSQLDB that has been interfaced through JDBC
- The Jakarta Framework for uploading files through HTML forms
- Jhighlight for the source code highlighting

And it has been tested with:

- Internet Explorer 7
- Mozilla Firefox 3 rc1 (Mozilla Firefox 2 works as well)

## **CodeBase's Functionalities:**

CodeBase provides different functionalities depending whether you are visiting it as a Guest user or as a Registered user.

### ***Guest User's Functionalities:***

#### **The Menu:**

On the right side of the page there is a menu with the following items:

- Home
- About
- Browse
- Log In

The user navigates the website by clicking on one of the above items.

## The Home Page:

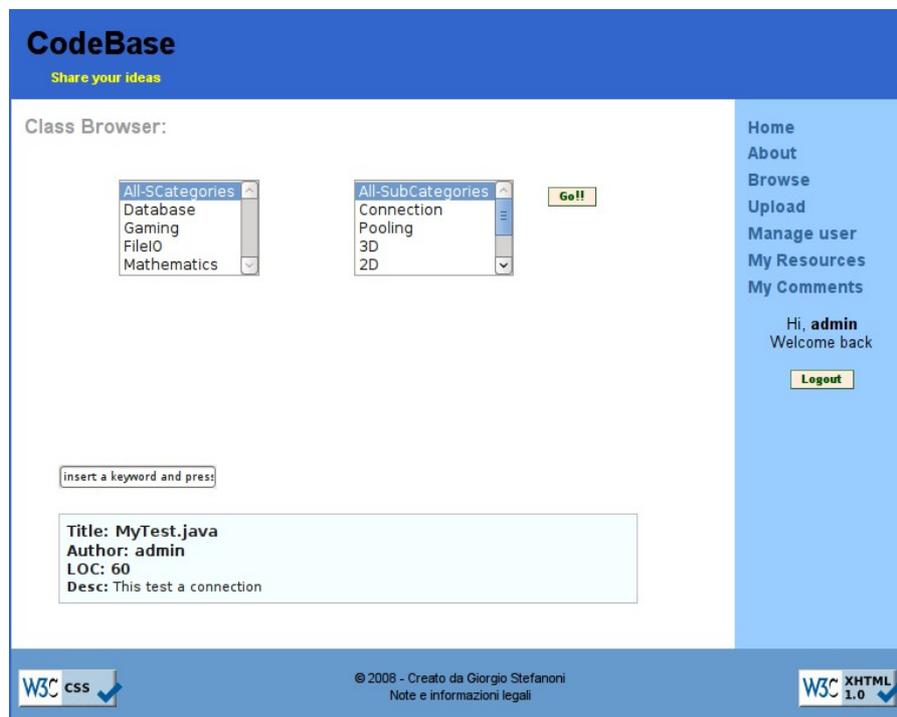
With the home button the user can go back to the introductory page that was shown when opening the website. This page contains some news on the project, a short introduction of the author and some contacts through which the user can contact him.

## The About Page:

With the about link we are redirected to a new page. This page contains information about the project and answers to some simple questions that a new user might be interested in.

## The Browse Page:

By clicking on browse, the user is redirect to a page in which he can browse the classes that are in the repository. In the browser he can select the category of classes he wants to see as search result. Alternatively, he can insert a keyword in the text field and search it by clicking ok. The result will be shown in more pages, if necessary, each holding ten class descriptions. The class description includes the name, the author, the number of line of codes and a short description of the class. The user can choose a class description and click on it. He will be redirected to a page that contains the source code of the chosen class with the respective comments. The user will not be able to post a comment, since it is not logged in.



## The Registration Page:

If the guest user wants to register himself to the service, he can click on the link on the bottom of the menu. He will be asked to insert his name, an user name, a password and an email. The user

name and email must be unique, which is, there must not exist a registered user with the same user name or with the same email. If the registration has gone well, he can log in.

### ***Registered User's Functionalities:***

#### **User Groups:**

There are three types of user in the system, these are:

- **Normal Users:** they have no special rights and they can modify only their resources. They might not have the right to post resources, to post comments or to download party resources.
- **Administrators:** users that can manage the rights of normal users (e.g the right of posting resources)
- **Users belonging to the highest group:** the only ones who can change the belonging group of users (both administrators and normal users)

#### **The Menu:**

A logged user, on the right hand side of the webpage, will see an expand version of the menu, which will contain more items. At the end, the menu will contain:

- Home
- About
- Browse
- Upload
- Manage User
- My Resources
- My Comments
- Log In

The home and about pages remain unaltered, the only difference is in the menu.

## The What's New Page:

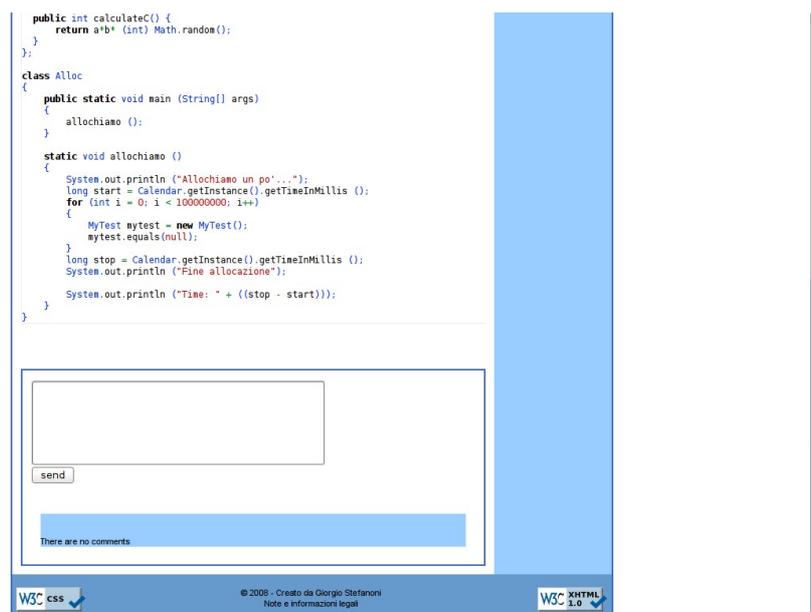


*In this example there is only one new resource since last visit*

After an user has logged in, he will be redirected to this page. This page will contain all the description of all the resources that are new since his last visit, if any. If the user is new (i.e is the first time he logs in) he will be shown all the resources that have been uploaded today. If he clicks on the resource, he will be redirected to a page showing the source code of the resource.

## The Browse Page:

The page is the same as for non-logged users, the difference is that when they view the source code of a class; they not only see the comments but also a text area where to insert their comments. Nevertheless, if the user has no right of posting comments he will be shown an error in later stages, when trying to post one. The user can download all the resources except the party ones, if he has no rights on them.



*The textarea is there for letting logged users write their comments.*

*The guests user will not see it.*

## The Upload Page:

**CodeBase**  
Share your ideas

**Class Uploader:**

Remember, your classes have to respect these directives:

- Not contain errors, thus they can be compiled
- Each line should not be longer than 80 chars
- Try to write concise and clear code
- Everyone loves well documented source codes

Upload your Java file

Choose a category:

Insert a short description:

Is party's resource? (visible to just party authorized users):  
No

Browse...

Upload

Home  
About  
Browse  
Upload  
Manage user  
My Resources  
My Comments

Hi, francesca  
Welcome back  
Logout

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W3C XHTML 1.0

This page provide to the user a form through which he can upload his classes. He must choose a parent and a child category (The user is not able to add categories, they are fixed), insert a short description of the class (max 500 chars), decide whether is a party resource (downloadable only for a restricted set of users) and select the class on his file system (admitted only files with extension .java). When the user presses submit the data is processed, if he has not the permission to upload resources an error is prompted.

## The Manage User Page:

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Registered users:

Username	First Name	Last Name	Email	Can comment	Can post	Is in party	Group	
admin	giorgio	stefanoni	admin@codebase.com	true	true	true	admin	
francesca	francesca	spinella	francesca@codebase.com	true	true	true	user	
magix2003	giorgio	stefanoni	magix2003@hotmail.com	false	true	true	dio	
marco	marco	spinella	marco@codebase.com	true	true	false	user	Modify

Home  
About  
Browse  
Upload  
Manage user  
My Resources  
My Comments

Hi, **marco**  
Welcome back

Logout

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*In this example the user can modify only its own information*

This page displays a table containing all the user of the system with their information. The last column hosts links to modify the associated user.

This table is generated dynamically and the content of the last column depends on the group of the user:

- If he is a normal user, the modify button will be shown only next to his user
- If he is an administrator, the modify button will be shown next to each normal user and next to his name.
- If he belongs to the highest group he will be able to modify all the users.

Also the action associated to the modify button depends on the user:

- If he is a normal user he will be redirected to a page in which he can modify his profile. (Remark: a normal user will be shown the modify button only next to his name so its actually modifying his information)

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Change your information

Be aware! You cannot change the username

First Name \*

Last Name \*

Email \*

Rewrite your email \*

Password \*

Rewrite your password \*

Send Reset

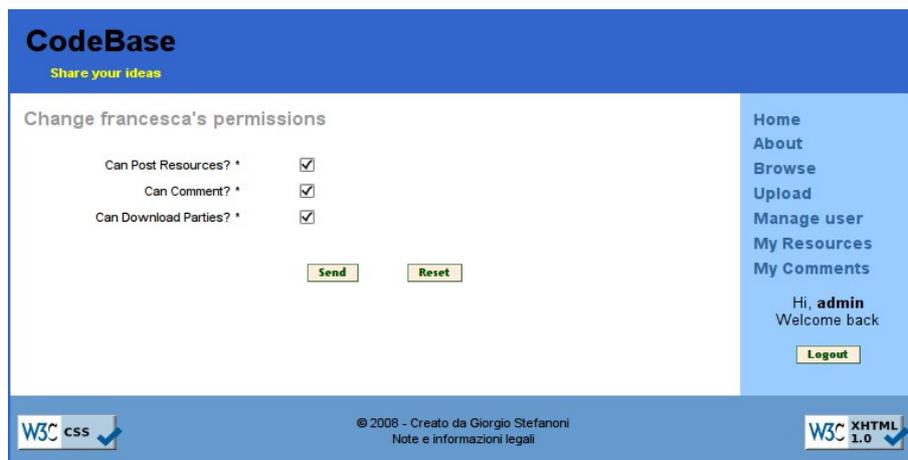
Home  
About  
Browse  
Upload  
Manage user  
My Resources  
My Comments

Hi, **magix2003**  
Welcome back

Logout

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- If he is an administrator, he will be redirected to a page in which he can modify his profile in case he clicks on the link next to his name. Otherwise, he will be redirected to a page where he can modify the rights of the associated user. The rights are:
  - The right of posting resources
  - The right of posting comments
  - The right of downloading party resources.



- If he belongs to the highest group, he will be redirected to a page in which he can modify his profile in case he clicks on the link next to his name. Otherwise, he will be redirected to a page where he can modify the belonging group of an user. He can choose between normal user and administrator.



## The My Resources Page:

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**My Resources:**  
Administrators can see also other users' files

Title: **Membership.java**  
Author: francesca  
LOC: 71  
Date : 2008-06-03  
Party : 1  
Desc: un due tre prova

Title: **RetrieveNewResources.java**  
Author: admin  
LOC: 180  
Date : 2008-06-04  
Party : 1  
Desc: afa

Title: **PrintRandomDeptsAndEmps.java**  
Author: marco  
LOC: 60  
Date : 2008-06-07  
Party : 1  
Desc: tre

Home  
About  
Browse  
Upload  
Manage user  
My Resources  
My Comments

Hi, **magix2003**  
Welcome back

[Logout](#)

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*In this figure the user belongs to the highest group*

This page displays all the resources that belong to the user. If he is an administrator or he belongs to the highest group he will see also the resources of the other users that he can administrate (Administrators will see all the resources of the normal users, the highest group will see both the normal user's and the administrator's resources). These resources will be shown on many pages, if needed, each containing ten resources. If the user clicks on a specific resource, he will be redirected to a page where he can delete it or modify its information.

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Delete file RetrieveNewResources.java

Click here to delete the resource: [delete](#)

Modify file RetrieveNewResources.java

Modify the info

Change categories:

Change description:  
afa

Is party's resource? (visible to just party authorized users):

[Modify](#)

Home  
About  
Browse  
Upload  
Manage user  
My Resources  
My Comments

Hi, **magix2003**  
Welcome back

[Logout](#)

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## The My Comments Page:

*Also in this example the user can see all the comments*

This page displays all the comments that were written by the user. If he is an administrator or he belongs to the highest group he will see also the comments of the other users that he can administrate (Administrators will see all the comments of the normal users, the highest group will see both the normal user's and the administrator's comments). These resources will be shown on many pages, if needed, each containing ten comments. If the user clicks on a specific comment, he will be redirected to a page where he can delete it or modify its information.

## CodeBase's Implementation:

### **Packages:**

The package structure of the project is as follows:

- **beans:** containing the Java Beans
- **comments:** containing classes and servlets managing the comments
  - modification
  - post
- **db:** containing a class that provides functionalities to connect to the db
- **resource:** containing classes and servlets managing the resources
  - complexity
  - modification
  - upload
  - viewer
- **users:** containing classes and servlets managing the users
  - login
  - modification
  - registration
- **utilities:** utilities classes used by the others to perform their responsibilities

### **Beans:**

In the system we have three Java Beans and two classes with the scope of containing beans. The beans are:

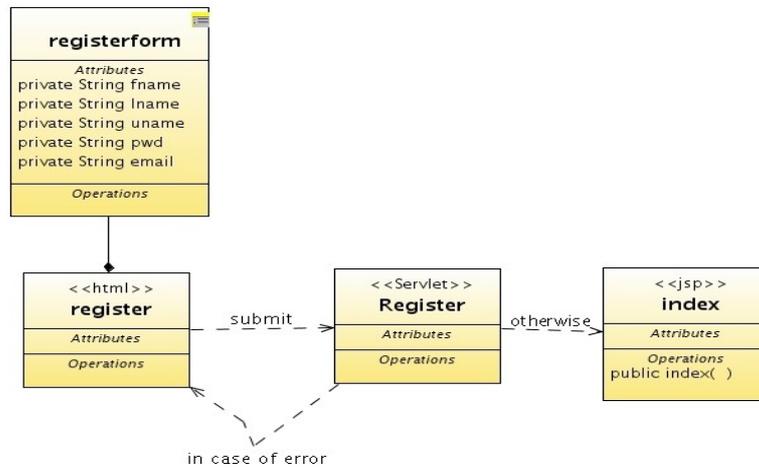
- **User Bean:** Representing a registered user
- **Comment Bean:** Representing a comment
- **SourceFile Bean:** Representing a resource

The two complex beans are:

- SourceFileList
- CommentList

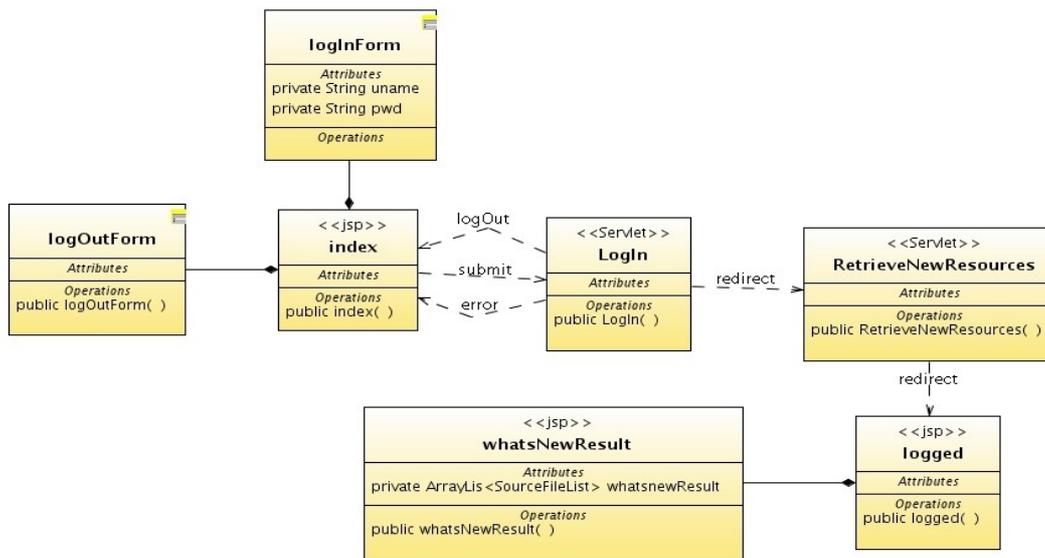
Both provide the same functionality, so I will use as running example the SourceFileList. The need of this bean has come up while having to decide how to display the results of a search. The idea is to break, when needed, the results in more pages. To do so I've created this class which contains as instance variable an ArrayList of SourceFile which will be at most of ten elements. By creating an ArrayList of SourceFileList we can use this data structure to break the result into pages holding each a SourceFileList (which internally holds ten SourceFiles).

**Registration:**



The user fills up the form in the register.html file and it submits its request. The servlet Register is called and firstly checks whether the user is already logged in, in which case it returns an error message. Otherwise, it starts reading the parameters and if no error occurs tries to perform the insert in the db. Before actually doing the insert it checks whether the email or the username are already in the db, in which case returns an error. It performs the insertion in the db and redirects the user to the index page.

### Log In/Out:



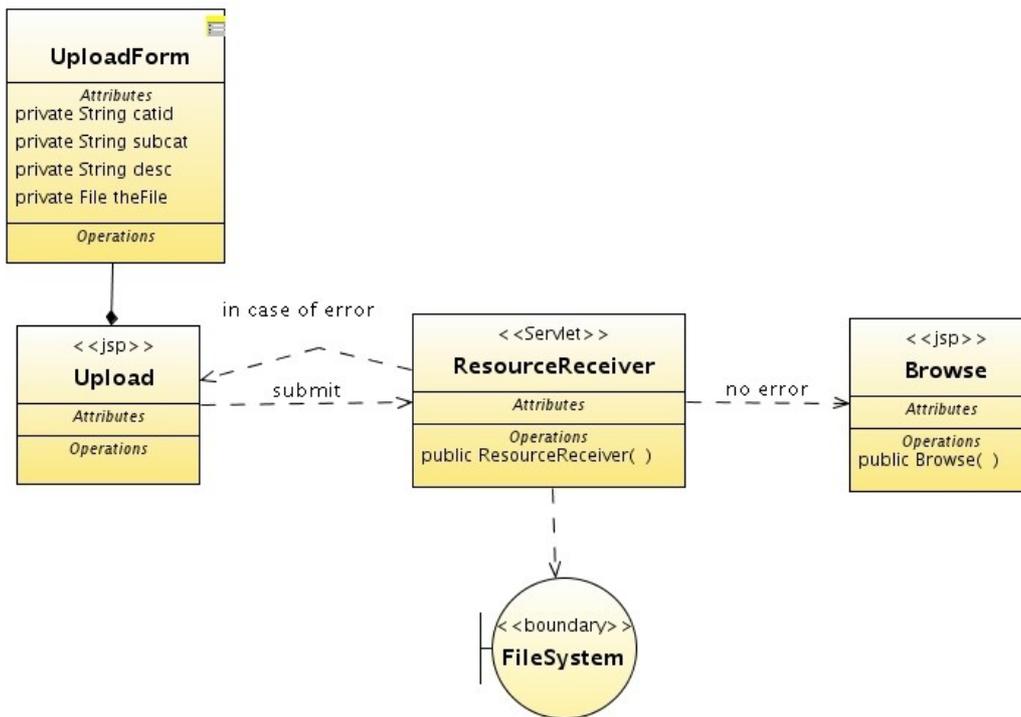
### Log out:

The user is already logged in and presses the log out button. The LogIn servlet is called, the session is invalidated and the user is redirected to the index page; in case of an error a message is prompted and the user is redirected to the index page.

### Log In:

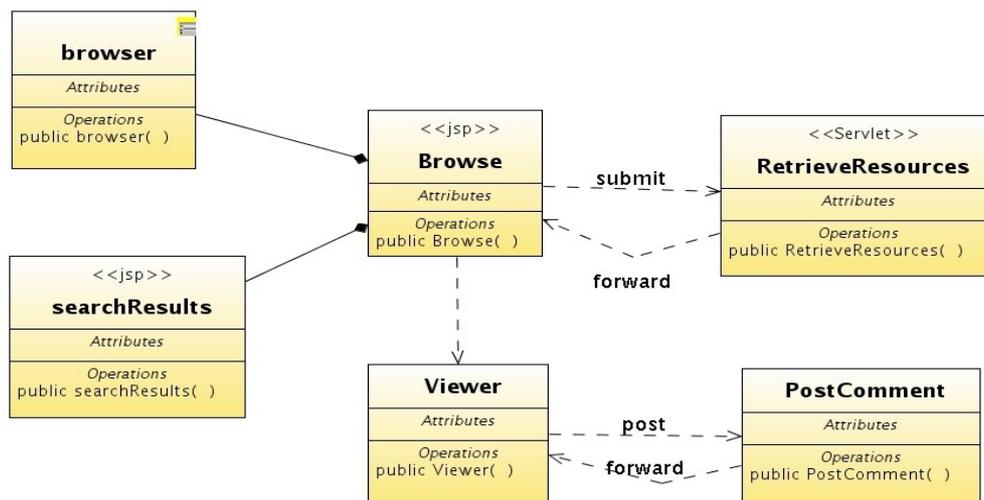
The user fills up the form to log in and submits it. The LogIn servlet is called and checks whether the user was already logged in, if it is the case prompts an error and redirects the user to the index page. Otherwise, it retrieves the form parameters and check the credential of the user against the user table in the database. If it does not pass, the user is prompted a message and get redirected to the index page. Otherwise, an user bean is created and the cookie containing the date of the last visit of the user is retrieved. If it is present on the client the user bean is updated, otherwise we update it with the current date. Now we can set the new value of the cookie with the current date and the we redirect to the RetrieveNewResources servlet. This servlet retrieves all the resources that have been uploaded since the last visit of the user and puts them on an ArrayList of SourceFileList beans which will be stored in the session. We now redirect to the logged.jsp page, which includes the whatsNewResult.jsp. This latter jsp is responsible for getting the bean and displaying it on more pages if necessary.

**Resource Upload:**



The user fills up the upload form and clicks on submit. The ResourceReceiver Servlet is called, the parameters are parsed, a SourceFile bean is created, it is inserted in the db and finally stored on the file system. If there is an error in the procedure the user will be shown an error message and will be redirected to the upload.jsp web page.

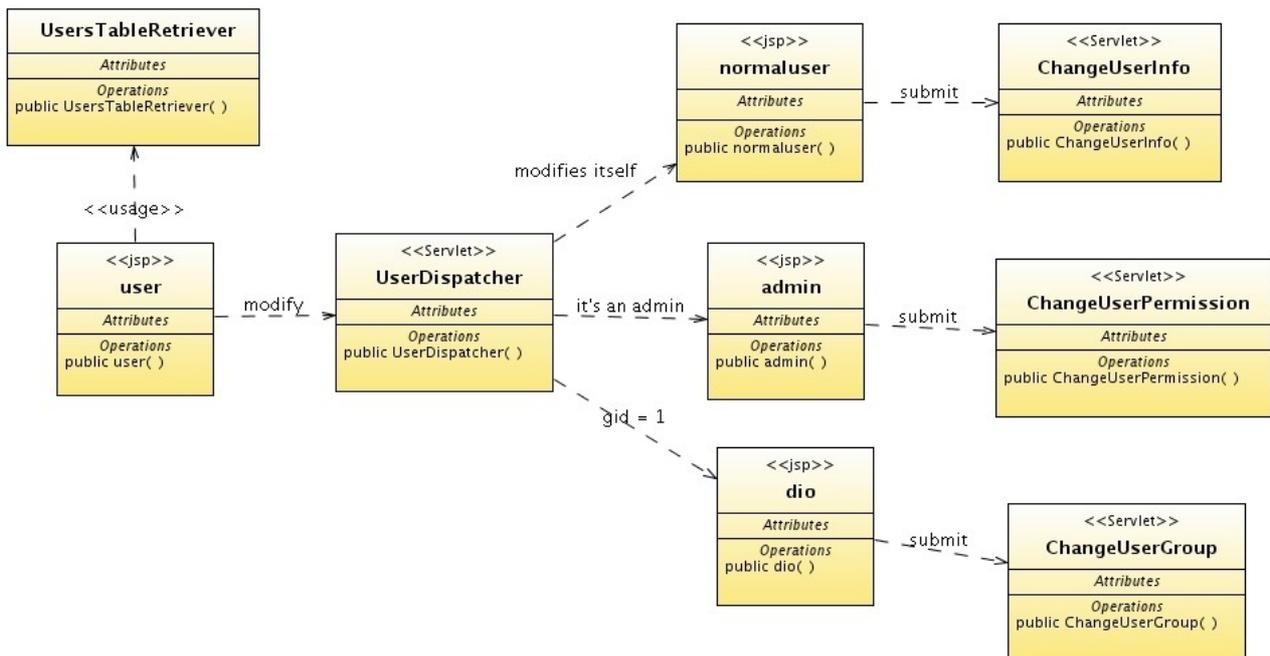
**Browse:**



The user utilizes the category browser to choose the search conditions and presses submit. This will call the RetrieveResource servlet which will parse the parameters and retrieving all the resources that match the search conditions. The result will be stored in the ArrayList of SourceFileList and the

servlet forwards the request to the browse.jsp. The result list will be processed by the searchResult.jsp, which is included in the browse one. This.jsp shows the result on one or more pages depending on the size of it. The result will consist of description of classes and if the user clicks on one of them he will be redirected to the Viewer servlet which is responsible of showing the formatted source code. The user, if it is logged in, will have the possibility to download the resource and to post comment on it. The download of the resource is denied also if the resource is categorized as party and the user has no rights on it.

### Manage User:

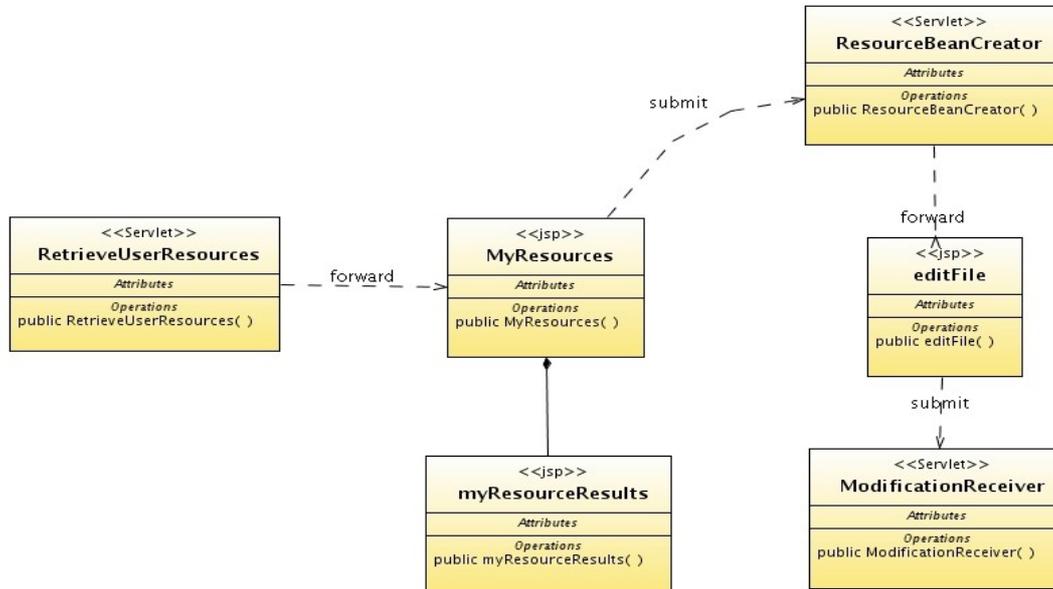


By clicking on the menu item Manage User, the system redirects you to the user.jsp page. Here, at runtime, a table containing all the registered users of the system is computed, through the UsersTableRetriever class. As we explained before (see Manage User functionality) the Modify link in the table will be inserted depending on the group of the user browsing. When the user clicks on a Modify button he will be redirected to the UserDispatcher servlet. This servlet dispatch you to other.jsp:

- it will dispatch you to normalUser.jsp if you clicked on the Modify button belonging to your user. Here you will be able to change your information and then by clicking on submit the ChangeUserInfo servlet is called for actually updating your data. At the end, you will finally go back to the Manage User page.
- It will dispatch you to admin.jsp if you clicked on a Modify button which is not “yours” and you are an administrator. Here you will be able to change the rights of the user you've chosen and then by clicking on submit you will the ChangeUserRight servlet is called for actually changing the rights of that user. At the end, you will finally go back to the Manage User page.
- It will dispatch you to dio.jsp if you clicked on a Modify button which is not “yours” and you belong to the highest group. Here you will be able to change the group of the user you've chosen and then by clicking on submit you will the ChangeUserGroup servlet is

called for actually changing the group of that user. At the end, you will finally go back to the Manage User page.

### **My Resources:**



When the user click on My Resources, the servlet RetrieveUserResources is called. This servlet retrieves all the resources that belong to the user or to the users he administrate and puts them on an ArrayList of SourceFileList beans which will be stored in the session. We now redirect to the myresource.jsp page, which includes the myresourceResult.jsp. This latter jsp is responsible for getting the bean and displaying it on more pages if necessary. If we click on a class description we will be redirected to the servlet ResourceBeanCreator, which will create the bean associated to the class chosen. You will be redirected to editFile.jsp, where you will have the possibility to delete or to modify the resource. Whatever of the two option you choose you will be redirected to the ModificationReceiver servlet. In the servlet the bean will be retrieved and if you chose to delete the resource, then the file with its comments will be deleted from the system, otherwise the modifications will be made permanent.

### **My Comments:**

The implementation is pretty the same as for the My Resource functionality.

### **DB:**

The database contains these tables:

- Users (uname, pwd, email, fname, lname, lastin, gid, iscom, isres, ispar)
- Groups (gid, name)
- Categories (catid, name, father)
- Files (fid, name, location, desc, loc, uname, date, ispar)
- Comments(cid, fid, uname, text, date)

**Problems Found:**

I did not find any insurmountable problems, but I've got some issues with the DBMS at the beginning. It also took some time to get use and be effective using the MVC pattern. I've found particularly frustrating problems about JavaScript and HTML compatibility with different browsers.