**NYU Tandon School of Engineering**

**Principle of Database**

**CS 6083, Spring 2017**

**Project #2 Report**

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**INTRODUCTION and SUMMARY**

We are intended to design a database-backed website for crowdfunding. In the project 1, the database side for the application had been designed and implemented. In the second part, the web-based interface should be designed and implemented.

In our implementation, this application’s database part is based on MYSQL, server end is based on PHP and the front end is implemented by HTML, CSS and bootstrap. The bootstrap is imported by CDN links. In the following parts, we will briefly describe our design and implementation.

**IMPROVEMENT of DATABASE SCHEMA**

In the second part, we add some new tables in our database to support some additional features and adjust the original schema.

To support the history log:

**history\_proj** (userid, projid, viewtime)

**history \_tag** (userid, label, viewtime)

**history\_keyword**(userid, keyword, viewtime)

The foreign key history\_proj(userid) references user(userid)

The foreign key history\_tag(userid) references user(userid)

The foreign key history\_keyword(userid) references user(userid)

These three tables have added to the database to record the user activities such as searching the keywords, viewing the projects and searching the tags.

To support the upload and display of images and videos:

**proj\_image**(projid, imageid, imagecontent)

**proj\_video**(projid, videoname)

The foreign key proj\_image (projid) references project(projid)

The foreign key proj\_video (projid) references project(projid)

These two tables store images and videos which are upload by users when they create a new project.

The following is the other part of our database schema:

**User** (userid, username, password, loginname, useremail, userstate, usercity, useraddress, usercard)

**Project** (projid, projname, description, min, max, endtime, planned\_finish\_time, createtime, userid, status(funding, failed, doing, finished))

**Follow** (userid, followedid)

**Likes** (userid, projid)

**Rate** (userid, projid,ratetime, rate)

**Comment** (projid,userid, commenttime, context)

**Pledge** (pledgeid,userid, projid,pledgetime, amount)

**Charge** (pledgeid, chargetime)

**proj\_update** (projid, updatetime, context, image)

**tag** (projid, label)

The foreign key project (userid) references user(userid)

The foreign key comment (userid) references user(userid)

The foreign key comment (projid) references project(projid)

The foreign key tag (projid) references project(projid)

The foreign key follow (userid) references user(userid)

The foreign key follow (followedid) references user(userid)

The foreign key like (userid) references user(userid)

The foreign key like (projid) references project(projid)

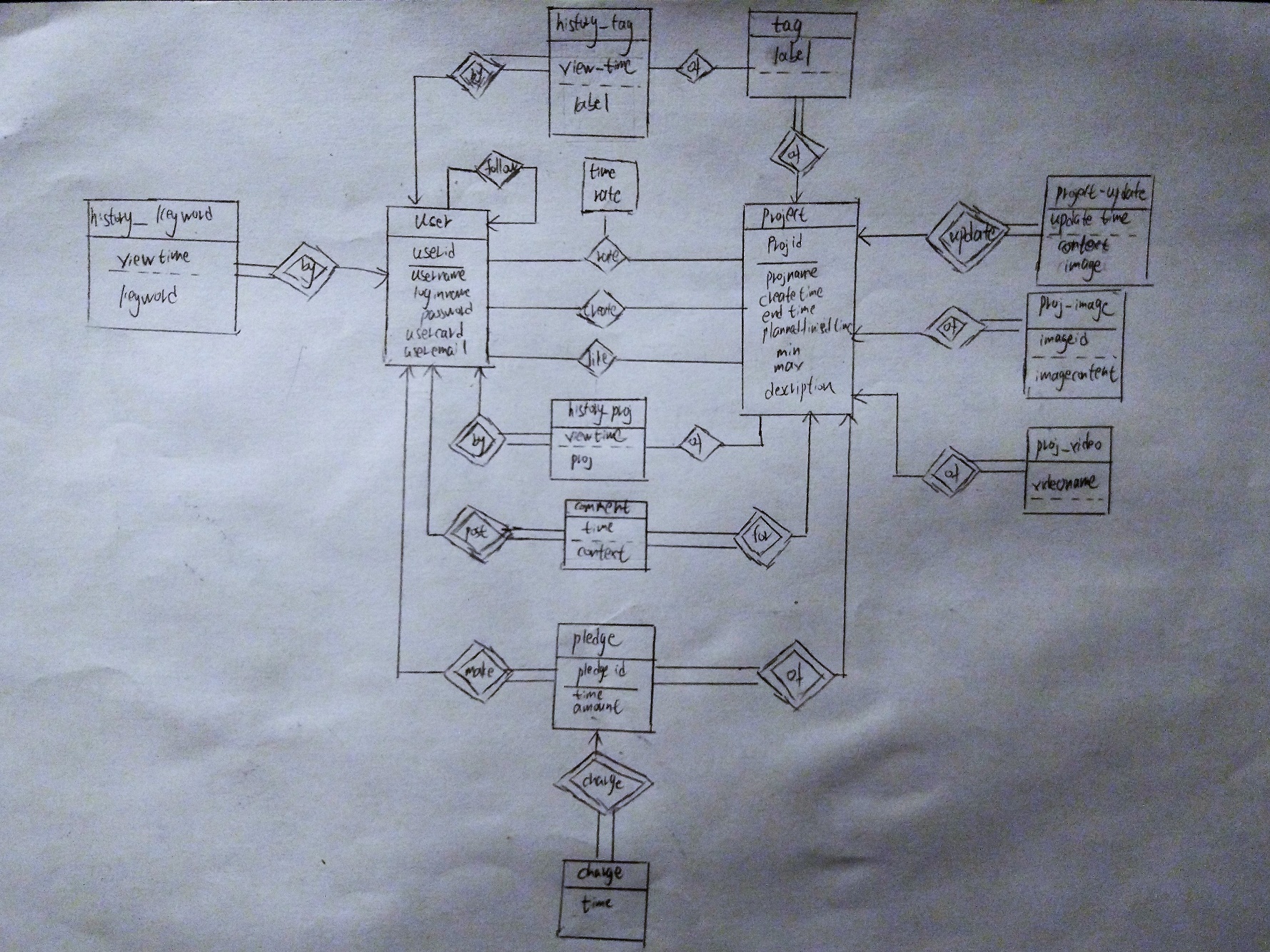
The foreign key rate (userid) references user(userid)

The foreign key rate (projid) references project(projid)

The foreign key pledge (userid) references user(userid)

The foreign key pledge (projid) references project(projid)

***Modified E-R Diagram***



**DESIGN for WEB-BASED INTERFACE**

***Sign In and Sign Up***

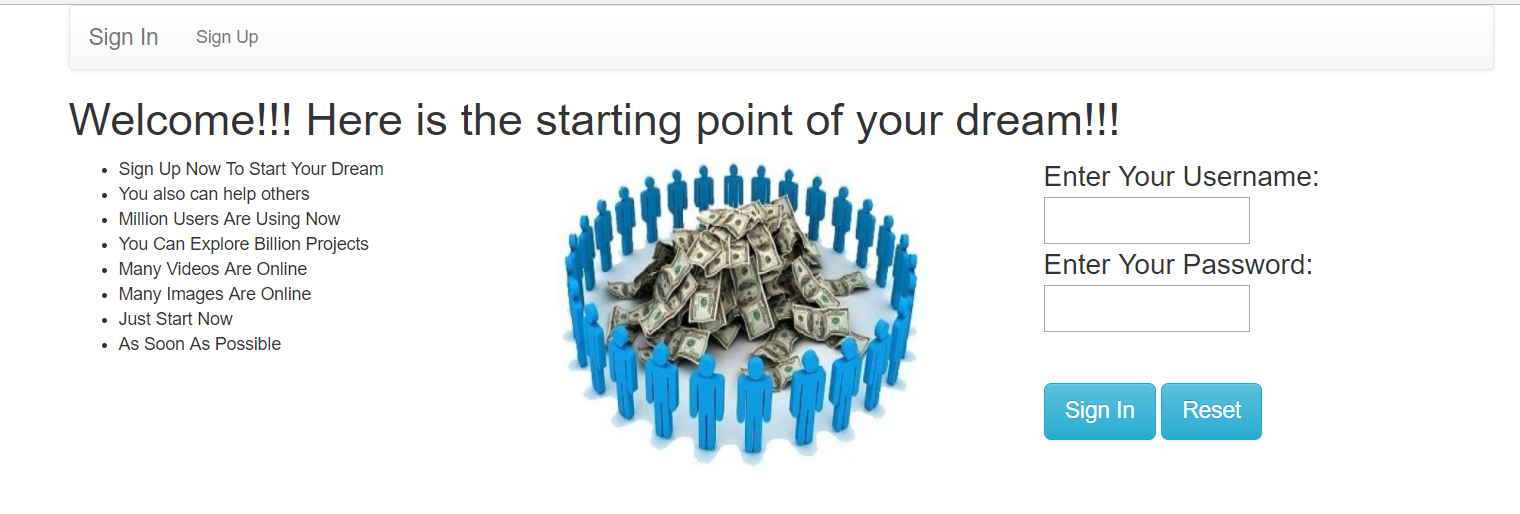


Figure: Sign In Page

User can enter login name and password in the two input boxes, and then press the “Sign In” button to login the website. The input boxes are supported by HTML form. The form will submit user information in the POST method to a PHP page called “login.php” where we will connect the database to check user login information and create the session to store user information.

If someone wants to sign up in our website, he can press the “Sign Up” button in the header line and link to the “signup.html”.

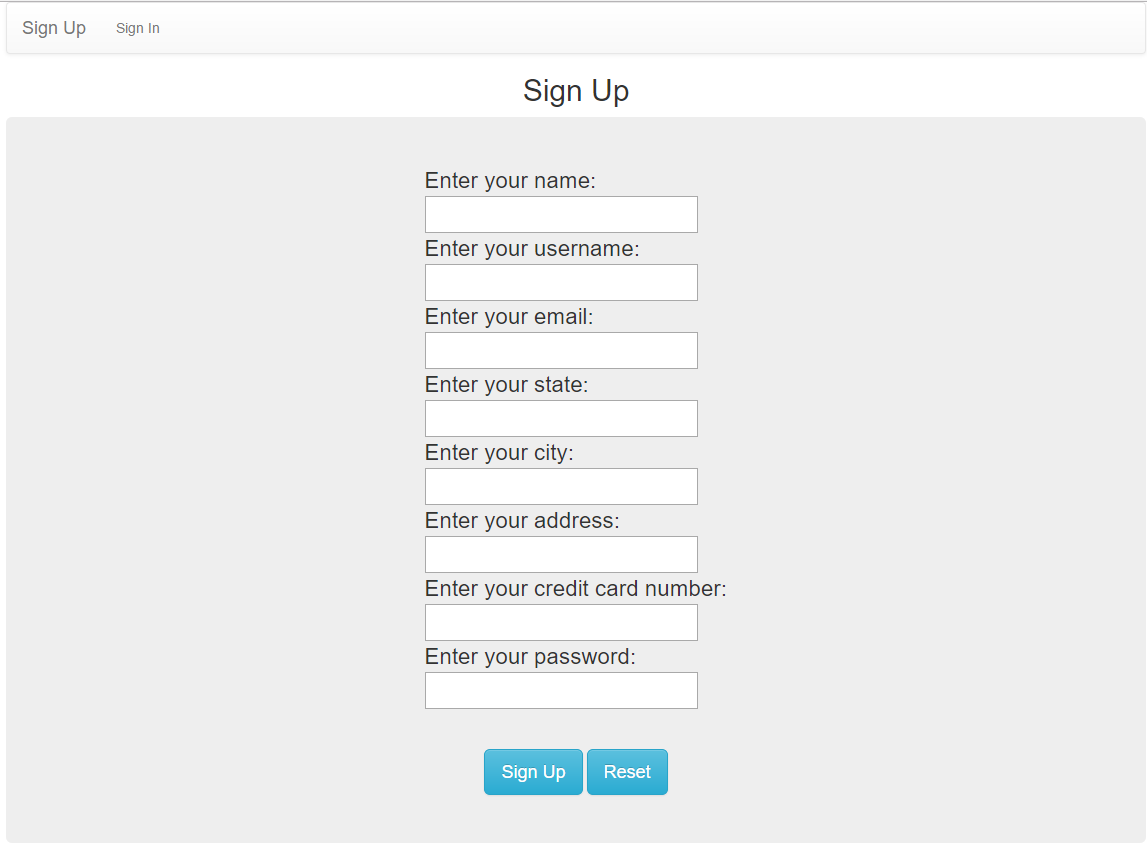


Figure: Sign UP Page

In the same way, user can enter their information in the HTML form to sign up. Each input box has been signed different special input type to guarantee form of different input. For example, “Enter your email” has been signed as “input type = email”. The form will be submitted in POST method to “signup.php”. In signup.php, the uniqueness of user login name and email will be checked. If user information can pass the check, this information will be stored in the database.

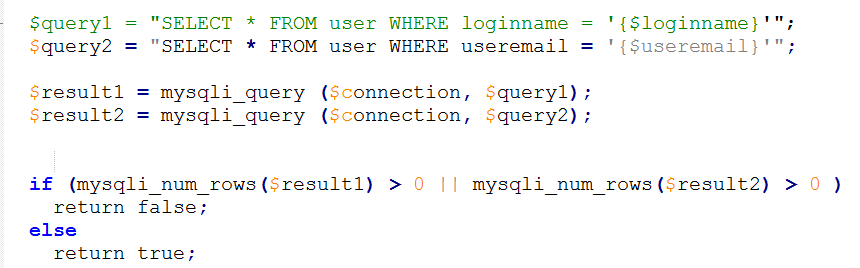


Figure: Sign UP Test

***Create New Project and Upload Materials***

Every user can create new project to raise money. This process is separated to two phases. The first phase is master by, “create\_project.html” and “create\_project.php”.

The basic information of project will be stored in the database. Also the funding end time, planned finished time, minimum fund amount and maximum fund amount will be checked.

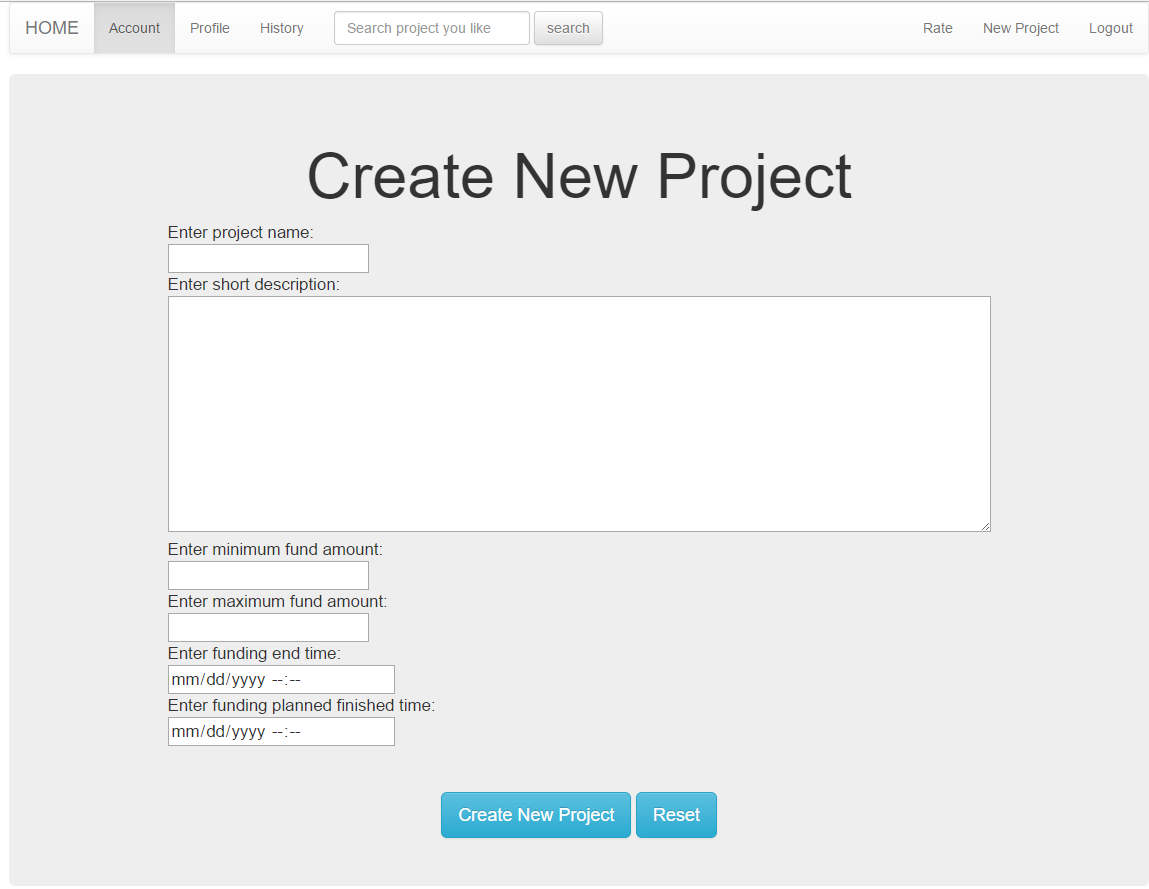
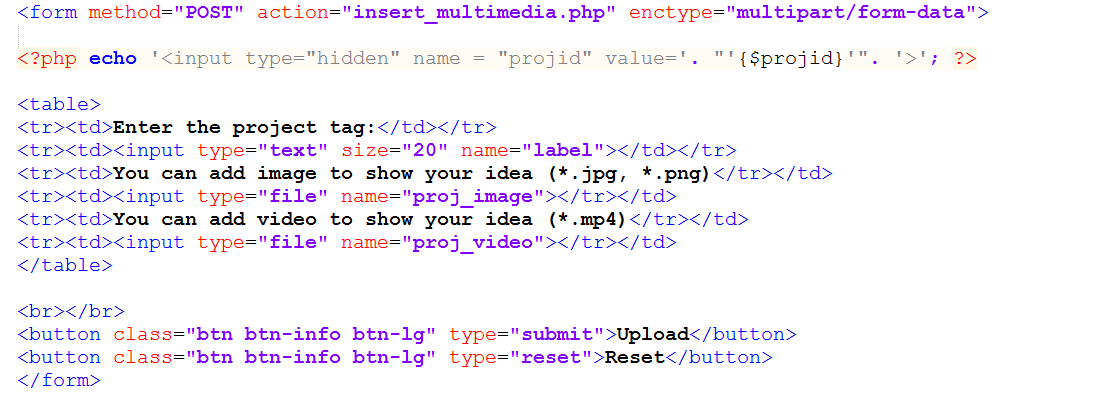


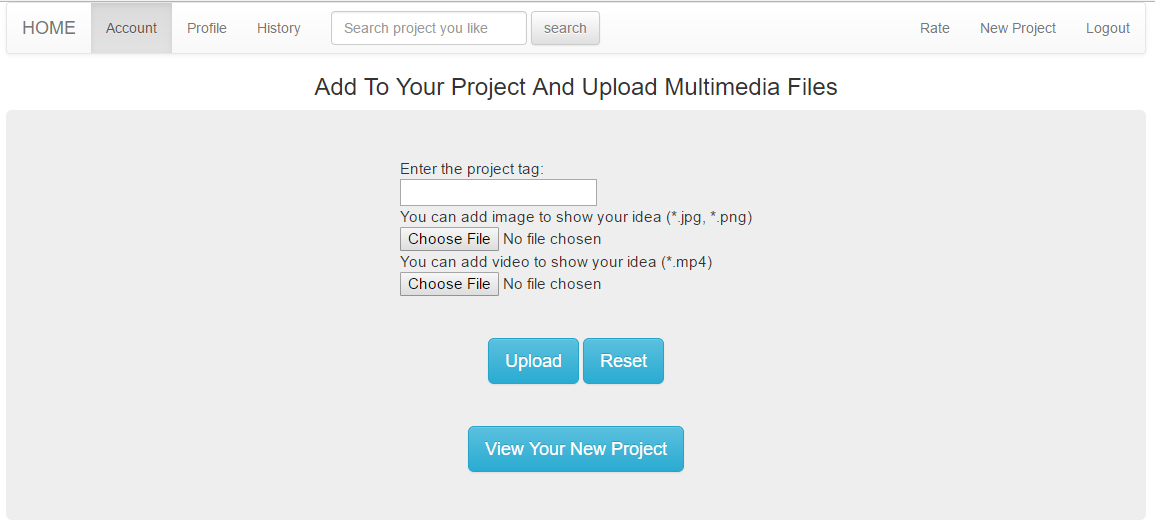
Figure: Create Project page

The second phase can support users to upload tag, images and videos to the database.



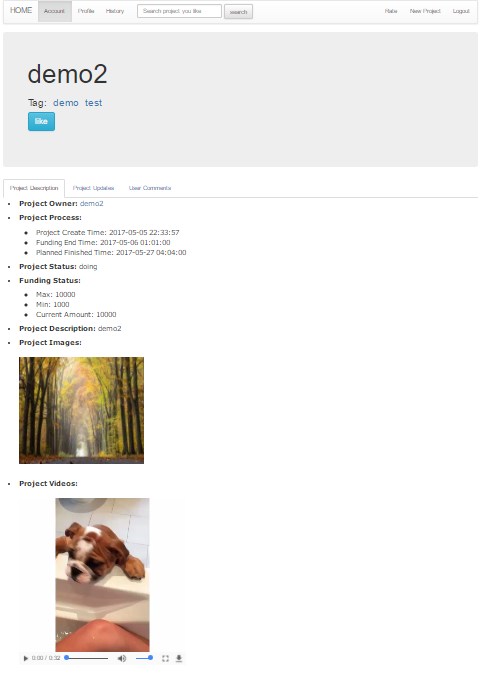
*Figure: HTML Form Source Code*

The HTML form’s submit method is post, and enctype is multipart. In the php page, we can use the $\_FILES['proj\_image']['name'] to get the file’s name and $\_FILES['proj\_image']['tmp\_name'] to get the file’s content. For images, we store the image content as Long Blob in database. For videos, we store the video path in server in database.



*Figure: Upload Multimedia Data*

***Project Page***



*Figure: Project Page*

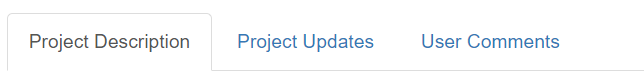
The project profile shows the project name, tags, project description, images and videos which are all stored in the database. All data are retrieved from database according to the projid which is sent in GET method.

**echo**'<img src="data:image/jpeg;base64,'.**base64\_encode** ($row["imagecontent"]).'"style="width:300px;height:256px;" />';

The images are stored as blob, so we use the php to encode the blob to png. Database just stores the server path of videos. So <video> tag in html5 can be used to display the videos stored in the server.

***Update, Comment, like and Pledge on Projects***

Project updates and comments are displayed in the same page as project profile. User can use the following bar:



*Figure: Section Bar*

to choose different tabs in the page. This feature is supported by bootstrap library.



*Figure: Comments*

Comments are sorted by post time. We just allow user to upload text in the comment section. All users’ names in this part are hyperlinks, so users can click them. Every user can post comments in projects. The amount will be submitted to “insert\_comment.php” in POST method. After the php program was executed, the page will be headered back by:

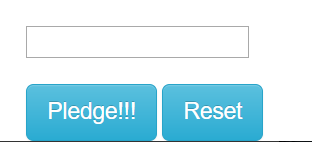
**header**('location: '.$\_SERVER['HTTP\_REFERER']);

to avoid duplicated submissions.



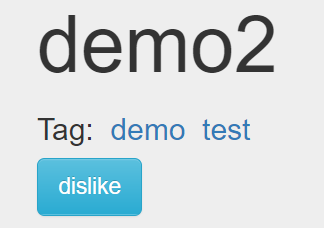
*Figure: Project Updates*

The project updates are displayed in the same ways as comments. However only the project user can upload updates. The php program will check the $\_session[“userid”] with the project owner’s userid which are retrieved from database. The form will show in the page only when the two userids are same.



*Figure; Pledge Form*

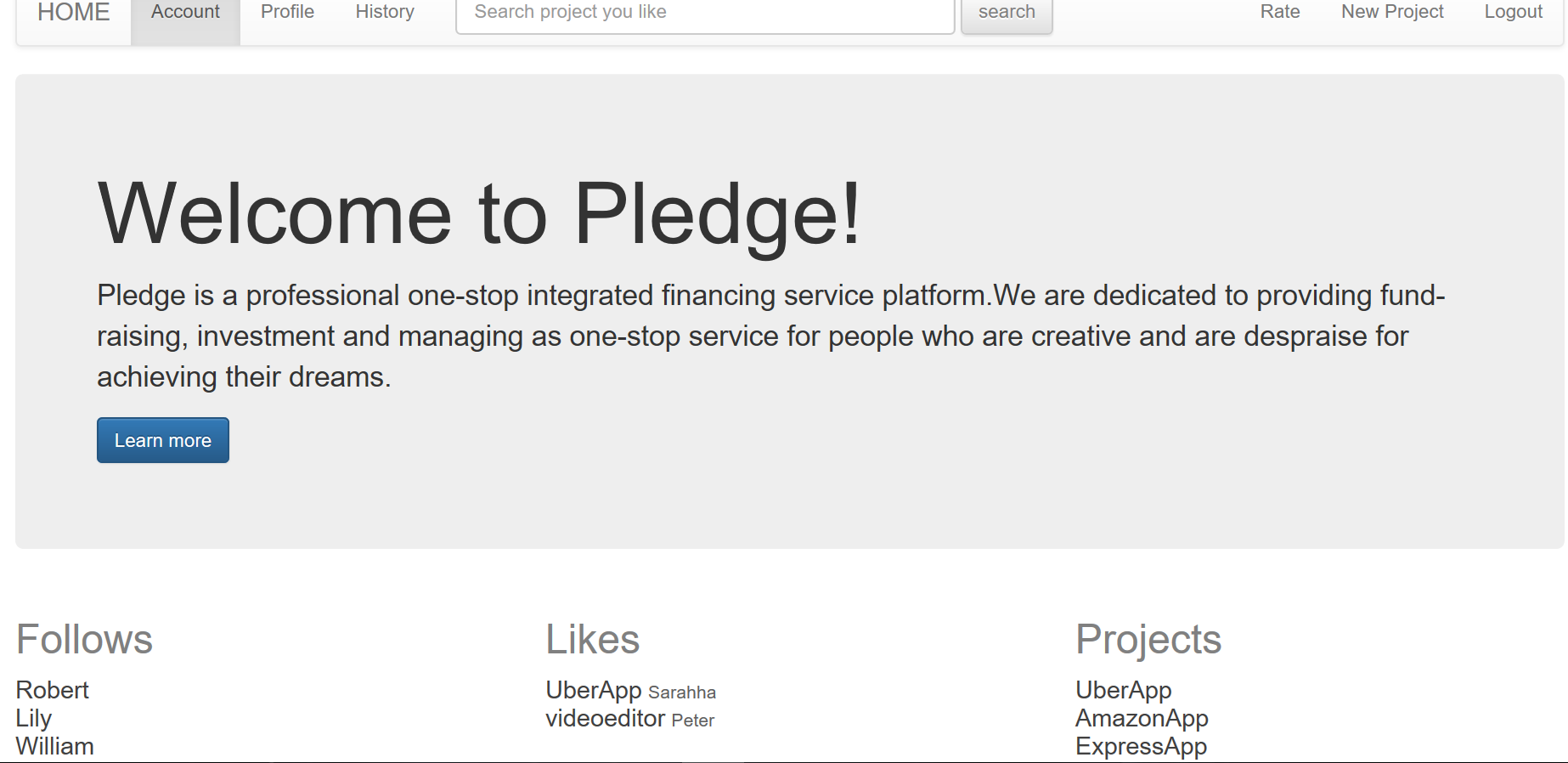
Only when the project status is “funding”, the pledge form displays in the bottom of project profile. The amount will be submitted to “insert\_pledge.php” in POST method. After the php program was executed, the page will be headered back. Triggers and event in database which have been briefly described in part 1 will handle the change of project status and record the charge.

*Figure: Like and Tags*

The tags under project name are hyperlinks which will jump to the search page to show the search results of this tag. User can like/dislike this project by press the like/dislike button. A variable called “liked” will be assigned when loading the project file. If user has liked the project, “liked” will be 1 and button is “like”, otherwise it will be 0 and button is “dislike”. When user pressed the button, “liked” and projid will be sent to “proj\_like.php”. The userid can be got from Session. If liked is 1, we delete this record in like table. Otherwise, we insert one new row into like table.

***START PAGE***

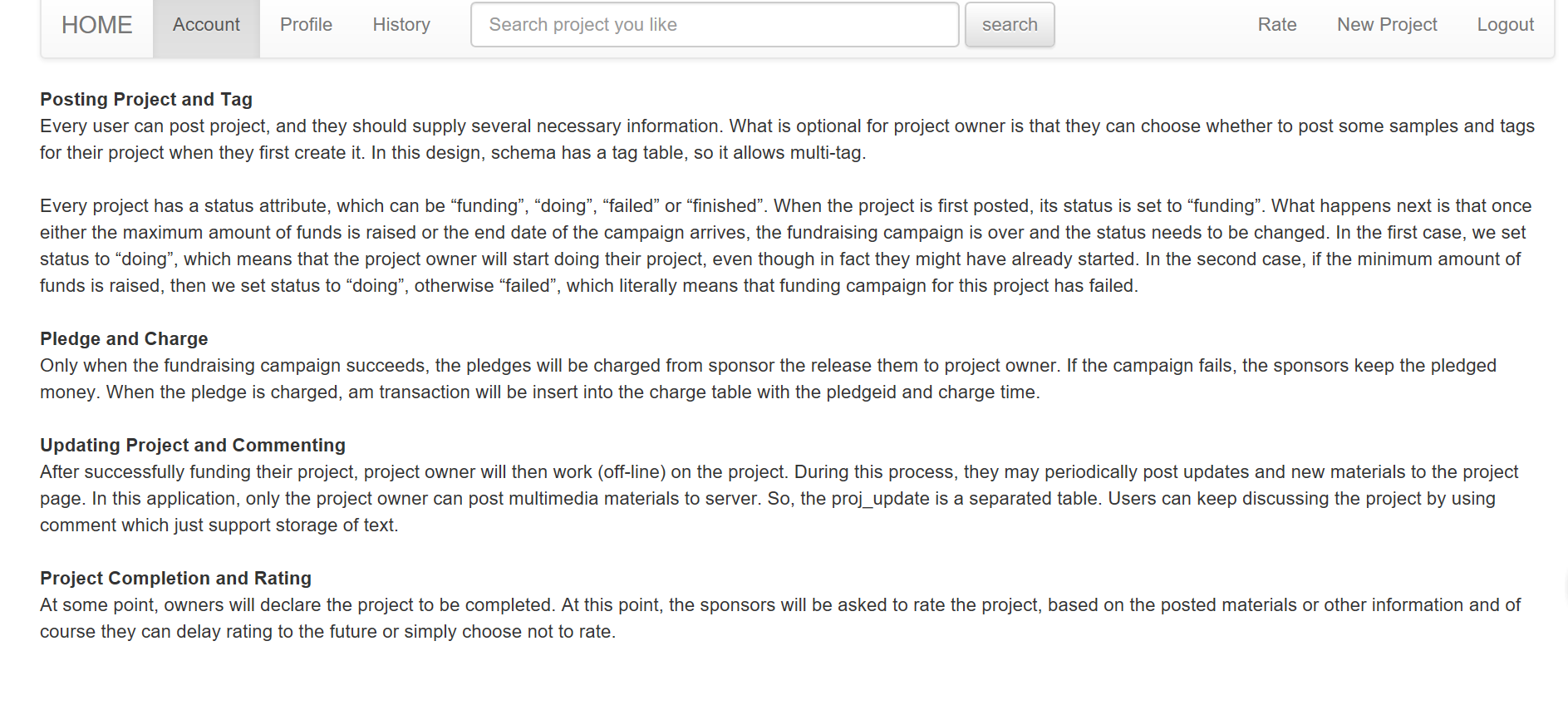
After you are verified, you will enter you personal start page like above figure. And now you can see some items relevant to you, e.g., a list of your following people, a list of your liking project and a list of your own project. Additionally, in the middle of this page, you can see a brief introduction to our website, if you want to gain more manual introduction, just click the learn more button, then you will find everything you can do on our website on the next page.

*Figure: Start Page*

***BACK TO START PAGE***

Click the “HOME” button on the top of the page, you will go back to your personal start page. NOTE: You can so this at any time at any page.

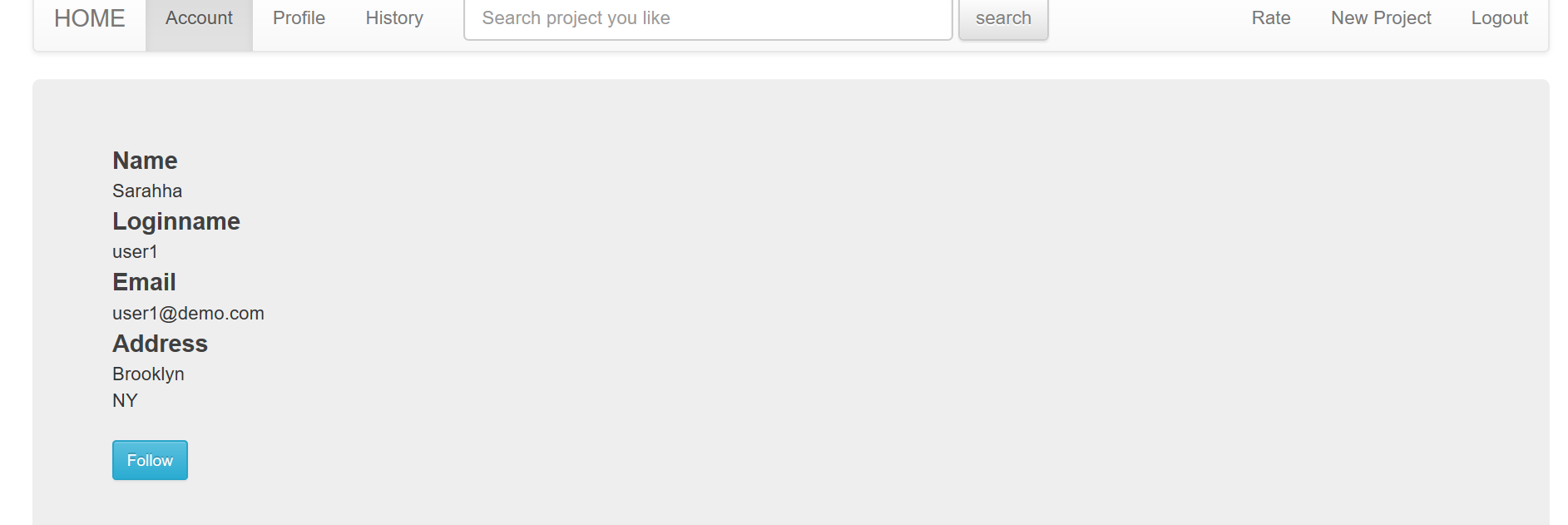
After back to your start page, if you are interested in learning some recent activities of any of your likes, click their name to jump to another page to gain more detailed information. For example, if you are interested in the user who post a project you like, then you simply click his/her name. Then you will go to his/her own personal page, where you can learn some public information about him/her, like following picture.



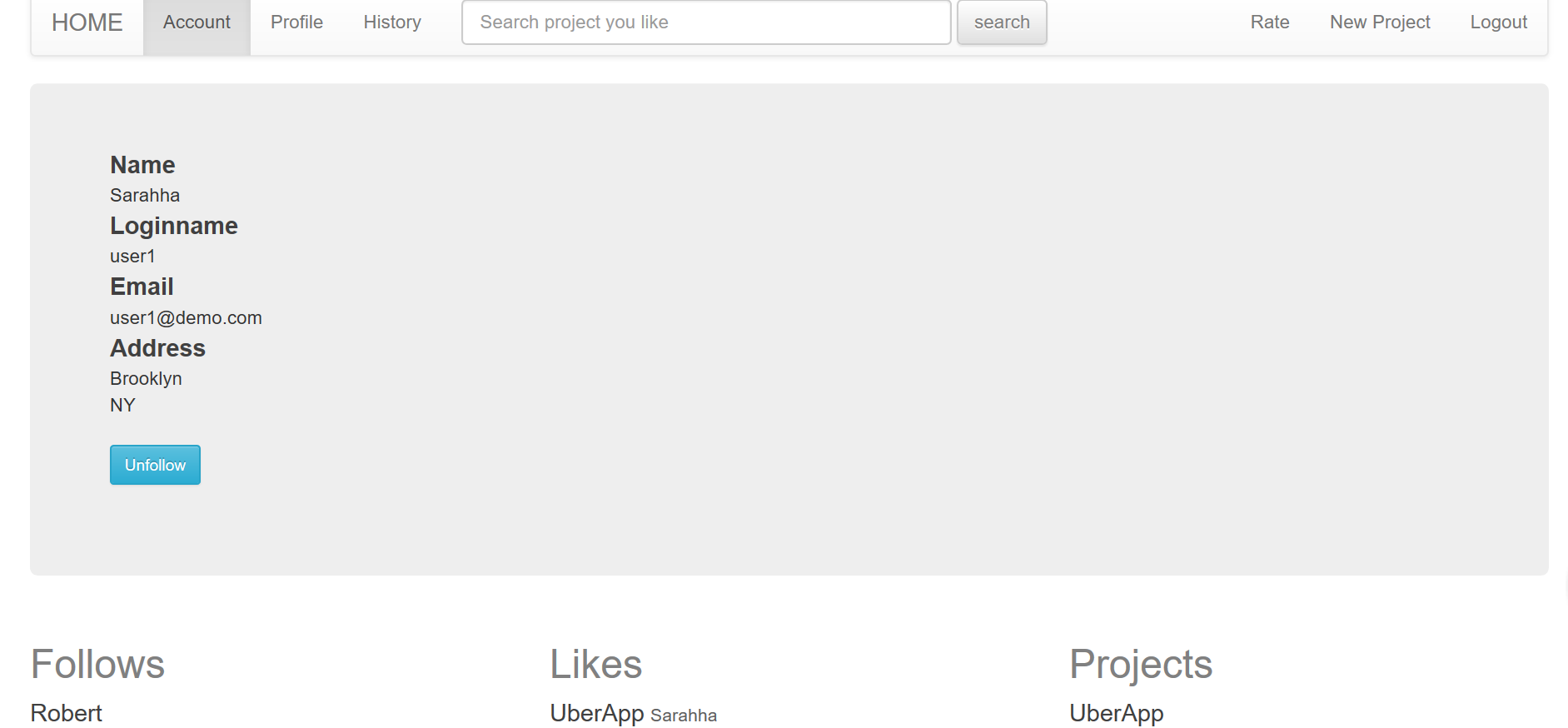
*Figure: Introduction Page*

***PUBLIC PROFILE***

This is page shows you how much your personal information will be exposed to others. If you enter other’s profile page, we allow you to know his/her name, email address and some not so detailed physical address. You can also view his/her follows, likes and other projects that you might be interested in as well. If you are think you like this person, just follow him/her, and he/she will be immediately added to you follow list. After you follow a person, the blue button in above figure will change from “Follow” to “Unfollow”, which literally means you can delete this person from your follow list once you lose your interest on him/her.



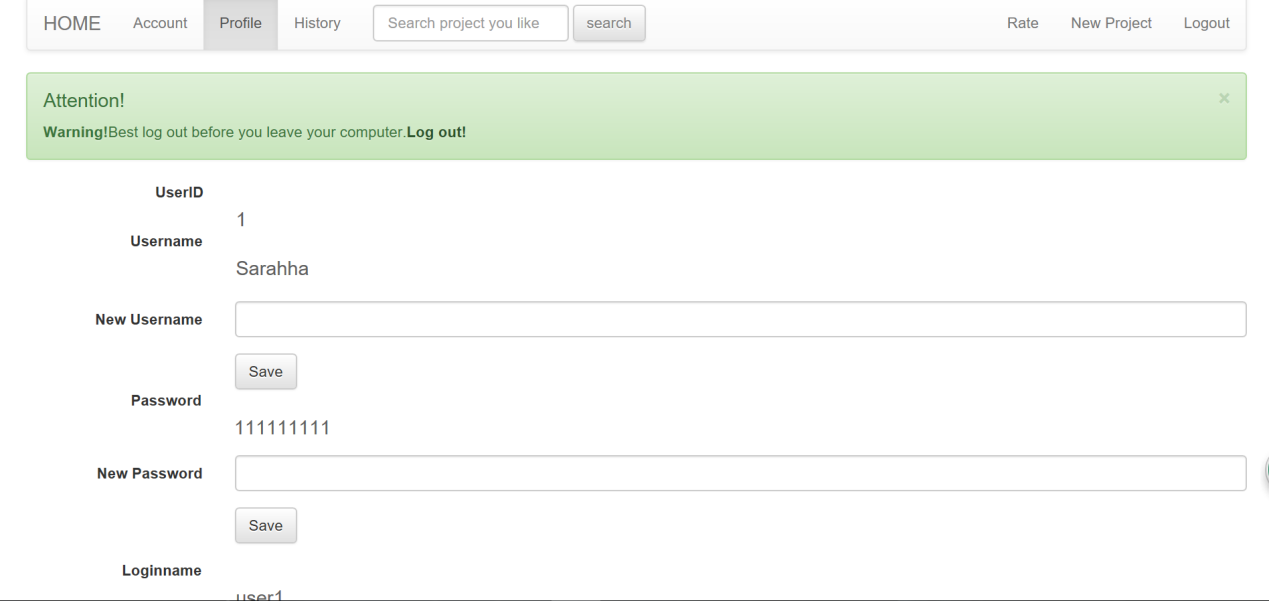
*Figure: Public User Profile 1*

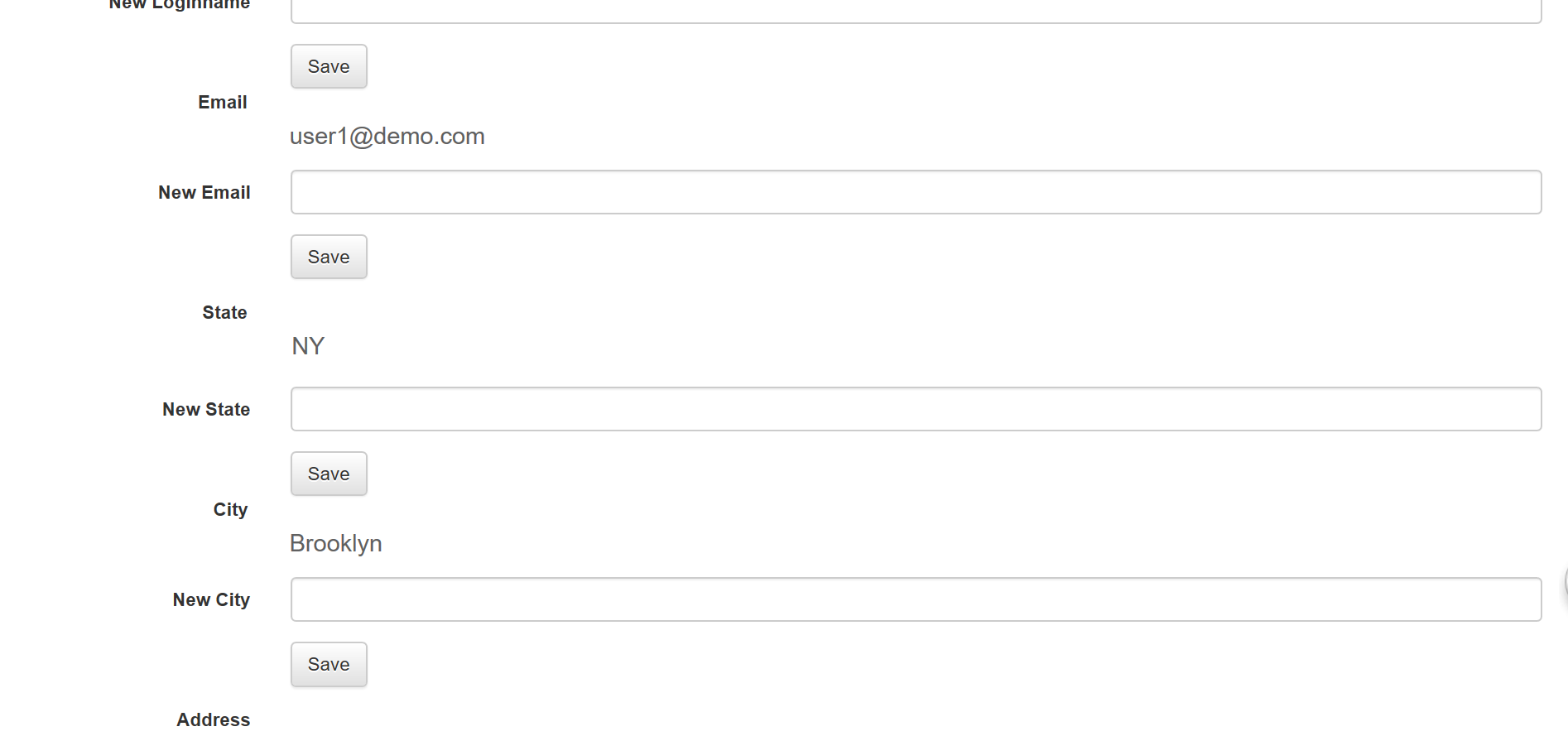


*Figure: Public User Profile 2*

***PRIVATE PROFILE***

Sometimes you probably want to change some of your private information, simply click the profile tag on the heading line, and you will arrive at you personal profile page. We show you all your information, add you are permitted you edit any of them. Just enter your new information in the corresponding input field, do not forget to save if you have completed, the page then will automatically refresh itself to show you your most up-to-date personal information. One thing you have to notice is that we only allow you to change one item of your information every time you submit your changes. No matter how many blank you have filled, only the information in corresponding filed above the save button you just clicked will be accepted and updated.

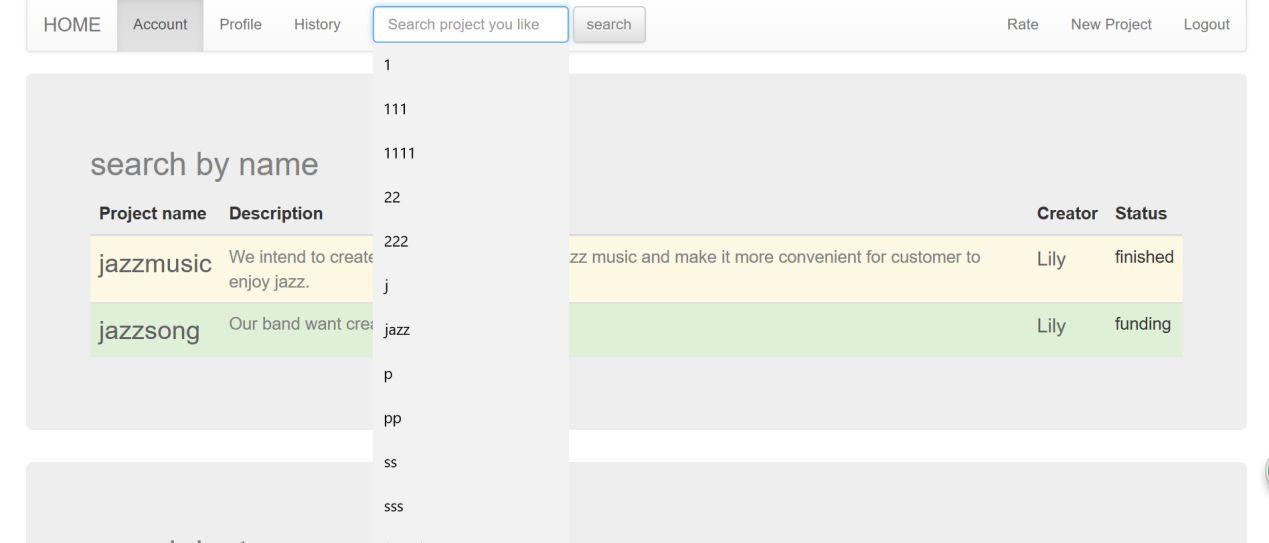


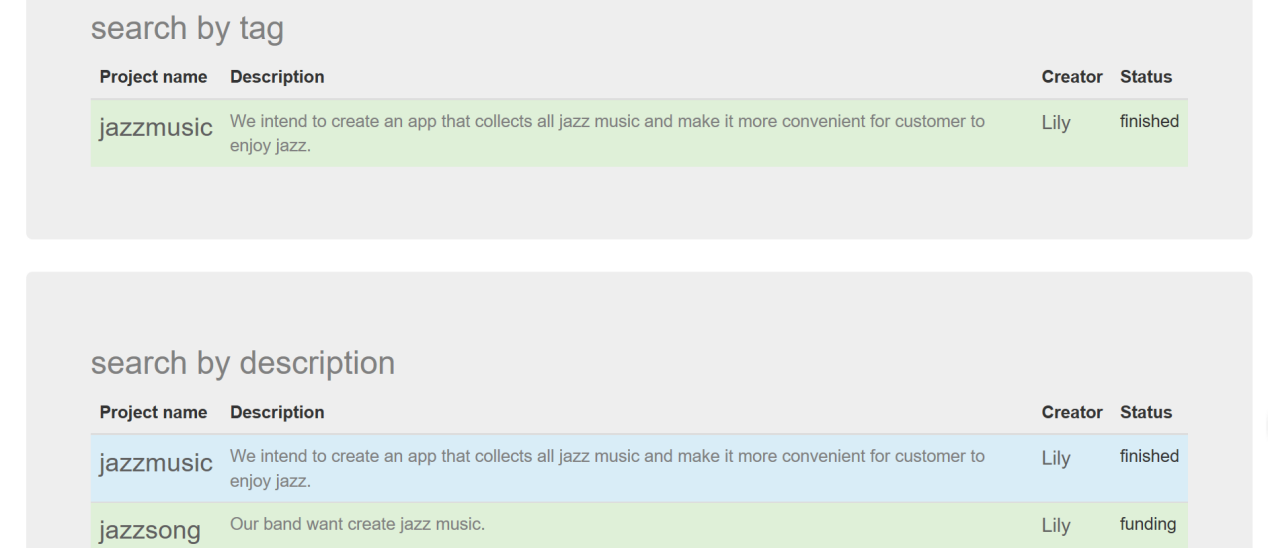


*Figure: Upload User Profile*

***SEARCH***

Here we come into one of the most important features of our website, namely, search. There is a search bar on the top of each page. Enter some keyword you are interested in or just enter nothing if you are not sure what you are exactly looking for. We will show you as many project as we can that might match your expectation and we categorized the searching result into 3 categories: search by tag, search by project name, search by project description. If nothing is entered, of course, every project will be exhibited. For each project in searching result, we show its project name, description, creator and status, which we think are enough for customer to learn the outline of each project. If you really interested in learning more about this project, click the project name and you will jump to the project profile page where you will learn everything about this project and make some comments on this project.



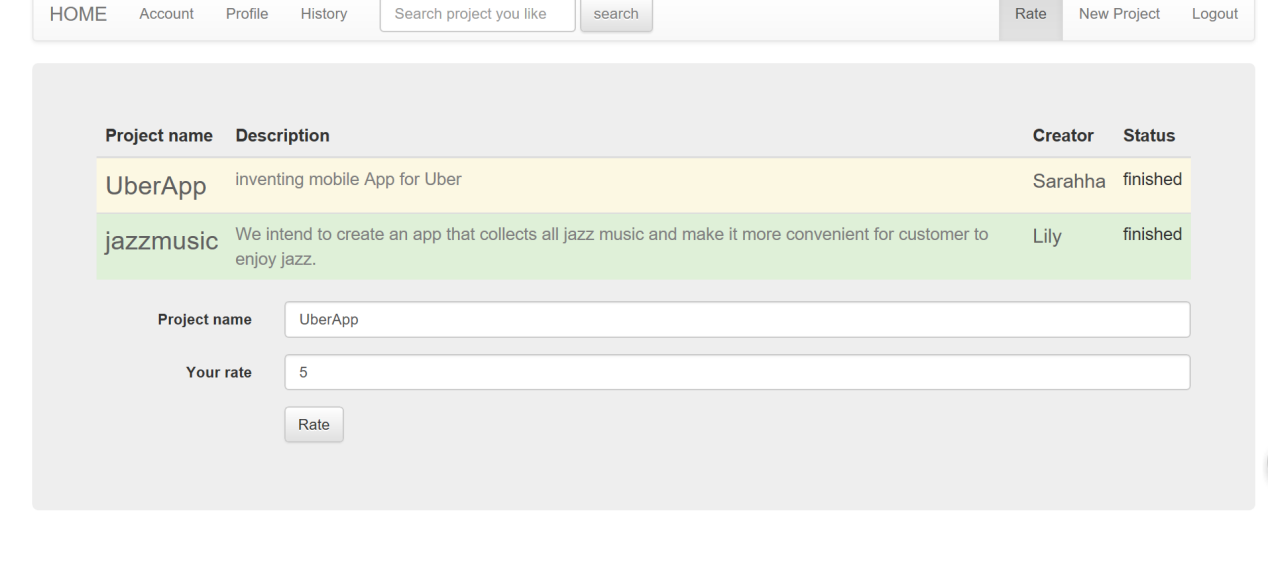


*Figure: Search Page*

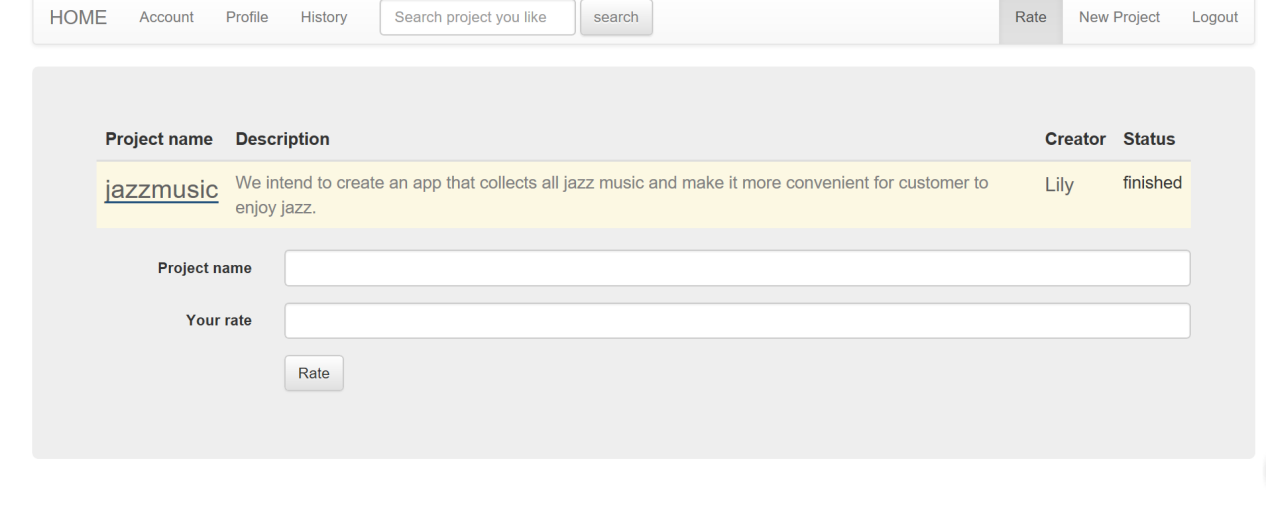
***Rate***

Only after you pledge to other’s projects, once they finish the project, can you rate it. Simply find the rate tag on the top of current page, you will enter your rate page, where everything that you can rate will be listed. If you want to rate a project, enter the name of project you want to rate with your rate. Finally, click rate button, your rate will be submitted to us at once. Keep in mind that you must enter the right project name, otherwise your rate will be rejected and we will send you a warning to remind your mistake.

You can rate every project only once, once you successfully rate it, the page will be automatically refreshed and this project will no longer be in your rating list, that is, that you cannot see it on your rate page.

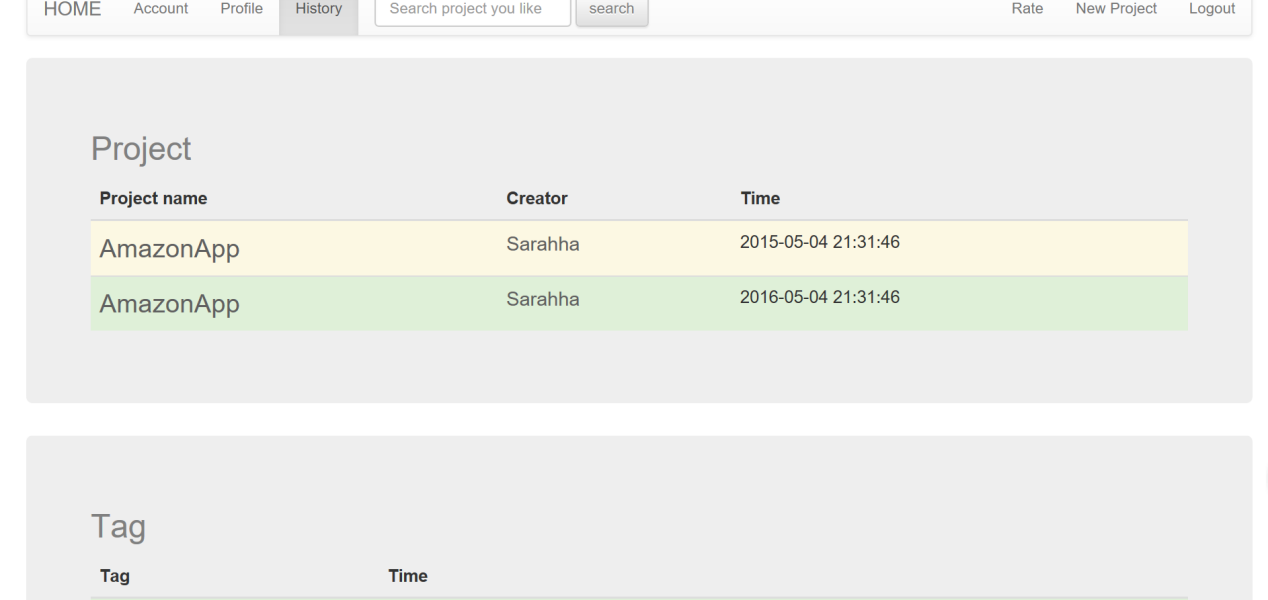


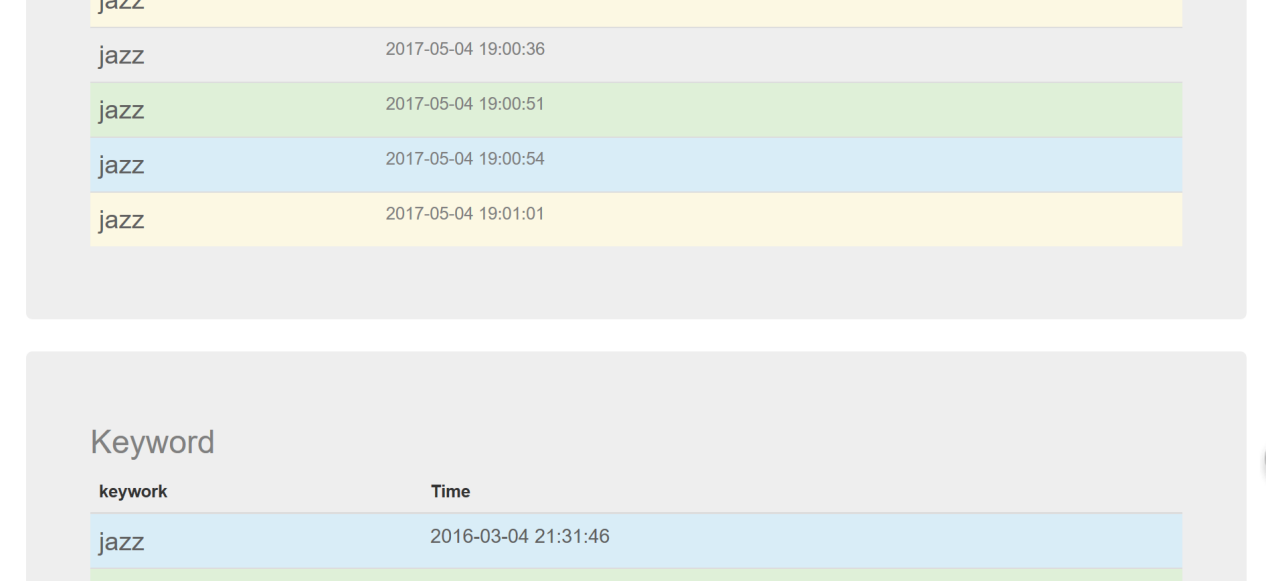
*Figure: Before Rating*

 *Figure: After Rating*

***HISTORY***

Another key functionality of our website is that we record your every footprint for your convenience. We log information whenever you looks at a project, searches using keywords, or clicks on a tag. Once you enter your history page, the system will display projects you have recently looked at, tags you have recently clicked and any keyword you have recently searches, and in general, it will help us to learn what kind of things the you are interested in.





*Figure: History Page*

***Security***

To guarantee the website from SQL injection and cross-site scripting attacks, we apply mysql\_real\_escape\_string() in every input whci we need to use in SQL statement. mysql\_real\_escape\_string() calls MySQL's library function mysql\_real\_escape\_string, which prepends backslashes to the following characters: \x00, \n, \r, \, ', " and \x1a.

Also we apply htmlspecialchars() to everything we read from database to try to print with html. Htmlspecialchars can convert special characters to HTML entities.