

Trade'a'skill –A Skill Trading website

MEET, SHARE AND LEARN

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1. Introduction

Recent advances in technology have been changing the way we do our everyday tasks at an exponential pace. We no longer stand in long queues at the cash counter, at banks to deposit money or book a travel ticket. Everything is just a touch away. But there are a few things that cannot be dusted away with time. One such thing is the process of learning. There are multitudes of options available online to learn something. But, it cannot replace the person to person interaction that happens in conventional learning and the benefits reaped out of it, especially when it's something new.

For this project, we have created a website that allows users to benefit from the conventional learning methods by providing a platform where they can exchange their skills. Our main objective is to bridge the gap between people who want to learn things from each other mutually. Another ulterior motive is to bring together like-minded people so they can share their interests and impart new skills amongst themselves. For example, a person who is well-versed in German may be interested in learning Tennis, but could not afford it or could not pursue it for any reason. What are the chances that he/she will meet someone who knows Tennis but wants to learn German. This is where the Skill Trading website proves to be beneficial.

2. User Privileges:

In our project, we have developed a website where a registered user can search for people who have the skills the user is seeking and contact them. This website works on the idea that users can just exchange their skills, without having to spend anything and learn a new skill. This is beneficial because, although there are YouTube tutorials and blogs that teach new skills, it is not better than having a friend who can teach you what you want in exchange of just what you know. People of all age groups and traditions can sit together and build a relationship that will benefit them mutually.

Users can search for people who have the skills that the user is seeking by Skill name or category or location or the time the user is available. If the user is interested in a profile then the user can contact them through a simple messaging system. Upon mutual understanding and consent, they can meet, share their skills, and learn in the process.

3. Design Considerations:

3.1. Database Table description (Data Model)

We store the following information in the database:

1. User Details, which is the user's personal profile
2. Skill Details, which has the list of skills possessed by the user
3. Message Details, which contains the history of messages where were sent to and from.

3.1.1 Message details table:

#	Name	Type	Collation	Attributes	Null	Default
1	MessageID	int(10)			No	None
2	Message	varchar(100)			No	None
3	ToUser	varchar(50)			No	None
4	FromUser	varchar(50)			No	None
5	TimeStamp	timestamp(6)			No	CURRENT_TIMESTAMP(6)
6	Deleted	varchar(100)			Yes	NULL
7	Status	int(1)			Yes	NULL

This table is used to store and retrieve the messages each user sent and received. The status field tells whether or not the message was read by the user. 0-unread and 1-read. Deleted column has the list of users, who deleted that message, so when the user checks the inbox/sent the deleted message will not be displayed.

3.1.2. User table:

The UserName field in user table is a foreign key in the other 2 tables. The User Table has the following fields:

#	Name	Type	Collation	Attributes	Null	Default
1	UserName	varchar(50)			No	None
2	FirstName 🏠	varchar(20)			No	None
3	LastName	varchar(30)			No	None
4	Age	varchar(2)			No	None
5	Phone	text			No	None
6	Email	text			No	None
7	Password	text			No	None
8	SecurityQuestion1	varchar(100)			No	None
9	SecurityQuestion2	varchar(100)			No	None
10	Answer1	varchar(100)			No	None
11	Answer2	varchar(100)			No	None
12	Address1	longtext			No	None
13	Address2	longtext			No	None
14	City	varchar(30)			No	None
15	State	varchar(30)			No	None
16	Zip	varchar(7)			No	None
17	Availability	varchar(20)			No	None

All the fields in this table represent user attributes like address, username preferred, password, email and phone etc.

3.1.3. Skilldetails table:

#	Name	Type	Collation	Attributes	Null	Default
1	skillID 🗝️	int(10)			No	None
2	UserName	varchar(30)			No	None
3	SkillName	varchar(50)			Yes	NULL
4	SkillCategory	varchar(50)			Yes	NULL
5	SkillDescription	varchar(200)			No	None
6	Skill2Name	varchar(50)			No	None
7	Skill3Name	varchar(50)			No	None
8	Skill2Category	varchar(50)			No	None
9	Skill3Category	varchar(50)			No	None
10	Skill2Description	varchar(50)			No	None
11	Skill3Description	varchar(50)			No	None

This table has the skill details of each user, and has UserName as the foreign key.

3.2. Process Design:

Our main concern was to make the website as easy to use as possible for the user, and at the same time not compromising its performance. The following considerations were kept in mind during the design of the website:

3.2.1. Validation on both sides

Validation was done both in client side and server-side. This was mainly because, a user may disable JavaScript in the browser and may result in the database containing undesired values. Having only the server-side validation will increase the number of unnecessary hits to the server. All the forms are submitted using the POST method.

3.2.2. Password Encryption

Passwords are very critical information and should not be stored as such in the database. This calls the need for encryption before it is stored in the database. For every login, the password entered by the user is encrypted using the same salt and checked if it is equal to the value in the database.

3.2.3. Messaging System

We have implemented a simple messaging system, where a user can send message to another user, whose skills they are interested in. To distinguish a new unread message from a read message, we use a 'Status' field in the message details table. The number of unread messages is also displayed in the navigation bar. Users are also given the option to reply to or delete a message. Upon deleting a message, the message is hidden for only the respective user, but is still available to the user who sent or received it.

3.2.4. Attractive UI

User Interface is very important to any website as, it makes the first impression about the site. A good website should have a UI that is pleasing to the eyes and has ease of access to all its features. A home page is also a very important aspect of a website, as it decides whether or not a user will register in the website. We have arduously designed the first page in the website to get any visitor to register, by displaying a slideshow depicting what the user can expect from the website.

3.2.5. Easy Navigation

There are navigation links in all pages for ease of access to the user.

3.2.6. Different Search criteria

The purpose of the website is to enable a user to look for other users to exchange their skills. The user should be given the flexibility to search for skills based on all the criteria or either the name of the skill, the location of the user, the skill category or the availability of the user.

3.2.7 Forgot Password Option

All users are likely to forget their passwords at some point of time. Hence, a forgot password option is given to the user. The process is made secure by asking the security questions that the user will remember at any point of time and that the user entered during registration. This will authenticate the returning user and hence, the user will be allowed to create a password for the account.

3.2.8 Change/Update Skill

This website is a social networking site and hence we capture a lot of personal details about the user and the skills possessed by each user is also very crucial. These details may change over time and hence we give the option to change these details through this feature. This is made hassle free by allowing the user to update personal details and the skill details independently.

4. UI Mockup:

The page that is displayed first is the index.php and looks like the following:



Figure 1 Login Home Page Mock Up

The registration and the home page after logging in looks like the Figures 2 and 3.

The registration page mockup features a header with the site name "Trade'A'Skill" and the tagline "Meet,share and learn.". Below this is a registration form with fields for "UserName" and "Password", a "Login" button, and links for "Forgot Password" and "Register Now". The main content area is labeled "Form Here" and contains a large square placeholder with an 'X' and a "Submit" button. The footer includes a "Background Image" label and a copyright notice "@2016Trade'A'Skill".

Figure 2. Registration Page Mock Up

The home page mockup after logging in has a header with the site name "Trade'A'Skill" and the tagline "Meet,share and learn.". It includes a navigation menu with "Home", "Profile", "Messages", and "Logout". The "Messages" dropdown menu is open, showing "Inbox" and "Sent". The main content area is labeled "Form Here" and contains a large square placeholder with an 'X' and a "Submit" button. The footer includes a "Background Image" label and a copyright notice "@2016Trade'A'Skill".

Figure 3. Home Page after logging in Mock Up

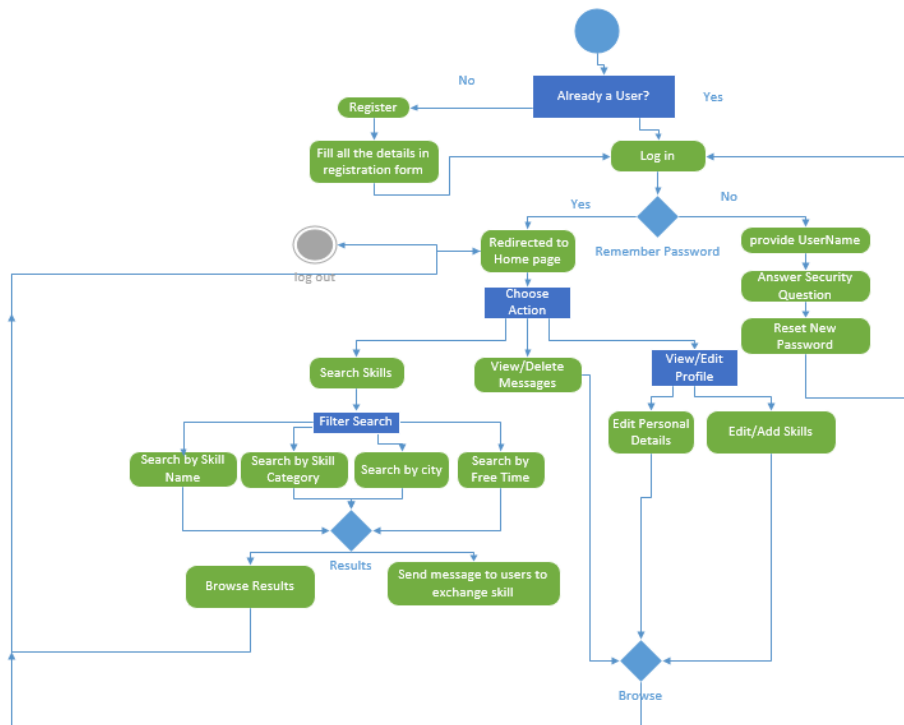
The results page matching the user's search is like the one below:

The search results page mockup features a header with the site name "Trade'A'Skill" and the tagline "Meet,share and learn.". It includes a navigation menu with "Home", "Profile", "Messages", and "Logout". The "Messages" dropdown menu is open, showing "Inbox" and "Sent". The main content area is labeled "Search Results" and contains a list of search results. Each result is represented by a placeholder with an 'X' and a "Send Message" button. The footer includes a "Background Image" label and a copyright notice "@2016Trade'A'Skill".

Figure 4. Search Results page Mock Up

5. System Components and Functions:

5.1 Sequence / Activity Diagram (Process Model)



The activity diagram explains how each activity's control flow goes in the application.

5.2 System Components and their functions:

Page Name	Purpose	Inputs	Output Screen
Login.php	Allows the registered user to login to the application. Provides Forgot password? Link and Registration links for new users	Username, password	If validation is successful, then the home page is displayed, else the user must re-enter the username and password.
Registration.php	Provides form for the user to register	User's personal details, details about the skills the user wants to exchange and account details like username, password and security questions	After successful registration, the user is redirected to the login page.

forgotpassword.php	This page displays the security questions and requests for answers the user entered at the time of registration.	Answer for security question1 and 2	If the user answers the security questions, the user is allowed to reset his password.
changepassword.php	This page allows the user to reset the password after he/she correctly answers the security question	New password Confirm password	Upon successful validation with the database, the login page is displayed, where the user logs in with the changed password, else an error message is shown to the user.
askusername.php	This page checks if the username entered by the user for forgot password is present in the database.	Username	If username is present navigated to the change password page else thrown an error message in the same page
Search.php (Home page)	This page gives flexibility to the user to search based on all or either of the conditions: skill category, skill name, location and availability of the user. At least one criteria should be selected.	At least one criteria, i.e Skill name, category, location, availability.	Navigates to search results page
Fetch.php	This page returns the result of the search query in the previous page. A 'Send Message' button is provided to the user to contact them	User can click on the Send Message button to contact a user whose skills he/she is interested in.	Navigates to the Send Message page.
SendMessage.php	Allows the user to send a default message or compose a new message	Message intended to the target user	Same page with a success or error message
profilepage.php	Displays 2 forms, where the user can edit the personal details entered during registration and skill details independently. A maximum of 3 skills can be updated.	Personal Details, skill details	Same page with a success or error message
AllDetails.php	Fetches all details of the user from skilldetails table and user table to	Takes input username from the session	included in the profilepage.php

	display in the update profile page		
UpdatePersonalDetails.php	Contains queries to update the personal details updated by the user	Takes input from the personal details form in profilepage.php	included in the profilepage.php
UpdateSkilldetails.php	Contains queries to update the skill details updated by the user	Takes input from the skill details form in profilepage.php	included in the profilepage.php
Viewmessage.php	Displays the messages received by the user. Displays the sender, time sent and the user who sent the message	Has 2 buttons 'Reply ' and 'Delete'	On click of reply, user is navigated to the compose message screen and on click of delete button, the username of the user is updated in the 'Deleted' column of the mesagedetails table. So, the message is filtered out for that user.
ViewSent.php	Displays the messages sent by the current user	Has a 'Delete' button	Confirms if the user wants to delete the message and deletes it.
Logout.php	Removes all the session variables, destroys the session	none	Navigates the user to the login page
database.php	Establishes the database connection		
Header.php	Has the header information and includes the links page that has to be included in all the pages		
links.php	Has a list of the navigation links present in the header		
classes.php	Contains a SkillDetails class, UserDetails class, and a MessageDetails class so that the results from select queries can be fetched as an object of these classes		
component.css and demo.css	Contains the styles required for the slide show implemented in the login home page		

homestyle.css	Contains all the css that are used commonly throughout all the pages		
slideshow.js	Contains the script for slide show in the login page		
validations.js	Contains all the javascript validations for all the forms		
support.js	Contains the scripts for dynamically selecting action based on the button clicked in Viewmessage page		

5.3 Technologies Used:

Technology	Use
PHP	Server side scripting
JavaScript	Client side scripting
AJAX, jQuery	For asynchronously checking if the username the user wants to register with is already present in the database
HTML	For creating UI elements
CSS	For styling the different UI elements

6. Individual Member Responsibilities:

Our team consists of 2 members: Sweta Agrawal and Vinuthira Gandhi Chandrasekaran. We divided the website into modules and delegated a set of modules to each user.

6.1 Sweta Agrawal

User Registration (with password encryption)
Login Module
Change Password
Update Personal Details
Update Skills

6.2 Vinuthira Gandhi Chandrasekaran

Search skills
Displaying Search Results
Send Message
View Inbox/ Sent

Both the members jointly implemented the CSS of the website and the final testing of the project.

7. Challenges faced

We faced several challenges throughout the development cycle. The biggest challenge was to implement a full-fledged working application in a short period and including as many features as we could, to the website. There were some setbacks and issues, which we both brainstormed and fixed after some discussions. The implementation of the slideshow for the login home page, was the most challenging task with respect to CSS. Another difficulty was in getting a proper alignment with the header, the changing main content, and the footer.

8. Limitations

To bring out the best features in our website with time constraint, we set upon the following limitations:

1. The user can register a maximum of only 3 skills.
2. The messaging system does not keep track of each conversation, it rather lists all the messages, without separating it as conversations.
3. The user cannot upload images in the profile.
4. Limited validation – no protection against SQL injection, XSS and CSRF due to time constraints
5. User can change password only when they forget it.

9. Learnings and Future Scope

We learnt to use the CSS box model, variety of CSS elements and how to improve the visual appeal of a website. Using AJAX to send asynchronous requests to the server and jQuery to display the error messages without reloading a page. Different methods to communicate between JavaScript and PHP, PHP and database. We also learnt how to embed HTML in PHP and make dynamic web pages.

With all the learnings from this experience, we have decided upon making further improvements on this project. Like, having a more complex chat system for the users to interact, options to review each user and give a rating. Photo uploads can also be enabled for each user. We can further enhance the login page to attract new users by adding testimonies from existing users. For this, we can collect feedback from each user. The scope to improve a website is vast and we are keen on engaging ourselves in making the website a full-fledged social network.