



Technical Design Document

by Team Maverick

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Introduction

The A-LEC is a useful service that provides tutoring to SMU students, but little information is available online for which subjects are tutored and whether or not tutors are active. Our website will allow students to search for tutors based on a class, showing a list of the tutors that are active at that time. In addition, our website will allow students to rate and comment on tutors and to view a history of all the sessions they've attended at the A-LEC. These features will allow the A-LEC to function more seamlessly and to foster a productive environment with the tutors and the students.

Software Requirements

Visitor

- Search for available tutors based on a variety of specifications
- View tutor profile pages
- Create an account on Mustang Tutors using the student's SMU ID

Student

- All functionality of a visitor
- Log in onto created account
- Edit account information
- Rate and comment on tutor profile pages
- View history of tutoring sessions the student attended
- Grant access of history to a third party
- Apply to be registered as a tutor

Tutor

- All functionality of a student
- Complete form for each tutoring session
- View history of sessions with students the he/she tutored
- Toggle availability status

Admin

- All functionality of a student
- Update tutor profiles
 - Update tutor scheduled times
 - Update list of courses tutors are authorized to tutor in
- Toggle tutor active status
- Approve/deny tutor applications

Parent

- All functionality of a visitor

- View tutoring history of a student

Use Case Diagram

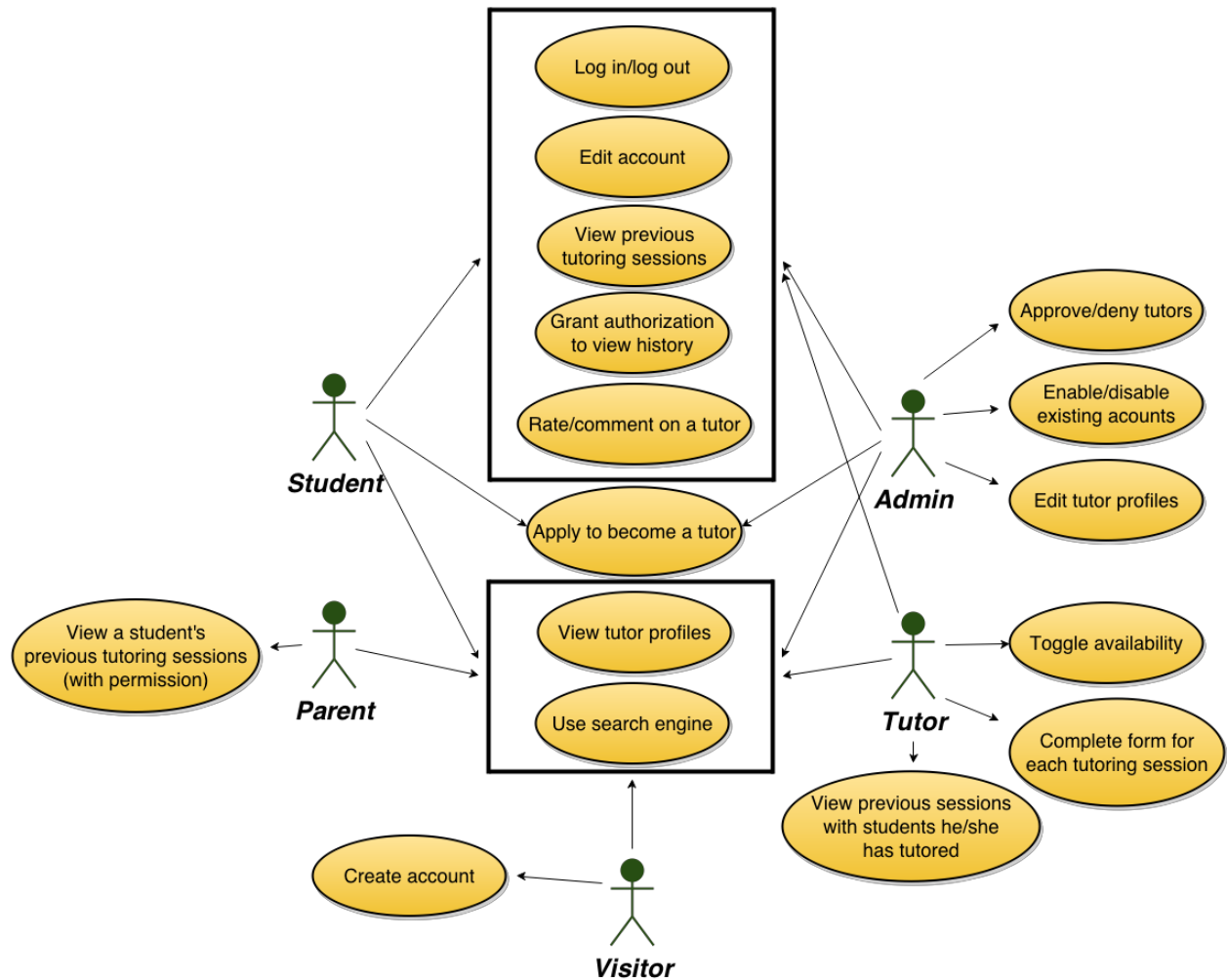


Figure 1: Use Case Diagram

Database Model

Table	Attribute	Type	Constraints
Users	User_ID	INT (Auto Increment)	Primary Key
	SMU_ID	INT	Unique Key
	First_Name	VARCHAR(30)	
	Last_Name	VARCHAR(30)	
	Email	VARCHAR(255)	
	Password	VARCHAR(255)	
	Codeword	VARCHAR(255)	
	Available	INT	
	Active	INT	
	Tutor	INT	
	Admin	INT	
Courses	Course_ID	INT (Auto Increment)	Primary Key
	Subject	VARCHAR(30)	
	Course_Number	INT	
	Course_Name	VARCHAR(255)	
Courses_Tutored	Courses_Tutored_ID	INT (Auto Increment)	Primary Key
	Course_ID	INT	Foreign Key
	User_ID	INT	Foreign Key
Schedule	Schedule_ID	INT (Auto Increment)	Primary Key
	User_ID	INT	Foreign Key
	Day	INT	
	Start_Time	TIME	
	End_Time	TIME	

Figure 2.a: Table of Entities

Database Model Continued

Table	Attribute	Type	Constraints
Ratings	Rating_ID	INT (Auto Increment)	Primary Key
	User_ID	INT	Foreign Key
	Tutor_User_ID	INT	Foreign Key
	Rating	INT	
Comments	Comment_ID	INT (Auto Increment)	Primary Key
	User_ID	INT	Foreign Key
	Tutor_User_ID	INT	Foreign Key
	Comment	VARCHAR(255)	
	Timestamp	DATETIME	
Records	Record_ID	INT (Auto Increment)	Primary Key
	User_ID	INT	Foreign Key
	Tutor_User_ID	INT	Foreign Key
	Course_ID	INT	Foreign Key
	Date	DATE	
	Start_Time	TIME	
	End_Time	TIME	
	Summary	VARCHAR(255)	
Applications	Application_ID	INT (Auto Increment)	Primary Key
	User_ID	INT	Foreign Key
	Pending	INT	

Figure 2.b: Table of Entities

Entity Relationship Diagram

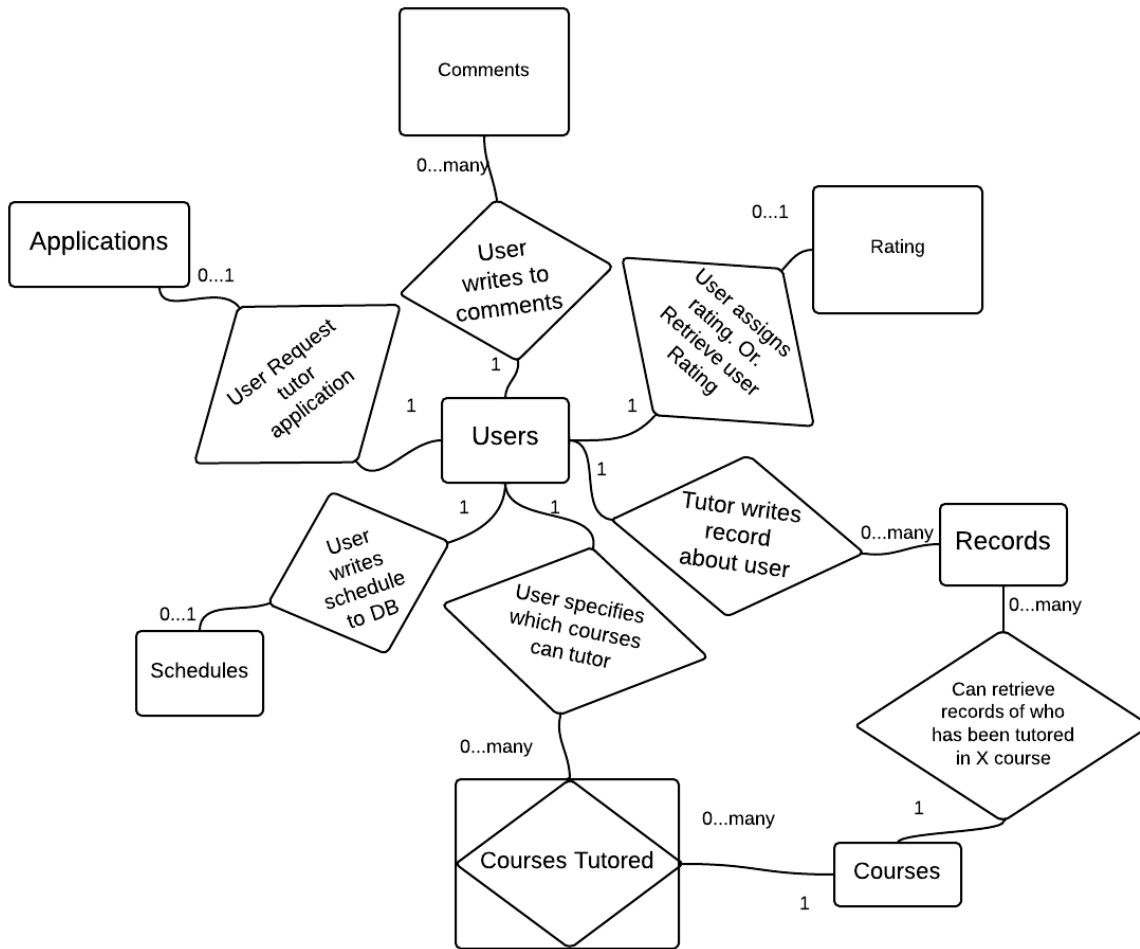


Figure 3: Entity Relationship Diagram

Explanation of Requirements

Login and Registration

When a user first registers with Mustang Tutors, he/she is asked for an SMU ID and password to be associated with the new account, as well as his/her first name, last name, and email. This information is then inserted into the Users table to be referenced when a user attempts to log in. The primary key of the Users table, user_id, is assigned automatically along with the codeword, tutor, and admin fields, while the fields not listed are left as NULL.

Query to register a new user:

```
INSERT INTO users (email, password, first_name, last_name, smuid,
codeword, tutor, admin)
VALUES ('$email', '$password', '$first_name', '$last_name',
'$smuid', '$codeword', 0, 0);
```

Query to verify user login information:

```
SELECT * FROM users
WHERE smuid = '$smuid' AND password = '$password';
```

Searching for Available Tutors

Most of the data that can be used as the criteria of a user's search is stored in the Users, Schedules, and Courses tables. Information about the courses is associated with the tutors that teach them through the Courses_Tutored table, which stores a list of every course a tutor teaches in the form of two foreign keys that point to the Users and Courses tables. Information about the times a tutor typically tutors for a course is provided by joining the Schedules table with the Courses_Tutored table using the user_id foreign key of the Schedules table.

Users will be able to search for tutors based on course type (ex: CSE), course number (ex: 3345), course name (ex: Graphical User Interfaces), and availability. They can have any combination of these filters.

Query to view all tutors that teach a certain course:

```
SELECT users.first_name,users.last_name
FROM courses
NATURAL JOIN courses_tutored
INNER JOIN users
ON users.user_id = courses_tutored.user_id
WHERE courses.course_name = '$course_name';
```


Query to view tutors currently available for a certain course:

```
SELECT users.first_name, users.last_name, courses.course_name
FROM courses
NATURAL JOIN courses_tutored
INNER JOIN users
ON users.users_id = courses_tutored.user_id
WHERE courses.course_name = '$course_name' AND
users.available = 1;
```

Student Tasks

Users who register with Mustang Tutors are granted additional functionality outside of searching for tutors. They are allowed to provide feedback on the tutoring sessions they attend through Mustang Tutors' comment and ratings systems, which are viewable by all other users. Users are also allowed to view the history of sessions they attended with a tutor and to share access to this history with their parents by sending them a code word linked to their account.

Tutors who wish to register with Mustang Tutors must first register as a user, then submit an application to be reviewed by Mustang Tutors administrators.

Query to rate a Tutor:

```
INSERT INTO ratings (user_id, tutor_user_id, rating)
VALUES ('$user_id', '$tutor_id', '$rating');
```

Query to comment on a Tutor:

```
INSERT INTO comments (user_id, tutor_user_id, comment)
VALUES ('$user_id', '$tutor_id', '$comment');
```

Query to view history of Records:

```
SELECT * FROM records
INNER JOIN users
ON records.user_id = users.user_id
WHERE users.user_id = '$user_id'
ORDER BY records.date;
```

Query to submit tutor application:

```
INSERT INTO Applications (user_id, pending)
VALUES ('$user_id', 1);
```

Routine Tutor Tasks

Tutors are expected to perform certain tasks on a regular basis, such as updating their availability and submitting records after each tutoring session. All records submitted by tutors are stored in one Records table, and are then referenced by the student's user_id, the tutor's user_id, or both.

For availability, there will be three options: 1) checked in and available, 2) checked in and busy, or 3) checked out.

Query to submit a Record:

```
INSERT INTO Records (user_id, tutor_user_id, date, summary,
course_id)
VALUES ('$user_id', '$tutor_user_id', '$date', '$summary',
'$course_id');
```

Query to update the availability of a Tutor:

```
UPDATE users
SET available = '$available'
WHERE user_id = '$user_id';
```

Administrative Functionality

The main role of the administrators is to review tutor applications and to moderate the information found on a tutor's profile page. The applications are emailed to the address associated with the user_id of the admin, and the approval status of the applications are stored in the Applications table.

Admins are the only users that are allowed to alter the schedules of tutors and the courses taught by tutors. These are held in the Schedules and Courses_Tutored tables. When first creating a schedule for a newly approved tutor, the admin inserts entries to the Schedules table for each day of the week the tutor works. The entries contain the times that the tutor begins and ends their shift, as well as the user_id of the tutor. An entry is inserted into the Courses_Tutored table for every course that a tutor is allowed to teach. Admins are also the only users authorized to change the active status of tutors.

Query to approve/deny a user's tutor application:

```
UPDATE users, applications
SET users.tutor = '$approve', applications.pending = 0
WHERE users.user_id = '$user_id' AND
applications.user_id = '$user_id';
```

Query to toggle whether a tutor is active or inactive:

```
UPDATE users
SET active = '$active'
WHERE user_id = '$user_id';
```

Query to update the schedule of a tutor:

```
UPDATE schedules
SET start_time = '$start_time', end_time = '$end_time'
WHERE user_id = '$user_id' AND day = '$day';
```

Query to add a course that a tutor is allowed to teach:

```
INSERT INTO courses_tutored (course_id, tutor_id)
VALUES ('$course_id', '$tutor_id');
```

Parental Access

Parents of a student are not required to register as users, as their only functionality is to view the history of their children's tutoring sessions. They gain access to this history by entering the SMU IDs of their children, as well as the code word from the student that was emailed to an email address specified by the student.

Query to verify parent authorization:

```
SELECT * FROM users
WHERE smuid = '$smuid' AND codeword = '$codeword';
```

Query to view all the reports made by tutors for a particular student:

```
SELECT * FROM records
INNER JOIN users
ON records.user_id = users.user_id
WHERE users.smuid = '$smuid'
ORDER BY records.date;
```

Detailed Software Architectural Diagram



Figure 3: Software Architecture Diagram

This diagram illustrates the flow of data through the three tier architecture of Mustang Tutors, as well as the technologies utilized at each tier. In addition to the languages shown above, we will utilize the `jQuery Javascript Library` and the `Laravel PHP Framework`.

Paper Prototypes

Below are the paper prototypes that show the basic layout for each of the pages on our website and on our Android application. Below each picture is a brief explanation of what that page is for.

The paper prototype shows the layout of the Mustang Tutors home screen. At the top left is a placeholder for a logo with dimensions 160 x 104. To its right is the site title "Mustang Tutors". Further right are input fields for "SMU ID" and "Password", a "Register" link, and a "Login" button. Below these are four navigation buttons: "Home", "About Us", "Contact Us", and "View History". On the left side, there is a "Search" section with a "Course Type" dropdown, "Course Number" and "Course Name" input fields, an "Available Only" checkbox, and a "Go!" button. The main content area displays eight tutor cards in a 2x4 grid. Each card has a placeholder image (96 x 121), a "Name" label, and a status indicator (a filled circle for the first two cards and an empty circle for the last two).

Web Prototype 1: The home screen. The user is not logged in. On this page, users can search for available tutors.

160 × 104

Mustang Tutors

[Register](#)

Search

☐ Available Only

96 × 121

John Smith

●

John Smith

Average of xxx: ★★★★★

Available

121

e

●

96 × 121

Name

●

96 × 121

Name

○

96 × 121

Name

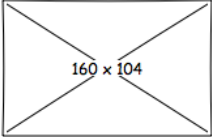
○

96 × 121

Name

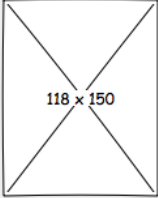
○

Web Prototype 2: The home screen. Shows the information that pops up when a user hovers over a tutor's picture.



Mustang Tutors

[Register](#)



John Smith

Available

Average of xxx: ★★★★★

Yours: ★★★★★

Courses

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

Regular Hours

Sunday	5:00 PM - 9:00 PM
Monday	5:00 PM - 9:00 PM
Tuesday	5:00 PM - 8:00 PM
Wednesday	None
Thursday	5:00 PM - 10:00 PM
Friday	12:00 PM - 5:00 PM

Comments

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Web Prototype 3: A tutor's profile page.

Mustang Tutors

Welcome, John!

My Account Status: Available ▼

Home

About Us

Contact Us

View History

John Smith

Available

Average of xxx: ★★★★★

Yours: ★★★★★

Disable Edit Profile

Courses

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

CSE 4340: Statistics for Engineers

Regular Hours

Sunday	5:00 PM - 9:00 PM
Monday	5:00 PM - 9:00 PM
Tuesday	5:00 PM - 8:00 PM
Wednesday	None
Thursday	5:00 PM - 10:00 PM
Friday	12:00 PM - 5:00 PM

Comments

Add Comment

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse pontenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse pontenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse pontenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012 This student rated the tutor: ★★★★★

Web Prototype 4: An admin's view of a tutor's profile page.

Mustang Tutors

My Account

Status: Available ▼

Home

About Us

Contact Us

View History

John Smith

Available

Average of xxx: ★★★★★

Yours: ★★★★★

Disable

Submit Changes

Courses

☒ CSE 4340: Statistics for Engineers
 ☒ CSE 4340: Statistics for Engineers
 ☒ CSE 4340: Statistics for Engineers
 ☒ CSE 4340: Statistics for Engineers

Type ▼

Course Number

Course Name

+

Regular Hours

<input checked="" type="checkbox"/> Sunday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Monday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Tuesday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Wednesday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Thursday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Friday	8:00 AM	to	5:00 PM

Comments

Add Comment

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012
 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012
 This student rated the tutor: ★★★★★

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam vel turpis eros. Suspendisse potenti. Sed quid elit ultricies diam cursus sagittis ut non mi. Suspendisse varius leo vitae convallis. Morbi nec nunc ut orci bibendum consequat. Vestibulum varius hendrerit adipiscing.

Posted 12/12/2012
 This student rated the tutor: ★★★★★

Web Prototype 5: A tutor's profile page, as seen by an admin when they are editing it.

17

Mustang Tutors

Welcome, John!

My Account

Home

About Us

Contact Us

View History

John Smith
johnsmith@gmail.com

Add Picture

Courses

Attach Transcript

Type

▼

Course Number

Type

▼

Course Number

Type

▼

Course Number

Type

▼

Course Number

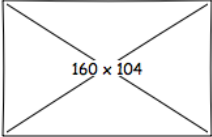
+

Regular Hours

<input checked="" type="checkbox"/> Sunday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Monday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Tuesday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Wednesday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Thursday	5:00 PM	to	10:00 PM
<input checked="" type="checkbox"/> Friday	8:00 AM	to	5:00 PM

Submit

Web Prototype 6: Application to become a tutor.



Mustang Tutors

Welcome, John!

[My Account](#)

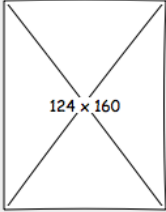
Status: Available
▼

Home

About Us

Contact Us

View History



View Transcript

Jane Smith

Select Eligible Courses

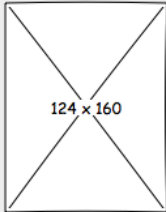
☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers

Edit Regular Hours

<input type="checkbox"/> Sunday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Monday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Tuesday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Wednesday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Thursday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Friday	8:00 AM	to	5:00 PM

Approve

Deny



View Transcript

Joe Smith

Select Eligible Courses

☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers
☐ CSE 4340: Statistics for Engineers

Edit Regular Hours

<input type="checkbox"/> Sunday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Monday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Tuesday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Wednesday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Thursday	5:00 PM	to	10:00 PM
<input type="checkbox"/> Friday	8:00 AM	to	5:00 PM

Approve

Deny

Web Prototype 7: An admin's view of the tutor applications.

160 x 104

Mustang Tutors

My Account

Status: Available ▼

Welcome, John!

Home

About Us

Contact Us

View History

Grant Access

Email: ⊕

Codeword:

Save Codeword

Email Codeword

Web Prototype 8: A user can use this page to grant access to his/her history, or change the code word.

160 x 104

Mustang Tutors

SMU ID

Password

[Register](#)

Login

Home

About Us

Contact Us

View History

Tutoring History

Enter ID of Student:

Enter the codeword:

Submit

Web Prototype 9: The page for an authorized user to enter in a student's ID and his/her code word to see the student's history.

160 × 104

Mustang Tutors

Welcome, John!

My Account

Status: Available ▼

Home

About Us

Contact Us

View History

Tutoring History

CSE 4340: Statistics for Engineers
Tutored by: Jane Smith

12/12/2013
5:00 PM - 6:00 PM

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris id sem eu eros volutpat molestie.

CSE 4340: Statistics for Engineers
Tutored by: Jane Smith

12/12/2012
5:00 PM - 6:00 PM

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris id sem eu eros volutpat molestie.

Web Prototype 10: The student view for tutoring history.

160 x 104

Mustang Tutors

Welcome, John!

My Account

Status: Available ▼

Home

About Us

Contact Us

View History

Tutor's History

CSE 4340: Statistics for Engineers
Student Tutored: Jane Smith

12/12/2013
5:00 PM - 6:00 PM

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris id sem eu eros volutpat molestie.

CSE 4340: Statistics for Engineers
Student Tutored: Jane Smith

12/12/2012
5:00 PM - 6:00 PM

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris id sem eu eros volutpat molestie.

Web Prototype 11: The tutor view for tutoring history.

160 × 104

Mustang Tutors

My Account

Status: Available ▼

Home

About Us

Contact Us

View History

Welcome, John!

Record Meeting

Student ID:

Enter Student ID

Date of Session:

mm/dd/yyyy

▼

Time of Session:

5:00 PM

to

5:00 PM

Course Tutored:

Type ▼

Course Number

Course Name

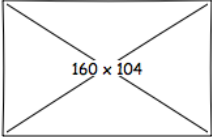
Comments (1-3 sentences):

Reset

Submit

Web Prototype 12: A tutor's form for recording a tutoring session with a student.

24



Mustang Tutors

[Register](#)

Register

First Name:

Last Name:

Email:

SMU ID:

Password:

Confirm Password:

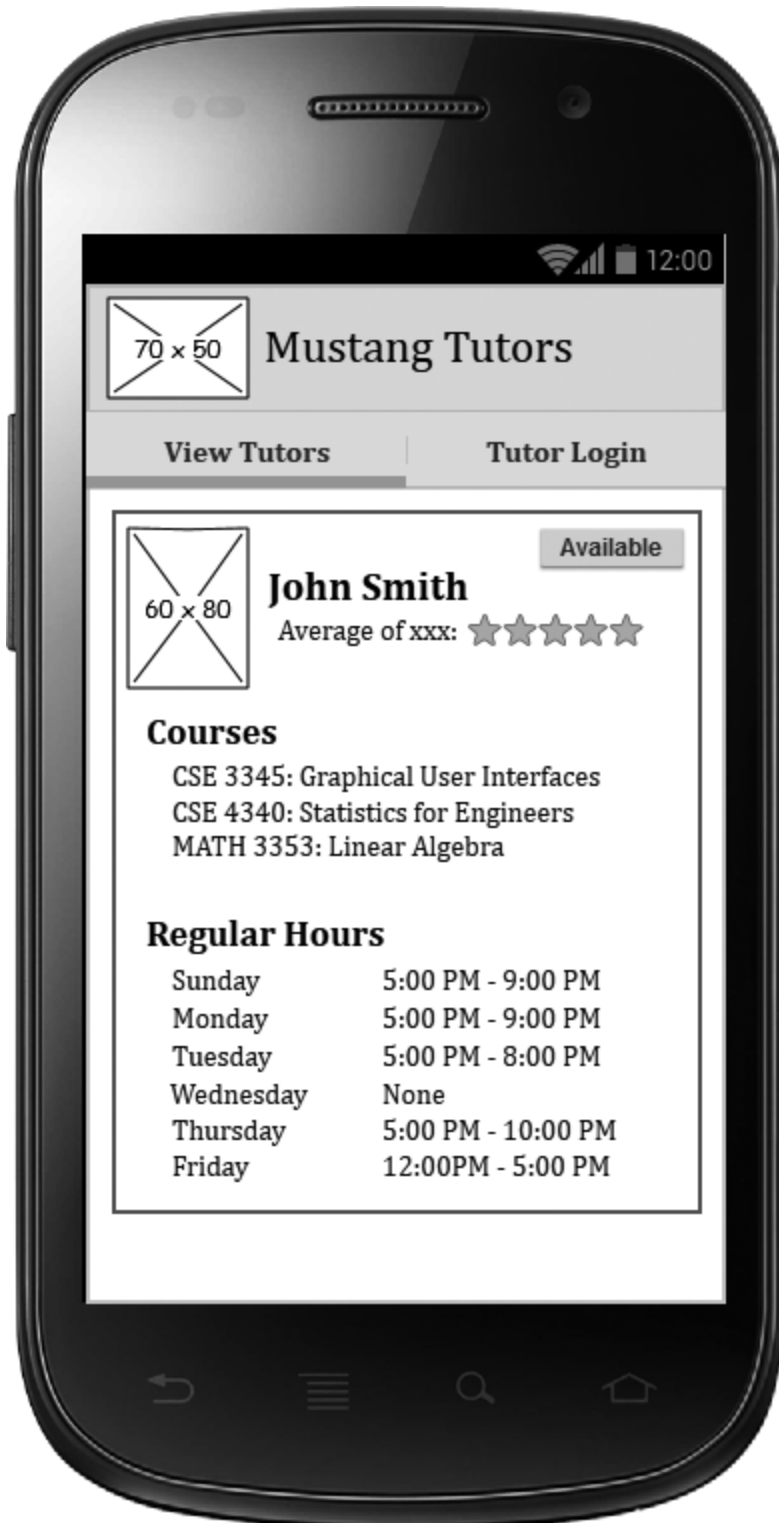
Web Prototype 13: The registration form.



Android Prototype 1: The home screen of someone not logged in.



Android Prototype 2: The tutor search menu.



Android Prototype 3: A tutor's profile page. Seen after clicking on a tutor on the home screen.



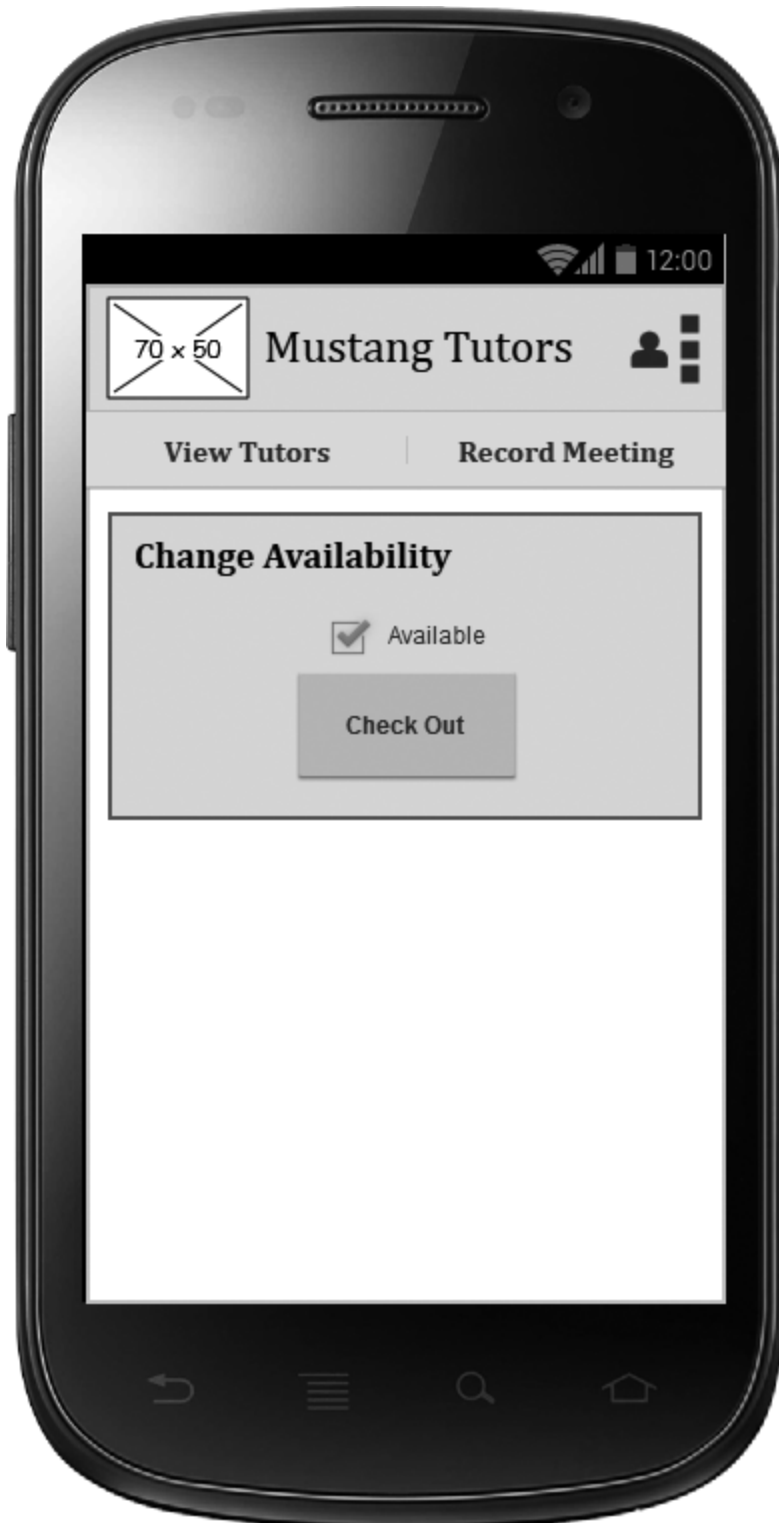
Android Prototype 4: Tutor login screen.



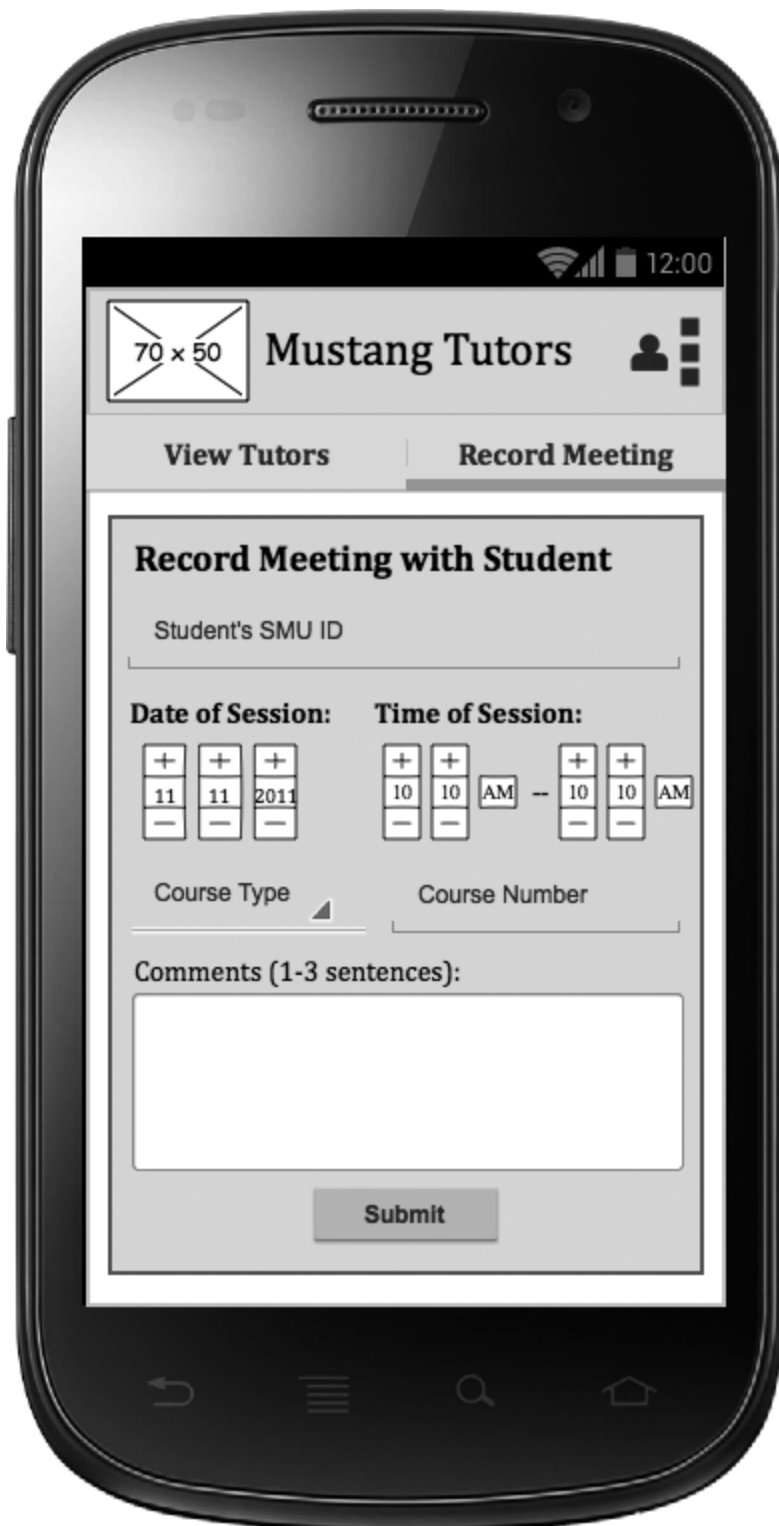
Android Prototype 5: The home screen of a logged in tutor.



Android Prototype 6: The account menu of a logged in tutor.



Android Prototype 7: Change availability screen for a tutor.



Android Prototype 8: Tutor's form for recording a meeting with a student.

User Profiles

Role	Frequent User of A-LEC	Infrequent User of A-LEC	Tutor at the A-LEC	Admin at the A-LEC	Parent
Age	21	19	20	40	50
Education	In college	In college	In college	Bachelor's	Bachelor's
Computer Skill Level	Med	Low	Med	Low	Med
Familiarity with A-LEC	Goes there everyday for tutoring	Has heard of it	Works there several days of the week	Works there every day	Has heard of it

[Student 1]: He is a 21-year-old junior college student who often struggles with his homework, so he goes to the A-LEC for tutoring almost every day. He likes how the A-LEC is run on a drop-in basis, so he doesn't have to set up appointments all the time, but sometimes dislikes it, since there are days that he sits around in the A-LEC for hours waiting for a tutor that can help him. He has a smartphone and is about as tech-savvy as your average college student.

[Student 2]: She is a 19-year-old freshman college student who knows that the A-LEC tutoring center exists and has heard it's a great resource for getting homework help, but has never gone there before. She is hesitant to visit the A-LEC, since she is slightly shy and would feel uncomfortable if she went there and had to sit around for a long time to wait for a tutor. Additionally, she doesn't know who tutors at the A-LEC, and isn't keen of being tutored by a stranger. She isn't very experienced with using technology.

[Tutor]: He is a 20-year-old sophomore college student who is a tutor at the A-LEC. He tutors several classes and works there a few days of the week. Generally, he sticks to his tutoring schedule well, but sometimes he has personal conflicts and is unable to come to work, in which case he calls or emails the A-LEC to tell them he won't be coming. He is as tech-savvy as an average college student.

[Admin]: She is 40 years old and works full-time at the A-LEC. Her main responsibilities include managing the tutors and directing students who drop-in towards an available tutor. She avoids using computers whenever possible since they are confusing to her, and instead prefers doing everything on and pencil and paper. She also doesn't like change; she has been running the A-LEC tutoring system the same way for many years.

[Parent]: She is 50 years old and is a parent of [Student 1], who visits the A-LEC very often. She likes to check up on her son's academic progress, and gets concerned when her son's grades are slipping. As a caring mother, she occasionally wants to make sure that her son is getting the help he needs if he is struggling, so she sometimes calls the A-LEC to see if [Student 1] has been attending tutoring sessions there. Unfortunately, she doesn't call as often as she would like, because retrieving the information is a process that takes the A-LEC several minutes since it's all on paper. She's afraid of being a nuisance to the A-LEC. She knows how to use technology fairly well, but isn't an expert.

Task Analysis

Q: What are particular features of the current tutoring system that you particularly like?

[Student 1]: I like how I don't have to set up an appointment to get tutored there.

[Student 2]: I haven't been tutored there yet, but I like how they have tutors for specific classes instead of just things like math in general, computer science in general, etc.

[Tutor]: I like that the hours are somewhat flexible; if I have a personal time conflict, I don't have to show up to tutor.

[Admin]: I like that it's not complicated.

[Parent]: I like how the A-LEC keeps records of all the tutoring sessions.

Q: What difficulties have you experienced with the A-LEC?

[Student 1]: It's annoying that there's no way to easily look up whether there are tutors currently available in the subject I need help in. And sometimes the tutors aren't very good.

[Student 2]: I haven't gone to the A-LEC before, but I don't like how there is very limited information on the website.

[Tutor]: Sometimes too many students come in at once for help in the same subject, and the tutors get overloaded.

[Admin]: It's hard for me to do quality control on tutors because students don't have a way to give feedback on the tutors.

[Parent]: It's inconvenient for me to monitor my child's usage of the A-LEC.

Q: If you have visited the A-LEC for tutoring, on average, how long did you have to wait before a tutor was available to help you?

[Student 1]: Most of the time I do not have to wait. There were a few days when the tutor(s) didn't show up so I had to come back the next day.

Q: When a user is looking at tutors on Mustang Tutors, what information about each tutor should be most readily available for them to see (as in, minimal amount of additional clicks needed to access the info)? The choices are: name, picture, rating, comments, classes, regular hours, current availability. Order your choices by importance (most important is first).

[Student 1]: Classes, current availability, rating, name, picture, regular hours, comments

[Student 2]: Classes, current availability, regular hours, name, picture, rating, comments

[Tutor]: Classes, current availability, name, rating, regular hours, comments, picture

[Admin]: Classes, current availability, regular hours, name, rating, comments, picture

[Parent]: Classes, current availability, rating, regular hours, comments, name, picture

Q: What criteria should a user be able to filter the tutors by?

[Student 1]: Class, availability, the tutor's name

[Student 2]: What classes they teach, if they are at the A-LEC and available

[Tutor]: Course name/number, availability

[Admin]: Course, hours that tutors are at the A-LEC

[Parent]: Tutors that are available for a certain course, the quality of the tutors

Q: When a tutor records a meeting with a student, what information should be recorded?

[Student 1]: It doesn't matter to me too much what goes into the record, but it's probably a good idea to take note of who tutored me, what class it was for, and when it was. My parents, who sometimes look at my records, would probably want more information, like what exactly happens in each session.

[Student 2]: Just what is necessary: the class name/number, the tutor, and the date and time.

[Tutor]: The subject, tutor's name, and date and time are most important. This is not as important, but it's nice to let the tutor record their observations about the student and the session.

[Admin]: The student, the tutor, start and end time (or duration), date, course, and specific details about the tutoring session.

[Parent]: The date of the session, how long the session lasted, who tutored the student, what class the student was tutored in, and some notes about what happened in the session.

Q: Describe your vision of an ideal system for rating the quality of a tutor. Consider anonymity, changing ratings, separate ratings for each tutor for each subject, display of others' ratings, etc.

[Student 1]: I would like to be able to rate a tutor for every class that he/she tutors in. I prefer to remain anonymous in my ratings, but I can understand if someone wanted to not be. I should be able to see the average rating given by other students, and how many students have rated the tutor so far. I would like to be able to change my rating.

[Student 2]: Ratings should be anonymous. I think one general rating for a tutor for all the classes they tutor in is enough; I don't like it when ratings are too complicated. It would be nice to be able to change your rating. When I look at the ratings that other students gave the tutor, I want to see an average (like number of stars on Netflix) and how many people contributed to that average.

[Tutor]: Ratings should be anonymous for students, but as a tutor, I would like to be able to see who rated me and what rating they gave me. Ratings should be able to be changed. Generally, a tutor is about the same quality for each class they tutor in, so separate ratings for each class is unnecessary. When users look at the rating of a tutor, it should be out of 5 stars.

[Admin]: Each student should only be able to rate a tutor once (but they can go back and change it), and only if that student has been tutored by him/her in the past. We don't want people abusing the rating system. One rating per tutor per student is fine.

[Parent]: The ratings shouldn't be completely anonymous, so that the system isn't abused. Ratings for each subject taught by a tutor would be nice, since I think a tutor could have different proficiency levels in each class he/she teaches.

Q: (for a tutor) If you had to check-in/check-out from the A-LEC when you arrived/left and had to update your availability (busy/not busy) while you were at the A-LEC, would you actively ensure that your status was accurate? Would you need some sort of system to help you remember to update your status?

[Tutor]: I would probably forget to do it, since that is something new and it would take time to get used to. It would be nice if there was something to help me remember, like a notification on my phone.

Q: (for an admin) How often do you have to update the information of tutors (regular working hours, classes they teach, etc)?

[Admin]: Not very often, about once a semester, since everybody has a completely different schedule every semester and everything needs to be updated.

Q: (for a parent) Describe what steps you envision going through in order to view a student's tutoring history that you have permission to access. What is your opinion on having to input a short access code (~6 characters, randomly generated) in order to view the history?

[Parent]: Go to a web page, type in the student's id, and type in some kind of password. I wouldn't like a randomly generated password since that would be hard to remember.

Object/Action Analysis and Matrix

Object-Actions Hierarchy

Account

Attributes

- First Name
- Last Name
- SMU ID
- Email
- Account Type

Subtype: Tutor

- Rating
- Comments
- Active
- Availability
- Application Status
- Picture
- Courses
- Regular Hours

Actions

User role: All

- Log in/Log out
- Create account
- Search for tutors
- View tutor comments
- View tutor rating
- View tutor availability
- View tutor active status
- View tutor picture
- View tutor courses
- View tutor regular hours

User role: Student

- Grant parental access
- Apply to be a tutor

User role: Tutor

- Edit availability
- Create history

User role: Administrator

- View tutor applications
- Approve tutor applications
- Deny tutor applications
- Toggle active status of tutor

Search Bar

Attributes

- Course subject parameter
- Course number parameter
- Course name parameter
- Availability parameter

Actions

User role: All

- View search bar
- Search for tutors

Comment Section

Attributes

- List of comments

Actions

User role: All

- View comments

User role: Student

- Comment on a tutor

Rating Section

Attributes

- Tutor rating

Actions

User role: All

- View rating

User role: Student

- Rate a tutor

History

Attributes

- Records

Actions

User role: Student

- View history

User role: Tutor

- Create record

Object actions matrix

X = All

S = Student

T = Tutor

A = Admin

			Log In/Log Out	Create	View	Edit	Search for Tutors	Grant Parental Access	Apply to be a Tutor
Account			X	X					
	All								
		First Name							
		Last Name							
		SMU ID							
		Email							
		Account Type				A			
	Tutor								
		Rating			X				
		Comments			X				
		Availability			X	T			
		Active			X	A			
		Application Status			A	A			
		Picture			X				
		Courses			X	A			
		Regular Hours			X	A			
	Student							S	S
	Admin								
Search Bar					X		X		
		Course Subject							
		Course Number							
		Course Name							
		Availability							
Comment Section				S	X				
		Comments							
Rating System				S	X				
		Rating							
History				T	S				
		Records							

Software Lexicon

Active: Whether or not the tutor is currently employed at the A-LEC

Admin: User with the ability to accept an application to be tutor or deny it, as well as revoke said status; users are promoted to admins through a manipulation in the database

Application: A request made by a general user for a job as a tutor

Available: Whether or not the tutor is present and ready to hold tutoring sessions

Busy: When a tutor is unable to take on a student to tutor at a given time due to already being in a session with another student

Check In/Out: To make it known that a tutor is available to work or not; check in = made available; check out = not unavailable

Code Word: A phrase given to a parent of a child participating in tutoring sessions to gain access to his/her student's tutoring session history

Comment: A message made by a student left to give feedback on a tutor's work

Course: A series of lectures designed to instruct a participant in a particular subject or field of study

History: A list of the tutoring sessions that the student has had with a tutor

Parental Access: The ability of a student's parents to view the progress of their child's tutoring sessions

Rating: A measure of how favorable students found a particular tutor and how useful their sessions were to understanding course material

Record: A log of a session that was completed with a student, consisting of start and end times, the student's name, the subject taught, and any notes on the student's academic progress

Student: An average user; the default account type that a user gets when he/she registers on the website

Tutor: A tutor at the A-LEC; able to access all functionality of a student, but also able to check in/out, record sessions with tutors, and view all sessions conducted with students

Usability Test Outline

Summary

For our project, we will use the hallway testing method. We will perform this test with semi-random SMU students, and we will additionally test our product with Professor Raley.

During the test, we will guide users through the basic functionality of our website. We will have a script with basic instructions such as “Search for a tutor with class CSE 4340” or “Visit this tutor’s profile page,” and as our user presses buttons on the page we will place the appropriate page or appendage (drop-down menu, etc.) down in front of them, or will describe what the user would see happening. In this way, the user will be able to experience our website as if it was actually interactive.

As the user completes the test, we will take note of anything that causes the user strife or issue. This will allow us to gauge where holes in functionality or where unclear instructions may be present in our website. After the usability test is over, we will review these notes and rate all the problems we noticed based on their importance (task failure, bug, annoying, etc.). This information will go in our usability report.

We will perform three main waves of the test to ensure that our project remains appealing to our users. We will perform the first wave of tests on our users with paper prototypes so that we can gauge our design before any coding takes place. Our paper prototypes will be black and white to narrow its focus.

We will perform the second wave of tests halfway through the semester after we have implemented the first iteration of functionality. This will allow us to see how users react to our product as an actual webpage while we still have time to make adjustments.

Our third and final wave of tests will be at the end of the semester, when our product is in its final stage of production. This will allow us to see how users react to our completed product.

Script

Introduce Team and Product

"Hello, we are Team Maverick." [*Introduce presenters.*] "We are creating a website to accompany SMU's A-LEC center. Currently, there is not much information online concerning the tutors that are working in the A-LEC, so our website would allow students to search what tutors are currently available in the A-LEC and to view ratings and comments from other students about that tutor."

Briefly Explain Usability Test

"For this test, we will be showing you some of the basic functionality of our website. We have sheets of paper to represent the pages of our website, and we will dynamically manipulate those sheets of paper to give you an approximation of how our actual website will work."

Website

[*Put down Web Prototype 1/search page.*] "We will start with the home page of our website, which is this search screen. Please search for a tutor given course CSE 3345." [*User enters information.*] "The information you type is entered." [*When user presses "Go!" replace the current tutor listing with a cut-out of new listings.*]

"Please inspect a tutor." [*When user "hovers" over a tutor, place down Web Prototype 2/tutor hover.*] "Please visit John Smith's tutor profile page." [*When user clicks on the tutor's hover box, place down Web Prototype 3/tutor profile page.*]

"Please rate this tutor and comment on this tutor." [*User presses stars next to "Yours."*] "The stars light up as you hover over them and your rating appears when you click them." [*User enters comment.*] "Your comment appears as entered at the top of the comment list."

"We will now show you the functionality of an admin on our website. We will keep you on the same page that you are currently on, but you will now be logged in with an admin account." [*Place down Web Prototype 4/tutor profile admin view.*]

"Please edit this tutor's information." [*When user clicks "Edit Tutor" place down Web Prototype 5/tutor profile edit view.*] "This tutor can no longer tutor in the first course listed and can now tutor in CSE 3345: Graphical User Interface. Please make these changes." [*User clicks checkbox for that course.*] "That box becomes unchecked after you click it. Additionally, this tutor now work on Tuesdays only from 6:00PM to 8:00PM. Please make this change." [*User adjusts times.*] "These changes are made as you type them. Please submit these changes." [*When user clicks "Submit Changes" remove Web Prototype 5 to reveal Web Prototype 4.*]

"Please navigate to the page for admin's to review tutor applications." [*When user clicks "My Account" place down account dropdown menu. When user clicks "Review Applications" place down Web Prototype 7/applications.*]

"Jane Smith will be allowed to tutor in all the listed courses, but will only work on Mondays, Tuesdays, and Thursdays. Please make these changes and approve Jane Smith as a tutor." [*User clicks checkbox for Wednesdays.*] "That box becomes unchecked when you click it." [*When user clicks "Approve" place the check cut-out down next to the tutor's name.*] "Please deny Joe Smith." [*When user clicks "Deny" place the x cut-out down next to the tutor's name.*] "Thank you."

"We will now explore the functionality of a tutor. Please navigate to the page for logging a session with a student." [*When user clicks "My Account" place down account dropdown menu. When user clicks "Record Meeting" place down Web Prototype 12/meeting form.*] "You tutored a student with ID 12345678 on January 1, 2014 from 5:00PM to 6:00PM in course CSE 3345: Graphical User Interfaces. Please enter this information and submit this form when you are finished." [*When user clicks on the date, place down cut-out of date picker/calendar. When user clicks "Submit" place down Web Prototype 11/tutoring history.*]

"Please check-out of the A-LEC." [*When user clicks on status, place down status selector dropdown. When user selects "Check-out" replace the welcome message with one featuring "Status: Unavailable."*]

"Thank you. That concludes our demonstration of our website. Before we continue, do you have any questions, comments, or concerns about our website?"

Android

"We will now show you the paper prototypes for our Android application. We will begin you on the home screen of our Android application, the search screen. This is the screen the application will first open to." [*Place down Android Prototype 1/android home.*] "Please search for a tutor." [*When user clicks "Search" place down Android Prototype 2/android search. User enters information. When the user clicks "Go!" remove Android Prototype 2 to reveal Android Prototype 1.*] "Please visit John Smith's profile page." [*When user clicks on the tutor's box, place down Android Prototype 3/android profile.*]

"That concludes the Android section of the usability test. Do you have any questions, comments, or concerns about our Android App?"

Final Questions and Remarks

"That's the end of the usability test for the paper prototype. How do you feel using our website? Do you have any final comments?"

"Thank you so much for helping us with this test. Your perspective has been invaluable to us."

Usability Report

Test 1: Christopher Raley

We administered our test to three people. The first of these three was Christopher Raley, our Graphical User Interfaces professor at SMU. He's an expert in the field of website design, and he works for Samsung on Android applications. As a professor, he is not the target audience of this product.

During the administration of the website portion our test, we noted that on the edit profile page, Raley thought he needed to click the plus button to actually have a course added, though this is not the case. Additionally, Raley was unclear at first how to navigate to the page for an admin to review applications. It took him a while to click on "My Account" and commented that the "My Account" button did not look like a drop down menu. Once Raley found the drop down menu, he originally clicked on "Grant Access" instead of "Review Applications," suggesting that this terminology is overly confusing. As a tutor, he tried to click on "My Account" to check out, thinking that "logout" meant the same thing as "check out".

After we finished with the website portion, Raley gave us some feedback concerning our website design as a whole. He began with the home screen, suggesting that the list of tutors was ambiguous and that we should label that section to give our users context. Raley also suggested that we change the name "View History" to better convey what it actually represents (possibly to "View Student History").

Particularly for the tutor accounts, the distinction between "My History" and "Tutor History" was very vague. Raley suggested that we make them the same page with a toggle feature (possibly "View as Student" and "View as Tutor"). Raley also suggested that we include the "Grant Access" feature on the "View History" page instead of in the navigation bar with a "Share" functionality. Raley suggested that we also include the "Record Meeting" functionality on this page with an option for tutors to add a new meeting. This new meeting should also have "Course Tutored" listed at the top and should have the date and time automatically populated with the current date and time.

He then looked to our navigation bar and suggested that we move "About Us" and "Contact Us" to the foot of the page to make room for some change to our navigation system. Raley expressed great concern in how confusing our navigation bar was. Raley mentioned that having navigation in both "My Account" and on the main navigation bar was strange, and suggested that we move all the "My Account" links to the main navigation bar.

After looking at the list of features a tutor has that a regular user does not, Raley suggested that we might consider having a separate tutor dashboard.

Additionally, Raley suggested that we change the three states that a tutor can be (unavailable, available, and busy) to only two states and that a tutor becomes automatically unavailable when he or she logs out. In this system, a tutor would have a toggle option when logged in for available/busy, replacing the current status drop down.

On the tutor's profile page, Raley commented that a user could accidentally click the screen and leave a rating, so he suggested that an edit icon be required to edit the user's rating of that tutor.

Raley similarly suggested that edit icons could be used for when an admin is editing a user's profile page, instead of having an "Edit Profile" button. This would make the editing process less confusing and also less troublesome because the admin would not have to go to a separate page to edit. The disable button was also confusing, so Raley suggested that we should move it (possibly to the button of the page) and rename it (possible to "Active/Inactive"). Also, Raley suggested that we create a separate page for admins to go to for them to search for tutors to edit their profiles.

Finally, Raley found the "Review Applications" terminology to be confusing and suggested we simply rename it "Applications." On the applications page, Raley found it confusing that there was no submit/save button yet the applicant's information was editable. He suggested that we not allow a tutor's information to be editable until after he/she is accepted, so that we could then link to that tutor's profile page and allow the admin to edit it there.

Overall, Raley thought that our website required too much explanation. The terminology was unintuitive and the navigation was obscure.

After this, we moved on to the Android application. This portion of the test was much shorter and simpler. Raley had no trouble completing the tasks we asked of him on this part, but he did suggest that instead of text saying "Available" that we use a colored circle icon, similar to what we were planning on using on the website. Additionally, he thought that we should use a navigation drawer for the "Tutor Login" and for the option for tutor's to record a meeting with a student.

Test 2: Brice Darden

The next person we administered our usability test to was Brice Darden, a sophomore Creative Computing major at SMU. He is fairly competent with technology and rarely uses the A-LEC.

While administering the website portion of the test, Brice had no problem searching for a tutor, rating a tutor, or commenting on a tutor. We moved him on to the admin portion, and he was easily able to edit a tutor's information.

When asked to review tutor applications, he first tried to click the image of a tutor, and we had to tell him where to go before he was able to complete this task. Once he got to this screen, though, he had no problems approving/denying tutors.

After this, we told him to record a meeting with a student, and his first two tries were to go to "Tutor History" and then to "Grant Access" before finally finding "Record Meeting." This terminology was very unintuitive to him.

When we asked him what he thought of the website, he replied that the client side made sense but that the admin side did not make as much sense. He thought that "My Account" would take him to his profile information instead of taking him to various features. His troubles lined up well with the troubles that Raley had.

After this, we administered the Android portion of the usability test, and he had no problems on any features in this section. Once we finished, he said that he liked the Android application and that it made sense.

Test 3: Alyssa Rahman

We gave our third and final usability test to Alyssa Rahman. She is a freshman Computer Science major at SMU. Similarly to Brice, she has little familiarity with the A-LEC.

When Alyssa was asked to search for a tutor, she was unsure whether or not a course name was required in her search. After searching, when she was inspecting a tutor, she didn't understand what the different circles meant. Alyssa had no difficulty rating or commenting on a tutor.

During the portion where she had to edit a tutor's profile page, Alyssa believed that she had to press the plus button next to the blank course field to actually add a course, and she then asked where the save button was. These issues were similar to those that Raley expressed during this part of the test.

When asked to visit the page to review applications, Alyssa first clicked on the "Status: Available" drop down menu. After seeing that this was not the right option, she clicked on "My Account." She briefly considered clicking on "Grant Access" but decided against it when she saw the "Review Applications" option and clicked that instead. From there, she had no difficulty approving and denying tutors.

Next, we asked her to go to the page to record a session with a student, and she easily found "My Account" and "Record a Meeting." While recording the meeting, she said that it was too much work to put in the date and time, so she went to the courses tutored boxes first. This could be helped by the auto-population Raley discussed for this form.

After we were done presenting the website to Alyssa, she pointed out to us that a tutor could rate themselves many times, so we would want to have some way to prevent that from skewing our results.

She also expressed many concerns that were similar to Raley's. She thought that "check-out" meant "log off." She also didn't understand what "View History" was, and she didn't understand the difference between "Grant Access" and "Review Applications." Finally, she had some trouble finding "Record Meeting" and didn't understand why it wasn't a more prominent option.

We then showed Alyssa our Android application. She encountered no issues accomplishing the functionality of the Android application.

After she finished testing our Android application, she said that she hadn't been sure what part of the tutor box (in the search) would lead to the tutor's profile page. She also expressed a desire to see a "Leaving at ---" or a "Next shift at ---" on the tutor's information. Furthermore, she said that she would like the ability to bookmark courses that she searched for often, and

she said that she would like to be able to chat with tutors somehow from our product.

Summary

In general, the biggest issues encountered among our test users were with the terminology and the navigation of the website. The links from page to page were difficult to locate and even more difficult to identify for the users. We received many suggestions from our users on how to design a more intuitive and helpful navigation system, and this will definitely be the first design feature we change.

Main Issues

Task Failure

Navigation links under “My Account” were very difficult to locate.

Annoying

The concept of “View History” / “My History” etc. was very difficult for users to understand.

The concept of “Grant Access” was very difficult to understand.

Medium

The admin’s editing options for tutors were too complicated and aesthetically unpleasing.

The admin’s application review process could be decluttered and made more cohesive with the rest of the website.

The concept of a tutor recording a session with a student was a little confusing.