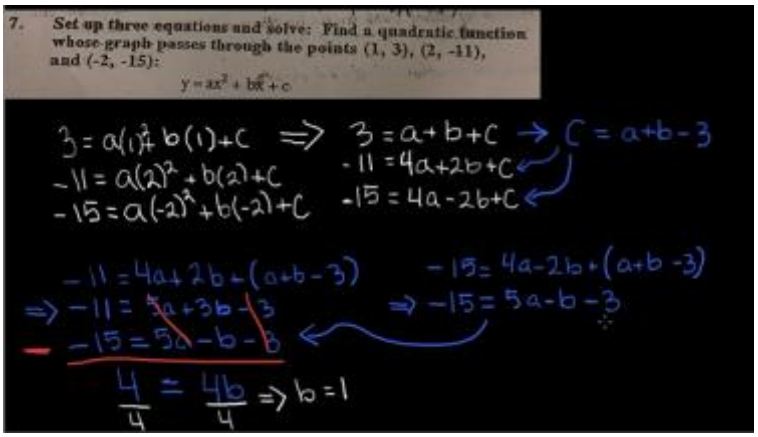
CS486C – Senior Capstone Design in Computer Science

Project Description

Project Title: Online Tutoring Business Portal	
Sponsor Information:	**Robert Lokken**, CEO/Founder Tailored Tutoring Co. RobLokken@TailoredTutoringCo.com (480) 323-8616

Project Overview:

Learning – and, in particular, learning from taught instruction (versus just by experience) – is one of the most important skills for success in modern life. At the same time, it can also be one of the difficult challenges we face: it has been shown that there are many, many different "learning styles" (visual, verbal, textual, etc.), so an explanation that works for one person may not make sense to another. A good teacher will watch for confusion and will try different explanation styles, but in the end, some students may need individualized help – more commonly known as *tutoring* – to understand where they are having a misconception, and to explain around their obstacle.



Although high-quality tutoring has been shown to be tremendously effective in helping struggling students, access to individualized tutoring has remained quite limited. Cost can run upwards of $35/hour; logistics are challenging, as both student and tutor have to find time and transportation to a meeting place, and of course, must be in the same general vicinity. A final obstacle is quality: depending on the location (which could be rural or remote), there might simply not be any qualified tutors in reasonable vicinity.

The Tailored Tutoring concept is a direct answer to these obstacles: the student sends the tutor the problem (e.g. picture with cell phone), the tutor takes some time to contemplate and plan one or more high-quality explanations, and then makes a short video in which he or she talks through the solution to the problem. Having a video solution has many advantages, including removing the need to find a common time to meet, the lack of time pressure for both tutor and student, the ability to rewind/replay as needed, and the ability to re-use the video for other students with same problem. This concept is the basis for the

Tailored Tutoring startup, and has been further developed over the past years to create a successful personalized online tutoring service.

The main problem driving this Capstone proposal is that our current operating process currently has many manual elements and efficiencies: incoming problems are assigned and emailed to tutors manually, solutions are posted for students manually, and payments are managed manually. As our client base of students and our pool of tutors continues to grow, we need a comprehensive upgrade to a specialized web portal that will effectively streamline our business process. Key features of the software solution will include:

Phase 0: Minimum viable product

- Ability to create secure user accounts for both students and tutors, including customizable user profiles for each.
- Students can add current courses to their profile, matching them to subject areas in which we are able to provide tutoring. Tutors can add biographical information, a headshot, educational history to their profile. They may also select the subject that they can tutor, payment preferences, and schedule on which they are available.
- Students can upload problem files into the "folder" for a course they are currently taking.
- Administrators are notified when new problems have been uploaded. They can easily see tutors qualified to solve the problem as well their schedules. Problems can be assigned to appropriate tutors.
- Tutors easily access problems assigned to them, may "accept" the problem, and upload the solution video right in their account.
- Students are notified when solutions are uploaded, and are charged accordingly. They may access their account to find the solution video in the appropriate course folder, and view it as often as desired.
- A simple GUI-based administrative interface that allows the portal administrator to manage both students and tutors, including tracking charges to students and payments due to tutors.

Phase 1: A truly useful application

- Students can browse tutors in their targeted subject areas, to select on that they like, e.g., based on that tutor's profile, or on student ratings.
- An automated payments system: Students either upload a credit card to their account, or (perhaps preferable) can purchase packages of "credits", that can be used to purchase videos.
- A highly-functional administrative interface for managing students and tutors, including searchable payments interface (e.g. that week, last month, etc.) for both students and tutors, and the ability to make adjustments as needed.

Phase 2: Amazing augmented features

- Full integration with Paypal or similar online service to simplify both incoming and outgoing payments.
- An effective rating system for tutors and students. This is effectively an online marketplace for tutoring and, like Ebay or AirBnB, there could be a way for both sides of the transaction to give feedback.

- Automated matching of students to tutors that takes into account key factors from the student's profile (preferences, past experiences, time zone, etc.) and the tutor's profile (experience, expertise, current tutoring load, availability schedule, time zone, etc.)

If successful, this product will become a prototype for the full-fledged web portal deployed by Tailored Tutoring, and will be seen and used by students and tutors worldwide. Providing easy, cost-effective, and universal access to high-quality tutoring will greatly reduce the barrier that many students face in getting the help that they need to become successful. Affordable, convenient, on demand, professional academic help at your fingertips, on any device!

Knowledge, skills, and expertise required for this project:

- Familiarity for Web2.0 frameworks, languages, and development techniques
- Familiarity with design of web-based GUI interfaces
- Familiarity with online payments processing.

Equipment Requirements:

- There should be no equipment or software required other than a development platform and software/tools freely available online.

Software and other Deliverables:

- A complete, secure Web2.0 portal as outlined above, installed and tested on a platform of the client's choice.
- User manual written for non-technical (ecologist) users, covering installation and configuration of website and related web service. Also covers operation of the app, including installation and connection to database.
- A strong as-built report detailing the design and implementation of the product in a complete, clear and professional manner. This document should provide a strong basis for future development of the product.
- Complete professionally-documented codebase, delivered both as a repository in GitHub, BitBucket, or some other version control repository; and as a physical archive on a USB drive.
- User testing with a small set of beta users provided by client.