SW Engineering CSC 648-848 Fall 2024

StudyGator

Team 08

Team Lead: Bryan Lee (blee37@sfsu.edu)

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Back-end lead: Nishi Suratia

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Milestone 1

Date Submitted	Date Revised
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1. Executive Summary

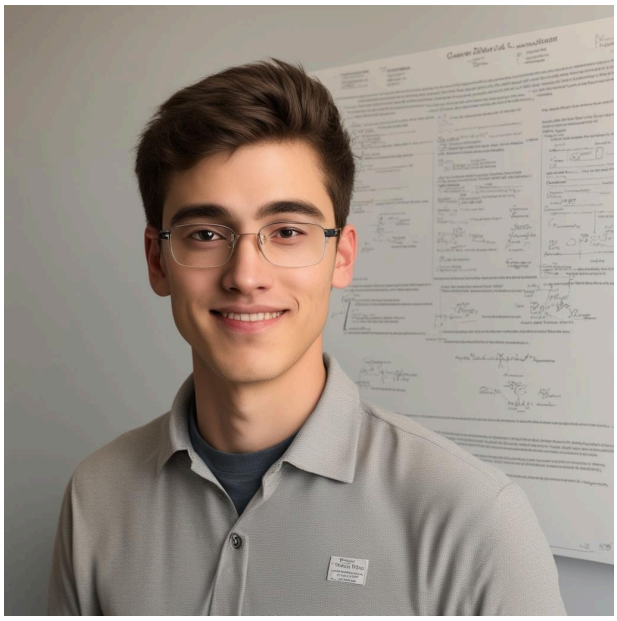
As the university semester progresses, it becomes increasingly demanding and hectic. Balancing the many coursework, project deadlines, and exam preparation can become overwhelming and stressful, especially with the limited time students typically have. Traditional options to seek academic assistance, like office hours, are often inadequate as they could conflict with other classes, extracurricular activities, or part-time jobs. In this rapid academic environment, students need flexible, easily accessible resources tailored not only to the specific course content but also to the unique teaching styles and expectations of each professor.

This is where our application, StudyGator, actively addresses the challenge of finding academic support localized to courses or professors at SFSU while offering the flexibility to fit any schedule. Users no longer have to spend hours looking through materials they don't understand, as StudyGator connects them directly with experienced tutors or alumni who are familiar with their specific coursework. This personalized approach not only streamlines efficient studying but also alleviates the academic burden, enabling students to tackle their coursework with confidence. With intuitive scheduling and communication features, StudyGator ensures that help is always just a click away, allowing SFSU students to focus on what matters most–their academic success.

Our team is a diverse group of students interested in creating solutions that can help make the student experience at SFSU better. Equipped with extensive backgrounds in software development and user-oriented design, we provide a perfect blend of skills necessary to create an application that will meet the needs of students and predict the challenges and preferences that they might face. We aim to develop a supportive and inclusive environment that further allows students to be successful academically while nurturing cooperation and contact between peers. Together, we strive to create a platform that will not only be innovative but also represent our student body's diversified voices and experiences.

2. Personae

John Johnson (User)



John Johnson is an SFSU student who is currently struggling in his organic chemistry class. He is proficient with computers and plays video games with his friends in his free time. He has a part-time job, so he has some money to afford tutoring; however, his budget is tight.

Goals:

- Passing his organic chemistry class
- Easily be able to access help from knowledgeable people

Pain Points:

- Budget-conscious
- Does not have time to sift through reviews and browse endlessly for tutors
- Stressed with little free time

Mary Merriam (Admin)

Mary Merriam has been a math professor at SFSU for over ten years. She is happy to help students and is willing to spend her free time helping them improve. Professor Merriam enjoys reading books and spending time with her two dogs.

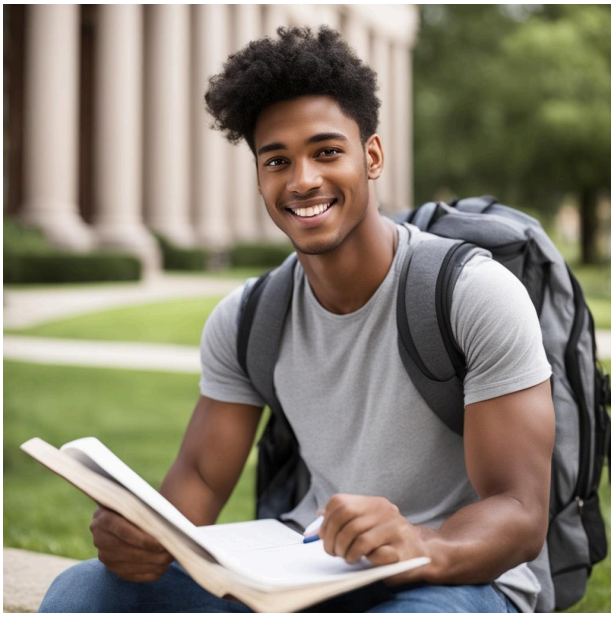
Goals:

- Help students improve academically
- Prevent inappropriate content from being posted

Pain points

- Bad with technology
- She does not want to lose too much of her free time
- Aware that not everyone is available during her office hours

Benjamin Benson (Tutor)



Benjamin is a senior at SFSU. He excels in his classes and helps out his friends during their study sessions. Benjamin realized the potential to earn some money through tutoring and decided to start at StudyGator. He has sufficient skills in navigating the internet.

Goals:

- Earn Money
- Improve his understanding by teaching
- Help others improve

Pain points:

- He does not know how to advertise his services

3. Use Cases

Use Case 1

John is looking for a tutor to help him prepare for the upcoming organic chemistry midterm. His friend recommended the StudyGator website, which advertised specifically to SFSU students. John begins using the site's search and filter option, entering the specific course name/ID. After browsing through a list of available tutors, John selects Benjamin. When he goes to book his appointment, a sign-up page prompts him to register. John was able to create an account and schedule a session with Benjamin quickly. He chose an evening session as it suits his busy schedule. Overall, the website's simple interface helps him book an appointment efficiently without spending much time searching and browsing.

Use Case 2

John has previously used StudyGator and had a positive experience with his previous tutor. He needs help again to prepare for his organic chemistry final exam. Instead of searching for a new tutor, John can log in to his existing account and quickly access his previous tutor's profile. He rapidly schedules another tutoring session, saving time and ensuring more time to focus on his learning.

Use case 3

Mary logs into the administrative section of the tutoring site to approve new tutors. The system provides her with a simple dashboard showing tutor profiles and their subject expertise. Despite not being very familiar with technology, the simple interface allows her to review tutors' applications and videos quickly. Without needing any advanced technical skills, she selects Benjamin's application, reviews it, and approves his position as a tutor. Benjamin will receive a notification that he has been approved to become a tutor and will begin to set up a profile.

Use Case 4

After being approved, Benjamin logs into his tutor dashboard. He updates his availability, indicating he can tutor during weekday evenings to accommodate his busy schedule. The system automatically matches Benjamin with students searching for Organic Chemistry tutoring within

his availability range. John, who previously searched for a tutor, selects Benjamin's time slot. Benjamin is notified via email and his dashboard of the booking. The system allows him to accept the booking automatically. The system automatically generates clientele for Benjamin, allowing him to focus on teaching, not advertising. After being approved, Benjamin logs into his tutor dashboard. He updates his availability, indicating that he can tutor on weekday evenings, ensuring he leaves time for his coursework.

Use Case 5

John receives a notification from his professor that a lab session has been rescheduled, creating a conflict with his booked tutoring session. He logs into the tutoring platform and navigates to the "My Sessions" section. John clicks on his upcoming session with Benjamin and selects the "Reschedule" option. The system displays Benjamin's other available time slots for the week and selects a new time that fits his updated schedule. Both John and Benjamin receive confirmation emails about the updated meeting. The session is rescheduled, and the updated time appears on John's and Benjamin's dashboards. John can quickly adjust his tutoring schedule without going through a complex process or manually contacting the tutor.

4. Main Data Items and Entities

- **User type**
    - **Unregistered user—**The user is not registered to the website. They can browse/search tutor listings, register for an account, or log into an existing account. If they want to schedule a meeting with a tutor, they will be prompted to register/log in.
    - **Registered user** - Browse and schedule a meeting with a tutor—Inherits permissions of unregistered users.
    - **Tutor (Registered user with additional features)** - Create/edit their profile where they can select the subject/course they want to tutor for. Assign their schedules via time slot. See notifications on potential students.

    - **Admin -** Has permissions for both registered and non-registered users. Can approve or deny all tutor applications and listing (videos, CV, tutor's profile)
- **User Generated Items**
    - **Tutor Listings** - Information inputted by the tutor
        - Tutor images/video
        - Availability/time slots
        - Tutor description/information
        - Subjects/Classes
        - Pricing
        - Prompts to notify the tutor
        - Reviews/Ratings
    - **Dashboard**
        - Profile (Tutor only)
        - Notifications
        - User listings
        - Booked sessions
        - Session requests
    - **User Login Information** - Created during registration
        - Email
        - Password
    - **Search categories**
        - Subjects (drop down)
        - Classes (drop down)
        - Tutor name/course name (limited to search bar)

5. High-Level Functional Requirements

Unregistered users

1. Unregistered users shall be able to browse tutor listings.
2. Unregistered users shall be able to search and filter listings by subject, rating, and availability.
3. Unregistered users shall be able to register an account using an SFSU email.
4. Unregistered users shall be able to view tutor profiles, bios, and availability.

Registered users

5. Registered users shall inherit all privileges of unregistered users.
6. Registered users shall be able to apply to become a tutor.
7. Registered users shall be able to request a tutor for their services from the listing.
8. Registered users shall be able to manage their account information (name, email, password, and account deletion).
9. Registered users shall be able to book tutoring sessions based on tutor availability.
10. Registered users shall receive notifications for upcoming sessions or cancellations.
11. Registered users shall be able to leave reviews and ratings for tutors after sessions.
12. Registered users shall be able to reschedule or cancel a tutoring session.

Tutors (Registered users with additional features)

13. Tutors shall inherit all privileges of unregistered users.
14. Tutors shall be able to create or edit their tutor profiles (subjects, courses, availability, or bio)
15. Tutors shall be able to upload their CV/Resume.
16. Tutors shall be able to receive notifications when a student books or cancels a session.
17. Tutors shall be able to manage their availability by adding or removing time slots.

Admin

18. Admin users shall inherit all privileges registered users
19. Admin users shall be required to verify all tutor listings before they are posted.
20. Admin users shall be able to verify the prospecting tutor's application.
21. Admin users shall be able to remove users or listings from the website.
22. Admin users shall be able to view and manage all user data (both student and tutor accounts).

6. List of non-functional requirements

1. Application shall be developed, tested, and deployed using tools and servers approved by Class CTO and as agreed in M0
2. Application shall be optimized for standard desktop/laptop browsers, e.g., must render correctly on the two latest versions of two major browsers
3. All or selected application functions shall render well on mobile devices (no native app to be developed)
4. Posting of tutor information and messaging to tutors shall be limited only to SFSU students
5. Critical data shall be stored in the database on the team's deployment server.
6. No more than 50 concurrent users shall be accessing the application at any time
7. Privacy of users shall be protected
8. The language used shall be English (no localization needed)
9. Application shall be simple to use and intuitive
10. The application shall follow established architectural patterns
11. Application code and its repository shall be simple to inspect and maintain
12. Google Analytics shall be used
13. No email clients shall be allowed. Interested users can only message to sellers via in-site messaging. One round of messaging (from user to seller) is enough for this application
14. Pay functionality, if any (e.g., paying for goods and services), shall not be implemented nor simulated in UI.
15. Site security: basic best practices shall be applied (as covered in the class) for main data items
16. Media formats shall be standard as used in the market today
17. Modern SE processes and tools shall be used as specified in the class, including collaborative and continuous SW development and GenAI tools
18. The application UI (WWW and mobile) shall prominently display the following exact text on all pages: "SFSU Software Engineering Project CSC 648-848, Fall 2024. For Demonstration Only" at the top of the WWW page Nav bar. (Important so as to not confuse this with a real application).

7. Competitive analysis (functions/features only, not business or marketing)

Feature	Our website **StudyGator**	Chegg Tutor	Tutor.com	Khan Academy	Wyzant
User Profile	++	+	+	+	-
Search Functionality	++	+	+	+	+
Tutor Matching	++	+	++	+	-
Session Scheduling	++	+	+	+	-
Campus focus (SFSU specific-features)	++	-	-	-	-

Feature exists; ++ superior; - does not exist

Our tutoring website offers unique value by focusing on SFSU-specific features, such as matching students and tutors within the SFSU community and integration with the university's scheduling. Competitors like Chegg, Tutors, and Wyzant provide robust matching and search functionality but lack the personalized, university-specific focus that our platform will offer. Additionally, the advanced filtering and customized scheduling features will make it easier for SFSU students to find and book sessions with tutors who have already taken the course, ensuring they receive support tailored to their specific academic needs.

8. High-Level System Architecture and Technologies used

- Deployment cloud servicer we are using:
    - AWS EC2
    - Cloudflare and GoDaddy for custom domain
- Database:
    - AWS RDS and MySQL v8.0.39
- Web Server:
    - Nginx/1.24.0 with PM2 process manager
- Operating System:
    - Ubuntu 24.04
- Frontend frameworks:
    - ReactJS
    - Tailwind CSS
- Backend:
    - Node/Express v20.17.0
- Browsers we will support:
    - Google Chrome
    - Microsoft Edge
- Additional open source resources/APIS:
    - Flowbite for UI components and Google Analytics

9. Use of GenAI tools for Milestone 1

genAI tool	ChatGPT-4o
Task	Grammar check/fix and brainstorming ideas for use cases
Useful rating	Medium

- Prompt: Can you fix the grammar/clarify the following text? [Insert fragment of the milestone one writing]

Although we do not have the prompt's history anymore, we basically had GPT perform grammar/spell check for our writing as well as to get considerable ideas for our use cases. One noticeable help it provided is in the last paragraph of the Executive summary. It helped clarify and get the point across to the reader more concisely and expanded on existing ideas. Alternatively, GPT spewed a lot of random jargon and added unnecessary fluff to the writing, but that was filtered out and removed manually. Overall, it was helpful with grammar/spelling, but it still required a lot of intervention and correction to get the writing quality we desired.

genAI tool	DeepAi
Task	Image Generation
Useful rating	High

We also used AI to generate images for our personae. While the pictures are not perfectly realistic, they serve their purpose well in providing a face for our several personalities. The image generation took around 5 minutes for all three images. Overall, they are acceptable and were generated quickly despite the slight uncanniness of the pictures.

10. Team and Roles

Student Names	Email	Role
Bryan Lee	blee37@sfsu.edu	Team Lead
Min Ye Thway Khaing	mkhaing1@sfsu.edu	Front-end Lead
Kenneth Wen	kwen@sfsu.edu	GitHub Master
Nishi Suratia	nsuratia@sfsu.edu	Back-end Lead

11. Team Lead Checklist

- So far, all team members are fully engaged and attending team sessions when required [**OK**]
- The team found a time slot to meet outside of the class [**ISSUE**]
    - Currently, it is challenging to accommodate everyone's hectic schedule. Some of us work over the weekend, lecture during others' free time, and so on. We are trying to resolve this with flexible online meetings.
- Team ready and able to use the chosen back and front-end frameworks, and those who need to learn are working on learning and practicing [**DONE**]
- The team reviewed class slides on requirements and used cases before drafting Milestone 1 [**OK**]
- The team reviewed non-functional requirements from the “How to start…” document and developed Milestone 1 consistently. [**DONE**]
- The team lead checked the Milestone 1 document for quality, completeness, formatting, and compliance with instructions before the submission [**DONE**]
- The team lead ensured that all team members read the final M1 and agreed/understood it before submission [**DONE**]
- The team shared and discussed the experience with genAI tools among themselves [**DONE**]
- Github is organized as discussed in class (e.g., master branch, development branch, folder for milestone documents, etc.) [**OK**]