Project Title: TutorFIT: a mobile application connecting students and tutors at the Florida Institute of Technology

Team Members:
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Client:
The clients of our app include Dr. Khaled Slhoub, a distinguished professor in the Department of Computer Engineering and Sciences, as well as students attending the Florida Institute of Technology.

Date(s) of Meeting(s) with the Client for developing this Plan:
Our group will meet biweekly on Mondays and Wednesdays, from 3:30pm - 4:00pm at the Harris Center for Science and Engineering.

Goal and Motivation:
Our primary objective is to streamline the process of connecting students with accessible tutoring resources at the Florida Institute of Technology (FIT). We will make the process of finding a tutor easier for students while also giving them flexibility with regards to more tutoring options being available. Additionally, we aim to bridge the noticeable deficit of available tutors, particularly for challenging junior and senior level classes. The current tutoring system at FIT falls short in covering these advanced courses, leaving students with limited options for seeking extra assistance on complex topics. Our app will empower successful students to offer tutoring to their peers, expanding the pool of available tutors and improving the overall learning experience for the FIT student community. By creating a dynamic platform that connects students and tutors, we aim to provide a comprehensive solution that meets the diverse and demanding educational needs of our university.

Approach:
Our approach to developing this app is centered around addressing the critical need for accessible tutoring resources for students at FIT, and our intended features are designed to achieve this goal effectively:

1. **User Registration:** Students and tutors will have the option to "sign up" and input their personal information to create their profiles within the app. This registration process will be user-friendly and intuitive, guiding them through the steps to provide essential details. Additionally, we will include a comprehensive database of courses to simplify the registration process, making it easier for users to identify and add their relevant courses. To allow student and tutor registration, we will also utilize a live search feature, allowing users to quickly find the courses and professors they need during the registration process. Students and Tutors will also be able to set their preferred teaching or learning languages.

2. **Scheduling (Student and Tutor)**: Students will have the ability to view a list of the classes they are enrolled in and access information about available tutors for those classes. They can then schedule tutoring sessions at their convenience. Tutors, on the other hand, will be able to view the list of classes they have earlier selected to tutor for (during registration) and manage incoming tutoring requests, accepting or declining them as needed. Students will also be able to search for tutors using filters such as course name, course code, preferred learning language and department.

3. **Communication (Between Student and Tutor):** Effective communication is essential for successful tutoring. We will implement an in-app messaging feature, leveraging real-time messaging SDKs, to facilitate seamless communication between students and tutors. Users can choose to communicate via in-app chat or through email if they prefer.

4. **Push Notifications/Alerts:** To keep users informed and engaged, our app will support push notifications and alerts. Students will receive alerts about accepted or declined appointments, reminders for scheduled tutoring sessions, and messages from their tutors. Tutors, on the other hand, will be notified of pending appointment requests from students, cancellations, and incoming messages from their students. These real-time notifications ensure that both students and tutors stay well-connected and can manage their tutoring commitments effectively.

5. **Event Tracking:** We will integrate a third-party SDK to monitor user engagement and interactions with the app. This will include tracking the amount of sign-ups, appointments booked and canceled as well as other relevant activities. The data collected will be valuable for stakeholders to gain insights into app usage and make informed decisions for improvements.

6. **User Engagement and Retention:** In our app, we value and reward user loyalty. Loyal and frequent users will have the unique advantage of accessing free tutoring sessions, funded by revenue generated from strategically integrated advertisements via a third-party ad provider. Simultaneously, our dedicated tutors will benefit from ad revenue redistribution, allowing them to earn extra income. This dual approach not only encourages users to stay engaged with the app but also creates a mutually beneficial ecosystem where students receive valuable tutoring while tutors are rewarded for their commitment, enhancing the overall learning experience within our community.

7. **Student Reviews and Ratings:** To promote transparency and accountability, we will implement a feature that allows students to rate and leave reviews about their tutoring sessions and experiences with individual tutors. After each tutoring session, students can provide feedback on factors such as tutor knowledge, communication skills, and overall effectiveness. These reviews and ratings will be visible to other students considering the same tutor, helping them make informed decisions when choosing a tutor. Additionally, tutors will have the opportunity to view and respond to student feedback, fostering a constructive feedback loop that benefits both students and tutors. This feature encourages high-quality tutoring and creates a sense of trust within our tutoring community.

Novel Features/Functionalities:

1. **Real-Time Communication:** The feature of facilitating real-time communication between students and tutors is novel, primarily because it addresses a significant gap in the market. Many educational apps lack a centralized and efficient way for students and tutors to communicate seamlessly. By integrating real-time messaging capabilities, our app offers a practical solution for enhancing the learning experience by allowing for immediate clarification of doubts and queries.

2. **Event Tracking**: While event tracking itself is a common practice, the emphasis on using third-party SDKs to monitor and gather data about user engagement, user retention, and the ease of system use is a novel approach. This data-driven approach not only helps in improving the app's overall user experience but also provides valuable insights for stakeholders, enabling informed decisions and enhancing the app's long-term sustainability and success.

3. **Incentive/Reward Systems:** While reward systems are not uncommon in apps, the specific implementation of an incentive system that offers free tutoring sessions to loyal and frequent users, while also allowing tutors to benefit from ad revenue redistribution, is a unique and compelling approach. It encourages both students and tutors to actively participate and engage with the platform.

4. **Student Reviews and Ratings:** The novel feature is the integration of real-time student reviews and ratings for tutors on the platform, enhancing transparency and accountability. This feature allows students to provide immediate feedback after each session, making it unique. Furthermore, the visibility of these reviews to other students aids in informed tutor selection. The ability for tutors to respond to feedback fosters improvement, ultimately promoting high-quality tutoring and trust within the community.

Technical Challenges:

1. **Cross-Platform Application Development:** Developing a cross-platform application that works seamlessly on various devices and operating systems will be a challenge, especially since the team has only a cursory knowledge of cross-platform development frameworks. Ensuring a consistent user experience across platforms while optimizing performance and handling platform-specific nuances can require a deep understanding of these technologies. It's important that we invest time in learning and mastering these frameworks to ensure the project's success.

2. **Limited Availability of Florida Tech's existing API and Web Hooks**: The absence of API access will limit our ability to retrieve real-time data from the Florida Tech registrar or hub, making it difficult to provide up-to-date information to users. Without access, we will rely on the structure and availability of the Florida Tech registrar or hub's web pages. Any updates to these pages can potentially disrupt our manual data retrieval methods and will require constant monitoring and adjustments to keep the app functional.

3. **Using JavaScript for Server-Side Automations:** While JavaScript is a versatile language widely used for web development, using it for server-side automations can pose challenges, especially as the team lacks experience in server-side JavaScript development. Ensuring the security and scalability of server-side components, such as handling user communication, sending push notifications, and managing email delivery, demands a strong understanding of JavaScript's backend frameworks like Node.js. Overcoming this challenge may involve extensive research, training, or collaboration with experienced backend developers to implement robust and secure server-side functionalities.

Addressing these technical challenges through learning, research, collaboration, and potentially seeking expert advice or resources will help the team navigate the complexities of cross-platform development, API integration, and server-side automation effectively, ensuring the success of the app project.

Milestone 1:

- **Compare and select technical tools**
    - User Registration
        - Native form creation vs TRACKS Authentication
    - Scheduling (Student and Tutor)
        - Native scheduling system vs Calendly
    - Communication (Between Student and Tutor)
        - Twilio vs SignalR
    - Push Notifications/Alerts
        - OneSignal vs Firebase vs Microsoft AppCenter
    - Student Rating and Reviews
        - Native review system vs third party SDK review system
    - Event Tracking
        - Firebase vs Bloomreach
    - User Engagement and Retention
        - Firebase vs Bloomreach vs Native development of loyalty system

- **Provide small ("hello world") demo(s) to evaluate the tools**
    - User Registration
        - Use sample registration information to test expected states and landing pages along with processing speed, efficiency, and ease of use
    - Scheduling (Student and Tutor)
        - Login as student and schedule a session with a tutor, then open another instance of the app on a separate simulator and login as tutor to ensure the request was received
    - Communication (Between Student and Tutor)
        - Launch two simultaneous versions of the app on separate devices and send messages from one user to the next
    - Push Notifications/Alerts
        - Send a request to tutor from one device and inspect tutor account from second device to ensure push notification alert was received

    - Student Review and Ratings
        - Leave a Sample Review: Log in as a student and provide a sample review and rating for a tutoring session to evaluate the ease of leaving feedback.
        - Review Visibility: Login as another student and check if the review and rating provided earlier are visible when considering the same tutor.
        - Tutor Response: Log in as the tutor associated with the review and respond to the feedback, testing the tutor's ability to engage with student reviews.
    - Event Tracking
        - Create a few accounts and schedule a few sessions, then view the event tracking dashboard after a few minutes to ensure the registration and scheduling data was accurately registered
    - User Engagement and Retention
        - Set a value of 5 sessions that a student needs to complete before receiving a coupon, and simulate 5 sessions being completed in order to ensure that a coupon was generated for the user

- **Resolve technical challenges:**
    - Cross platform application development
    - Limited availability of API and web hooks for information pulling
    - Using JavaScript for Server-Side Automations

- **Compare and select collaboration tools for software development, documents/presentations, communication, task calendar**
    - Software Development: Xamarin vs Flutter vs React Native vs XCode (Swift) vs Android Studio (Kotlin)
    - Source Code Control: GitLab vs GitHub
    - Source Code Access: SourceTree vs GitHub Desktop
    - Documents/Presentations: Google Suite
    - Communications: Instant messaging, E-mail
    - Task Calendar: Jira, Google Calendar

- **Create Requirement Document**
- **Create Design Document**
- **Create Test Plan**

Milestone 2:

- **Implement, test, and demo:** User Registration
- **Implement, test, and demo:** Scheduling (Student and Tutor)
- **Implement, test, and demo:** Student Ratings and Reviews
- **Implement, test, and demo:** Event Tracking

Milestone 3:

- **Implement, test, and demo:** Push Notifications/Alerts
- **Implement, test, and demo:** Communication (Between Student and Tutor)
- **Implement, test, and demo:** User Engagement and Retention

Task Matrix:

Task	Eleanor	Samaher	Sidney
Compare and select Technical Tools	Third Party SDK Integrations	UI/UX	Cross Platform Development
"hello world" demos	web	mobile	visualization
Resolve Technical Challenges	Repository	Display	Project Website and App
Compare and select Collaboration Tools	Communication, Task Calendar	Documents, Presentations	GitLab, SourceTree, Github Desktop
Requirement Document	write 25%	write 25%	write 50%
Design Document	write 45%	write 45%	write 10%
Test Plan	write 25%	write 50%	write 25%

Approval from Faculty Advisor

- "I have discussed with the team and approve this project plan. I will evaluate the progress and assign a grade for each of the three milestones."
- Signature: _____ Date: _____