Criterion A: Planning

The problem and its proposed solution:

In the past few months, one of the members of the physics class in my school (the **Client To Accommodate, CTA**) has been researching how to make study life easier for students pursuing the IB physics course. This subject seemed of special relevance given its complexity and greater workload. Indeed, the **CTA** has been struggling with the regular basis homework and material, but also with finding available study rooms during weekdays [A.1]. One of the intentions of the client is to implement a system that could promote cooperation for exam preparation and daily assignments for **all** the student body of the school. According to the client, a similar project was created in the past [A.1] but failed because of its simplistic and informal nature. Hence, the importance of a very user-oriented product.

As a result, my client and I have been developing an idea that could revolutionize the entire study collaboration process while easing the finding of study rooms. The client advocated for a solution in which there would be a commonly available system where local students will be able to register, create or join available study groups, ask for tutoring, and have a dynamic list of available rooms [A.1]. Such system should benefit my client within the physics course considering cooperation as a pillar of learning processes.

Potential solutions	Explanation
Study groups	By having the option to work in study groups the client and the rest of the student body will be able to help each other in a more systematic way. This will be helpful during exam seasons, quizzes/tests, homework, and for general material.
Tutoring	This will allow having one-to-one study sessions with peers that understand and/or are proficient with a given material.
Dynamic list of available rooms	By having such feature, the client will be able to have a precise list of available rooms at any given time of the day. This will make the process of finding a study room easier and faster.

After consulting my advisor for this project (the computer science teacher) under the authorization of my client, we arrived at the conclusion that this project would eventually require a cloud server [A.2].

Rationale:

After gaining an in-depth grasp of my client's needs, I concluded that a well-designed user experience is crucial for maximizing utility and the success of the product. Hence, by considering the user-focused aims of this project the client and I agreed to implement a desktop application; something previously recommended by my advisor [A.2]. A desktop application has been chosen over a website for enhanced accessibility (no need for a stable WIFI connection) and more responsiveness.

In terms of programming languages, I opted for Java, not only because of its simplicity which makes debugging easier but also for its Object-Oriented capabilities, which will allow modular and reusable coding.

Reasons for Java	Explanation
Object-Oriented-Programming (OOP)	Allows splitting the program into smaller and less complex bit-sized problems while promoting the integration of features such as encapsulation and reusability of code.
Statically-typed	Protects form run-time errors while providing real-time IDE Assistance.
Platform independent	It is able to run on any machine thus enhancing the accessibility of the end product.
Widely used	The fact that java is a widely used high-level programming language will ease the process of finding online resources.

Since the system will necessitate an online/cloud database there will be a considerable financial investment required to release a functional product. The client has declared that a budget had not yet been implemented, but soon figured out. Meanwhile, to create a temporary prototype, I will use SQLite, a local database that should be easily replaceable by a more sophisticated cloud solution within the available budget.

I choose my adviser as my computer science instructor since he has taught me the vast majority of the knowledge required for this project. Additionally, an academic figure was needed given the **CTA** being under 18.

Postscript:

- The **CTA** wishes to be identified as **Khanh Le**.
- Please refer to the appendix for the approval of the **CTA** to share data.

Success criteria:

High priority:

a) The system must be able to provide a clear dynamic list of available rooms at any moment.

b) The "StudyGroup" subsystem must propose to users matching groups. It is assumed that a "matching" happens when a StudyGroup is set with the same subject as the user's filter search.

c) The system must allow the creation of study groups, both in the case that non were found, and that the user wishes to create one.

d) The program has to be able to send emails when new StudyGroups are created. The recipients must share a subject with the StudyGroup and have agreed on receiving notifications.

e) The program has to be able to send emails when new Tutoring petitions have been created. (Only for users that agreed on receiving Tutoring notifications and study the subject being asked for)

f) The program has to be able to send a retrieved password through email when the button "Forgot password?" is pressed.

g) Students need to be able to ask for help, similarly, provide tutoring.

h) If a host quits a StudyGroup, the group must automatically be deleted. Meaning that all users in it will be logged-out of the group.

Medium priority:

i) The System must allow users to obtain information from a StudyGroup before joining.

j) When creating a StudyGroup the user should have access to a place where to describe the main focus of the group.

k) The program must allow the changing of UserName.

l) StudyGroups can only exist for ten hours. After that the StudyGroup should be renovated or otherwise will be deleted from the main view and database.

m) Option to receive or not to receive emails for Tutoring or new StudyGroups created.

n) Users should be able to research/create interdisciplinary StudyGroups. Meaning StudyGroups that were/are registered with more than one subject.

Low priority:

o) When the "Password" or "Email" of a user is being edited on the settings category, the system has to be able to inform the user by email.

p) The program has to be able to allow students to exceptionally book specific study rooms for given reasons (Standardized tests/Exams). This will be done by sending a common email to all users.

q) When creating StudyGroups that exceeds the curfew hour, there will be a notice to remind students of asking for extended curfew.

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