Part 2: Design Alternatives Report

Project Description

This project aims to develop a modern-minimalistic application called "SASHA" to address common challenges faced by students in online learning environments. The application will help students stay updated with course subjects, manage tasks, and overcome connectivity issues that hinder communication with teachers and overall academic performance.

Requirements Summary

The key requirements for the SASHA system revolve around improving the online learning experience for students. Specifically, the application needs to address:

Students not receiving timely notifications for their courses.

Students experiencing difficulties joining online class sessions.

Students facing connectivity issues that impact their ability to communicate with teachers and their overall school performance.

Additionally, the application aims to provide a user-friendly interface with features for managing files, tasks, and quizzes, while offering flexibility in media playback during study sessions.

Design Space

What requirements may be difficult to realize?

Realizing robust and consistent notification delivery for courses might be challenging, especially if the online learning platform used by the school doesn't have a direct API for integration or if there are limitations in Android's notification system that could lead to missed alerts. Ensuring seamless online class session joining despite connectivity issues is also difficult, as it depends heavily on external network stability, which is outside the application's control. Providing real-time communication solutions that overcome significant connectivity problems would require advanced features, such as offline access to materials or robust synchronization, which can be complex to implement while maintaining a modern-minimalistic design.

What are some tradeoffs that you should or did explore?

One major tradeoff explored is between providing a comprehensive feature set and maintaining a modern-minimalistic design. Adding more functionalities could clutter the interface, conflicting with the desired aesthetic. Another tradeoff involves the design of menu screens: using large thumbnails vs. a list format. Large thumbnails offer a visually rich experience but take up more screen real estate, while a list format is more compact but less visually engaging. For the splash art, the team considered either a full-screen icon or an icon encapsulated in a circle, weighing visual impact against perceived loading speed. Additionally, the decision to use only the Android GUI from Figma was a tradeoff to avoid complicating matters with separate GUI designs for different models. The team also considered using Lo-Fi music as a default but decided to allow users to toggle music on/off and changed the default to ambient noises, balancing a curated experience with user preference.

Which tasks will be easiest to support? Which are the hardest?

Tasks like creating, reading, updating, and deleting (CRUD) folders, files, and quizzes, as well as marking tasks as complete or ongoing, appear relatively easy to support given the outlined sample flows. Integrating a music toggle and having a default ambient soundtrack also seems straightforward.

The hardest tasks to support are those directly impacted by external factors like internet connectivity. For example, ensuring students can consistently join online class sessions or effectively communicate with teachers when they have connectivity issues is challenging due to reliance on external network stability. Implementing an effective notification/alarm feature that consistently alerts users and addresses pacing issues might also be complex, especially in diverse network conditions and across various Android devices.

Design Summary

The team considered various design alternatives, all aiming for a modern-minimalistic aesthetic. We decided to pursue designs based on Android GUI from Figma to simplify development and maintain consistency.

Splash Art: We considered two designs: a full-screen icon or an encapsulated icon in a circle. Both were explored, but the final choice will depend on user feedback during prototyping to determine which feels more intuitive and faster.

Navigation Drawer: Four different designs were sketched to achieve a modern minimalistic feel, all exploring variations in layout and icon placement.

Menu Screens: Two primary alternatives were considered: large thumbnails or a list view. The list view offers more items per screen, while thumbnails are more visually appealing. The decision will be finalized after user testing.

Music Integration: Initially, Lo-Fi music was considered, but based on feedback, the team decided to allow toggling music on/off and change the default to ambient noises, which caters to diverse user tastes while still providing a beneficial background

Notifications/Alarms: An "alarm feature to alert you if the user is out for a while" was suggested, and the team will integrate this to help users with pacing. This was pursued to directly address Jayden's scenario of lacking notifications.

Sorter Feature: The suggestion to filter or sort tasks by course, importance, and progress was taken into consideration for user convenience. This will be integrated to enhance task management.

We decided not to pursue designs that would complicate the user interface or deviate significantly from the modern-minimalistic vision. For instance, highly complex animations or excessive customization options were discarded in favor of simplicity and ease of use, aligning with the core design philosophy.

The Designs

Design 1: Main Menu Folders and Course Folder (Mock-up/Prototype)

Brief Overview: This design showcases the main entry point of the application, the "Main Menu Folders," and then transitions into a "Course Folder." The Main Menu Folders screen features a FAB (Floating Action Bar) for creating new folders, displaying user-created folders, and allowing for CRUD operations. The Course Folder then allows users to import, create, and view files, and access the Task Sheet.

Illustrations:

Splash Screen: The initial screen displays the app's logo (an "ICON") and remains visible for 2 seconds.

Main Menu Folders: This screen shows existing folders like "TP101-2P Computer Programming" and "EMC100 Freehand and Digital Drawing." A FAB is visible at the bottom right.

Course Folder: Inside a course folder (e.g., "SAMPLE FOLDER"), options for "Import," "Add File," "Task Sheet," and "Quizzes" are visible. This screen also displays a preview of a file (e.g., "PDF TEXT").

Scene from a User's Perspective: "Jayden opens the SASHA app, seeing the clean 'ICON' splash screen for a moment. He's then greeted by his main menu folders. 'Ah, finally a place to keep track of everything,' he thinks, tapping on 'TP101-2P Computer Programming.' Inside, he sees his imported PDFs and notices the 'Task Sheet' button. 'Perfect, I need to check my deadlines.' He taps the 'Add File' button and an overlay appears, asking if he wants to 'Import PDF or IMG' or 'add TXT file'."

Assessment of this Design:

Advantages: This design offers a clear hierarchical structure for organization, making it easy for users to navigate between courses and their associated materials. The FAB for adding new items is intuitive and follows Android design guidelines. The integration of import functionality directly into the Course Folder is convenient for users to bring in external study materials. This design directly addresses the requirement for organizing course subjects.

Disadvantages: The visual density of the Course Folder, especially with a file preview, might become cluttered if there are many files. The discoverability of the Task Sheet and Quizzes might be an issue if they are only accessible within the Course Folder, requiring multiple taps to reach them.

Degree to which requirements can be met: This design strongly supports the requirement of managing course subjects and files. It lays the groundwork for addressing issues related to getting behind on subjects by providing a centralized organization. However, it doesn't directly address notification or connectivity problems in this specific flow.

Feedback from potential users: (Gathered through informal discussions with students) Users found the folder structure intuitive for organizing courses. They appreciated the "Add File" option but suggested a clearer visual distinction between different file types in the file list. Some expressed a desire for a quicker way to access the "Task Sheet" directly from the main menu, indicating a need for either a navigation drawer option or a persistent task summary on the main screen.

Design 2: Task Sheet and File Screen (Mock-up/Prototype)

Brief Overview: This design focuses on task management and file viewing within the application. The Task Sheet provides an overview of ongoing tasks and allows for adding new ones, while the File Screen displays selected files and offers an ambient soundtrack option.

Illustrations:

Task Sheet: A list of tasks is displayed (e.g., "Name," "Ongoing"). A FAB is present to add new tasks.

Add File Overlay: When "Add File" is tapped, an overlay appears with options: "Import PDF or IMG," and "Add TXT file".

File Screen: A selected file ("PDF TEXT") is displayed. A play button is visible, indicating the ambient soundtrack feature.

Scene from a User's Perspective: "April checks her Task Sheet. 'Good, I only have 'Name' as 'Ongoing' for now.' She taps the FAB to add a new task and quickly types it in. Later, she's reviewing a particularly dense PDF. She notices the small music icon. 'Oh, perfect! Some ambient rain sounds would help me focus.' She taps it, and a soft rain sound begins to play, helping her concentrate despite her intermittent connectivity issues."

Assessment of this Design:

Advantages: The Task Sheet provides a centralized place for students to track their assignments and progress, directly addressing the concern of falling behind. The ability to add tasks quickly via a FAB enhances usability. The ambient soundtrack feature is a thoughtful addition to aid concentration during reviews, especially for users like April who have connectivity issues, as it offers a local, non-internet dependent focus aid.

Disadvantages: The simplicity of the Task Sheet might lack advanced filtering or sorting options, which could become an issue for users with a high volume of tasks. While the ambient soundtrack is a good idea, its discoverability might be low if it's only a small icon on the file screen.

Degree to which requirements can be met: This design directly supports the requirement of helping students manage their performance by providing a task tracking system. The ambient music feature also indirectly helps with connectivity issues by creating a focused environment for offline study. The suggestion for a sorter for tasks will be integrated to provide convenience.

Feedback from potential users: (Gathered through informal discussions with students) Users found the Task Sheet helpful for organization. The ambient music feature was highly praised, with some suggesting more variety in ambient sounds. They also asked for filtering options (e.g., by due date or course) on the Task Sheet.

Design 3: Quiz Screen and Quiz File Screen (Mock-up/Prototype)

Brief Overview: This design focuses on the quiz creation and management features of the application. The Quiz Screen allows users to add new quizzes, while the Quiz File Screen enables detailed editing of quiz questions, answers, time limits, and quiz types.

Illustrations:

Quiz Screen: Shows a list of quizzes (e.g., "Cheries Quiz," "Math Rate 1"). A FAB is available to add new quizzes.

Make Quiz Pop-up: When adding a quiz, a pop-up appears to define "Quiz Type," "Name," and "Timer".

Quiz File Screen: Displays the selected quiz details, including "Question Sample Question," "Answer Sample Answer," and options to "Add Question," "Random and Start" the quiz, and edit "TIMER" and "TYPE". It also allows swiping to delete questions.

Scene from a User's Perspective: "Mikasa needs to prepare for an upcoming exam. She opens the SASHA app and navigates to the 'Quizzes' section. 'I'll make a new quiz to test myself,' she decides, tapping the FAB. She names it 'HCI Review Quiz' and sets a timer. Inside the quiz, she taps 'Add Question' and types in her first question and answers. Realizing she made a mistake, she easily swipes left on a question to delete it. 'This will really help me study,' she thinks, considering the difficulty of her online class lately."

Assessment of this Design:

Advantages: This design provides a valuable self-assessment tool for students, which can be particularly beneficial for those struggling with online learning or communication issues. The intuitive flow for creating and editing quizzes, including the ability to add multiple questions and answers, makes the feature highly practical. The option to randomize and start a quiz adds flexibility for study.

Disadvantages: The initial design for adding a quiz via a pop-up might limit the complexity of quiz types or settings that can be configured. If quiz creation involves a lot of typing, the current interface might become cumbersome without advanced text input features.

Degree to which requirements can be met: This design directly supports students' academic performance by offering a tool for self-study and review. While it doesn't directly address connectivity, it provides an offline-friendly way to reinforce learning. The quiz feature can help students catch up on subjects they are behind on.

Feedback from potential users: (Gathered through informal discussions with students) Users were excited about the quiz-making feature, seeing it as a significant aid for self-study. Some suggested more options for question types (e.g., multiple choice, true/false) and the ability to import questions from external files. They also inquired about sharing quizzes with friends.

Requirements Changes

As a result of conducting the design process and gathering initial feedback, the following changes to the requirements and usability criteria have arisen:

Notification/Alarm Feature (Added/Modified): The initial problem statement highlighted students not getting notified by their courses. Based on a survey suggestion, an "Alarm feature to alert you if the user is out for awhile" will be integrated to ensure users are frequently notified and stay on pace. This elevates notifications from a passive problem to an active solution.

Toggle Music to Ambient Noises (Modified): While the original concept might have implicitly included a study aid, specific feedback suggested that "Lo-Fi isn't necessary since people have different tastes (ex. Rock or Classical). I propose that music can be searched with the Internet or can be played from the files than a set one". As a result, the music feature will be toggled on/off, allowing users to choose their preferred music, and the default music will be changed from lo-fi to ambient noises (e.g., rain and river noises) to provide a more universally acceptable study environment. This refines the usability criteria to better cater to user preferences for background sound during study.

Sorter for Tasks (Added): A new requirement emerged from user feedback: the ability to "filter or sort list of tasks based on course, importance, progress". This was not explicitly stated in the initial problem statement but became apparent as a valuable convenience feature during the design process, improving task management efficiency. The team will integrate this suggestion into the application.