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Project Proposal in

LBYCPEI - EQ3

Insight

Submitted by:

Hernandez, Jerry G. -

Lat, Jameul Lorenz P. -

Tamano, Faisal Richard Jr. D. -

Submitted to:

Mr. Ramon Stephen L. Ruiz

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Outline of the Paper:

1. Introduction
    - 1.1. Overview of the Project
    - 1.2. Goals and Objectives
2. Methodology
    - 2.1. Study Timer
        - 2.1.1. Notification Tool
        - 2.1.2. Interruption Recorder
        - 2.1.3. Ignore Pomodoro
    - 2.2. Spaced Repetition System
    - 2.3. Todo-List
    - 2.4. Notebook
    - 2.5. Calendar
3. Project Description
    - 3.1. IPO Diagrams
    - 3.2. Flowcharts
    - 3.3. UML Diagram
4. Deliverables
5. Evaluation
6. Conclusion
7. References

1. Introduction

1.1. Overview of the Project

Welcome to our Study Program project that utilizes the Java programming language. You have access to a comprehensive suite of features tailored to enhance your learning experience across various subjects and disciplines. Whether you're preparing for exams, reviewing course materials, or simply expanding your knowledge, Our program provides a user-friendly interface, intuitive navigation, and a range of customizable tools to optimize your study sessions. From note-taking and flashcard creation to interactive quizzes and progress tracking. Our program empowers you to take control of your learning experience and efficiency.

1.2. Goals and Objectives

TODO

2. Methodology

2.1. Study Timer

Insight will have a timer designed to utilize the pomodoro technique, a time-management method developed for enhancing the productivity of its user (Cirillo, 2018). The implementation will be based on a paper written by Ruensuk (2016).

2.1.1. Notification Tool

One of its features, a notification tool, will allow users to set a specific length of time to determine how long their pomodoro will last and when to notify them. If the user decides not to choose, the program will default to 25 minutes. In addition, the program will have a break time, which the user can adjust depending on their needs. This will, however, default to 5 minutes if there is no break duration defined by the user.

2.1.2. Interruption Recorder

Although the notification tool can significantly aid in the productivity of its users, its benefits could be supplemented by providing valuable data about the users' habits. To be more specific, Insight will have a feature where users can opt to record and categorize timer interruptions. This means that if the user decides to cancel or stop the pomodoro timer, they can specify whether they canceled it due to an internal interruption (using social media, leaving work, or thinking of unrelated tasks) or an external interruption (interruptions caused by unavoidable duties like an important phone call). Accordingly, the application can also display the recorded information about the interruptions (if the user wishes to see it).

2.1.3. Ignore Pomodoro

The interruption mechanism is very advantageous because it can help users analyze and improve their time management skills. Nonetheless, there are circumstances where users need to extend the pomodoro timer, like when they need a longer period of time for a task that necessitates continual focus. For this reason, Insight will enable users to ignore the notification alarms to assist users in adapting to these types of situations.

2.2. Spaced Repetition System

According to a study by Yuan (2022), taking advantage of the spacing effect for learning can lead to greater memory strength and long-term conceptual understanding. As a result, spaced repetition was included as a feature for this program. For the spaced repetition and flashcard implementation, Insight will make use of the framework introduced in Shah et al. (2020). Users can add questions and take quizzes or answer those questions to review them. Moreover, users will also be able to edit and delete the questions they added. The scores and the behavior of the user when answering will be recorded for the program to use.

What makes this system very effective for learning is not due to the fact that the users can review the questions they added, but the algorithm associated with deciding which questions to ask the user. Everytime a user answers, a score that considers the difficulty of a question will be computed. This score will be used to model the students behavior through a calculated decay rate. Additionally, the questions with scores below a certain threshold will be added to a review queue that will be used for a review event. In terms of what question to show to the user, it is based on a calculated probability of a review event. The cycle will not stop until necessary conditions are satisfied (review queue is empty or all scores are greater than threshold). In terms of the specific calculations, and steps, it will be heavily based on the formulas and procedures found in Shah et al.

2.3. Todo-List

Although this feature will have some of the basic and expected capabilities of todo-lists (such as adding, removing, and editing a task), it will also take some inspiration from the design principle of the application TaskDo by Kuhail and Gurram (2019). Their task management approach influenced how we would execute this feature because it can increase the productivity of users by assisting them in planning their day-to-day activities.

After the program analyzes the performance and history of the user, the todo-list feature of Insight will suggest to the user which task to perform on a given day and time. This means that it will need to collect information involving various tasks and the user's performance first before providing a recommendation. Therefore, a database would be created for the recommender system to analyze and help the user plan activities.

The recommender system will learn from the user by checking if the user was able to successfully complete a task given a specific time period. Consequently, it also learns from

periods where the user fails to accomplish a given task. The effectiveness of the recommender system can be further improved through a feedback system where users can evaluate whether the recommendations from the program are helpful or not.

Other information that the recommender system will take note of are the task type (Intellectual, Physical, and etc.), day type (Sunday, Monday, etc.), and time of the day (Early Morning, Midnight, and etc.). After a task is finished, the recommender system will also ask the user for a satisfaction rating from 1-5 (1 being the lowest and 5 being the highest). Using all the data collected and found in the database, the recommender system will help the user plan their activities and create their todo-list.

2.4. Notebook

TODO

2.5. Calendar

feature might be discarded due to time limitations

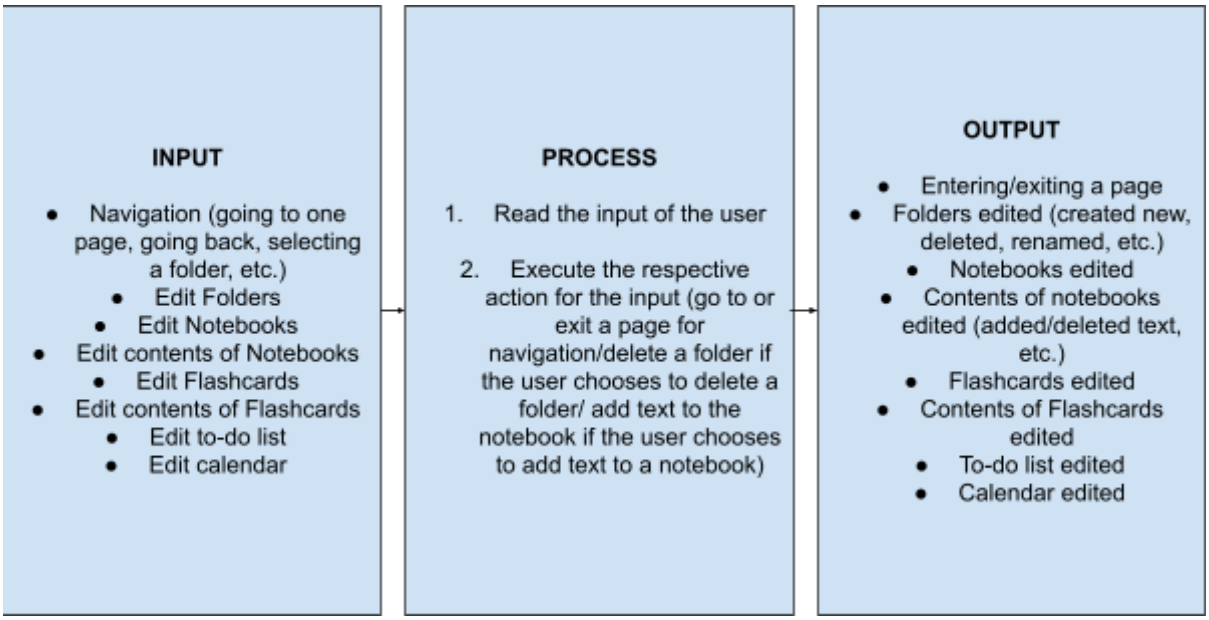
3. Project Description

The project is divided into the parts (classes): main menu (main method), folders (class with methods for notetaking, flashcards, and timers), and scheduling (class with methods for a making to-do list and calendar).

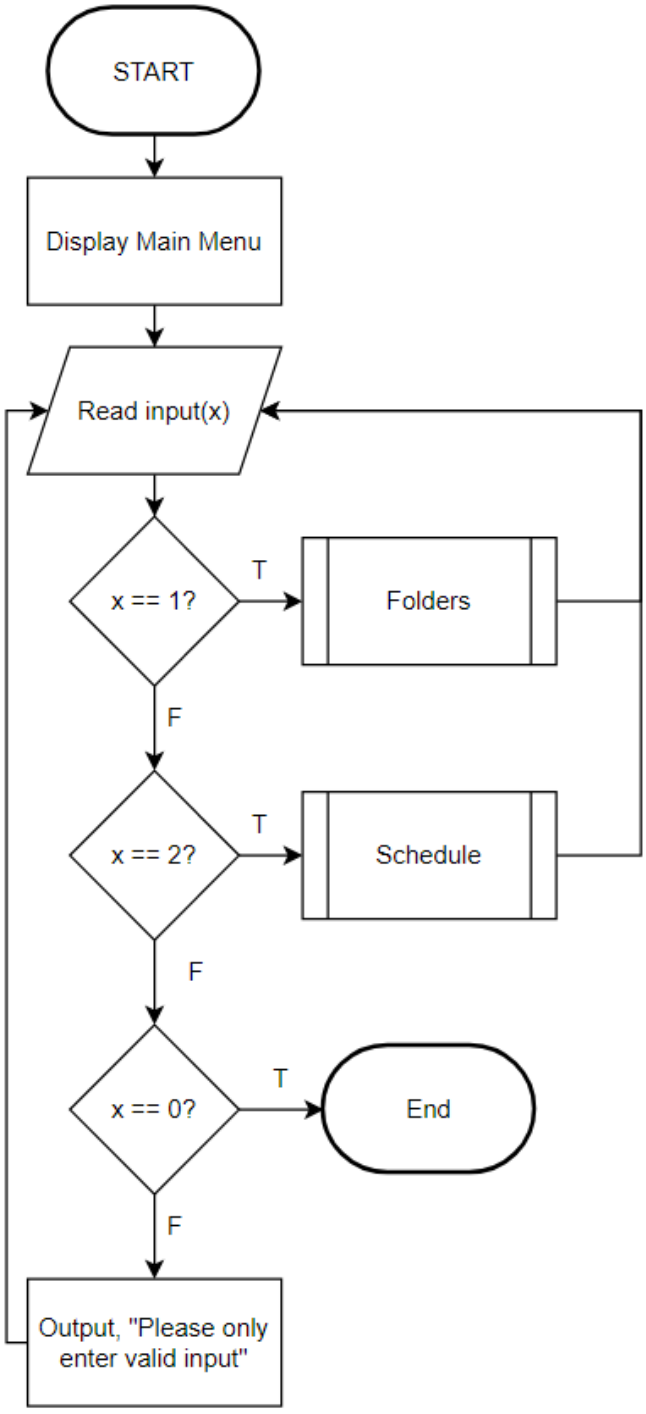
The program will first show the main menu where the user can either go to their folders or their schedule. Inside the folders are the subjects that the user has created as well as a choice to make new subjects. Each subject can have notebooks, flashcards, and more folders which are all subject to the preference of the user (the user may remove or add more notebooks, flashcards, or folders). For the scheduling, the user will have access to their to-do list and the calendar of the week. The calendar will show all of the activities that the user has entered along with the dates

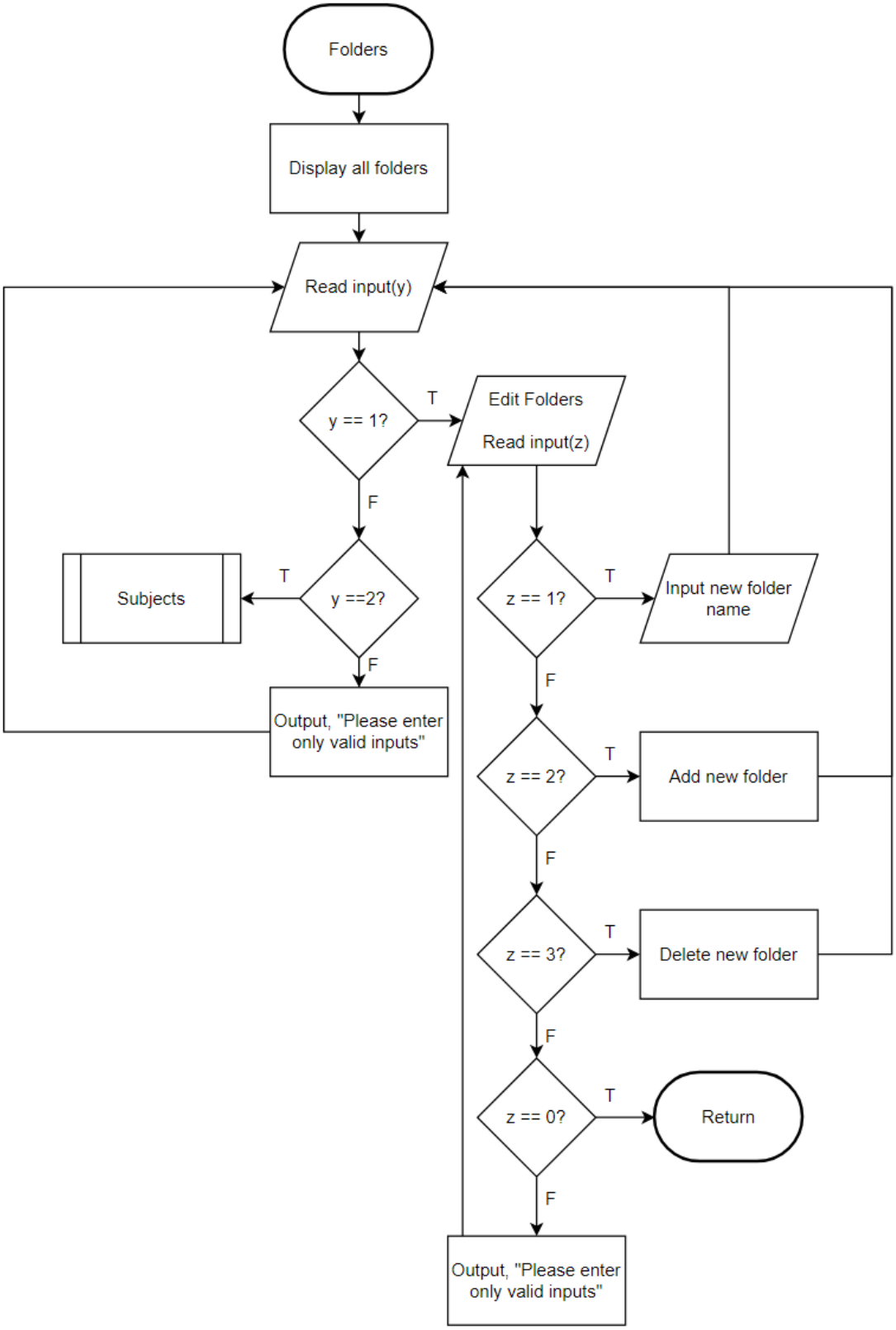
and times that the user has entered. Both the to-do list and the calendar are to be changed by the user. At the start of the program, the program will be empty (No folders, no to-do list, etc.). The user will create the folders for each subject and add notes to their to-do list themselves.

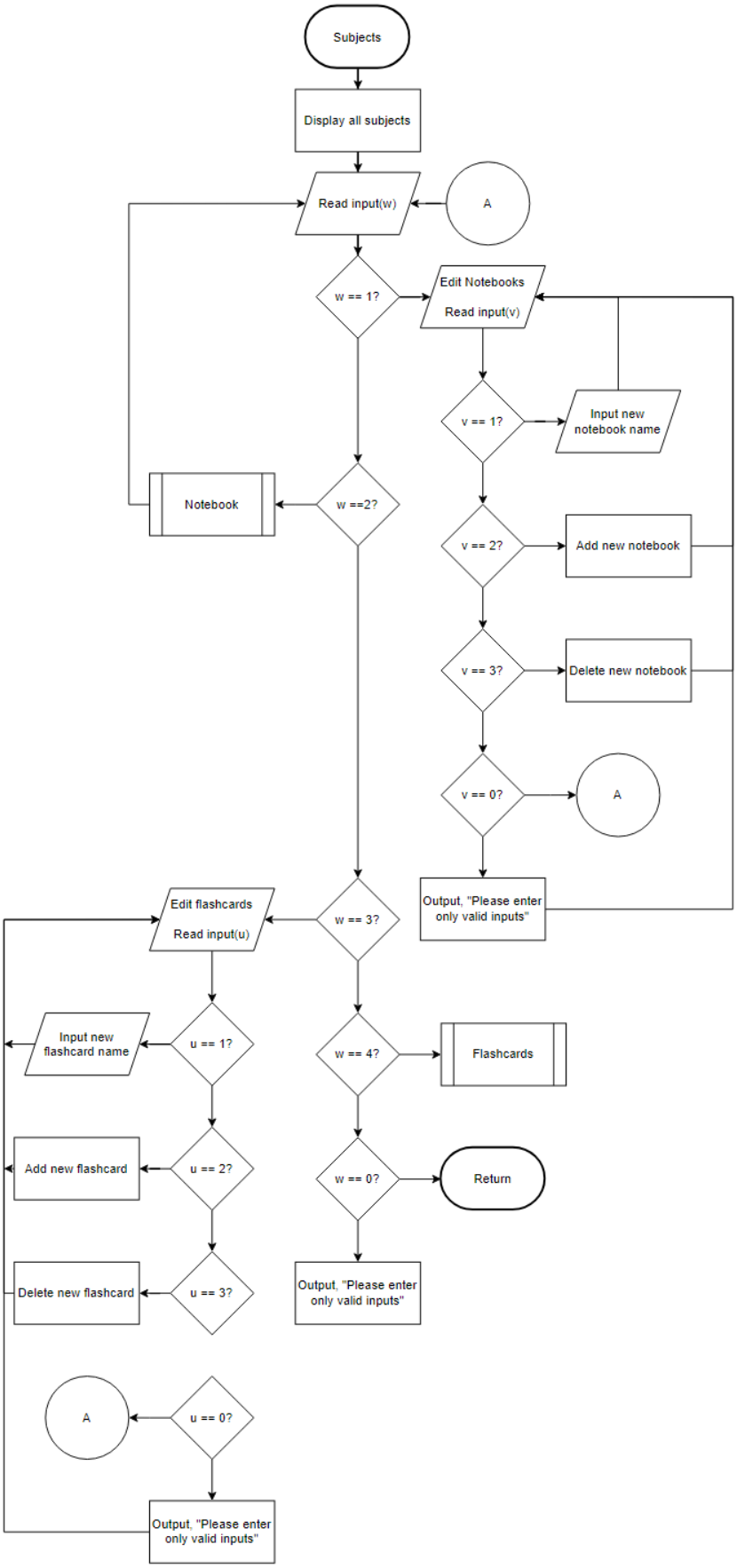
3.1. IPO Diagrams

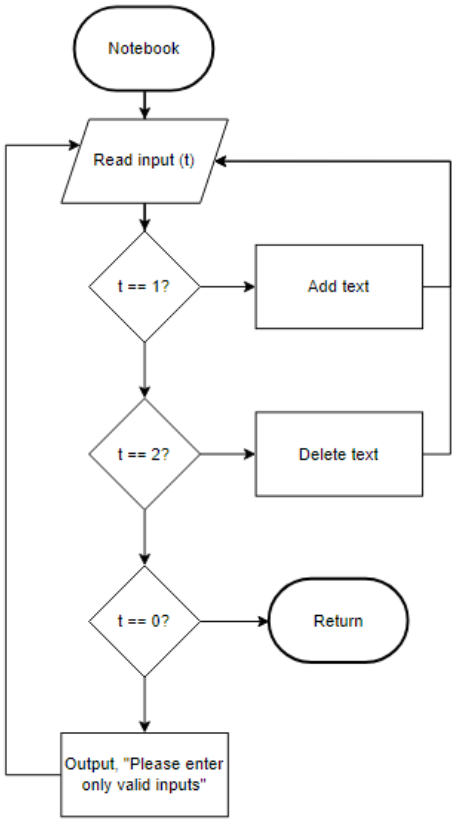


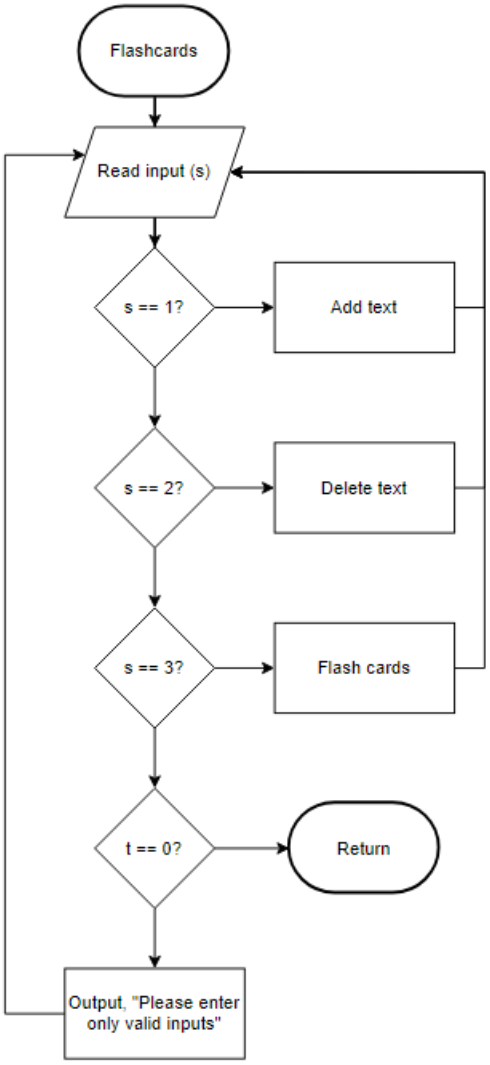
3.2. Flowcharts




Folders
Display all folders
Read input(y)
y == 1?
T
Edit Folders
Read input(z)
F
Subjects
T
y ==2?
F
Output, "Please enter only valid inputs"
z == 1?
T
Input new folder name
F
z == 2?
T
Add new folder
F
z == 3?
T
Delete new folder
F
z == 0?
T
Return
F
Output, "Please enter only valid inputs"


Subjects
Display all subjects
Read input(w)
A
w == 1?
Edit Notebooks
Read input(v)
v == 1?
Input new notebook name
v == 2?
Add new notebook
v == 3?
Delete new notebook
v == 0?
A
Output, "Please enter only valid inputs"
w ==2?
Notebook
w == 3?
Edit flashcards
Read input(u)
u == 1?
Input new flashcard name
u == 2?
Add new flashcard
u == 3?
Delete new flashcard
u == 0?
A
Output, "Please enter only valid inputs"
w == 4?
Flashcards
w == 0?
Return
Output, "Please enter only valid inputs"





3.3. UML Diagram

4. Deliverables

TODO

5. Evaluation

TODO

6. Conclusion

TODO

7. References

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