Use cases:
1. <u>Students:</u> It is difficult for students to keep track of all the minute tasks they have. Traditionally, we would use memos and paste them on walls and keep track of those. However, the digital age urges us to embrace new tools such as Google Keep, Trello, Notion, Miro, Kanban Board, etc. in place of physical methods. However, there still lacks a robust memo/todo tool for students, which on top of basic memo functions, should also include Pomodoro Timers, Lesson Plans Imports, keep track of grades, categorizing tasks, and also Collaboration with other students.

2. <u>Working Adults:</u> With the effect of COVID-19, working from home has become a new norm, and we should embrace the changes to our lifestyle. The Scrum Methodology involves a team to be transparent about the items they have yet to do, in progress, and have completed, as well as the time estimate for each task. Furthermore, Time boxing is also imperative for effective team discussion, ensuring that the information we bring across is concise. Current tools that are being utilized include Miro, MURAL, Jira, Trello to name a few. The project aims to extract some important aspects for working adults to be more effective in work, as well as collaboration with others.

Project Features:
1. Virtual Memo pads - Create Memo
2. Categorization of Memos Colors - Set a Label for specific Colors, assign color to Memo
3. Memo Board - A dashboard to view all active Memos. This is a virtual segregation of Memos independent of Categories (Eg, some people will have multiple Memo Boards in the Kitchen, in their rooms, etc.)
4. Master Memo Board - a dashboard to view all Memos from all of the user's assigned Memo Boards
5. Memo Archival - A place where non-active Memos resides
6. Memo Trash - Memos that are removed as they are no longer relevant. Able to Restore to Memo Board/ Memo Archival. Auto Clears any item Added in after 30 days.
7. Filter Memo by Title, Date Created, Memo Boards, Categories.
8. Pomodoro Timer with customizable timer.
9. Burndown Chart: View the amount of time spent on doing different category of tasks.

User flow:
1. After navigating to the Memo Webpage, users will be greeted with their Master Memo Board. Master Memo Board is generated by default for each user
   a. There will be a "Change Memo Board" filter and a "Change Primary Memo Board" function. [Each user acc in db will need a "Primary Memo Board" field]

     b. Users can sort Memo in ascending/descending order, in the field "Date Created; Categories; Memo Name;" [Default should be "Sort by Date Created", this bullet point requires a local sorting method]

2. There will be a "Add Memo" button or a blank Memo that upon filling up by the User, will be added to the list of Memo. By default, the Memos will not be categorized, and are placed in the Master Memo Board. [Memos will be added to user's table, with fields: Content, Category ID, Board ID]
     a. Users can assign Memo to different Memo Boards. When in this interface, users should also be able to create Memo Boards. All Memo Boards may not have unique names and are case sensitive. [Memo Boards created should have a UUID, and a Label for the name]
     b. Users can assign Memo to different Categories. When in this interface, users should also be able to create Categories. All Categories have unique Names and are case sensitive. [Category created should have a UUID, a Label and a an associated hex RGB color]

3. Users can open a Pomodoro timer, and set which category it is timing. By Default, each session is 25 minutes, with 5 minute breaks in between, and 15 minutes break instead every 4 sessions. The Long Break counter will be reset when the user customizes the Pomodoro and/or short break duration.
     a. These can be configured by the user, and saved as a profile with the following fields:
          i. Ringtone
          ii. Pomodoro time
          iii. Short break duration
          iv. Long break duration
          v. Long break every "n" short breaks.
     b. Users can see the "Burndown Chart" of each category every week/month/year. The "Burndown Chart" is an accumulation of time spent for each category, and is shown as a Polyline. Burndown Charts will be Memo Board independent.

4. Users can archive Memos into the Memo Archival. These Memo can still be viewed by the user, and will not be deleted.
     a. There will be a "Move to Trash" and "restore to <previous Memo Board>" button.

5. When users delete a Memo, it is moved to the Memo Trash. All Memo in the Memo Trash for 30 days will be automatically removed.

Implementation Plan:
1. Implement a Basic React + Rails (ensure React is able to interact with Rails)
2. Write Rails to be an API-only application, test using Postman/with Ruby + HTML
     a. CRUD for Memo Board, Memo, Category

3. Find and implement a mock React page for Memos. Figure out if using TypeScript or JSX.
4. Link React with Rails for CRUD on Memo creation, only on default Master Memo Board
5. Link React with Rails for CRUD for Categories
6. Link React with Rails for CRUD multiple Memo Board
7. Implement Memo Archival.
8. Implement Memo Trash, Cron Job daily to check if a Memo was moved to Trash at least 30 days ago, and removes them.
9. Implement useful filters for managing Memo Board
10. Implement basic Pomodoro timer (no customization)
11. Implement Burndown Chart, export Burndown chart in CSV or possibly some UI libraries and send to personal email using Cron Job.

Possible Expansions:
1. User Sign-up and Login: Allow multiple user sessions.
2. Kanban board: Keep track of weekly tasks
3. Memo Board Invites: support collaboration between users. Useful for multiple users to view one single Memo Board while working on the same project.
   a. Invites can come in the form of a shared link and QR code.
4. Grade Calculator: Keep track of Grades based on Assignment percentages, Midterms, estimated finals marks etc.
5. Grade Point Average Calculator: Based on NUS grading scheme, entering Letter Grades to update Semestral GPA and Cumulative GPA. Enable a One-Click SU button.
6. Add Counters for each Task: Helps in estimating time required for each Memo.
7. Cross platform Compatibility: Able to use on Phone (Android & iOS) and Web Versions. This requires a cross platform framework such as Ionic, ReactNative etc.
8. Support Dark Mode: The never ending battle between Light and Dark Modes. Include more users by allowing a darker color scheme

Troubles faced:
1. Faced a confusion on whether to use React Router or Rails Router.
2. Cannot find the "best practice" for Rails with React integration, currently looking through some tutorials and articles, and trying different things out.
3. Rummaging possible UI components for good looking Memos.
4. Plan Database schema as broadly as possible.