LiftOff Proposal for Orbital 2023

Team Name:

Bareheaded (Team 5899)

Team Member:

Name	Student Number	NUSNET Account
Cai Baizhou	A0262507H	E0990630
Zeng Zihui	A0254548W	E0959218

Proposed Level of Achievement:

Project Artemis.

Motivation

It is hard for us to find an app that combines Pomodoro clock and project management, as I want to time the time spent on each task in a project, so my time management skills are better. In addition, the graph-based visualisation projects provide a more convenient way to help me prioritize tasks and allocate time. The graph visualisation will show the prerequisites for each task clearly so that I will know what I should do in order to proceed to my next task. The biggest source of procrastination is lack of clarity. When you don't know exactly what you need to do, you hesitate to start. By having this app, it can help to gain a clearer view of the goals and improve the clarity of the tasks. With all these benefits in mind, we decided to create one.

Aim

We want to create a desktop application for project management as well as academic planning. This app will incorporate Pomodoro technique and uses graph-based visualisation to view projects, making it easier to manage tasks, stay on track, and improve productivity.

Table of Contents

1 User Stories

1.1 Create User Account UC

1.1.1 Enter Account Details

As a user, I want to be able to enter my account details on the account creation page so that I can create an account and access the application on both desktop and mobile phones.

1.1.2 Validate Email Address

As a user, I want to be able to enter my one-time password received in my email so that I can confirm my account registration.

1.1.3 Confirm Account Creation

As a user, I want to be able to confirm my account creation so that I can finalize the creation of my account and start accessing the application.

1.2 Login Account UC

1.2.1 Enter Login Details

As a user, I want to be able to enter my login details on the login page so that I can log into my account and use the features of the application.

1.2.2 View Login Errors

As a user, I want to be able to view any login errors that I may have made so that I can fix the errors and login properly.

1.2.3 Logout Account

As a user, I want to be able to log out of the application so that I can prevent unauthorized users from accessing my account on the same system.

1.3 Create New Whiteboard UC

1.3.1 Create Project

As a user, I want to create a project to group my tasks together so that I can better manage my tasks.

1.3.2 Set Project Deadline

As a user, I want to set an overall deadline for my tasks in my project so that I can better manage my projects.

1.3.3 Limit Workable Task Number

As a user, I want the system to limit the number of tasks that I can be working on to two so that I can focus on the task that I should do.

1.3.4 Perform Different Tasks Simultaneously

As a user, I want to be able to have different tasks that do not have a sequential association inside the project so I can choose any one of them to start working on.

1.4 Add Node UC

1.4.1 Create Task

As a user, I want to create a task with task name, task deadline, task description, and estimated time taken so that I can better plan my time to complete the task.

1.4.2 View Project Graph Nodes

As a user, I want to be able to view the tasks under a project in the graph nodes so that I can have an overall view of the project.

1.4.3 View Task Completion Status

As a user, I want to view completed and incomplete tasks in a different colour so that I can know the progress of my project.

1.5 Manage Node UC

1.5.1 View Change in Colour Intensity

As a user, I want the colour intensity of the task nodes to change as the deadline approaches so that I can have a visual and intuitive effect for deadlines.

1.5.2 Make Declaration of In-Progress Task

As a user, I want to declare a task as in-progress when I start working on it so that keep track of which tasks I should be working on.

1.5.3 Grey Task

As a user, I want the tasks that I cannot do currently to be greyed so that I can know which tasks I can and cannot do right now.

1.6 Delete Node UC

1.6.1 Delete Task

As a user, I want to be able to delete task that I accidentally created wrongly so that there will not be useless tasks.

1.6.2 Confirm Task Deletion

As a user, I want to receive double confirmation when I delete a task so that I will not delete my task unexpectedly.

1.7 Delete Whiteboard UC

1.7.1 Delete Project

As a user, I want to be able to delete projects and remove all the tasks in the project so that unwanted project will not be there, and I do not have to delete all the tasks one by one.

1.7.2 Confirm Project Deletion

As a user, I want to receive double confirmation when I delete a project so that I will not delete my project unexpectedly.

1.8 Manage Academic Planner UC

1.8.1 Create Academic Planner

As a user, I want to create an academic planner for my degree requirement in which I can visualize it as a graph, so that I could see the prerequisites more clearly and manipulate them in a more convenient way.

1.8.2 Create Module Category

As a user, I want to set different categories for degree requirement so that I could group my modules appropriately and ensure that each category of the degree requirement is fulfilled.

1.8.3 Add Module

As a user, I want to add a new module as a node in the planner and see what the pre-requisites for the modules are when I create it so that I know which modules need to be taken before I can take the module I want.

1.8.4 Adjust Module Node

As a user, I want to be able to drag and readjust the module node into the semester I want so that it is convenient for me.

1.8.5 Suggest Earliest Time for Module

As a user, I want the system to suggest the earliest time I can take the module so that I will not risk myself to delay my graduation.

1.8.6 Convert Module to Project

As a user, I want to be able to convert my module into a project so that I can manage all the tasks for this module and keep track of the progress.

1.9 Add Pomodoro Clock UC

1.9.1 Keep Track of Time Taken

As a user, I want to have the Pomodoro timer to keep track of my actual time taken for each task so that I can review my efficiency.

1.9.2 Set Pomodoro Clock

As a user, I want to be able to set focus duration, number of Pomodoros and rest duration when I use the Pomodoro timer for each task so that I can focus better and spread out my productivity level.

1.9.3 Remember Previous Pomodoro Clock Setting

As a user, I want the system to remember my previous Pomodoro clock setting since it may still be the same so that I do not have to adjust the Pomodoro clock setting again.

1.9.4 Countdown of Time

As a user, I want to be able to see the instant update of the amount of time left for the Pomodoro clock so that I can know how long I need to continue focusing on.

1.9.5 Floating Window for Countdown Timer

As a user, I want to see the floating window of the countdown timer for Pomodoro clock and adjust the position of the floating window when I minimize the application so that I can still keep track of the amount of time left.

1.9.6 Notify with Sound for Pomodoro Clock

As a user, I want to receive a sound notification when the focus duration and rest duration of the Pomodoro clock for the task is ended so that I can know when to rest and when to continue my work.

1.10 View Completed Tasks UC

1.10.1 View Tasks Completed

As a user, I want to have a graph to see how many tasks I completed in the last k periods of time so that I can check my efficiency.

1.10.2 View Actual Time Taken

As a user, I want to be able to view the actual time taken for the tasks in graphs so that I can compare my efficiency with the estimated time taken.

1.11 View Time Spending UC

1.11.1 View Time Allocation

As a user, I want to have a graph to see how long I spent working on my tasks in the last k periods of time so that I can check my efficiency.

1.11.2 View Top Time Spending Tasks

As a user, I want to have a visualization to show me my top 5 spending projects or tasks so that I could review whether my time allocation to the task is reasonable.

1.12 Create Template UC

1.12.1 Share Academic Planner Template

As a user, I want to be able to share my academic planner setting with my peers so that my fellow students of the same major do not need to create an academic planner again as the degree requirements are the same for us.

1.12.2 Import Academic Planner Template

As a user, I want to be able to import the academic planner template into my academic planner so that I do not have to create the planner myself based on my degree requirement and save time.

2 Features and Timeline

Index	Key Features	Brief Description
UC1	Create User Account	This use case allows user to enter their email addresses and password for account creation. The system will then hash the password and store the email and hashed password into the database. The system will generate an email that includes a one-time password and send it to the user's email address for verification. Once the user validates the email address, the account will be activated, and the user will be redirected to the home page of the application.
UC2	Login Account	This use case allows user to login their account by entering their email address and password. The system verifies the email address and password. If the email address and password are valid, the user will be redirected to the home page of the application.
UC3	Create New Whiteboard	This use case allows user to create a new whiteboard provided that the user is logged in. The user enters the whiteboard name, whiteboard description for the whiteboard creation. The user will then be redirected to the newly created whiteboard.
UC4	Add Node	This use case allows user to create a node inside the whiteboard provided that the user is logged in. The user enters the task name, task description, estimated time taken, and deadline to create a new node inside the whiteboard. The system will then display the created node inside the whiteboard and store all the node details.
UC5	Manage Node	This use case allows user to edit the node details provided the node is created and the user is logged in. The user enters new details of the node, which is task name, or task description, or estimated time taken, or the deadline. The system will then record the new node information. The user can also change the parent nodes or the child nodes of current node. Users need to finish the child node task before doing the parent node task. Once the child task nodes are completed, they will be collapsed into one node. Users can expand this node to check the completed task nodes. Unfinished task nodes will be coloured according to the deadlines set by the user. The nearer the deadline, the colour intensity of the node will be increased to remind users about the time.
UC6	Delete Node	This use case allows user to delete the node provided that the node is created, and the user is logged in. The system will remove the node from the whiteboard.
UC7	Delete Whiteboard	This use case allows user to delete the whiteboard provided that the whiteboard is created, and the user is logged in. The system will remove the whiteboard and all the nodes in the whiteboard.
UC8	Manage Academic Planner	This use case allows user to create their study plan with graph-like data structure visualization to meet their degree requirement. User can create categories according to their major degree requirement such as common curriculum requirements, programme requirements and unrestricted electives. System will represent each module as a node. User can categorize each module so the module credits will contribute to the corresponding category to keep track of graduation requirement. System will pop out prerequisite modules when new module is added.

UC9	Add Pomodoro Clock	This use case allows user to use pomodoro clock for each task. User can use pomodoro clock to track the time spent on each task. User can time the pomodoro clock multiple times and take breaks in between each pomodoro clock. System will record the time spent for each pomodoro clock for each task.
UC10	View Completed Tasks	This use case allows user to view the completed tasks in the last k periods of time. System displays the visual representation of the completed tasks.
UC11	View Time Spending	This use case allows user to view the amount of time spent on tasks in the last k periods of time. System displays the time taken for each task in graphs.
UC12	Create Template (Possible advance feature)	This use case allows user to create template for their academic planner. User can share their academic planner as template to the other users. System will import the template to the user's academic planner when user uses template.

*2 weeks for 1 sprint

Sprint	Targeted Completion Date	Target
1	28 May 2023	Create development plan ● Create wireframes ● Create UI designs using Figma ● Create diagrams (Class diagram, ER Model etc) Learn the technology that we need (ElectronJS, CI/CD, automated Testing etc.) Complete UC1 Create User Account, UC2 Login Account, and UC3 Create New Whiteboard
2	11 Jun 2023	Complete UC4 Add Node, UC5 Manage Node, UC6 Delete Node, and UC7 Delete Whiteboard
3	25 Jun 2023	Complete UC8 Manage Academic Planner, UC9 Add Pomodoro Clock, and UC10 View Completed Tasks
4	09 Jul 2023	Complete UC11 View Time Spending
5	23 Jul 2023	Complete UC12 Create Template
6	6 Aug 2023	Any other improvements
7	20 Aug 2023	Any other improvements

3 Tech Stack

Tech Required	Reason
Visual Studio Code	IDE used for development
ElectronJS	ElectronJS can be used to develop cross-platform desktop applications by using existing web technologies.
AWS	For hosting server
MySQL	Use a relational database for storing application data
NodeJS	
SpringBoot in Java	To host Restful API in our server for us to request data
Redis	Use to cache the cookies for users' entering the websites
GitHub	Use for software development collaboration and version control using Git Use for project management, and GitHub Actions for continuous integration

4 Qualifications

Team Member	Experiences
Cai Baizhou	● Created multithreaded HTTP servers using C++ ● Used SpringBoot to construct backend services for webs ● Used FastAPI to write Restful API ● Used C++ Qt library to write a desktop application receiving real-time forex data

Zeng Zihui	● Graduated with Information Technology Diploma
	● Took the following modules at Ngee Ann Poly before
	   o Database & Advanced Databases
	     ▪ Created relational database
	     ▪ Created cloud database
	   o Frontend Development & Web Application Development
	     ▪ Html, CSS, JavaScript
	     ▪ Created web apps using ASP.Net in MVC architectural pattern in C#
	   o Mobile Application Development
	     ▪ Created Android mobile application using Android Studio in Java
	   o Object-oriented Analysis & Design
	   o Data Structures & Algorithms
	   o Full-Stack Development
	     ▪ Experienced in the software development cycle
	     ▪ Used Agile Scrum Methodology
	   o DevOps
	     ▪ Used GitHub Actions for CI/CD
	   o Capstone Project
	     ▪ Created a deep learning model training web app in the team
	     ▪ Used Figma for UI design
	     ▪ Used React framework for frontend development and connected frontend to NodeJS backend
	     ▪ Practiced using Scrum Methodology