UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECD 2613

ANALYSIS DAN REKABENTUK SYSTEM

Phase 3 Project: Task Management System

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SECTION 16

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1. Project Overview

This project management system can accept and accommodate projects and tasks in education and project management. The interaction with the team members allows them to get an update on the progress of the same functions, as there is a chat system. This project must facilitate the ease of assignment of work and monitoring of the progress of the same and foster a collaborative environment amongst the members of the team; it must also emulate features that are unique to educational requirements, such as the submission of assignments and the tracking of the student's progress.

2. Problem Statement

2.1 Inefficient Task Management:

Poor Task Management:
Most of the integrated tools in task management today require their users to work with and across different applications exclusively meant for communication, tracking tasks, and reporting progress, respectively. This often raises the chances of miscommunication and fragmentation.

Manual Updates:
Project managers and team members need to update the latest status manually regarding the task to stay in sync with the project status, which is often very time- consuming and is prone to errors.

2.2 Poor Communication Channels:

Due to the use of different communication tools, most of the existing systems are developed outside, such as a mailing app or a chatting app, which does not integrate into the system for task management. This does not allow for real-time collaboration and instant feedback. When integrated communication is not available, there is a delayed response from other team members, leading to slow movement of projects that do not meet their deadlines.

2.3 Poor Visibility and Accountability:

Very little transparency and visibility exist in a traditional project. It is difficult to diagnose problems or to track milestone achievement because, in most typical conventional projects, the owners and other team members cannot easily see where the project is.

3. Proposed Solutions

Introducing Flowb:
FlowB is a task management system designed to improve efficiency and collaboration in project management and educational settings.

Key Features:

- Integrated Task Management: Centralized platform with automated real-time updates.
- Enhanced Communication: Built-in chat system and real-time notifications.
- Improved Visibility: Progress tracking with hierarchical task assignments.
- Educational Tools: Easy assignment distribution, grading, and feedback.
- Flexible Roles: Dynamic role assignment and role-based permissions.
- User-Friendly Interface: Intuitive design with essential features.
- Scalable: Optimized for large teams and growing user bases.

4. Requirement Analysis

4.1 Current Business Process (Scenarios, Workflow)

Current System:

- Assignments are given with no proper integrated tracking.
- Communication is through separate lines, primarily through emailing and messaging apps.
- Progress tracking is very rare or not even available. Hence the need to frequently follow up, check what is happening, and the status of the follow-up, the method of submission of assignments and following up on the same learning platform.

4.2 Function Requirements

Input:

- User Credentials
- Task Information
- Communication Message
- Submission of Assignments

Process:

- Create Project
- Task Allotment
- Send and Receive Task

Output

- Task Status Report
- Communication Threads
- Status Reports
- Assignment Feedback

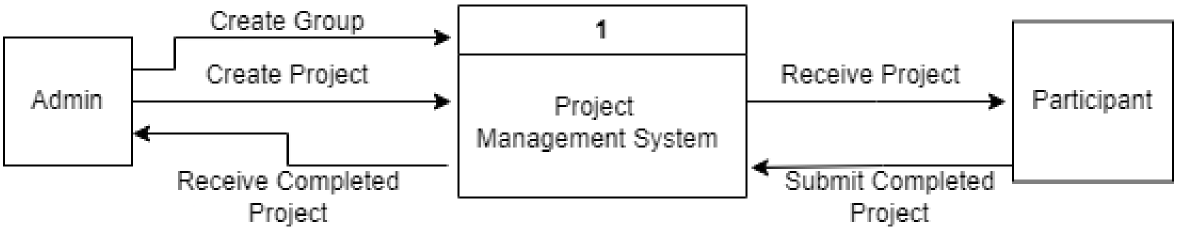
4.3 Nonfunction Requirements Performance and Control

Performance: The System shall support many users concurrently with minimal delays about communication / information updates.

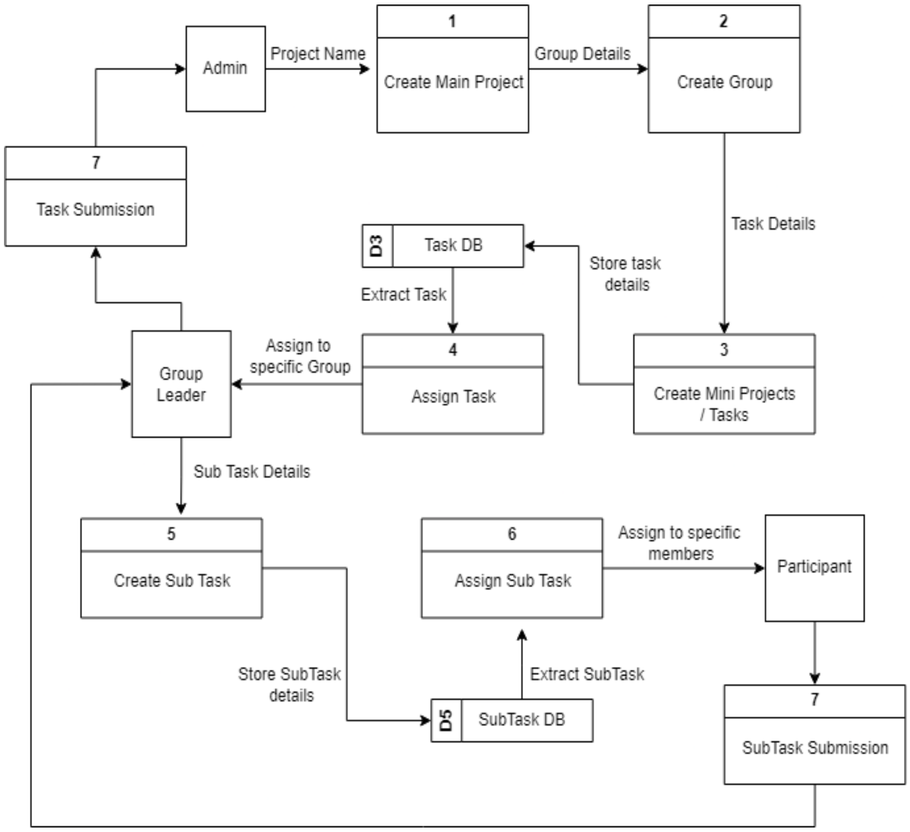
Control: It will ensure data security and privacy, especially any form of educational records and project data.

5. Logical DFD (AS-IS)

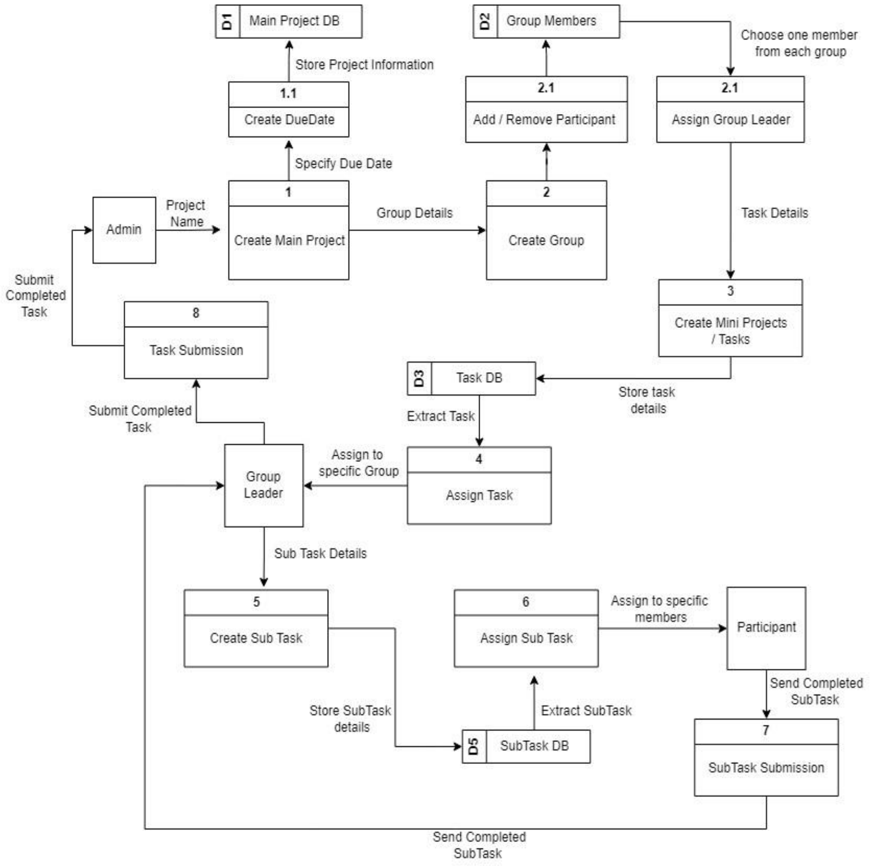
5.1 Context Diagram



5.2 0 Diagram



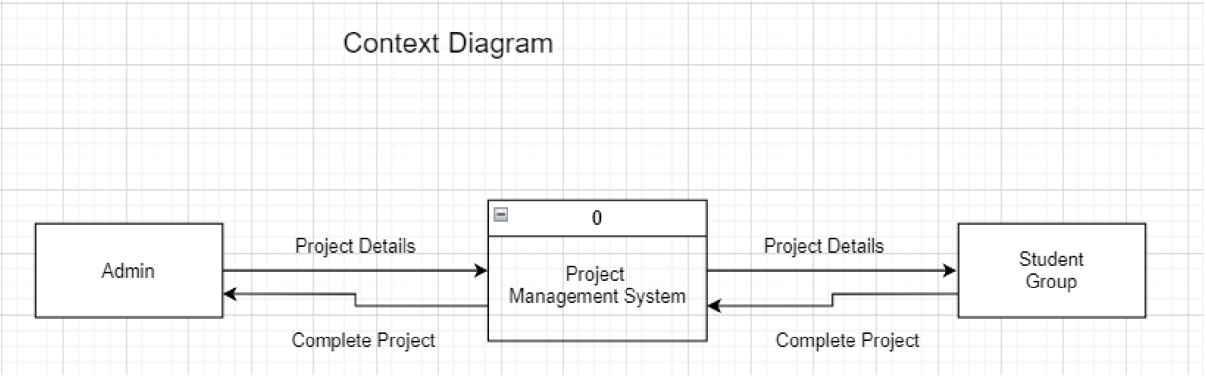
5.3 Child Diagram



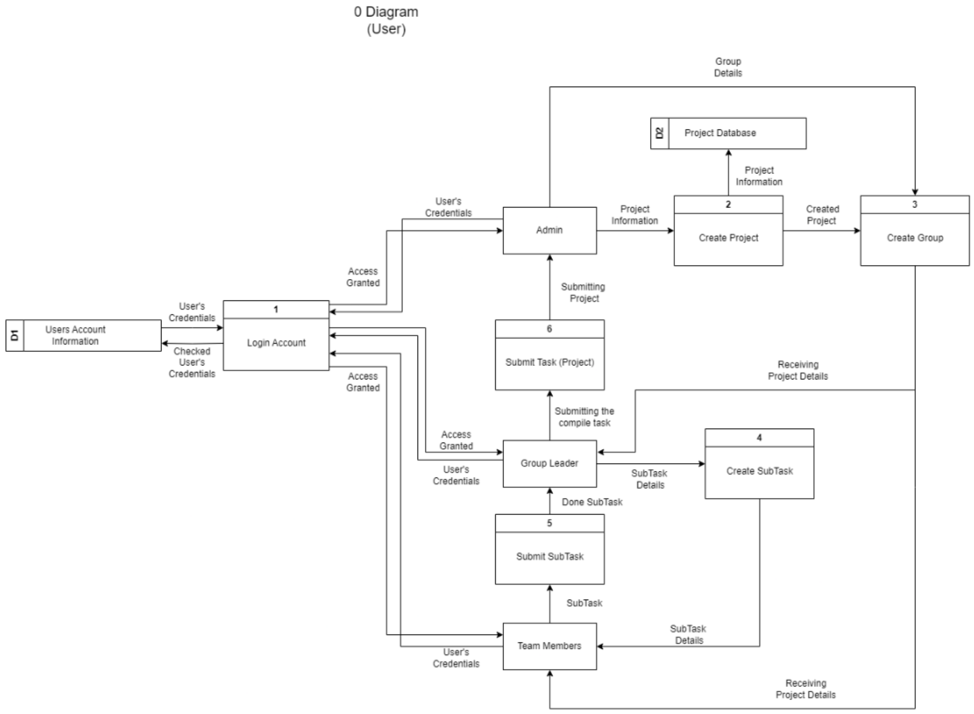
6. System Analysis and Specification

6.1 Logical DFD TO-BE System

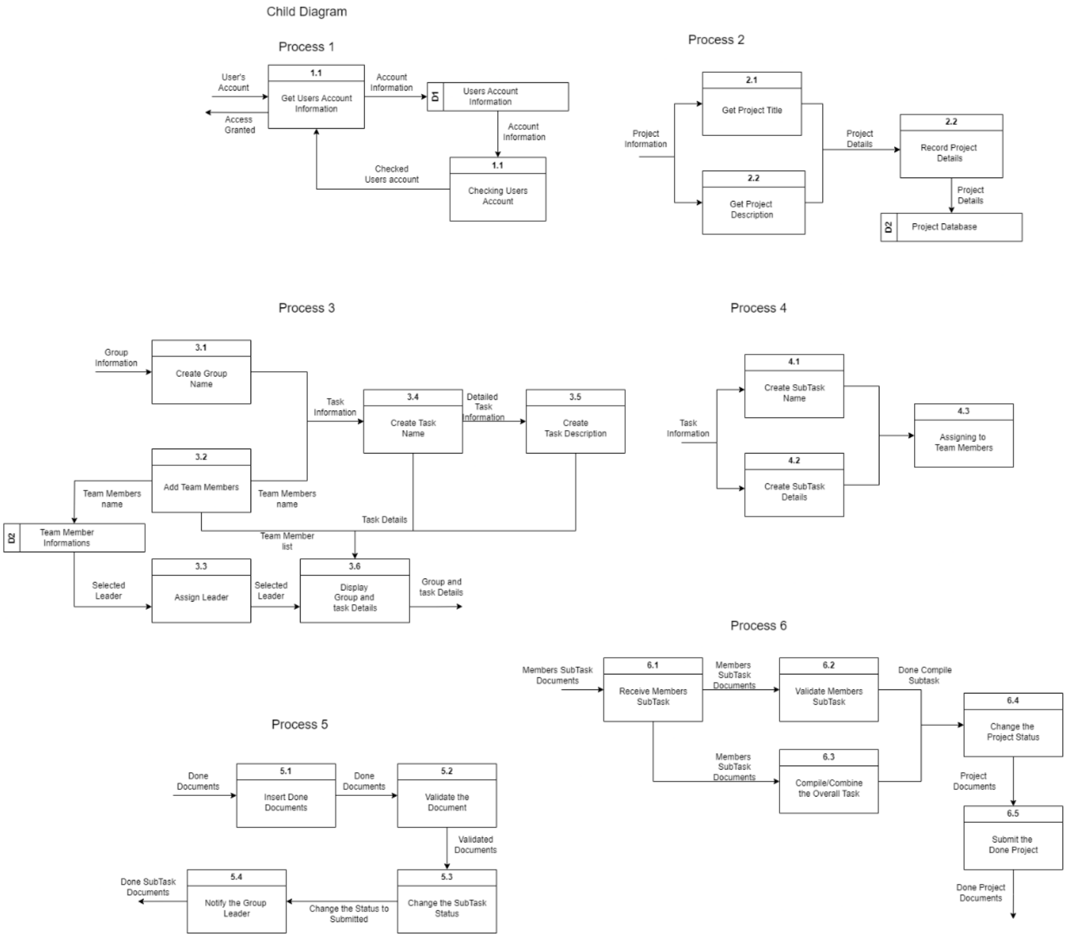
6.1.1 Context Diagram



6.1.2 (0 Diagram)



6.1.3 Child Diagram



6.2 Process Specification

Our requirement analysis was rigorous by taking inputs from all stakeholders about the application through the interview process that included questionnaires and observations. This showed an urgent need for integrated communication along with efficient follow-up of the progress of the task and pretty much streamlined project management. These must be the functional and non-functional requirements, which will be transposed by the uncovered circumstances found within the insights and will drive the development of our Task Management System.

6.2.1 Process 1: User Account

1) Allocate Information

- Structed English:

```
DO
  READ User Information
  IF User Account Type is 'Admin' THEN
    Assign Admin Rights
  ELSE IF User Account Type is 'User' THEN
    Assign User Rights
  ELSE
    Return "Invalid Account Type"
  END IF
UNTIL All Users Processed
```

2) Gain Access Authorization

- Decision Table:

Condition	**1**	**2**	**3**
User is authorized	F	T	T
Admin account	-	F	T
	-	T	-
Action	Reject	limited	Full Access

3) User Account Details

- Decision Tree
  - Check if the user account exists:
    - Yes: Retrieve account details.
    - No: Return “Account not found”.

6.2.2 Process 2: Project Information

1) Get Project Tasks

- Structed English:

```
DO
  READ Project Information
  IF Project Status is 'Active' THEN
    Retrieve Tasks
  ELSE
    Return "Inactive Project"
  END IF
UNTIL All Projects Processed
```

2) Record Project Details

- Decision Table:

Condition	1	2	3
Project is Active	T	T	F
Project has Tasks	T	F	-
Action	Reject Entry	Record Details	Inactive

6.2.3 Process 3: Group Management

1) Create Group Name

- Structed English:

```
DO
  READ Group Information
  IF Group Name is not Empty THEN
    Save Group Name
  ELSE
    Return "Group Name Required"
  END IF
UNTIL All Groups Processed
```

2) Add Team Members

- Decision Table:

Condition	1	2	3
Team Members Exist	F	T	-
Team Limit Reached	-	F	T
Action	Add member	Member exist	Limit Reached

3) Assign Leader

- Decision Tree:
    - Check if a leader is already assigned.
        - Yes: Return “Leader already assigned.”
        - No: assign Leader

6.2.4 Process 4: Task Management

1) Create SubTask Name

- Structed English:

```
DO
  READ Task Information
  IF SubTask Name is not Empty THEN
    Save SubTask Name
  ELSE
    Return "SubTask Name Required"
  END IF
UNTIL All Tasks Processed
```

2) Assign SubTask to Team Members

- Decision Table:

Condition	1	2	3
Team Member Exist	F	T	-
Task is Active	-	F	T
Action	Reject	Inactive	Assign Subtask

6.2.5 Process 5: Document Handling

1) Save Document

- Structed English:

```
DO
  READ Document Information
  IF Document is Valid THEN
    Save Document
  ELSE
    Return "Invalid Document"
  END IF
UNTIL All Documents Processed
```

2) Notify Team

- Decision Table:

Condition	1	2	3
Document saved	F	T	-
Team notified	-	F	T
Action	Reject	Notify	Already Notified

6.2.6 Process 6: SubTask Management

1) Receive SubTask Document

- Structed English:

```
DO
  READ SubTask Document
  IF Document is Complete THEN
    Save Document
  ELSE
    Return "Incomplete Document"
  END IF
UNTIL All SubTask Documents Processed
```

2) Validate SubTask

- Decision Table:

Condition	1	2	3
SubTask Document Exist	F	T	-
Document is valid	-	F	T
Action	Reject	Invalid Document	Validate Document

3) Compile SubTask

- Decision Tree:
  - Check if all documents are already assigned.
    - Yes: Compile SubTask
    - No: Return "Incomplete SubTask"

4) Change SubTask Details

- Structed English

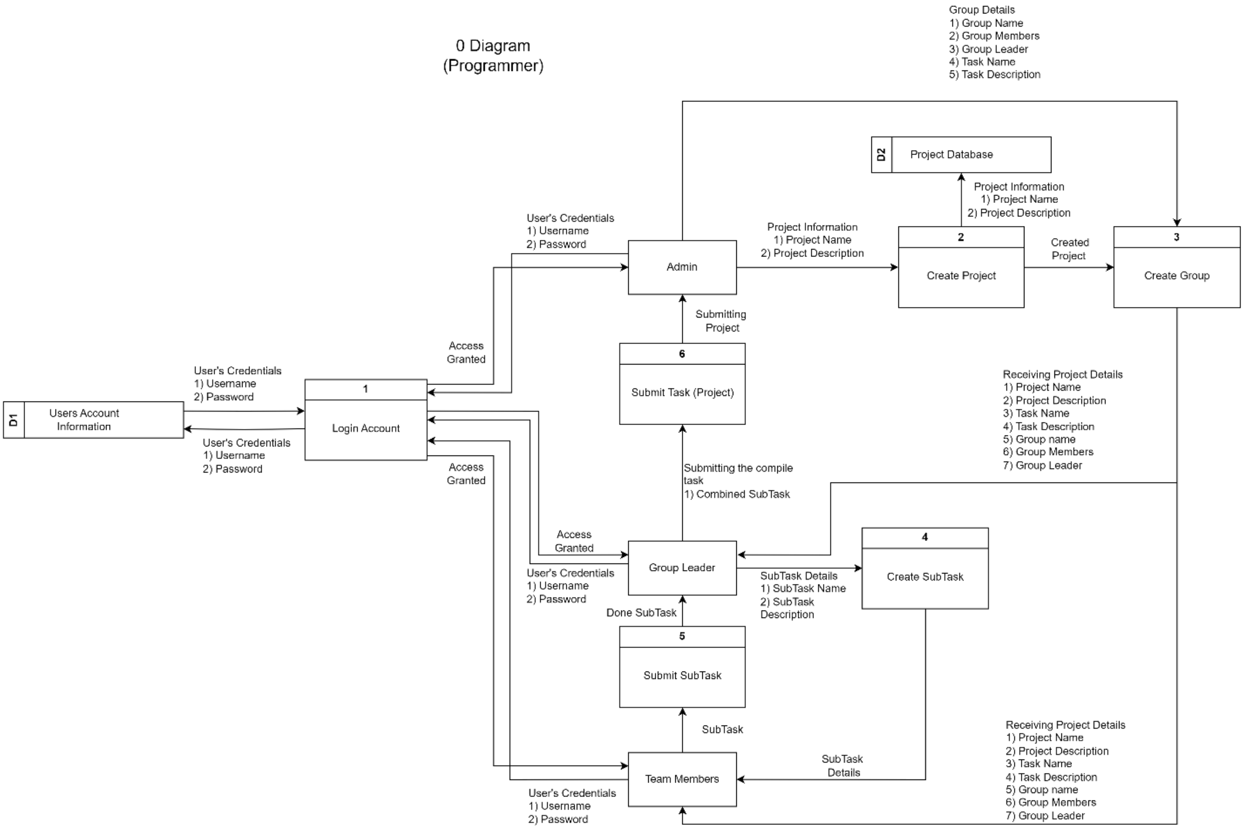
```
DO
  READ SubTask Information
  IF Change Request is Valid THEN
    Update SubTask Details
  ELSE
    Return "Invalid Change Request"
  END IF
UNTIL All Change Requests Processed
```

7. Physical System Design

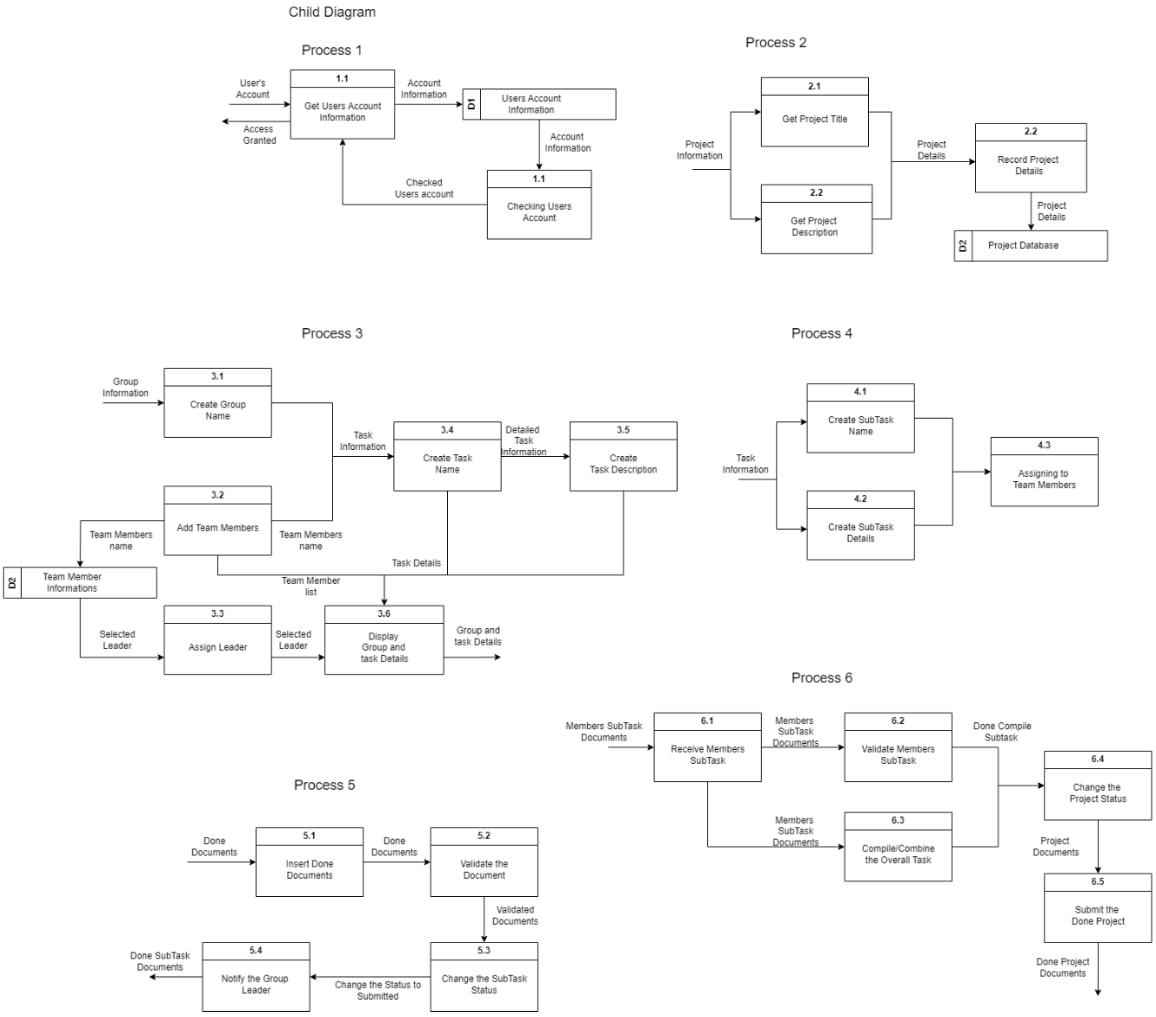
The Physical System Design is a crucial step in transforming the logical design into an implementable architecture. This phase ensures that the system is built on a solid technical foundation, addressing all necessary hardware, software, and structural requirements. Key components of the Physical System Design include:

7.1 Physical DFD TO-BE system

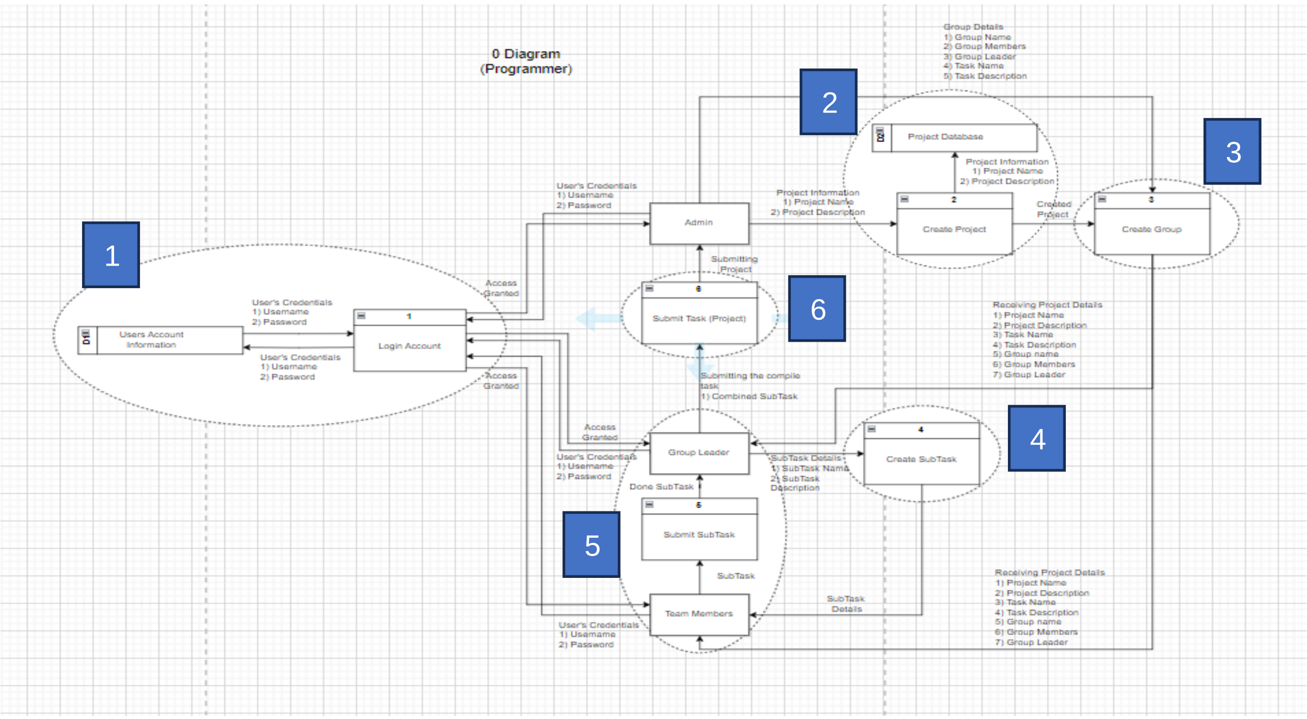
7.1.1 Diagram 0



7.1.2 Child Diagram



7.1.3 Partitioning



1. Login Account

The "Login Account" process is the initial step for users to access the system. Users provide their credentials, including a username and password. These credentials are verified against the stored information in the "Users Account Information" data store. If the credentials match, the system grants access, allowing the user to proceed to other functionalities within the system.

2. Create Project

Once logged in, admins have the capability to create new projects. This involves entering key project information such as the project name and project description. The "Create Project" process takes this information and stores it in the "Project Database." This process ensures that all project-related information is properly documented and can be referenced or updated as needed.

3. Create Group

The "Create Group" process allows the organization of team members into specific groups for project tasks. The process requires detailed project information, including the project name, project description, task name, task description, group name, group members, and group leader. Once this information is entered, the system creates a new group and stores the relevant details in the appropriate data store.

4. Create SubTask

After groups are created, tasks can be broken down into smaller, manageable subtasks through the "Create SubTask" process. This process involves inputting the subtask name and subtask description. The subtask details are then associated with the main project and stored for tracking and management purposes.

5. Submit SubTask

Team members and group leaders can submit completed subtasks via the "Submit SubTask" process. This process involves verifying the subtask details, such as the subtask name and description. Once a subtask is completed and submitted, the system updates the status and logs the completion details.

6. Submit Task (Project)

The "Submit Task (Project)" process involves the final submission of the project or major tasks. Admins or group leaders submit the project details, including the combined subtasks, to indicate the completion of significant project milestones. This process ensures that all components of the project are reviewed and marked as completed, maintaining an organized record in the system.

Data Stores and External Entities

The diagram includes several data stores like "Users Account Information" and "Project Database" that hold critical information necessary for the system's operation. External entities such as users and admins interact with these data stores through various processes, ensuring that the system functions seamlessly from login to project completion.

In summary, the DFD illustrates a structured approach to managing projects, from user authentication to project creation, task assignment, and submission of completed work, ensuring that each step is documented and traceable.

7.1.4 CRUD Matrix

The Create, Read, Update, and Delete (CRUD) matrix maps out all interactions between processes and data stores, ensuring comprehensive data management throughout the system. For example, it details how tasks are created, updated, assigned, and archived.

Entity	**Create (C)**	**Read (R)**	**Update (U)**	**Delete(D)**
User	Admin	Login, Chat	Login, Chat	Not shown
Main Project	Create Main Project, Create due date	Assign Task	Not shown	Not shown
Group Members	Create Group, Add/Remove Participant	Assign Leader, Assign Task	Add/Remove Participant, Assign Leader	Remove Participant
Task	Create Task	Assign Task, Submit Subtask	Not shown	Not shown
Subtask	Create Subtask, Assign Subtask	Submit Subtask	Not shown	Not shown
Messages	Send Message	Receive Message	Not applicable	Not shown

7.1.5 Event Response Table

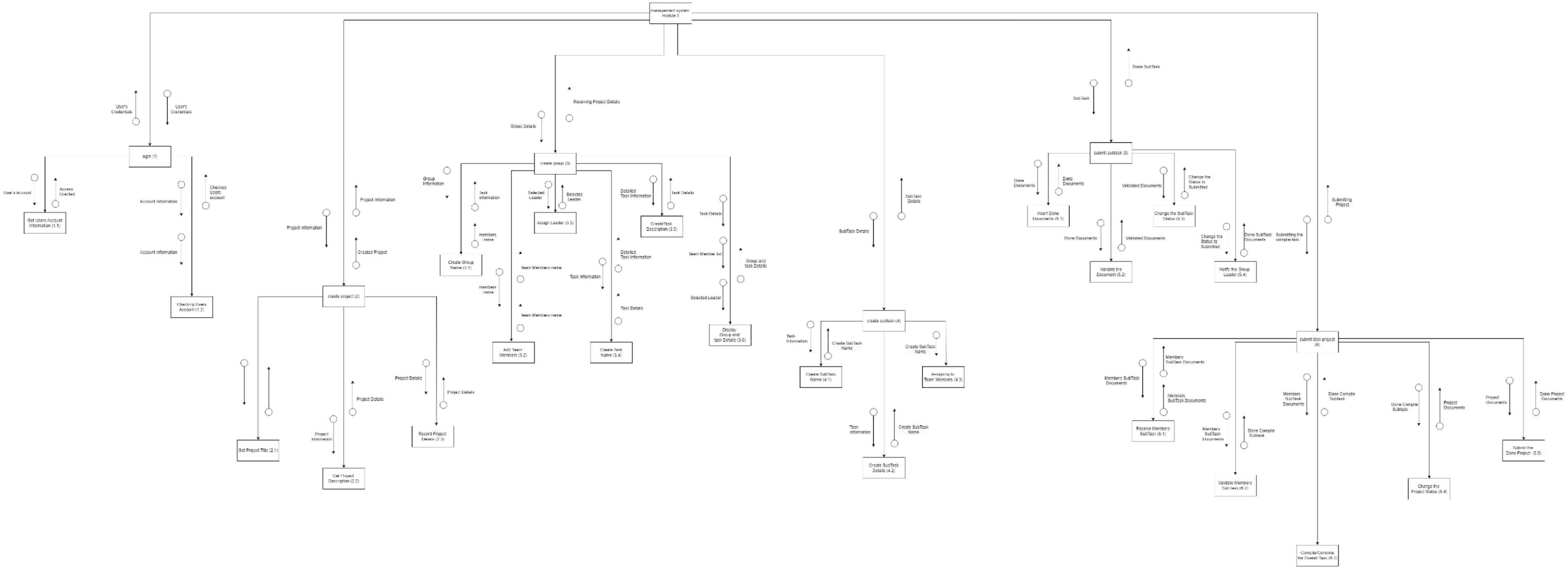
This table outlines how FlowB responds to various events, detailing the source (user actions or system triggers), trigger (specific user actions or system states), activity (processes initiated), response (system actions), and destination (affected modules or users). This ensures that the system can handle different scenarios effectively, such as task completion notifications or assignment deadlines.

Event	**Source**	**Trigger**	**Activity**	**Response**	**Destination**
User logs in	User	User submits credentials	Authenticate user	Return authentication result	User
Send message (Admin)	Admin	Admin sends message	Process and send message	Message sent	Chat system
Receive message	Chat system	New message for Admin	Display message	Message received	Admin
Submit completed task (Admin)	Admin	Admin submits completed task	Upload task details	Task details uploaded	System
Create Main Project	User/Admin	Project creation initiated	Store project information	Project information stored	Main Project DB
Create due date	User/Admin	Due date creation initiated	Specify and store due date	Due date specified and stored	Main Project DB
Create Group	User/Admin	Group creation initiated	Add group members	Group created with members	Group Members DB
Add/Remove Participant	User/Admin	Modify group members	Update group members list	members added/removed	Group Members DB
Assign Leader	User/Admin	Leader assignment initiated	Assign leader to group	Leader assigned	Group Members DB
Create Task	User/Admin	Task creation initiated	Store task details	Task details stored	Task DB
Assign Task	Group Leader	Task assignment initiated	Assign task to group	Task assigned to specific group	Group
Create Subtask	Group Leader	Subtask creation initiated	Store subtask details	Subtask details stored	Task DB

Assign Subtask	Group Leader	Subtask assignment initiated	Assign subtask to participants	Subtask assigned	Participants
Submit Subtask	Participant	Subtask submission initiated	Upload subtask details	Subtask details uploaded	System
Send message (Participant)	Participant	Participant sends message	Process and send message	Message sent	Chat system
Receive message (Participant)	Chat system	New message for Participant	Display message	Message received	Participant
Upload subtask	Participant	Subtask upload initiated	Upload subtask details	Subtask details uploaded	System

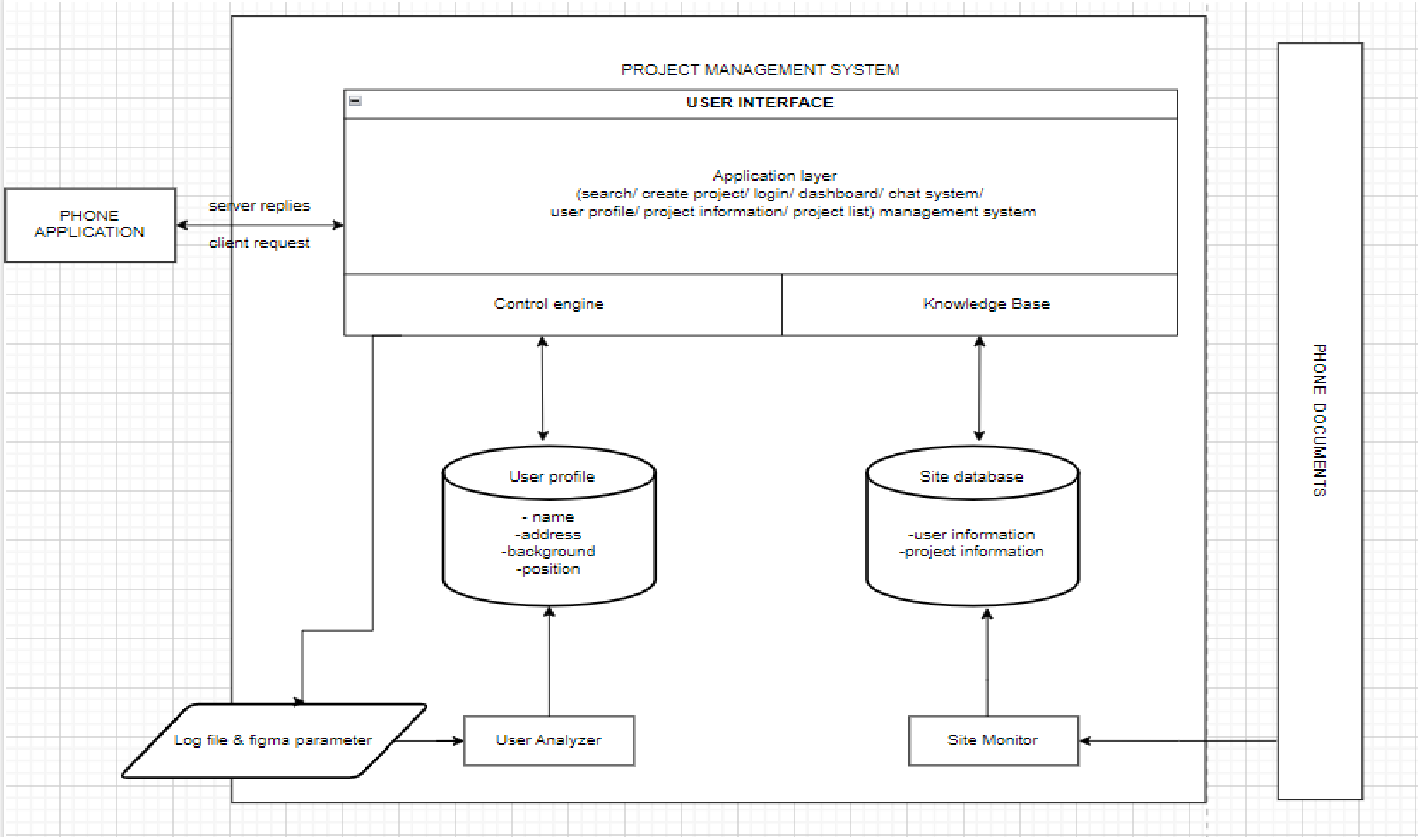
7.1.6 Structure Chart

This chart provides a hierarchical representation of FlowB’s modules and their interconnections, illustrating the overall system structure and flow of control from user interfaces to backend processes.



7.1.7 System Architecture

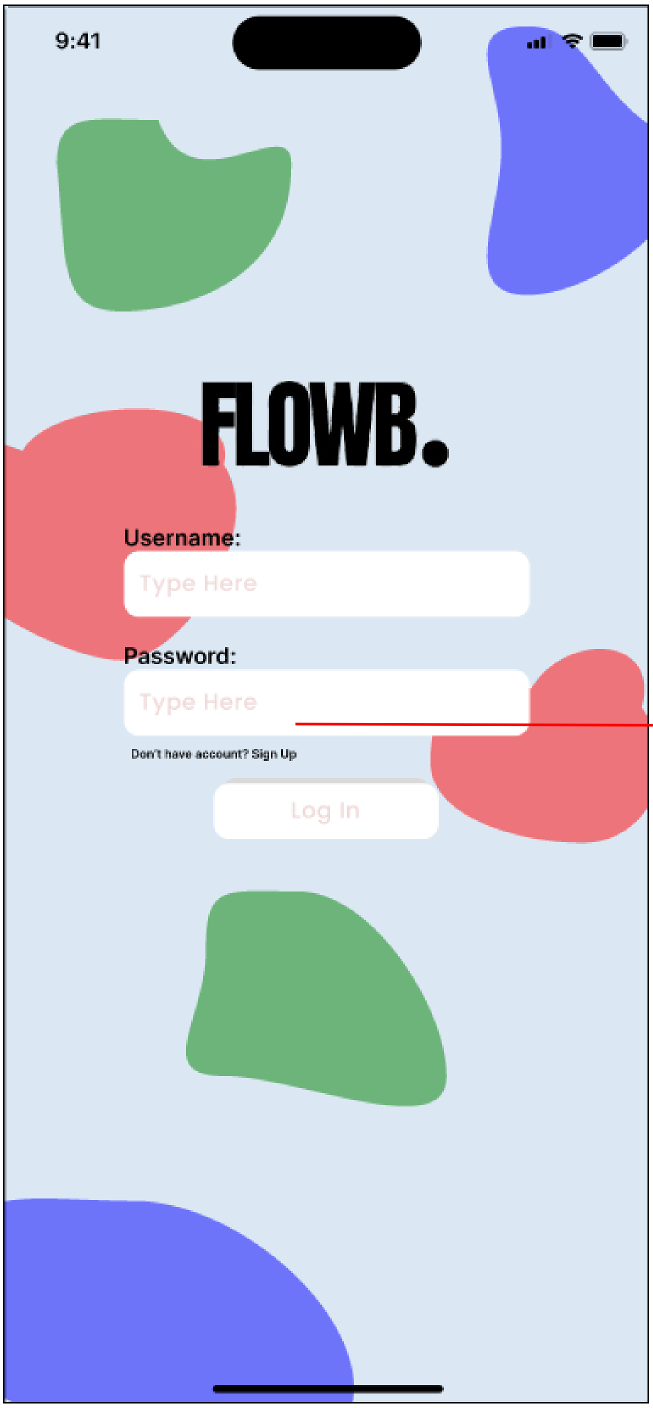
This section describes the physical layout of FlowB, including hardware components (servers, databases), network configurations (internal and external communications), and other infrastructural elements essential for system deployment and operation. It ensures that the system is scalable and reliable, supporting many concurrent users and real-time updates.



8. System WireFrame

Wireframes offer a clear visual guide of FlowB’s layout, showing how different elements like dashboards, task lists, and communication panels are organized and interact with each other.

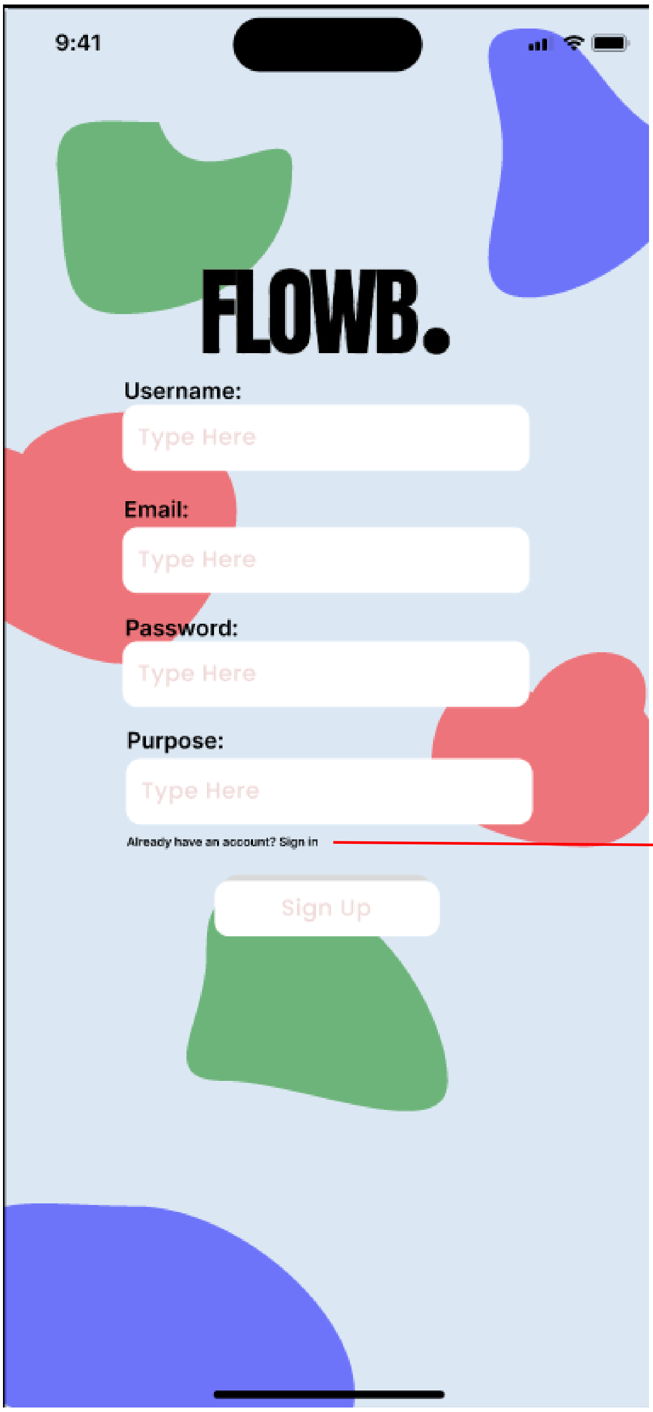
8.1 Login Page



In this Page the user can login their account if they have registered their account in the system. If they don’t have an account then they can click the sign-up button to create new account. If they do have it will go to the main page.

If the user wants to sign up, they can click this button

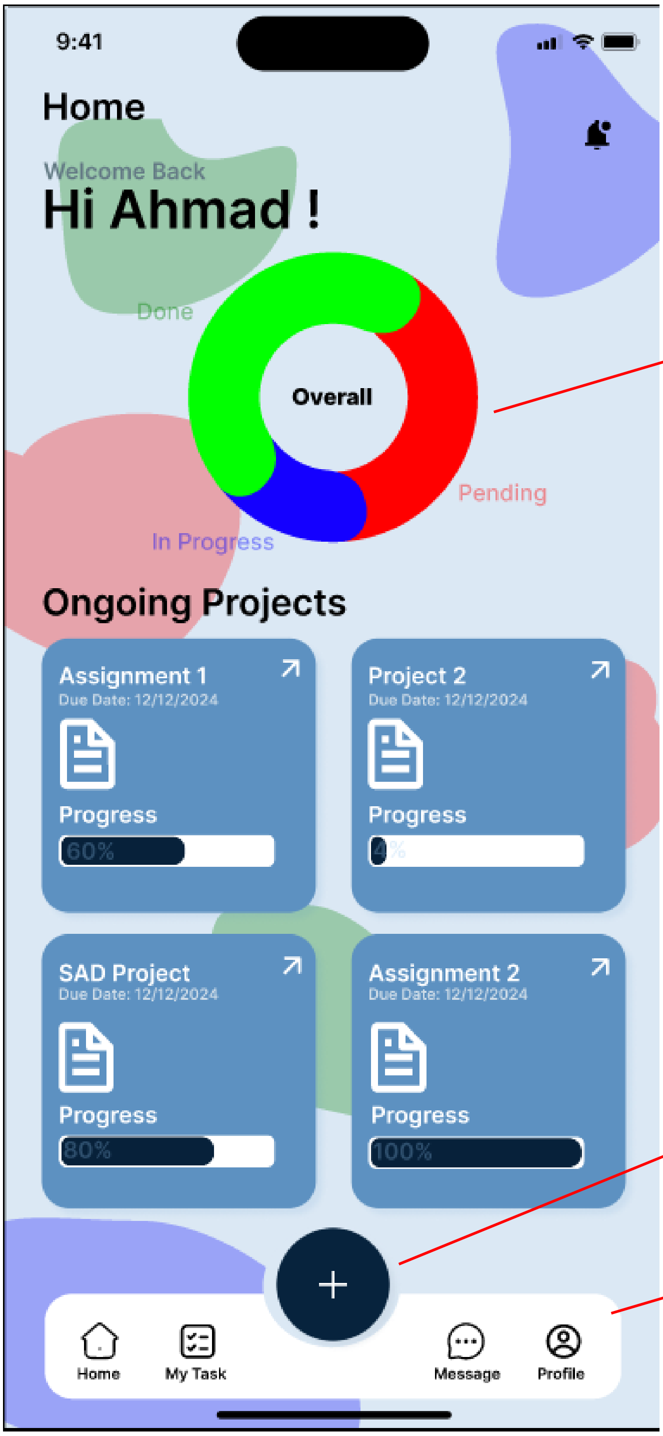
8.2 Sign Up Page



In this Page the user can fill up their credentials to create an account.

If the user already has an account, then they can just continue to the login page

8.3 Main Page



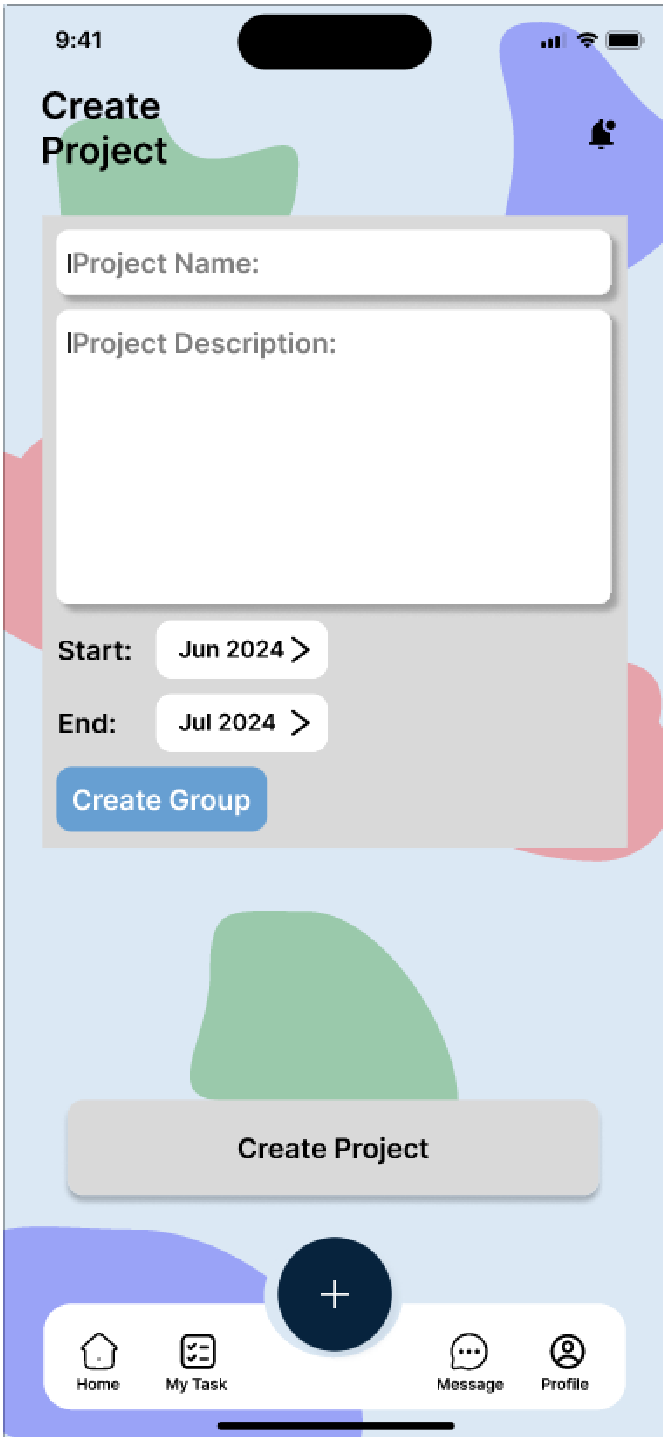
This is the main page of this app. This page covers a lot of the main function of the app. The users can create project, view the dashboard (Done, Pending and Ongoing) projects. Plus, there a few button that will direct to other pages which are My Task, Message and User's Profile.

The dashboard

The Create Project Button

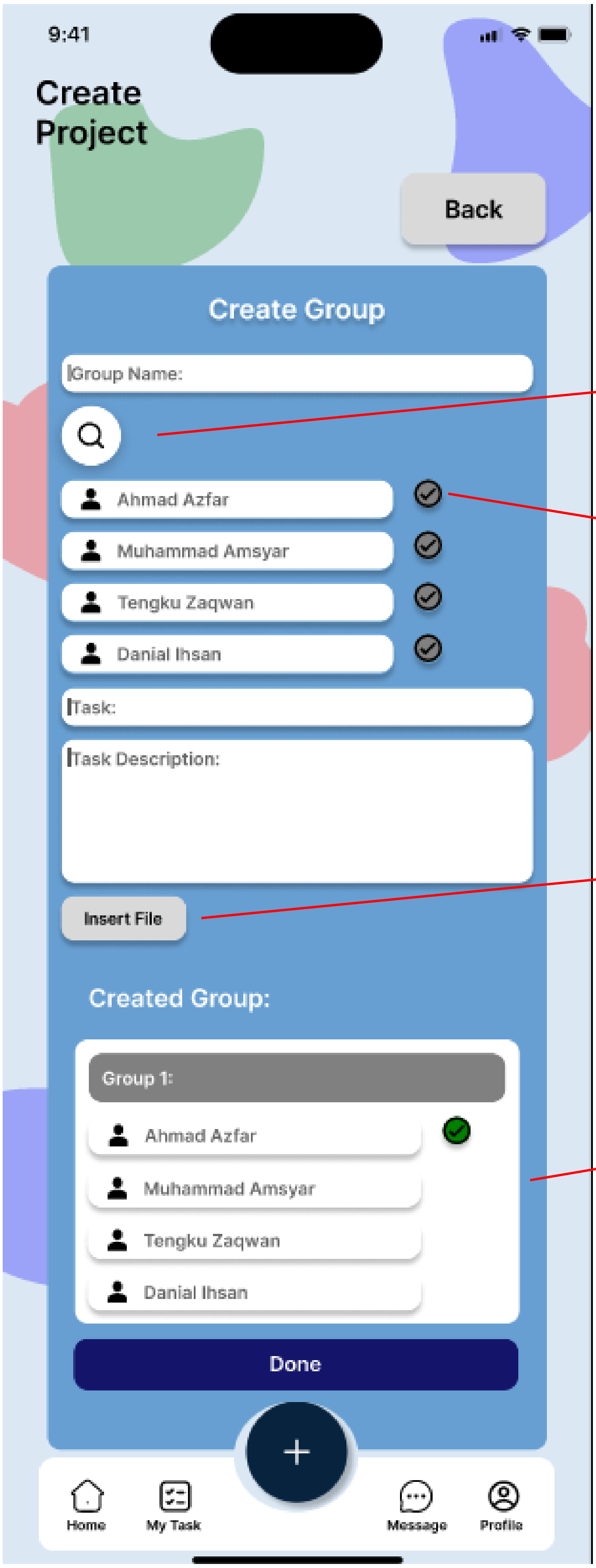
The Menu Button

8.4 Create Project Page



This Page, the user will able to create a project. The user's need to fill up the Project Name, and its description. They also can pick when the project starts and end. But before they create the project, they need to create groups based on the project requirements.

8.5 Create Group Page



This page is where the admin can create the groups. They need to enter the name of the groups, and insert the members to each group. They also need to choose any one of the team members to be the leader of the group Then the user needs to fill up the specific task for each of the groups. If done, click the confirm button to show that the group has been created.

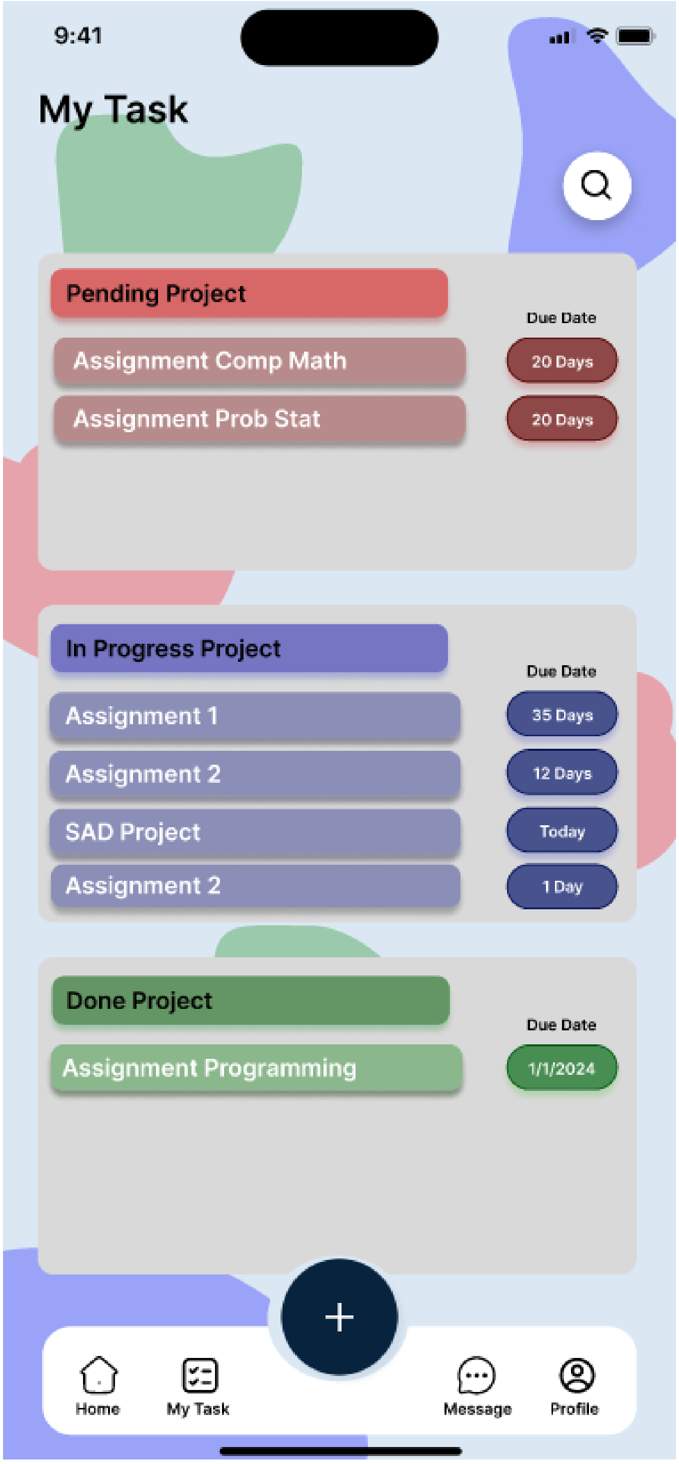
Search function to search the usernames of the team members

This button is to assign who will be the group leader. Each group can only choose 1 group leader. The button will change to green if the user has been assigned to be the leader.

Insert File function to insert any file that is needed for the project

Confirmation that the group has been created

8.6 My Task Page



9:41

My Task

Pending Project

	Due Date
Assignment Comp Math	20 Days
Assignment Prob Stat	20 Days

In Progress Project

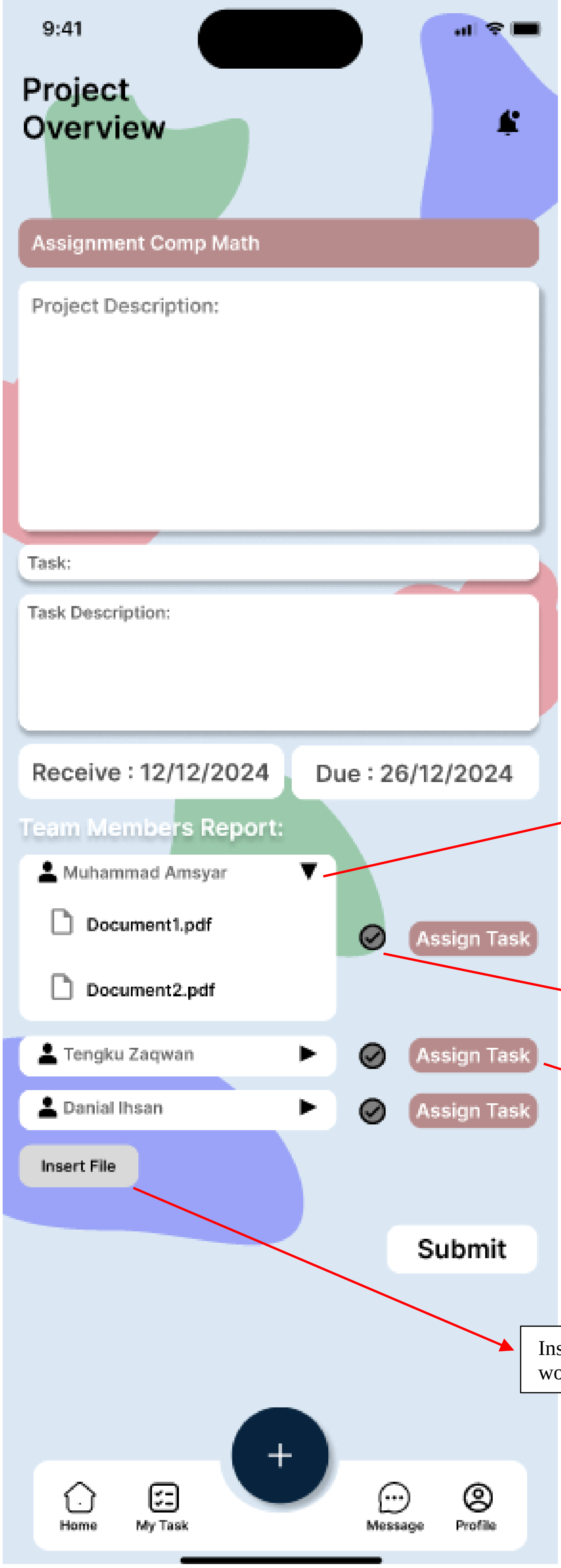
	Due Date
Assignment 1	35 Days
Assignment 2	12 Days
SAD Project	Today
Assignment 2	1 Day

Done Project

	Due Date
Assignment Programming	1/1/2024

Here in this page, it will show the list of pending, In progress and finish project. The color represents the state of the project. Each of the project can be click to show the project report.

8.7 Project Overview Page



The project overview, is where the users can see what they need to do for the project. However, here is the user interface for the group leader. There are assign task button for the leader to assign subtask to its team members. Plus, the leader also can see if the team members sent back the task or not. If the tick button turns green then it will indicate the team members already submit to the leader. If the project is done then, the leader can submit it to the admin.

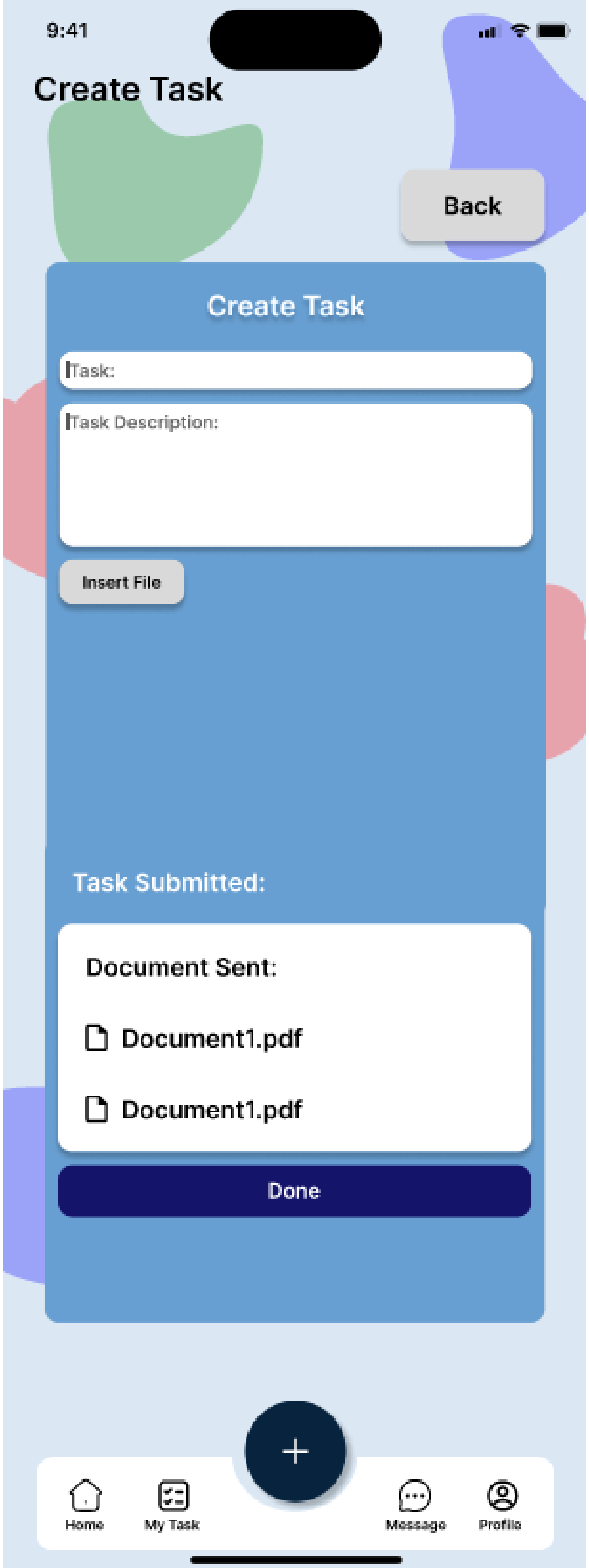
Here are the submitted subtask to the leader

Submit indicator

Assign task button to a specific team member

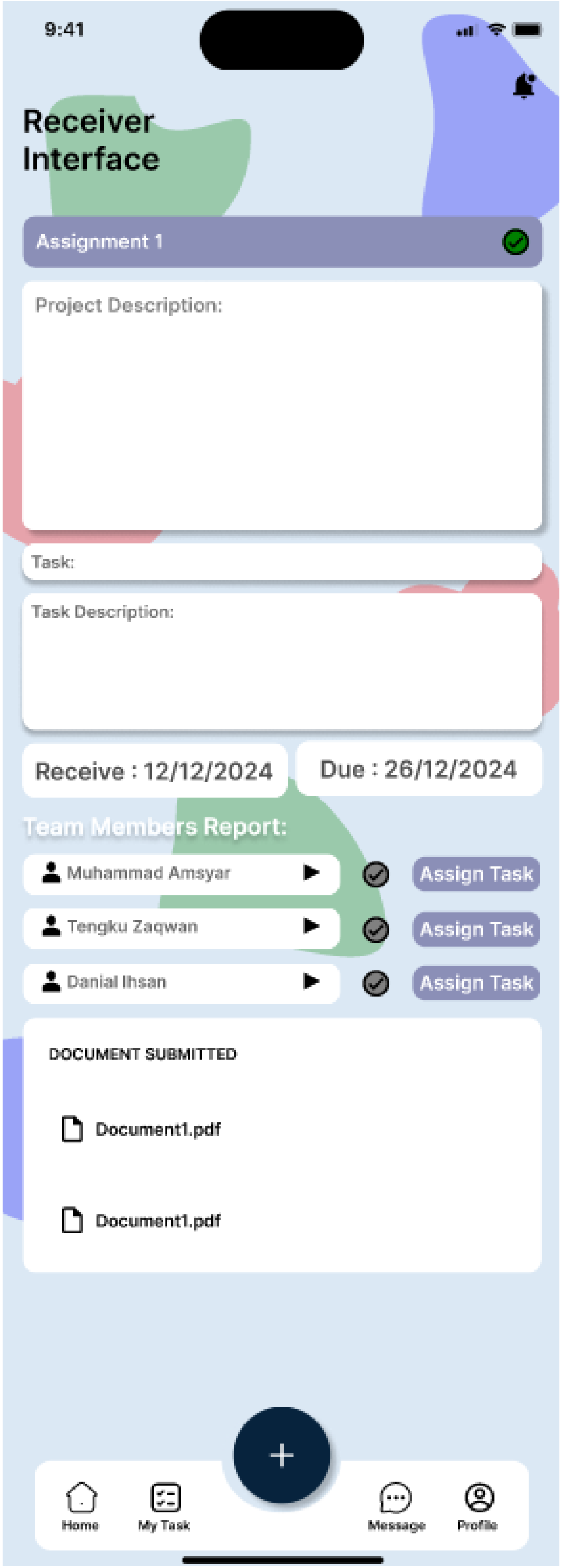
Insert file to submit the work

8.8 Create SubTask Page



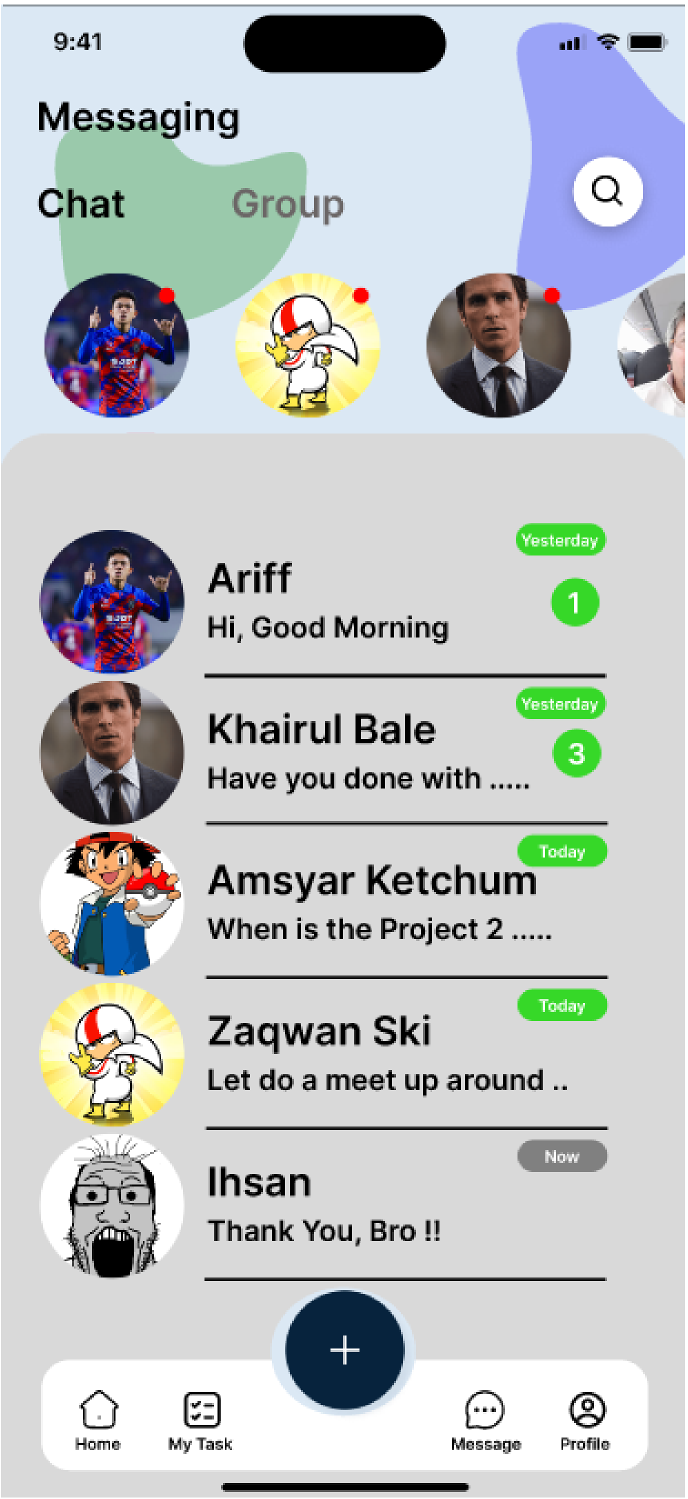
Here is where the leader can create the sub task for each team members.

8.9 The Receiver of The Project Page



If the task is finish and submitted the group leader will see this page. The admin also will see the same UI.

8.10 Direct Chat Page



9:41

Messaging

Ariff
Hi, Good Morning
Yesterday
1

Khairul Bale
Have you done with .....
Yesterday
3

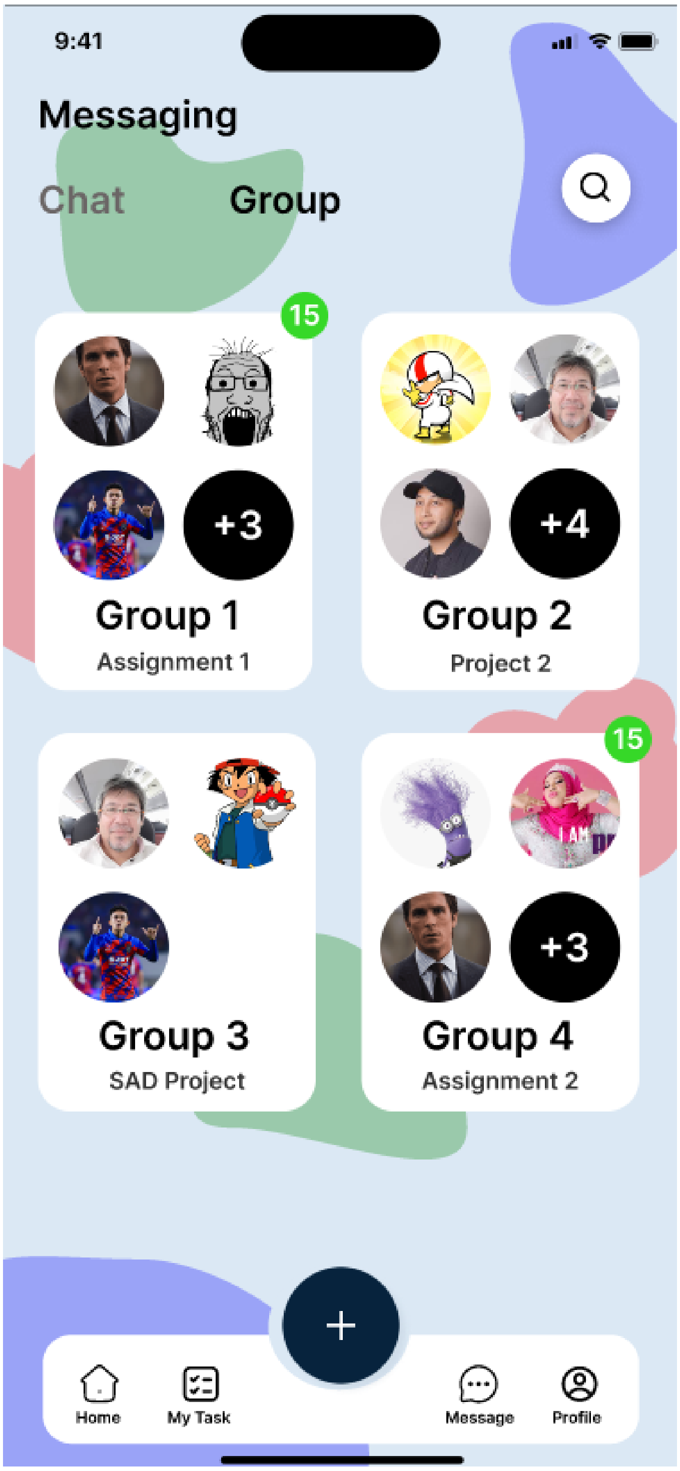
Amsyar Ketchum
When is the Project 2 .....
Today

Zaqwan Ski
Let do a meet up around ..
Today

Ihsan
Thank You, Bro !!
Now

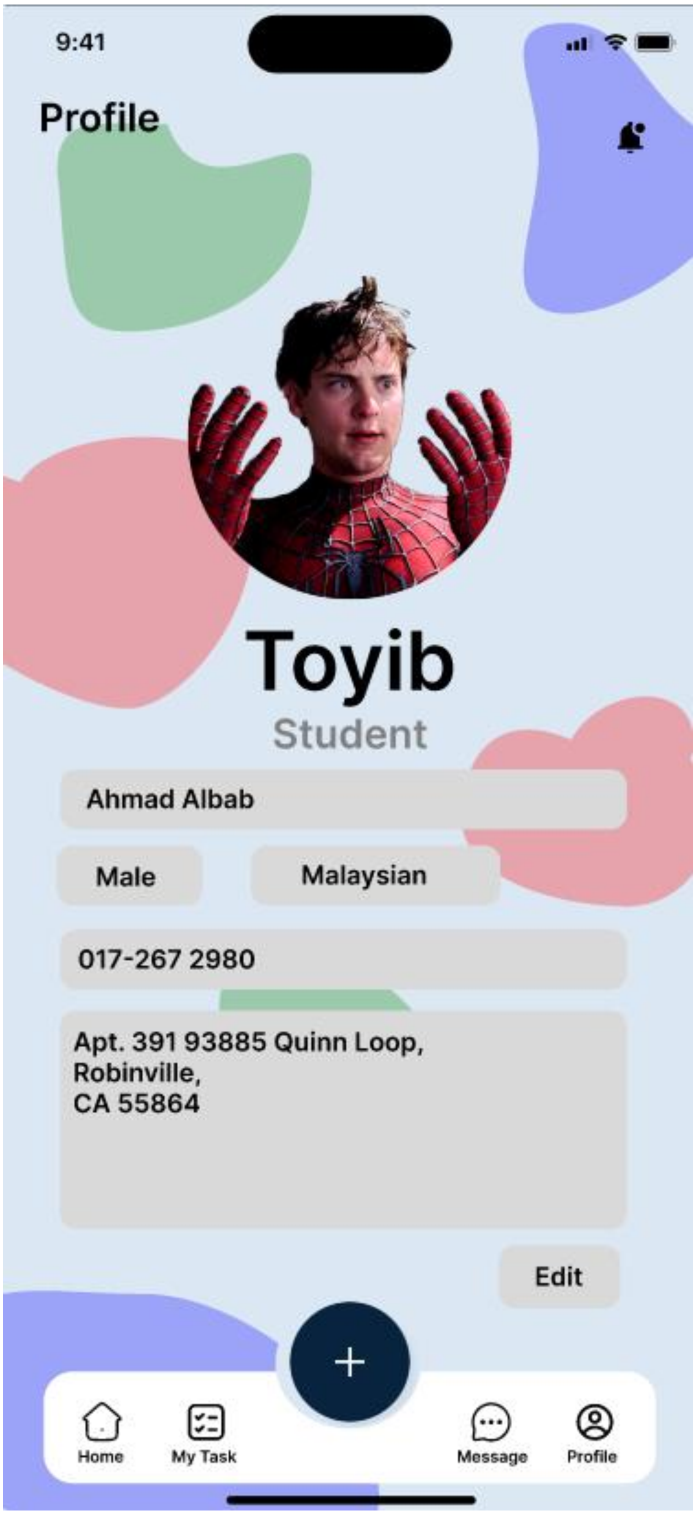
The Users also can just interact with each team members directly in the app.

8.11 Group Chat Page



The Users also will able to chat in groups. The group is created automatically or manually based on how the user want after creating the project.

8.12 User’s Profile Page



Toyib

Student

Ahmad Albab

Male

Malaysian

017-267 2980

Apt. 391 93885 Quinn Loop,
Robinville,
CA 55864

This the page where it will display the position of the account and the user’s information.

9. Summary

9.1 Achievements

1) Comprehensive System Design:

   The project successfully developed a detailed Physical System Design, incorporating key components such as the Physical DFD TO-BE system, CRUD Matrix, Event Response Table, Structure Chart, and System Architecture. This detailed planning ensures robust data management, system scalability, and maintainability.

2) Intuitive User Interface:

   The System WireFrame section provides a well-structured visual guide for the user interface. It includes detailed wireframes for key functionalities such as login, sign-up, project creation, task management, and communication. This facilitates an intuitive and efficient user experience.

3) Modular Approach:

   The system’s design adopts a modular approach, partitioning the system into distinct modules responsible for specific functionalities. This enhances the maintainability and scalability of the system, allowing for easier updates and improvements.

4) Effective Communication Tools:

   The inclusion of direct and group chat features within the system ensures seamless communication among team members, enhancing collaboration and coordination.

5) Detailed Task and Project Management:

   The project overview and my task pages provide comprehensive views of project and task statuses, allowing users to track progress, assign subtasks, and manage deadlines effectively.

9.2 Limitations

1) Scalability Concerns:

   While the system architecture ensures scalability, the performance under high user load or large data volumes has not been thoroughly tested. This might pose challenges as the number of users and projects increases.

2) Limited Real-time Features:

   The system’s real-time capabilities, such as instant updates and notifications, may be limited. Enhancing these features could improve user experience and responsiveness.

3) User Experience Refinement:

Although the wireframes provide a clear structure, further refinement and user testing are required to ensure that the interface meets user needs and expectations effectively.

4) Security Measures:

The document does not extensively cover security protocols and measures. Ensuring data security and user privacy is critical, and additional focus on security features is necessary.

9.3 Contributions

1) Structured Design Framework:

The project provides a comprehensive framework for designing a task management system, including detailed diagrams and matrices that can serve as a reference for future projects.

2) User-centric Interface Design:

The detailed wireframes contribute to the development of user-centric interfaces, promoting intuitive navigation and efficient task management.

3) Modular System Architecture:

The modular approach in system design contributes to easier maintenance and scalability, offering a blueprint for developing scalable and maintainable systems.

9.4 Suggestions for Future Work

1) Enhance Real-time Features:

Implement and test real-time features such as instant updates, notifications, and real-time collaboration tools to improve the system's responsiveness and user experience.

2) Focus on Security:

Integrate robust security measures into the system design, including data encryption, user authentication, and access control. Conduct security testing to identify and mitigate potential vulnerabilities.

3) Advanced Analytics and Reporting:

Develop advanced analytics and reporting features to provide users with deeper insights into project progress, team performance, and task management efficiency. This can aid in decision-making and process improvements.