System Design Document
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Sprint 1

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1. Introduction

Overview

Moody, a To-Do List Application is a GUI-based Java program that enables users to manage their tasks based on priority, track completed tasks, and modify user settings. This application provides a user authentication feature with a login screen, task creation and categorization by priority, task completion tracking, and user settings management.

2. Goals

- Allow users to log in, create and manage tasks, and reset passwords.
- Categorize tasks into different priority levels and provide tabs for easy navigation.
- Provide a simple user interface using Java Swing components.

3. System Architecture

The application is a standalone desktop GUI using Java Swing for user interface components. It is composed of two main parts:

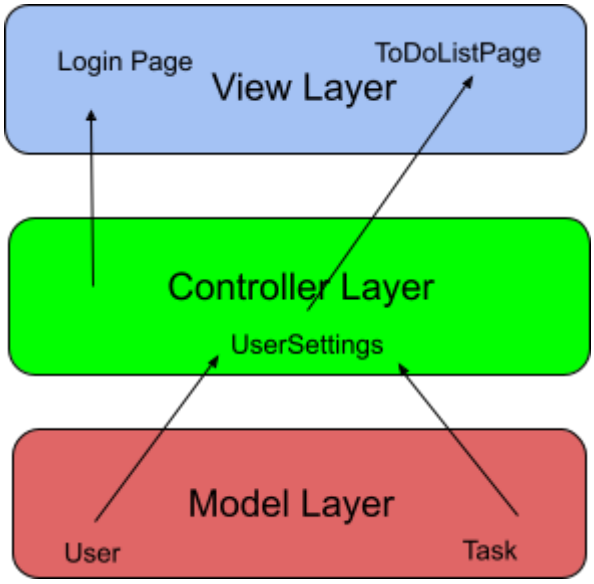
1. Login Module – Handles user authentication and displays the login page.
2. To-Do List Module – Allows users to add, categorize, and manage tasks within different priority tabs and settings

4. Class-Responsibility-Collaborator (CRC) Cards

Class	Responsibilities	Collaborators
LoginPage	Display login form; verify user credentials against `User` data; redirect to `ToDoListPage` upon successful login.	`User`, `ToDoListPage`
User	Manage and store user credentials; validate and update passwords.	`LoginPage`, `ToDoListPage`
ToDoListPage	Display main UI for task management; organize tasks into priority tabs; manage completed tasks and user settings.	`User`, `LoginPage`
Task	Represent individual tasks with details like name, priority, and completion	`ToDoListPage`

	status; manage task behaviors like updating completion.	
UserSettings	Handle user settings management, such as password reset and logout; interact with `User` for credential updates.	`User`, `ToDoListPage`

5. Software Architecture Diagram



Interactions:

- `LoginPage` calls methods on `User` to verify credentials.
- Upon successful login, `LoginPage` redirects to `ToDoListPage`.
- `ToDoListPage` interacts with `UserSettings` for tasks and settings changes.
- `UserSettings` invokes `User` for password updates and handles logouts.
- `ToDoListPage` accesses `Task` to manage task statuses and organization.

6. Detailed Design

6.1 Login Flow

1. User Input: The `LoginPage` displays text fields for username and password entry.
2. Authentication: Upon clicking the login button, the `LoginPage` verifies the input password against the `User` object's stored password.
3. Access Control: If verification succeeds, the application closes the login page and opens the `ToDoListPage`.

6.2 Task Management Flow

1. Task Creation:
    - User enters task details and selects priority in the `ToDoListPage`.
    - Clicking "Add Task" triggers `addTask()` to create a task entry panel.
    - The new task is displayed in the appropriate tab based on its priority.
2. Task Completion:
    - Selecting the checkbox next to a task marks it as completed.
    - Completed tasks are moved to the "Completed Tasks" tab through `moveToCompletedTasks()`, and the checkbox is disabled.
3. Task Deletion: This feature could be added in future versions if needed, allowing users to remove tasks.

6.3 User Settings Flow

1. Password Reset:
    - In the User Settings tab, the user enters the current password and a new password.
    - Clicking "Reset Password" verifies the current password; if correct, it updates the password using `setPassword()`.
    - A confirmation message is displayed for success or failure.
2. Logout:
    - Clicking "Logout" closes the `ToDoListPage` and reopens the `LoginPage` for authentication.

7. User Interface Design

Login Page (LoginPage)

- Components:
    - Username and password fields.
    - Login button to validate credentials.
    - Forgot password button (future enhancement).

Main Task Management Page (ToDoListPage)

- Components:
    - Tabbed Pane for categories (Stressed, Productive, Completed Tasks, User Settings).

    - Task Input Panel with text field, priority dropdown, and add button.
    - Priority Panels for displaying tasks based on their priority, using scrollable sections.

User Settings Panel

- Components:
    - Fields to enter the current and new password.
    - Reset password button to update credentials.
    - Logout button to close the `ToDoListPage` and reopen `LoginPage`.

8. Future Enhancements

- Task Due Dates: Add fields for task deadlines to help users manage time-bound tasks.
- Recurring Tasks: Enable users to set recurring tasks that reappear after completion.
- Reminder Notifications: Provide alerts or reminders for high-priority or due tasks.
- Persistent Data Storage: Integrate file-based or database storage to save tasks and user credentials across sessions.