

Chapter One: Requirement Analysis (Use Case)

The initial phase of developing the Smart Task Controller system involves an in-depth analysis of how diverse user types interact with the application. This stage is critical as it lays the foundation for understanding the system's functional requirements and provides a structured visual representation of interactions between users and the system through a use case model. This chapter meticulously identifies each actor's goals, responsibilities, and the system's responses to their actions, ensuring a comprehensive blueprint for the project's development.

1.1 Functional Overview

The Smart Task Controller is a sophisticated web-based application designed to streamline task management for both individual users and administrators. It offers a robust set of features, including task creation, editing, searching, and viewing, alongside advanced functionalities such as permission control, calendar synchronization, and customizable reminder alerts. The system aims to enhance productivity by providing an intuitive interface and automated notifications, catering to the needs of users ranging from personal task organizers to organizational administrators.

1.2 Identifying the Actors

The system involves two primary actors, each with distinct roles:

- **User:** A registered individual who leverages the application to manage personal or assigned tasks. This actor performs operations such as creating new tasks with detailed descriptions, editing existing tasks, searching for specific tasks using keywords, viewing a comprehensive task list, setting reminders for due dates, modifying reminders, synchronizing tasks with external calendar applications, and receiving timely notifications.
- **Admin:** A privileged user with elevated responsibilities, including managing other users (e.g., adding or removing them), distributing tasks across the user base, setting or modifying user permissions, inviting new users to the system, overseeing task progress, adding comments to tasks, and reviewing user profiles for administrative purposes.

1.3 Use Case Diagram Components

Actors: User, Admin

Use Cases: A detailed list of functionalities includes:

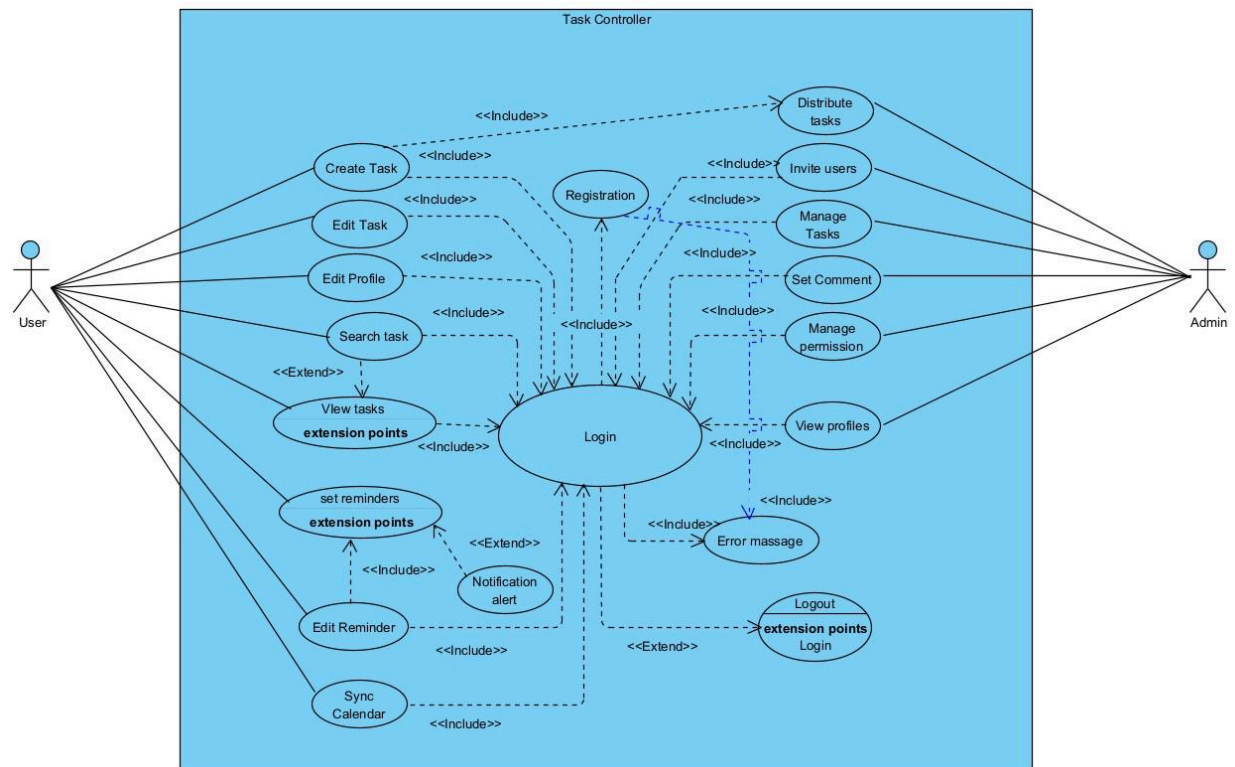
- Login: Authenticate user identity.
- Logout: Terminate the current session.
- Registration: Establish a new user account.
- Create Task: Initiate a new task entry.
- Edit Task: Modify an existing task's details.
- Edit Profile: Update personal account information.
- Search Task: Locate tasks using search criteria (extends View Tasks).
- View Tasks: Display all tasks associated with the user (extension point).
- Set Reminders: Schedule alerts for task deadlines (extension point).
- Edit Reminder: Adjust reminder settings or timing.
- Notification Alert: Deliver alerts when reminders are triggered (extends Set Reminders).
- Sync Calendar: Integrate tasks with an external calendar.
- Error Message: Provide feedback for failed operations.
- Distribute Tasks: Assign tasks to other users (Admin).
- Invite Users: Add new users to the system (Admin).
- Manage Tasks: Monitor and control task statuses (Admin).
- Set Comment: Add notes to tasks (Admin).
- Manage Permission: Define user access levels (Admin).
- View Profiles: Access and review user details (Admin).

1.4 Detailed Use Case Flow

The interaction flow begins when a user or admin accesses the login page to authenticate their identity. If the user is not yet registered, they are directed to the registration process, which includes email verification to ensure account validity. Upon successful login, the user is redirected to a personalized dashboard, serving as the central hub for task management. Users can create, edit, search, and view tasks, set reminders with specific times, synchronize their tasks with external calendar systems like Google Calendar, and receive automated alerts. Administrators have additional privileges, allowing them to manage the user base, distribute tasks equitably, control access permissions, invite new members, monitor task progress, add comments for clarity, and review user profiles to maintain system integrity.

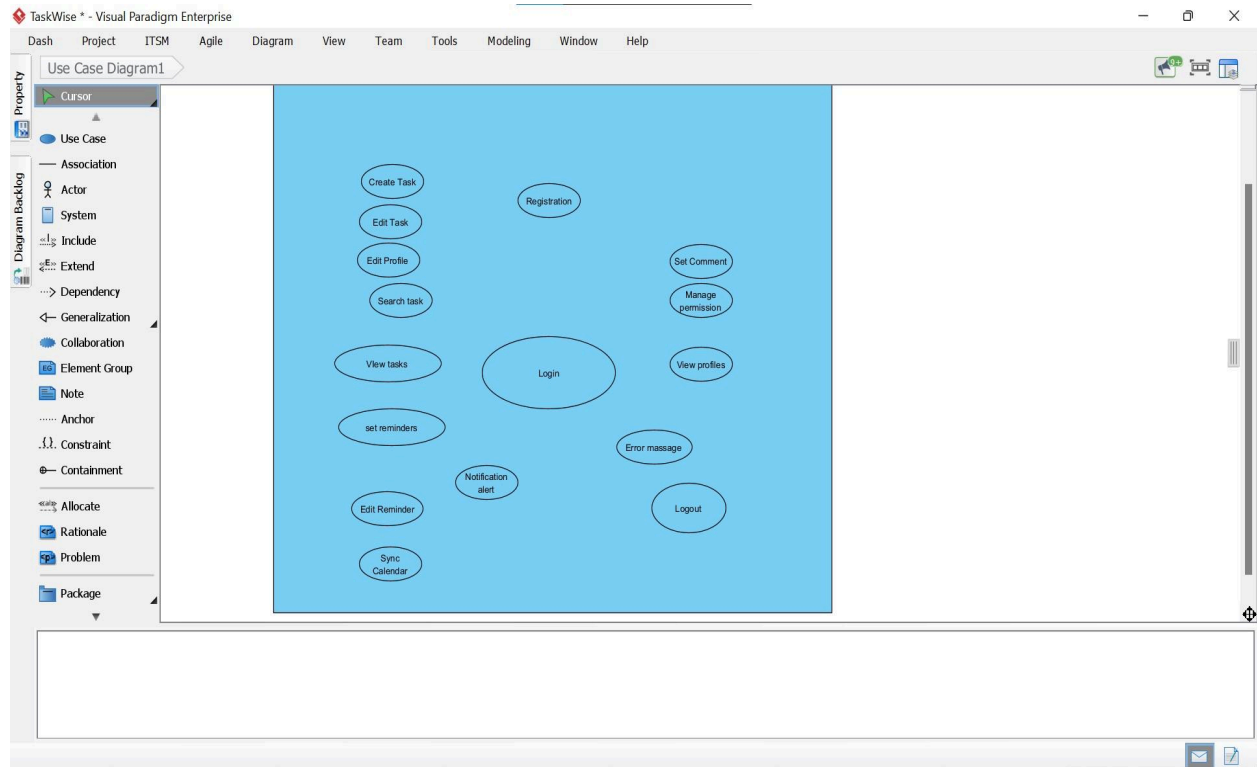
1.5 Example of Use Case Model

The use case diagram visually represents the dynamic interactions between the User and Admin actors and the Smart Task Controller system. It highlights core functionalities such as Login, Registration, and task management, using "extends" relationships (e.g., Search Task extends View Tasks for advanced filtering) and "includes" relationships (e.g., Login includes Error Message for invalid attempts). This diagram serves as a roadmap for developers, ensuring all user interactions are accounted for.

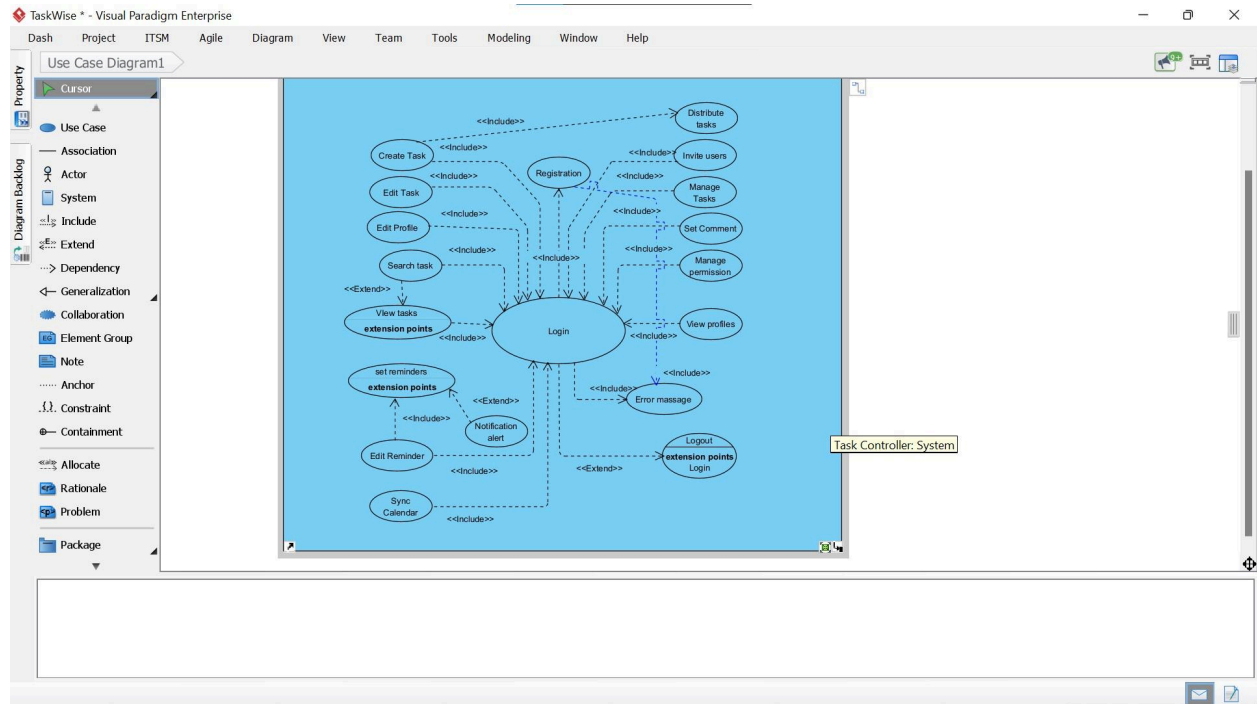


+ Steps to draw use case

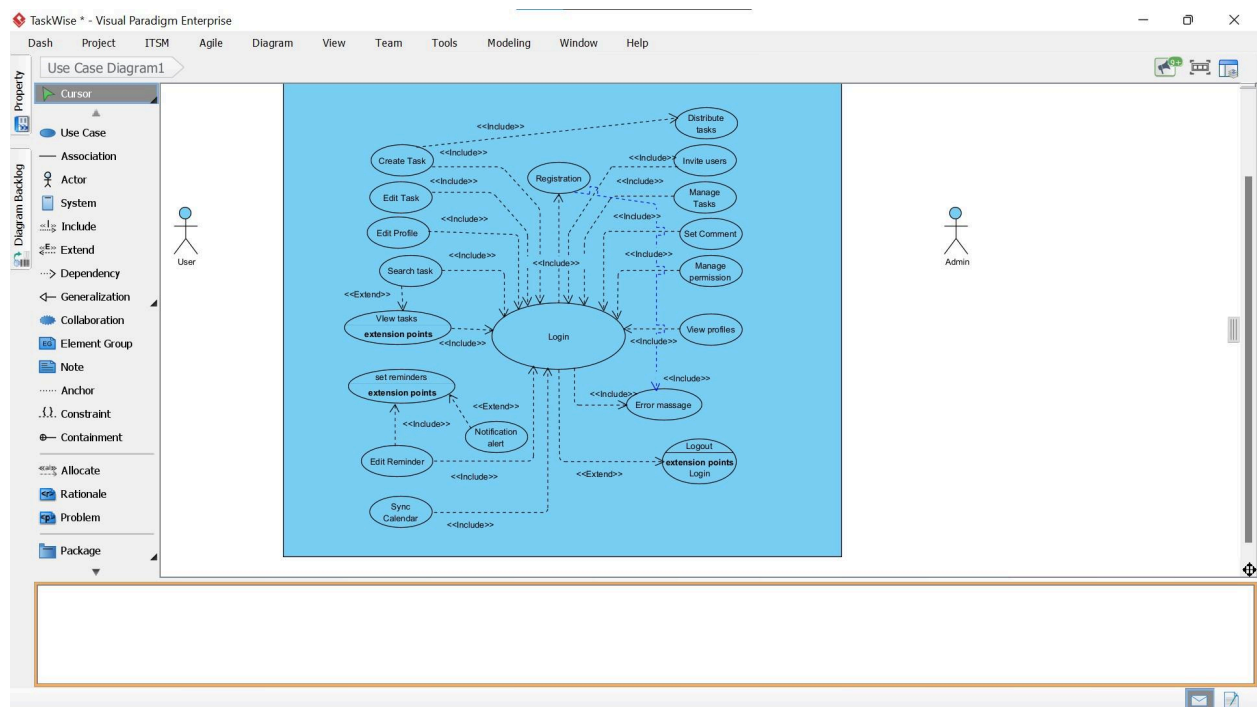
Step 1: draw the system and the use cases.



Step 2: join them with appropriate conjunction.



Step 3: put the users and finally join them in the use case there belongs to.



1.6 Use Case Descriptions and Template Table

This section provides detailed narratives for each use case, explaining the purpose, preconditions, postconditions, and potential exceptions to ensure a thorough understanding of system behavior.

Use Case ID	UC-01	
Use Case Name	Login	
Actor	User / Admin	
Summary	This use case describes how a registered User or Admin logs into the Smart Task Controller system by providing valid credentials.	
Precondition	The actor must already have an account with valid credentials.	
Basic Scenario	Actor Action	System Response
	Step 1: The actor opens the login page. Step 3: The actor enters their email and password Step 5: The actor clicks "Login".	Step 2: The system displays the login form. Step 4: The system processes the credentials. Step 6: The system validates and redirects to the dashboard.
Alternative Scenario	If credentials are incorrect: <ul style="list-style-type: none">• The system displays an error.• The actor retries or recovers account.	
Post Condition	The user is logged in and redirected to the dashboard.	

Use Case ID	UC-02	
Use Case Name	Registration	
Actor	User	
Summary	Allows a new user to create an account and verify via email.	
Precondition	The email must not already exist.	
Basic Scenario	Actor Action	System Response
	Step 1: User goes to home page. Step 3: Clicks "Sign Up". Step 5: Enters name, email, password. Step 7: Submits form.	Step 2: Home page loads. Step 4: Registration form displays. Step 6: System validates input. Step 8: System stores data and sends verification email.
Alternative Scenario	If email exists or invalid input: <ul style="list-style-type: none"> Error message prompts user to retry. 	
Post Condition	The account is created and ready for verification.	

Use Case ID	UC-03
Use Case Name	Create Task

Actor	User	
Summary	Enables a user to add a new task with specific details.	
Precondition	User must be logged in.	
Basic Scenario	Actor Action	
	Step 1: User clicks "Create Task". Step 3: Fills form with title, due date, etc. Step 5: Submits the form.	Step 2: Task creation form appears. Step 4: System validates. Step 6: Task is saved and confirmed.
Alternative Scenario	Invalid or missing input: <ul style="list-style-type: none">Error prompts user to correct.	
Post Condition	Task appears in user's task list.	

Use Case ID	UC-04
Use Case Name	Edit Task
Actor	User
Summary	Modify details of an existing task.
Precondition	Task must exist and be accessible.

Basic Scenario	Actor Action	System Response
	Step 1: Selects a task. Step 3:Edits task fields. Step 5:Submits changes.	Step 2: Form loads with task details. Step 4: System validates input. Step 6: Task is updated and confirmed.
Alternative Scenario	Task not found or invalid input: <ul style="list-style-type: none"> System shows error. 	
Post Condition	Task is updated in the database.	

Use Case ID	UC-05	
Use Case Name	Edit Profile	
Actor	User	
Summary	Allows users to update personal information.	
Precondition	User must be logged in.	
Basic Scenario	Actor Action	
	Step 1: Clicks on "Edit Profile". Step 3: Edits personal details. Step 5: Submits the form.	Step 2: System displays profile form. Step 4: System validates input. Step 6: System updates profile.
Alternative Scenario	Invalid input:	

	<ul style="list-style-type: none"> Error prompts correction.
Post Condition	User profile is updated.

Use Case ID	UC-06	
Use Case Name	Search Task	
Actor	User	
Summary	Enables users to search tasks using keywords.	
Precondition	User must be logged in and have tasks.	
Basic Scenario	Actor Action	System Response
	Step 1: User enters keyword. Step 3: Views search results..	Step 2: System filters tasks. Step 4: Displays matching tasks.
Alternative Scenario	No results: <ul style="list-style-type: none"> System displays "No results found." 	
Post Condition	Search results are shown.	

Use Case ID	UC-07	
Use Case Name	View Tasks	
Actor	User	
Summary	Displays all tasks associated with the user.	
Precondition	User must be logged in.	
Basic Scenario	Actor Action	System Response
	Step 1: Opens task list.	Step 2: Retrieves and displays tasks.
Alternative Scenario	No tasks found: <ul style="list-style-type: none"> • Message displays "No tasks." 	
Post Condition	Tasks are visible for management.	

Use Case ID	UC-08	
Use Case Name	Set Reminders	
Actor	User	

Summary	Allows users to create reminders for tasks.	
Precondition	Task must exist.	
Basic Scenario	Actor Action	System Response
	Step 1: Selects a task. Step 3: Sets reminder details.	Step 2: System shows reminder options. Step 4: Reminder saved.
Alternative Scenario	Invalid time: <ul style="list-style-type: none"> Error prompts correction. 	
Post Condition	Reminder is scheduled.	

Use Case ID	UC-09	
Use Case Name	Edit Reminder	
Actor	User	
Summary	Modify reminder timing or delivery method.	
Precondition	Reminder must exist.	
Basic Scenario	Actor Action	
	Step 1: Selects existing reminder. Step 3: Modifies details.	Step 2: Displays reminder details. Step 4: System saves changes.

Alternative Scenario	<ul style="list-style-type: none"> Reminder not found: <ul style="list-style-type: none"> Error is displayed.
Post Condition	Reminder is updated.

Use Case ID	UC-10	
Use Case Name	Notification Alert	
Actor	System	
Summary	Sends alerts when reminders are triggered.	
Precondition	Active reminder exists.	
Basic Scenario	Actor Action	System Response
	(system)	Step 1: Scheduler checks reminders. Step 2: Notification is sent.
Alternative Scenario	Delivery fails: <ul style="list-style-type: none"> Retry or fallback is used. 	
Post Condition	Notification is received.	

Use Case ID	UC-11
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Use Case Name	Sync Calendar	
Actor	User	
Summary	Sync tasks with external calendar.	
Precondition	User must have access to calendar.	
Basic Scenario	Actor Action	System Response
	Step 1: Clicks sync option.	Step 2: Authenticates with calendar.
	Step 3: Confirms permission.	Step 4: Calendar is updated.
Alternative Scenario	Permission denied: <ul style="list-style-type: none"> • Sync fails and shows error. 	
Post Condition	Tasks synced to external calendar.	

Use Case ID	UC-12
Use Case Name	Logout
Actor	User / Admin
Summary	Ends the user session.

Precondition	User must be logged in.	
Basic Scenario	Actor Action	System Response
	Step 1: Clicks logout.	Step 2: System asks for confirmation.
	Step 3: Confirms logout.	Step 4: Session ends and redirects to home.
Alternative Scenario	Cancels logout: <ul style="list-style-type: none"> User stays logged in. 	
Post Condition	User is logged out.	

Use Case ID	UC-13	
Use Case Name	Distribute Tasks	
Actor	Admin	
Summary	Admin assigns tasks to users.	
Precondition	Admin is logged in and data exists.	
Basic Scenario	Actor Action	
	Step 1: Selects task and user.	Step 2: Task is assigned and user notified.
Alternative Scenario	User not found: <ul style="list-style-type: none"> Error is shown. 	

Post Condition	Task is assigned.
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Use Case ID	UC-14	
Use Case Name	Invite Users	
Actor	Admin	
Summary	Adds new users by invitation.	
Precondition	Admin has invite rights.	
Basic Scenario	Actor Action	System Response
	Step 1: Enters email and role.	Step 2: Sends invitation or creates user.
Alternative Scenario	Invalid email: <ul style="list-style-type: none"> Error is shown. 	
Post Condition	User is invited.	

Use Case ID	UC-15
Use Case Name	Manage Tasks

Actor	Admin	
Summary	Monitors and updates tasks.	
Precondition	Admin is logged in.	
Basic Scenario	Actor Action	
	Step 1: Opens task management. Step 3: Updates statuses.	Step 2: Displays tasks. Step 4: Changes are saved.
Alternative Scenario	Task not found: <ul style="list-style-type: none"> Error is shown. 	
Post Condition	Task status is updated.	

Use Case ID	UC-16
Use Case Name	Set Comment
Actor	Admin
Summary	Adds comment to a task.
Precondition	Task must exist.

Basic Scenario	Actor Action	System Response
	Step 1: Opens a task. Step 3: Adds comment.	Step 2: Comment field appears. Step 4: Comment is saved.
Alternative Scenario	Empty comment: <ul style="list-style-type: none"> Error is shown. 	
Post Condition	Comment is stored.	

Use Case ID	UC-17	
Use Case Name	Manage Permission	
Actor	Admin	
Summary	Changes user roles and access levels.	
Precondition	Admin is logged in.	
Basic Scenario	Actor Action	System Response
	Step 1: Selects a user. Step 3: Updates role.	Step 2: Shows current permissions. Step 4: System saves changes.
Alternative Scenario	Invalid role: <ul style="list-style-type: none"> Error is displayed. 	

Post Condition	Permissions are updated.
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Use Case ID	UC-18	
Use Case Name	View Profiles	
Actor	Admin	
Summary	View user details for monitoring.	
Precondition	Admin is logged in.	
Basic Scenario	Actor Action	System Response
	Step 1: Selects a user.	Step 2: User profile is displayed.
Alternative Scenario	User not found: <ul style="list-style-type: none">Error is shown.	
Post Condition	Profile is reviewed.	