Software Engineering
Assignment 2
Exam candidate Y3872645

Table of contents:

***Note to grader:**
The use case descriptions and general use case diagram contain various use cases which are part of the system but which were not specifically requested in the project.

Specific use case diagrams and protocols have been provided which pertain only to the four use cases requested in the project.

The class diagram focuses primarily on the four use case diagrams requested in the project, but also includes other information important for system functioning.

Use case descriptions

Use Case	Description
Add a new project	A user of general manager level authorization creates a project by entering the new project into the system along with its details. The new project is added to the project list.
View projects	A user may view projects or project tasks for which he has been authorized. Developers are authorized to view project tasks to which they have been assigned by the project manager. Project managers are authorized to view their assigned project, and all project specific tasks assigned by them. The general manager is authorized to view all projects and all project specific tasks.
Delete a project	A user of general manager level authorization is enabled to cancel a project and delete it from the system. When a project is deleted, the project manager, all tasks, and all task assignments, are also cancelled.
Assign a project	A user of general manager level authorization selects a project manager for a specific project from among those project managers who have not yet been assigned three projects. A project without a project manager is tagged as “inactive,” but once a project manager has been assigned to a project, the project is tagged as “active.”
Assign a project task	A user of project manager level authorization enters a list of tasks for his assigned project. For each task the project manager assigns one or

	more developers and a priority level “low,” “medium,” or “high.” Each developer may be assigned to no more than two project tasks. The project manager informs each developer of his assignment and sends a reminder as the task deadline approaches.
Edit a project	A user may edit project details for which he has been authorized. General managers may edit the project manager assignment for a project. General managers and project managers may edit project details, and project managers may edit project specific task details.

Use Case	Description	
Extended description	Actor Action	System Response
Add a project	1. User logs into the system.	2. The system displays the project list, including all projects authorized for the user. For an authorized user (general manager level of authorization), the screen displays the option: “Add new project.”
	3. User clicks on “Add new project.”	4.The system prompts the user to enter the title of the project, and also project details: client, cost, projected end date. The system automatically generates the start date at this time.
	5. User enters the project details.	6. The system adds the new project to the project list and displays the updated list on the screen.
View projects	1. User logs in to the system.	2. The system displays all projects authorized for the user in order of start date. The system displays three options for viewing the project list: by start date, by projected end date, or by status. In a separate task category dialog box appear two options: “Project specific

		tasks” and “Private tasks.” Below that is a task list.
	3. User selects desired ordering of the project list.	4. The system sorts the project list as per the user selection: start date, end date, or status.
	5. User right clicks on the desired project.	6. The system displays selected project details, including client, cost, start date, end date, assigned project manager, and status. Projects which have been assigned a project manager are listed with status “active,” and projects which have not yet been assigned a project manager are listed with status “inactive.”
	7. User selects “Project specific tasks” in the task category dialog box.	8. The system displays all project specific tasks for which the user has viewer authorization. The system displays options for viewing the task list: by priority, by start date, by due date, by project, or by task status.
	9. User selects the desired ordering of the task list.	10. The system sorts the task list as per user selection: by priority, by start date, by due date, by project, or by task status.
	11. User right clicks on the desired task.	12. The system displays selected project task details (including date of task creation, assigned developer).
Delete a project	1. User logs in to the system.	2. The system displays all projects authorized for the user. For an authorized user (authorized at the level of general manager), the system displays the option:

		“Delete project.”
	3. User selects the desired project from the project list and clicks “Delete project.”	4. The system prompts “Are you sure you want to delete this project?” The system prompts the user to select “yes” or “no”
	5. User selects “yes.”	6. The project is deleted, along with all project details, notes, project assignments, tasks, and task assignments.
Assign a project	1. User logs in to the system.	2. The system displays all projects authorized for the user, in the project list.
	3. User selects a project and right clicks on it.	4. The system displays selected project details. For an authorized user, the system displays the option: “Assign project manager.”
	5. User clicks on “Assign project manager.”	6. The system displays a list of available project managers with fewer than 3 current project assignments.
	7. User selects a project manager from the list.	8. The system adds the assigned project manager to the selected project details. Once a project manager has been assigned, project status changes from “inactive” to “active.”
Assign a project task	1. User logs in to the system.	2. The system displays all projects authorized for the user, in the project list.
	3. User selects a project and right clicks on that project.	4. The system displays selected project details. For authorized users (at the project manager level of authorization), the system displays the option: “Add tasks.”

	5. User clicks on “Add tasks.”	6. The system lists all current specific project tasks and displays a prompt for the user to enter new tasks. For each new task entered, the system displays a list of available developers (those with fewer than 2 projects currently) and prompts the user to select one or more developers, and to assign the task a priority of “high”, “medium”, or “low.”
	7. User enters new tasks, assigns a developer for each task, and assigns a priority level for each task.	8. The system adds the new task, along with its details (assigned developer(s), priority), to the list of project tasks. For each assignment, the system sends an automatic email to the developers newly assigned to the task. The system also generates a reminder email to be sent 24 hours prior to the task due date.
Edit a project	1. User logs in to the system.	2. The system displays all projects authorized for the user, in the project list.
	3. User selects a project and right clicks on that project.	4. The system displays selected project details. For authorized users, the system displays the option “Edit project.”
	5. User selects “Edit project.”	6. The system display enables project editing for authorized users, including editing of project manager assignment(for general manager level of authorization), editing of title, cost, client, and projected end date (general or project manager level of authorization), task details

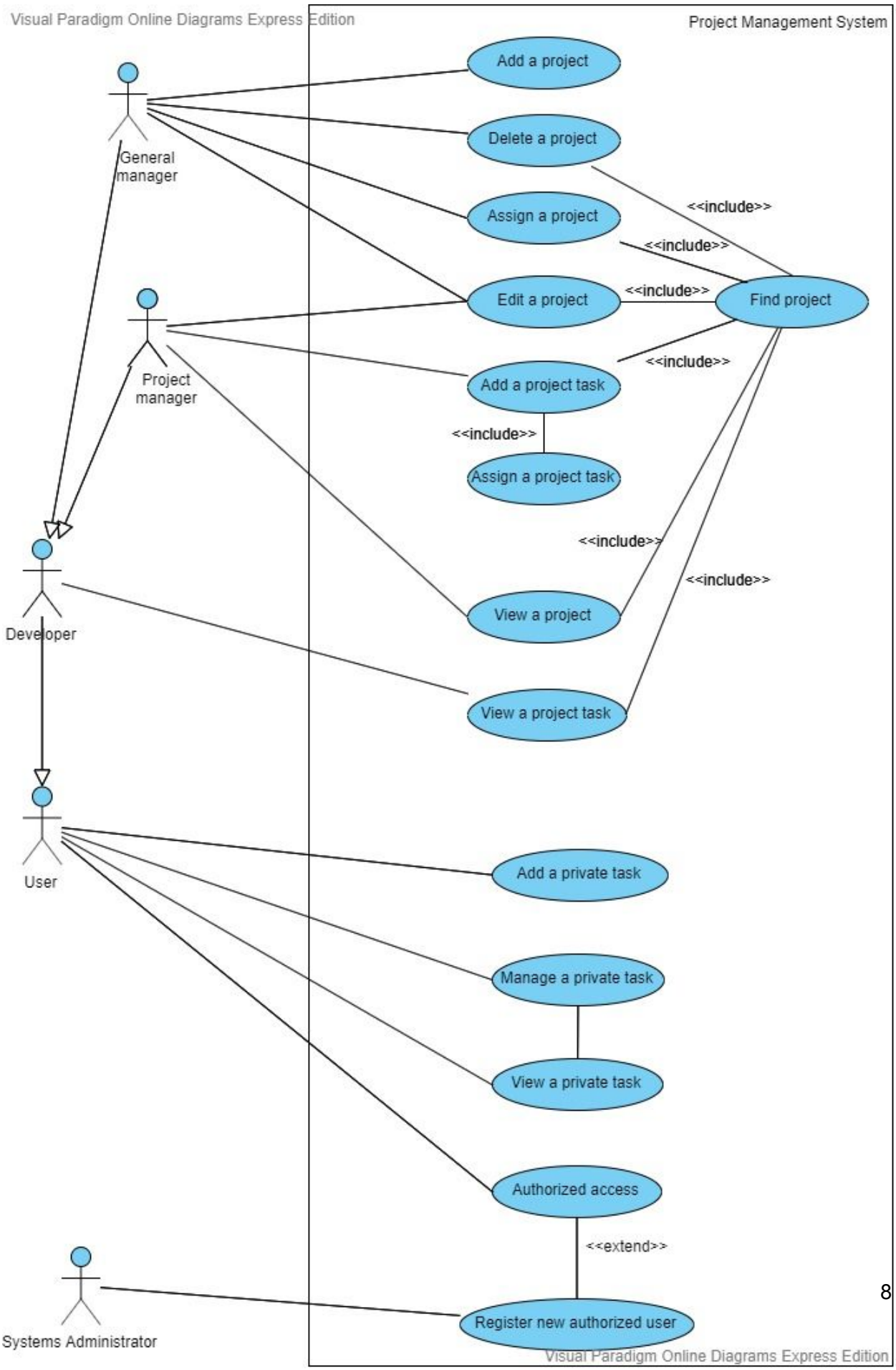
		and the option of marking a task as complete (project manager level of authorization).
	7. User edits the project.	8. The system updates project details. If the project manager is deleted at this time, the status of the project returns to "inactive." If a task has been marked "complete," the system no longer enables editing for that task.

Assumptions:

1. An authorization step occurs at the time of log in. This is a pre-condition to other steps.
2. Once the user has logged in, the system displays a list of projects which have been authorized for the user. This first screen also displays options which have been approved for a given level of authorization. This specific order of presentation of details was not specified in the assignment but seems like a logical flow. *Important: for a developer, only one project appears on this screen. and the only information authorized for his viewing is the project task to which he has been assigned. Therefore "view a project" is NOT listed in the general use case diagram as a use case for the developer.
3. **The background information did not specify that the project manager could view projects; but rather, only project tasks for his project. However, it is assumed that if a project manager can edit his project, he must also be able to view the project to which he has been assigned.
4. For a new project, the start date is automatically set to the date that the new project is added to the system.
5. "End date" for a project, as described in the assignment, refers to a projected end date. Once the project is complete, the projected end date may be amended such that it agrees with the actual known calendar end date.
6. An additional functionality has been added: before a project is deleted, in order to avoid time consuming mistakes, the system prompts the user: "Are you sure that you want to delete this project?" The user must confirm the intention to delete before the project is deleted.
7. Processes for adding and assigning projects are the responsibility of the general manager, whereas processes for adding and assigning project specific tasks are the responsibility of the project manager. Therefore these have been divided into separate use cases, with "Add project" and "Assign project" separated from "Assign a project task".

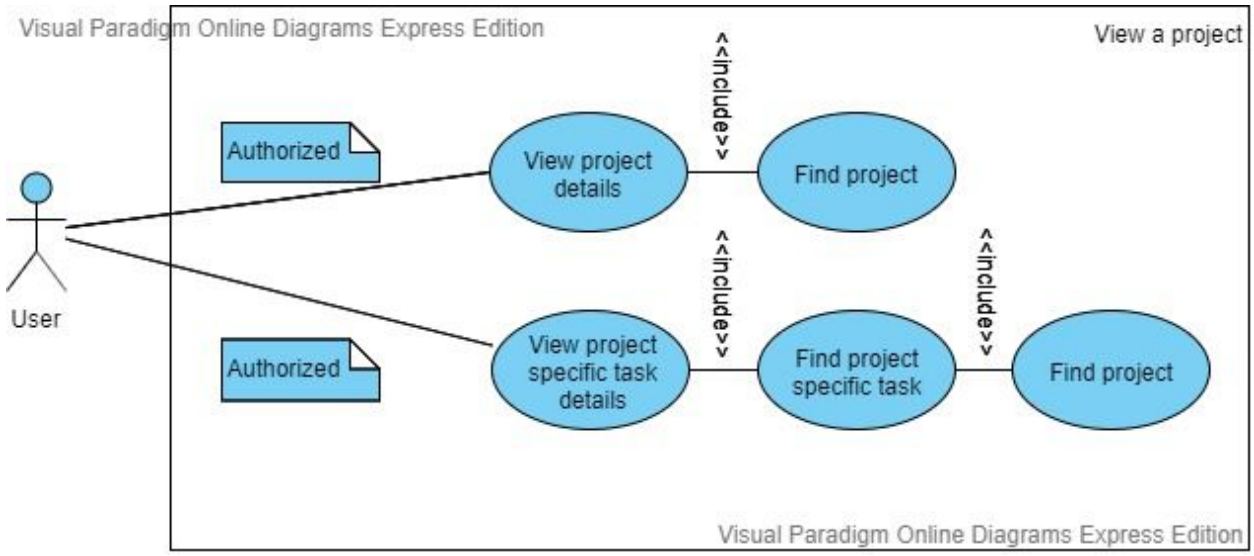
8. In this model, adding a project task and assigning that task to a developer are processes that occur at the same time and cannot be separated from one another. Initial assignment of a project task to one or more developers must be done at the time of adding that task. Changing the project task assignment is not included in “Assign a project task” - it is dealt with separately in the editing section.
9. Both general managers and project managers may edit projects, but the assignment does not specify whether their privileges are equal in this task. Herein it is assumed that a project manager may edit all project details for projects to which he has been assigned, except for editing the project manager assignment itself. Similarly, a general manager may edit all project details for all projects, except for the tasks associated with that project. This is an issue which may need further input from the client: if the simultaneous editing of both project manager and general manager were to become confusing or onerous, it might be necessary to further delineate privileges so that one type of manager does not undo the work of the other.
10. The “View a project” use case assumes the ability to view all aspects of projects and projects tasks for which the user has been granted authorized viewing. Even though private tasks are not part of project viewing, the option to view private tasks appears on the same screen. See the extended use case description above.
11. “Assign a project task” has an automatic email function that informs the developer of the assignment and reminds the developer that the due date is approaching. However, “Assign a project” does not have this automatic email function when a project manager receives his assignment. ***It is assumed, at this higher level of management (i.e. general manager assigning a project to a project manager) that the general manager may have issues that he wishes to discuss with the project manager. He will inform the project manager of this assignment, as well as any associated issues, directly rather than through the system.

<u>General use case diagram for the project management system</u>:
*For a developer, only one project appears on this screen. and the only information authorized for his viewing is the project task to which he has been assigned. Therefore “view a project” is NOT listed in the general use case diagram as a use case for the developer; even though, technically, a developer can see part of a project.
**The background information did not specify that the project manager could view projects; but rather, only project tasks for his project. However, it is assumed that if a project manager can edit his project, he must also be able to view the project to which he has been assigned.
***Unlike “Assign a project task,” “Assign a project” does not have an automatic email function when a general manager assigns a project to a project manager. It is assumed, at this higher level of management (i.e. general manager assigning a project to a project manager) that the general manager may have issues that he wishes to discuss with the project manager. He will inform the project manager of his new assignment, as well as any associated issues, directly rather than through the system. There will be no system generated emails from the general manager to the assigned project manager.


Visual Paradigm Online Diagrams Express Edition
Project Management System
General manager
Project manager
Developer
User
Systems Administrator
Add a project
Delete a project
Assign a project
Edit a project
Find project
Add a project task
Assign a project task
View a project
View a project task
Add a private task
Manage a private task
View a private task
Authorized access
Register new authorized user
<<include>>
<<include>>
<<include>>
<<include>>
<<include>>
<<include>>
<<include>>
<<extend>>
Visual Paradigm Online Diagrams Express Edition

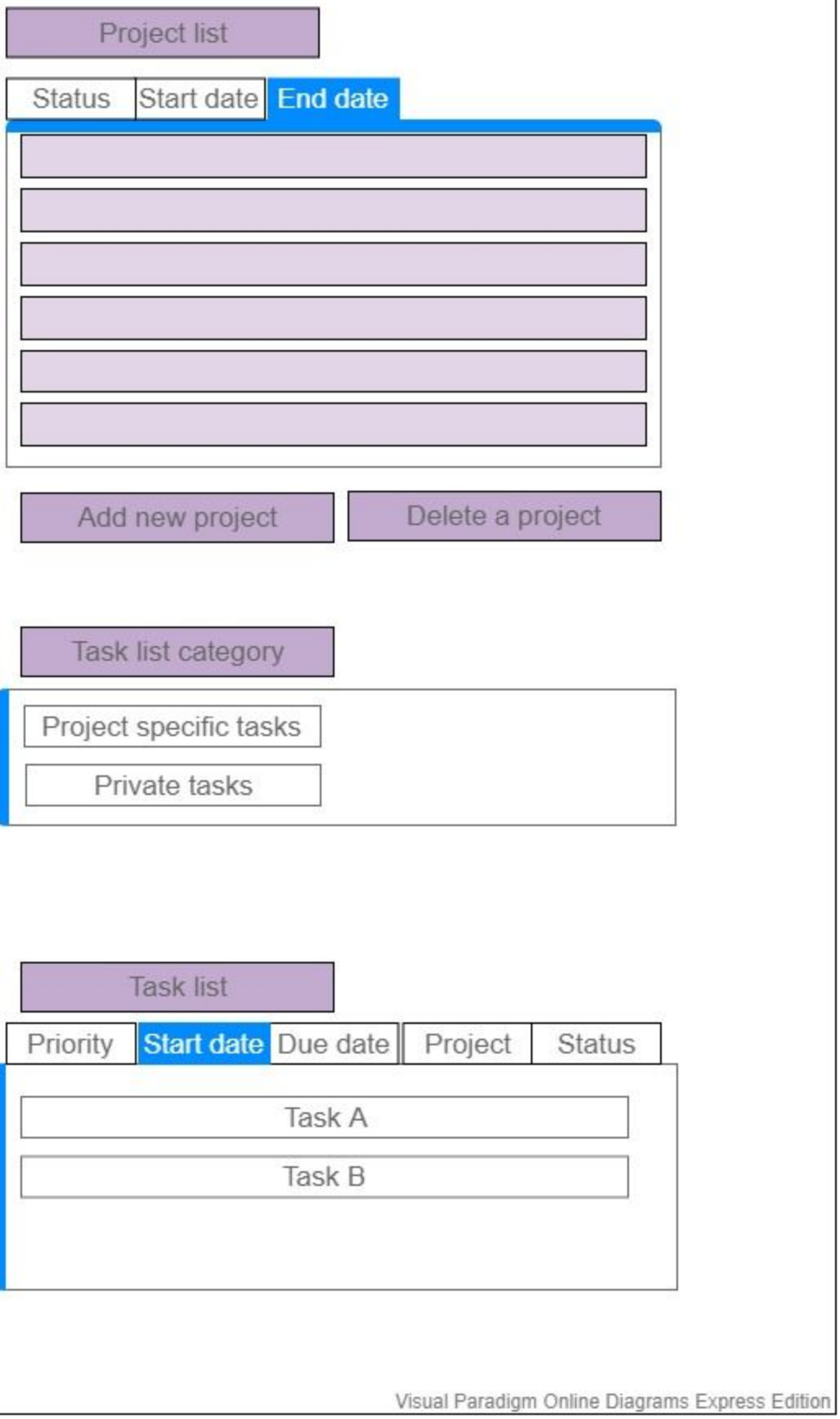
Specific use case diagrams and prototypes:

View a project

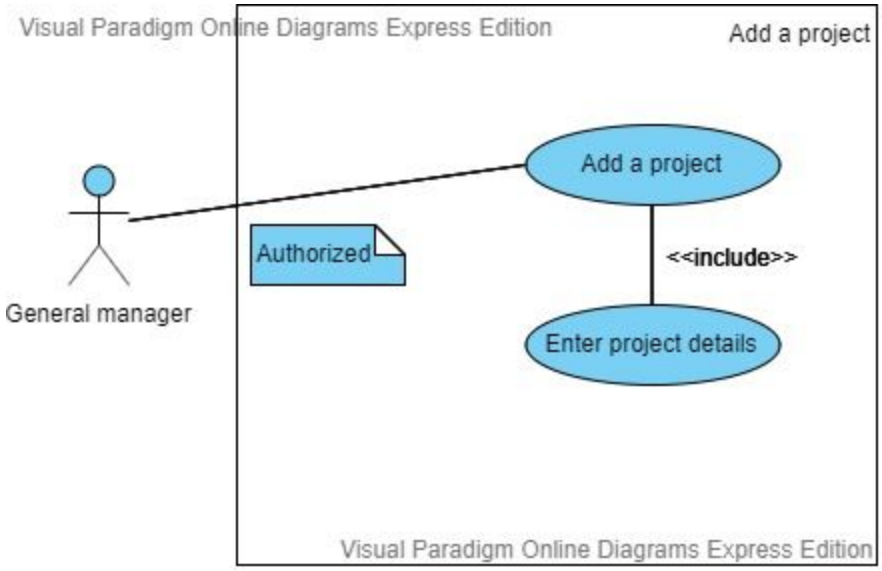


Initial user interface prototype including functionalities for multiple use cases

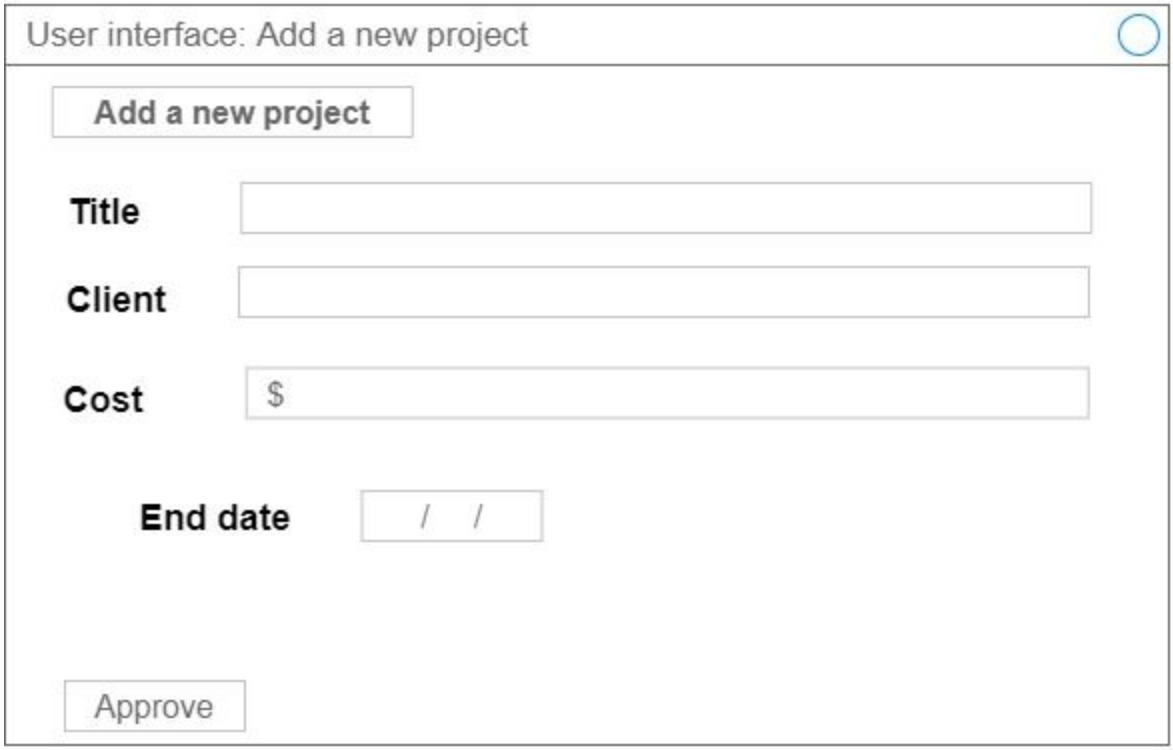
Initial user interface for authorized user



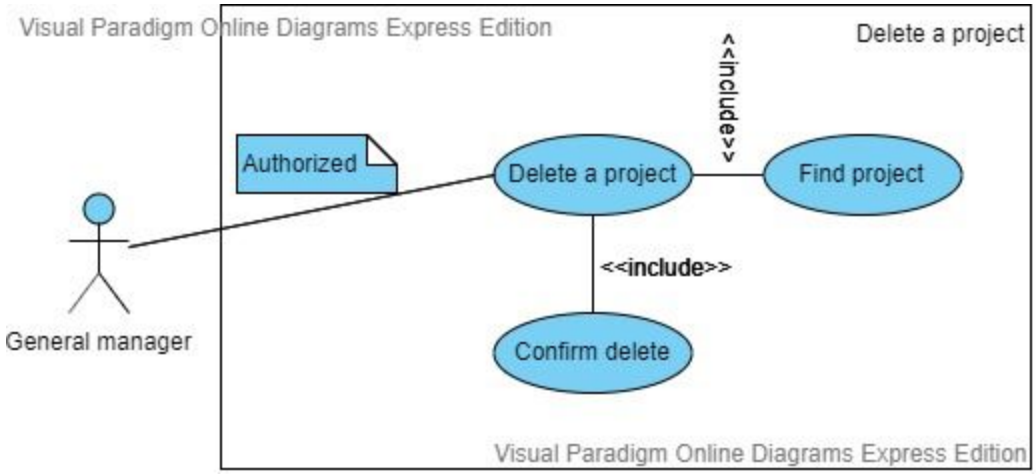
Add a project



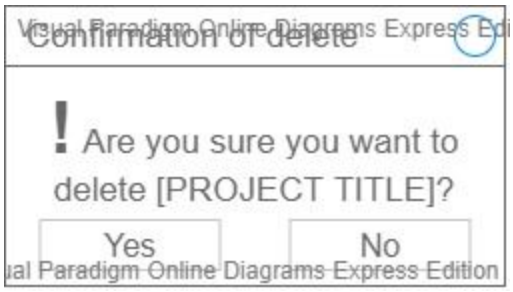
Interface prototype for Add a project



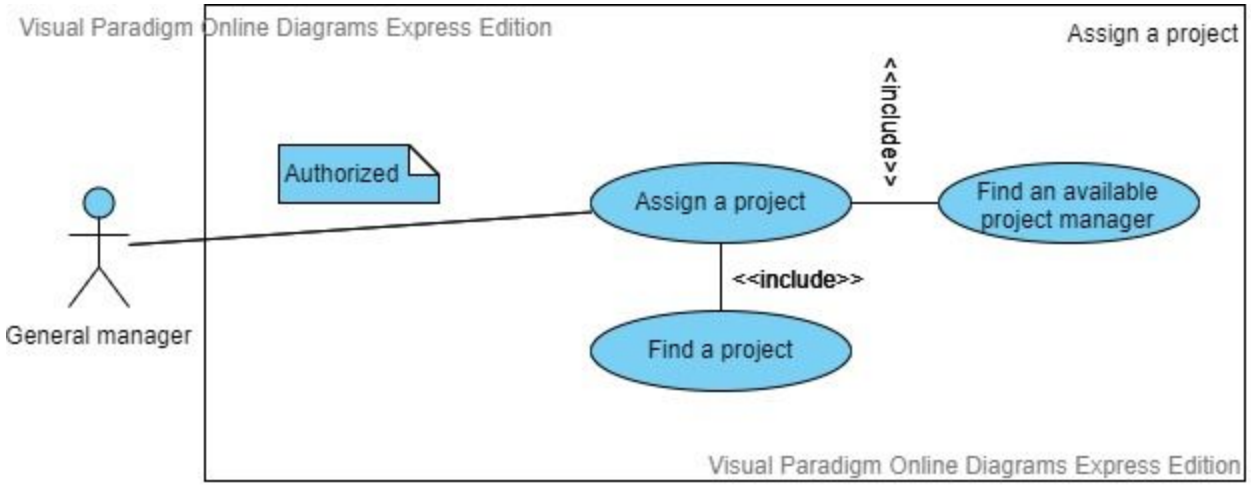
Delete a project



Interface prototype for confirmation of delete



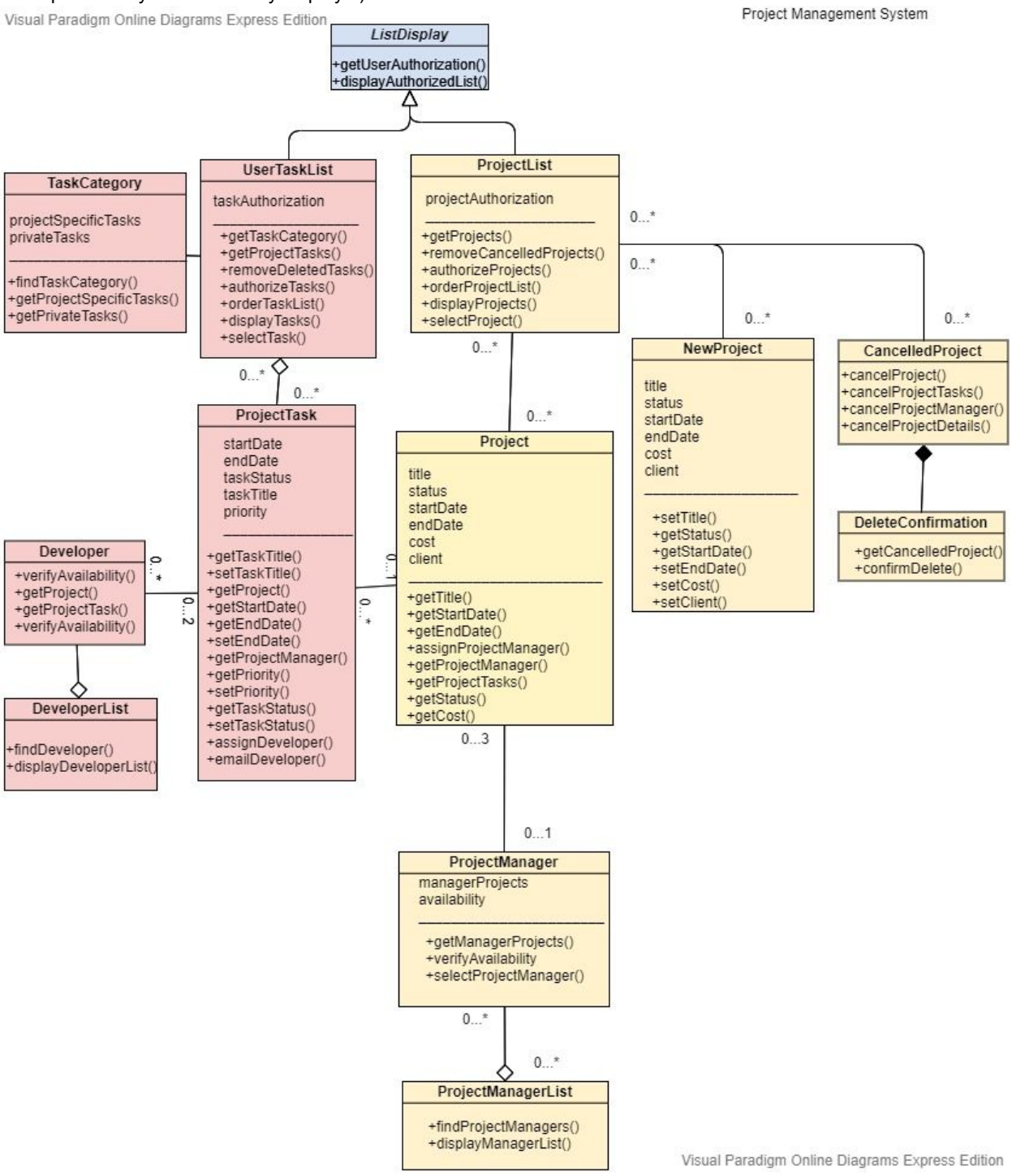
Assign a project



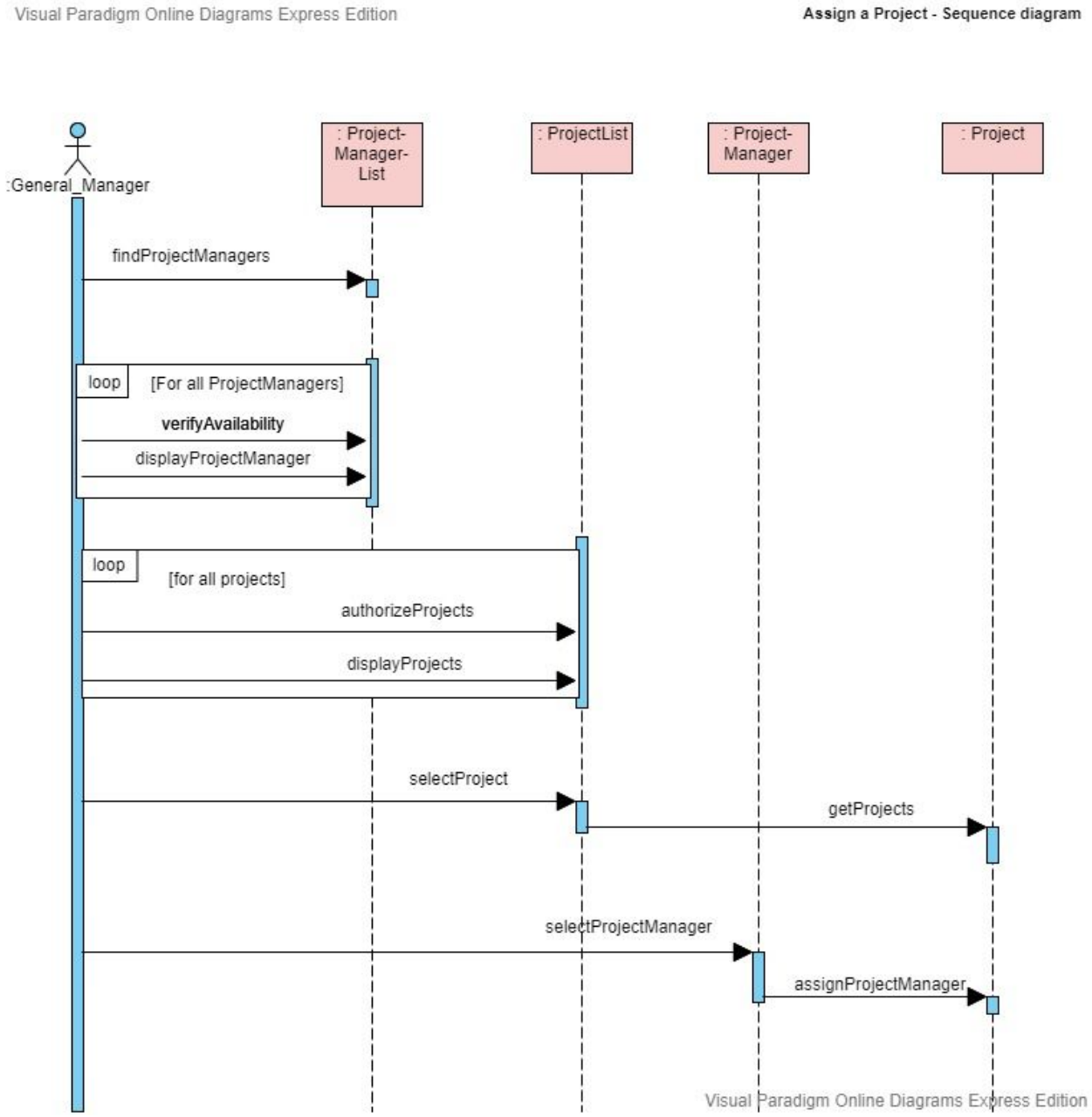
Interface prototype for Assign a project (note the brackets, where the system would fill in the information)

Class diagram for Project management system

(Note: “list” classes below should be considered as collections - of projects, user tasks, project managers, or developers. They are not merely displays.)



Sequence diagram for Assign a project



Brief personal review of Online Visual Paradigm (OVP):

OVP generates graphics which are visually pleasing and professional in appearance. Once, on attempting to amend an OVP exported .jpg file using Microsoft Paint, I discovered the difference in efficiency between OVP and a generic drawing program for generating requirement analysis diagrams. Creating software engineering diagrams in OVP is quick and simple: OVP automates the creation of shapes and templates in nearly all of the various types required for requirement analysis graphical display. In Microsoft Paint, the task of creating similar requirement analysis diagrams would have taken me many times longer to accomplish.

Improvements to OVP Express Edition might include better integration with google Drive and other platforms, as well as improved functionality of OVP applications for iOS and Android. Regarding the OVP free version, the text “Visual Paradigm Online Diagrams Express Edition” is displayed in all exported files, which may detract somewhat from the finished appearance of a graphic.