

Personal Task Management System - Operation Contracts.

1. Create Task

Element	Description
Operation	createTask(title: String, description: String, priority: PriorityLevel, dueDate: Date)
Pre-conditions	None.
Post-conditions	<ul style="list-style-type: none">• A new Task instance t was created.• $t.title$ was initialized to title.• $t.description$ was initialized to description.• $t.priority$ was initialized to priority.• $t.dueDate$ was initialized to dueDate.• $t.creationDate$ was initialized to the current date/time.• $t.status$ was initialized to 'open'.• A new ActivityEntry instance a was created.• $a.timestamp$ was initialized to the current date/time and $a.description$ was initialized to indicate creation.• An association was formed between t and a.

2. Create Project

Element	Description
Operation	createProject(name: String, description: String)
Pre-conditions	A Project with the given name does not already exist.
Post-conditions	<ul style="list-style-type: none">A new Project instance p was created.$p.name$ was initialized to name.$p.description$ was initialized to description.

3. Update Task

Element	Description
Operation	updateTask(taskId: ID, title: String, description: String, priority: PriorityLevel, dueDate: Date, status: StatusType)
Pre-conditions	A Task t with taskId exists in the system.
Post-conditions	<ul style="list-style-type: none">$t.title$ was updated to title.$t.description$ was updated to description.$t.priority$ was updated to priority.$t.dueDate$ was updated to dueDate.$t.status$ was updated to status (can be open, completed, or cancelled).A new ActivityEntry instance a was created to log the update.An association was formed between t and a.

4. Assign Task to Project

Element	Description
Operation	assignTaskToProject(taskId: ID, projectId: ID)
Pre-conditions	A Task t with taskId exists and is not currently associated with a project. A Project p with projectId exists.
Post-conditions	<ul style="list-style-type: none">An association was formed between t and p.A new ActivityEntry instance a was created to log the project assignment.An association was formed between t and a.

5. Move Task to Another Project

Element	Description
Operation	moveTaskToAnotherProject(taskId: ID, newProjectId: ID)
Pre-conditions	A Task t with taskId exists and is already associated with a project. A Project new_p with newProjectId exists.
Post-conditions	<ul style="list-style-type: none">The association between t and its previous Project was broken.An association was formed between t and new_p.A new ActivityEntry instance a was created to log the project movement.An association was formed between t and a.

6. Remove Task from Project

Element	Description
Operation	removeTaskFromProject(taskId: ID)
Pre-conditions	A Task t with taskId exists and is associated with a Project.
Post-conditions	<ul style="list-style-type: none">The association between t and its current Project was broken.A new ActivityEntry instance a was created to log the removal.An association was formed between t and a.

7. Add Subtask

Element	Description
Operation	addSubtask(taskId: ID, title: String)
Pre-conditions	A Task t with taskId exists.
Post-conditions	<ul style="list-style-type: none">A new Subtask instance s was created.$s.title$ was initialized to title.$s.status$ was initialized to 'open' (or incomplete).An association was formed between Task t and Subtask s.

8. Update Subtask Status

Element	Description
Operation	updateSubtaskStatus(subtaskId: ID, status: SubtaskStatusType)
Pre-conditions	A Subtask s with subtaskId exists.
Post-conditions	<ul style="list-style-type: none">$s.status$ was updated to status.(Note: As per requirements, completing all subtasks does NOT automatically update the parent task's status).

9. Delete Subtask

Element	Description
Operation	deleteSubtask(subtaskId: ID)
Pre-conditions	A Subtask s with subtaskId exists.
Post-conditions	<ul style="list-style-type: none">The Subtask instance s was destroyed.The association between its parent Task and the Subtask s was broken.

10. Add Tag to Task

Element	Description
Operation	addTagToTask(taskId: ID, tagName: String)
Pre-conditions	A Task t with taskId exists.

Post-conditions	<ul style="list-style-type: none"> • If a Tag tg with tagName does not exist, a new Tag tg was created and $tg.name$ was initialized to tagName. • If a Tag tg with tagName already exists, tg is retrieved. • An association was formed between Task t and Tag tg. • A new ActivityEntry instance a was created to log the tag addition. • An association was formed between t and a.
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11. Remove Tag from Task

Element	Description
Operation	<code>removeTagFromTask(taskId: ID, tagName: String)</code>
Pre-conditions	A Task t with taskId exists and is associated with a Tag tg named tagName.
Post-conditions	<ul style="list-style-type: none"> • The association between Task t and Tag tg was broken. • A new ActivityEntry instance a was created to log the tag removal. • An association was formed between t and a.