

Identification of system operations

- createTask(title, description, priority, dueDate)
- updateTask(taskId, newTitle, newDescription, newPriority, newDueDate, newStatus, newProjectId, tagChanges)
- completeTask(taskId)
- cancelTask(taskId)

operation contracts

Contract C01: createTask

Operation : createTask(title: String, description: String [0..1], priority: PriorityLevel, dueDate: Date [0..1])

Cross References: Use Case: UC1 Create Task

Preconditions:

- title is not empty.
- priority is a valid PriorityLevel.
- If dueDate is provided, it is a valid date.

Postconditions:

- A Task instance t was created. (instance creation)
- t.title was set to title. (attribute modification)
- t.description was set to description if provided, otherwise left null/empty. (attribute modification)
- t.creationDate was set to current system date/time (now). (attribute modification)
- t.dueDate was set to dueDate if provided, otherwise left null. (attribute modification)
- t.priority was set to priority. (attribute modification)
- t.status was set to open. (attribute modification)
- t was not associated with any Project (i.e., t.project = null). (attribute state)
- An ActivityEntry instance a was created. (instance creation)
- a.timestamp was set to now. (attribute modification)
- a.type was set to created. (attribute modification)
- a.description was set to a short creation message (example: "Task created"). (attribute modification)
- a was associated with t. (association formed: Task 1 — 0.. ActivityEntry)*

Contract C02: updateTask

Operation: updateTask(taskId: TaskID, title: String [0..1], description: String [0..1], priority: PriorityLevel [0..1], dueDate: Date [0..1], status: TaskStatus [0..1], projectId: ProjectID [0..1], removeProject: Boolean [0..1])

Cross References: Use Case: UC2 Update Task

Preconditions:

- A Task instance t exists with identifier taskId.
- If title is provided, it is not empty.
- If priority is provided, it is a valid PriorityLevel.
- If status is provided, it is a valid TaskStatus.
- If dueDate is provided, it is a valid date.
- If projectId is provided, a Project instance p exists with identifier projectId.

Postconditions:

- If title was provided, t.title was updated to title. (attribute modification)
- If description was provided, t.description was updated to description. (attribute modification)
- If priority was provided, t.priority was updated to priority. (attribute modification)
- If dueDate was provided, t.dueDate was updated to dueDate. (attribute modification)
- If status was provided, t.status was updated to status. (attribute modification)
- An ActivityEntry instance a was created. (instance creation)
- a.timestamp was set to now. (attribute modification)
- a.type was set to updated. (attribute modification)
- a.description was set to summarize the update (example: "Task updated"). (attribute modification)
- a was associated with t. (association formed)

Contract CO3: completeTask

Operation: completeTask(taskId: TaskID)

Cross References: Use Case: UC5 Complete Task

Preconditions:

- A Task instance t exists with identifier taskId.

Postconditions:

- t.status was set to completed. (attribute modification)
- An ActivityEntry instance a was created. (instance creation)
- a.timestamp was set to now. (attribute modification)
- a.type was set to completed. (attribute modification)
- a.description was set to a short completion message (example: "Task completed"). (attribute modification)
- a was associated with t. (association formed)

Contract CO4: cancelTask

Operation: cancelTask(taskId: TaskID)

Cross References: Use Case: UC6 Cancel Task

Preconditions:

- A Task instance t exists with identifier taskId.

Postconditions:

- t.status was set to cancelled. (attribute modification)
- An ActivityEntry instance a was created. (instance creation)
- a.timestamp was set to now. (attribute modification)
- a.type was set to cancelled. (attribute modification)
- a.description was set to a short cancellation message (example: "Task cancelled"). (attribute modification)
- a was associated with t. (association formed)