

Purpose:

The purpose of these tests is to verify the functionality of the TaskManager, TaskVisualizer, and Sorter components, specifically focusing on task tagging, task completion visualization, and task sorting. The tests ensure that the system behaves as expected under various scenarios, including adding, saving, loading, sorting, and visualizing tasks.

Test Cases for test_task_tag.py

Test Case	Description	Expected Result
test_add_task	Verifies that tasks can be added to the TaskManager	Tasks are successfully added, and the task count matches the expected value.
test_view_tasks	Ensures that tasks are displayed correctly including their tags.	Task titles and tags are displayed in the correct format.
test_save_and_load_tasks	Tests saving tasks to a file and reloading them into the TaskManager	Tasks are saved and loaded correctly, with all attributes (e.g., tags) intact.
test_tags_are_sorted	Verifies that tags are displayed in alphabetical order.	Tags are sorted alphabetically in the output.

Test Cases for test_task_visualizer.py

Test Case	Description	Expected Result
test_get_completion_data	Verifies that the number of completed and incomplete tasks is calculated correctly	The counts for completed and incomplete tasks match the expected values
test_empty_task_manager	Ensures that the visualizer handles an empty TaskManager correctly	The visualizer returns zero for both completed and incomplete tasks

test_pie_chart_data	Tests that the pie chart data is generated correctly	The pie chart reflects the correct proportions of completed and incomplete tasks
test_tag_changes_affect_completion	Verifies that changes to task tags update the completion status.	The completion data updates correctly when task tags are modified.

Test Cases for test_sorter.py

Test Case	Description	Expected Result
test_title_sorter	Verifies that tasks are sorted correctly by title	Tasks are sorted alphabetically by title
test_date_sorter	Verifies that tasks are sorted correctly by due date	Tasks are sorted chronologically by due date
test_priority_sorter	Verifies that tasks are sorted correctly by priority (High > Medium > Low)	Tasks are sorted by priority in the correct order.
test_sorter_integrity	Ensures that sorting does not modify the original task data	Task data remains intact after sorting

Test Results

Test File	Total Tests	Passed	Failed	Remarks
test_task_tag.py	4	4	0	All tests passed. Task tagging and saving/loading functionality verified.
test_task_visualizer.py	4	4	0	All tests passed. Task visualization and completion

				tracking verified.
test_sorter.py	4	4	0	All tests passed. Sorting functionality verified for title, date, and priority

Observations:

- The TaskManager correctly handles task addition, saving, and loading, ensuring data integrity.
- Tags are displayed in alphabetical order, improving readability.
- The TaskVisualizer accurately calculates and displays task completion data, even when tasks are modified dynamically.
- The Sorter classes correctly sort tasks based on the specified criteria
- No performance issues

Recommendations:

- Add tests for edge cases
- Sorting tasks with identical titles, due dates, or priorities.