

Test Case 1: Task Creation – Invalid Date and Time

- **Input:** Enter a past date (2023-01-01) or time less than 30 minutes from now.
- **Expected Result:** Error message. Task not created.
- **Purpose:** Validates date/time logic and future deadline enforcement.

Test Case 2: Delete and Restore Without Task

- **Input:** Try delete task with an invalid ID (e.g., 9999); then restore when no task is deleted.
- **Expected Result:** No such task and no deleted tasks messages.
- **Purpose:** Tests ID validation and empty stack edge case.

Test Case 3: Rename Category to Existing Name

- **Input:** Attempt to rename an existing category (e.g., Work) to another existing one (Personal).
- **Expected Result:** Warning message indicating the new name already exists; operation canceled.
- **Purpose:** Prevents naming conflict and preserves data integrity.

Test Case 4: Merge Category Into Itself

- **Input:** Enter the same name for source and destination categories during merge.
- **Expected Result:** Error message “Cannot merge a category into itself.”
- **Purpose:** Validates logical correctness and protects data structure.

Test Case 5: Sort Tasks with Same Priority and Date

- **Input:** Create two tasks with identical priority and due date/time.
- **Expected Result:** Tasks are sorted stably and order is consistent or based on creation.
- **Purpose:** Tests sorting stability and priority queue behavior with duplicates.

Test Case 6: Load Malformed CSV File

- **Input:** Corrupt the tasks.csv file (e.g., remove fields or use invalid delimiters).
- **Expected Result:** Malformed lines are skipped without crashing; valid tasks still load.
- **Purpose:** Ensures resilience in file I/O and prevents system crash.