

How I Implemented Smart Assign

Smart Assign is a feature designed to automatically assign a task to the most available user. This ensures balanced task distribution and improves team productivity.

Logic in my own words:

1. When Smart Assign is triggered (via a button in the UI), the backend retrieves all users from the database.
2. For each user, I calculate how many active tasks (in "Todo" or "In Progress") they currently have.
3. I compare all users and find the one with the least number of active tasks.
4. That user is chosen and the task is assigned to them.
5. A real-time update (taskUpdated event) is emitted via WebSocket to all connected clients.
6. The assignment is also logged in the activity panel using an actionLogged WebSocket event.

This logic ensures fair load distribution without any manual user selection.

How Conflict Handling Works (with Example)

Problem:

If two users try to edit the same task at the same time, one user's changes might overwrite the other's without warning. To prevent this, I implemented conflict detection and resolution.

How it works:

1. When a user opens the edit form, the current task's updatedAt timestamp is stored.
2. When the user clicks Save, the frontend sends the original timestamp along with the updated task data.
3. On the backend, I compare:
 - The client's updatedAt value
 - The current updatedAt value from the database
4. If they match → no conflict → update is saved normally.
5. If they don't match → conflict detected → a 409 Conflict response is sent to the frontend with both versions:
 - The server's latest version
 - The client's attempted changes
6. The frontend then shows both versions side by side and gives the user 3 options:
 - **Merge:** Combine client changes into the latest server version
 - **Overwrite:** Force-save client version
 - **Cancel:** Abort the update

Example:

- User A opens Task 101 at 10:00 AM.
- User B also opens Task 101 at 10:01 AM.
- User B edits and saves it at 10:02 AM → backend updates task and sets new timestamp.
- User A tries to save at 10:03 AM → conflict detected → shown merge/overwrite prompt.

This prevents accidental overwrites and allows collaborative editing with safety.