1. Objectives:

- Address the issue of the CLAHE effect not applying below a threshold of 10,000 and adjust input limits accordingly.
- Present weekly progress updates to the manager on key project areas, including axis calibration, GPU-accelerated CLAHE, and the development of a threshold-based CLAHE function.
- Begin implementing new tasks assigned during the progress meeting, including thread processing visibility and a CPU-based CLAHE option with time comparison functionality.

2. Activities:

- **CLAHE Threshold Adjustment:**
    - Investigated why no effect was visible when the threshold was set below 10,000.
    - Solution found: Adjusted the input box limit from 10 to 100 after observing that a tile size around 70-80 shows the CLAHE effect even when the threshold is under 10,000.
- **Weekly Progress Meeting:**
    - Provided updates and received feedback on several key tasks:
        - **Axis Calibration**: Demonstrated smooth calibration output, confirmed by code review.
        - **Overall CLAHE with GPU**: Successfully achieved performance targets; the manager approved the code.
        - **Threshold CLAHE Concept Review**: Discussed the current mask-based approach. The manager recommended switching to a vector-based approach to isolate threshold-based pixels for CLAHE, enhancing selective application.
        - **Thread Usage**: Confirmed the use of threads in functions such as Sharpen, Contrast, and Gamma adjustments.
    - **New Tasks Assigned**:
        - Display thread processing details, including row/column and thread ID.
        - Implement a CLAHE version for CPU with processing time displayed for comparison.
        - Redo the threshold CLAHE based on the manager's vector-based approach.

        - Develop a function to remove black lines in white regions while preserving essential lines around objects.

- **Additional Features Implementation:**
    - Added a CPU-based CLAHE function with processing time shown beneath the GPU CLAHE processing time. The times persist after each run for easy comparison.
    - Integrated a histogram for tracking frequency distribution during processing. Added both a small view and an expandable version synced with real-time output processing.
    - Began adding a toggle button to show/hide the histogram. Currently, a bug prevents the histogram from displaying correctly when clicked.
- **Progress Report**:
    - Compiled and submitted a progress update report detailing these activities and any challenges encountered.

3. Achievements:

- Adjusted the CLAHE threshold range to show effects at lower values, with a revised input limit.
- Successfully provided detailed updates to the manager, receiving approval and guidance on new tasks and optimizing the current approach for threshold CLAHE.
- Implemented CPU-based CLAHE with side-by-side processing time display for easy performance comparison.
- Introduced a histogram feature to enhance frequency analysis during processing, though troubleshooting of the toggle button bug remains.

4. Problems & Solutions:

- **Problem 1:** No visible effect for CLAHE below a threshold of 10,000.
    - **Solution:** Adjusted input limits and observed that tile sizes around 70-80 help make CLAHE effects more noticeable at lower thresholds.
- **Problem 2:** Histogram toggle button bug prevents display when clicked.
    - **Solution:** Currently under investigation to resolve the toggle functionality and ensure smooth display and collapse behavior.