ASSIGNMENT 2

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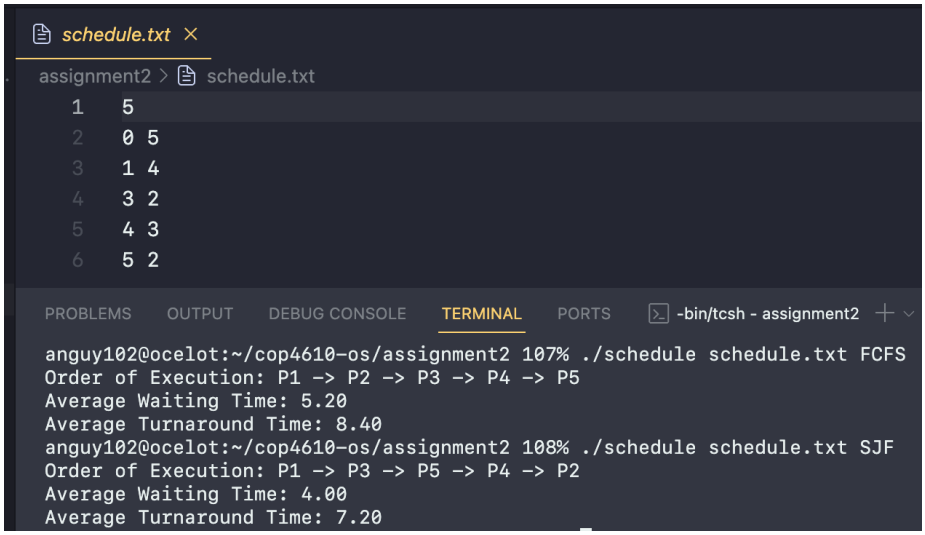

Figure 1: Screenshot

Design Choices

- **Separate functions**: Using distinct functions for FCFS and SJF improves code organization, readability, and maintainability, allowing focused implementation and debugging.
- **Queueing principle for FCFS**: FCFS follows a basic queueing principle, executing processes in the order of arrival. It efficiently calculates waiting and turnaround times using a prefix sum algorithm.
- **Greedy approach for SJF**: SJF employs a greedy strategy, selecting the process with the shortest burst time at each decision point to minimize the time for the next shortest job to execute.
- **In-place swapping for SJF**: In SJF, in-place swapping dynamically reorders processes based on burst times, optimizing memory usage and computational efficiency while ensuring consistent process identification.

Challenges Encountered

- **Accurate time calculation**: Precision in calculating waiting and turnaround times, especially for SJF, is challenging due to dynamic

process selection. It requires meticulous tracking of `current_time` and adjustments based on process arrival times.

- **Maintaining execution order for SJF**: Preserving the execution order while selecting processes based on burst time presents challenges, requiring careful selection of the index to swap within arrays.

Addressing Challenges

- **Accurate time calculation**: Tracking `current_time` and adjusting it based on process arrival times ensures precise calculation of waiting and turnaround times.
- **Maintaining execution order for SJF**: Overcoming challenges involves carefully selecting the index to swap within arrays, ensuring accurate scheduling based on burst times.

Lessons Learned

- **Modular design**: Using separate functions streamlines implementation and debugging, improving code organization and maintainability.
- **Precision in time calculation**: Achieving accuracy in time calculations demands meticulous tracking of variables and adjustments based on process characteristics, particularly in dynamic scheduling algorithms like SJF.
- **Efficient data manipulation**: In-place swapping optimizes memory usage and computational efficiency in SJF, highlighting the importance of efficient data manipulation techniques.
- **Manual verification of results**: Testing and manually verifying results provide essential validation, ensuring the correctness and reliability of simulation outcomes.