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I worked on the following parts in this project:

1. Implemented the main program logic in `main.py`, including the overall structure and flow of the simulation.

2. Developed the checkered partitioning strategies for dividing the computational grid among processes.

3. Wrote the communication logic between processes to handle boundary updates and ensure correctness.

4. Resolved deadlock issues by implementing a sophisticated communication protocol using MPI.

5. Designed and documented the manager-worker model for task distribution and result aggregation.

6. Debugged issues in the synchronization and communication patterns.

7. Tested the code with various configurations to ensure correctness and scalability.

8. Documented the source code with detailed comments for clarity and future maintenance.

9. Prepared the project report, including sections on design decisions, assumptions, and partitioning strategies.

10. Researched deadlock prevention techniques and integrated them into the communication model.