

Project Description:

In this project, students will demonstrate their understanding of parallel computing concepts by creating a simulation using the thread library. The goal is to simulate a real-world scenario of their choice, leveraging the power of parallelism to improve performance. The project will be graded based on code quality, expected functionality, and presentation of results.

Project Proposal

- Write a brief proposal outlining your simulation idea, including its real-world relevance and the problem it aims to solve.
- Provide an initial design plan that highlights the use of threads and parallelism in your project.
- Include a preliminary schedule with milestones.
- Ensure that your code is well-structured, well-documented, and follows best practices for parallel programming.
- Frequent code submissions or progress updates may be required during this phase.

Prepare a mid-project presentation showcasing your progress, challenges faced, and how you addressed them. **Session 20**

- Provide a demo of your running simulation.
- Highlight the parallel computing aspects of your code.
- Submit the final version of your simulation.
- Include a detailed report that covers the following:
 - Description of the real-world scenario being simulated.
 - Explanation of how parallelism and threads are used in your implementation.
 - Any optimizations or trade-offs made to improve performance.
 - Test results, performance metrics, and any visualizations.
 - Challenges faced and lessons learned.

Grading Criteria:

1. Code Quality (60%):
 - a. Code organization and structure.
 - b. Documentation and comments.
 - c. Proper use of thread library and parallel programming techniques.
 - d. Error handling and robustness of the code.
 - e. Code readability and adherence to coding conventions.
2. Expected Functionality (20%):
 - a. Does the simulation effectively model the real-world scenario?
 - b. Does it demonstrate a clear understanding of parallelism and concurrency?
 - c. Is the simulation free from critical bugs and errors?
3. Presentation of Results (20%):
 - a. Quality and clarity of the final report.

- b. Effectiveness of the mid-project presentation.
- c. Visualization of results, if applicable.
- d. Ability to explain the relevance and significance of the project.

Additional Notes:

Plagiarism or unauthorized collaboration is strictly prohibited.

Late submissions will be penalized according to the course policy.

Students are encouraged to seek guidance and clarification from the instructor or teaching assistants during the project.