CMP-310 Mini Project Grading Rubric

Total Points: 100

1. Correctness and Functionality – 50 points

Criteria	Points	Notes
Shared bounded buffer implemented correctly	10	Fixed size buffer, mutual exclusion ensured
Producer threads generate and add data	8	At least one producer thread functional
Consumer threads remove and process data	8	At least one consumer thread functional
Producers pause if buffer full, consumers pause if empty	8	Blocking behavior must be shown
No race conditions or deadlocks	8	Proper use of mutexes and semaphores to protect buffer access
Graceful termination after N items	8	The Poison Pill technique is implemented correctly

2. Code Quality – 20 points

Criteria	Points	Notes
Modular and well-organized code	5	Functions used effectively
Proper pthreads, semaphores, mutex use	5	Correct headers, avoid globals
Well-commented synchronization logic	5	Comments must explain key logic
Meaningful names	5	Avoid meaningless identifiers

3. Robustness and Error Handling – 15 points

Criteria	Points	Notes
Input validation (e.g., argc/argv checks)	5	Should not crash on bad input

Thread creation and semaphore error checks	5	Basic error reporting expected
Handles edge cases without a crash	5	Robust under stress

4. Documentation – 15 points

Deliverable	Points	Notes
README (compile, run, test case)	5	Should include at least one working example
Short report (design and challenges)	5	Bullet points are acceptable
Video demo (2+ members involved)	5	Video must demonstrate the application running, explain synchronization logic, and involve at least 2 group members

5. Bonus Features – up to 10 points (optional)

Feature	Points	Notes
Priority handling	+5	Consumers process urgent items first while keeping FIFO within each priority. Show at least one test run with urgent items
Throughput and latency metrics	+5	Record enqueue/dequeue times, compute averages, and include a brief comparison for two buffer sizes in the report.