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Project #3 – Write Up

This project consisted of using threads, locks, and conditional variables to synchronize multiple producers and multiple consumers. The goal of the project was to produce water, ethanol, ozone; to do this we created six threads and four locks and joined the producer and consumer threads. Before producing hydrogen, oxygen, or carbo, the associated locks would need to be acquired and held throughout the process. Afterwards, the locks were released the three producers were put to sleep until signaled again. For the consumers, they would acquire the locks of the producers need to make the molecules; conditional variables were used to help the consumers know when they met all the requirements to make them. Afterwards, the locks were also released and the consumers went to sleep until woken up again.

The problem we had was in the water_c() function. When running the program, the ozone and ethanol threads ran successfully, but the water was producing an infinite loop. After trying to debug the program, we realized there was a semicolon after the while loop's condition; once that was removed, everything worked fine.

The values were hardcoded and defined at the top of the program. To execute our code, using gcc -Wall main3.c -lpthread and ./a.out will make the program run smoothly.