Dining Philosophers Layer 2

This project uses the Asymmetric Deadlock Prevention Strategy to ensure smooth and safe coordination among the philosopher threads. In this method, philosophers follow different rules when picking up chopsticks: odd-numbered philosophers always pick up their left chopstick first, while even-numbered philosophers pick up their right chopstick first. By forcing them to follow opposite ordering, we break the circular wait condition, which is one of the major causes of deadlock in concurrent systems.

Compilation Process:

First I use oracle virtual box which is what we use last sem during our operation system class then to compile the program in Ubuntu or any Linux environment, run:

gcc -pthread dining_philosophers.c -o dining_philosophers

Execution Instructions

Run the program using:

./dining_philosophers

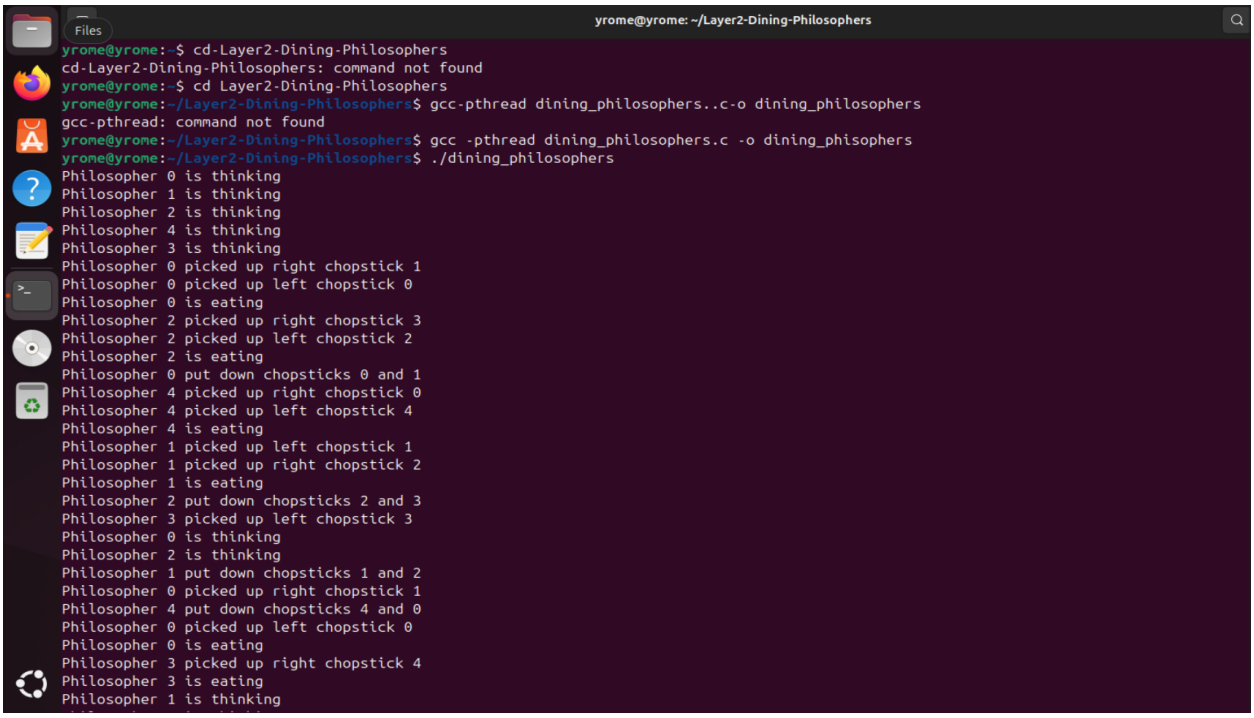
Let it run for 3–5 minutes while observing output to confirm:

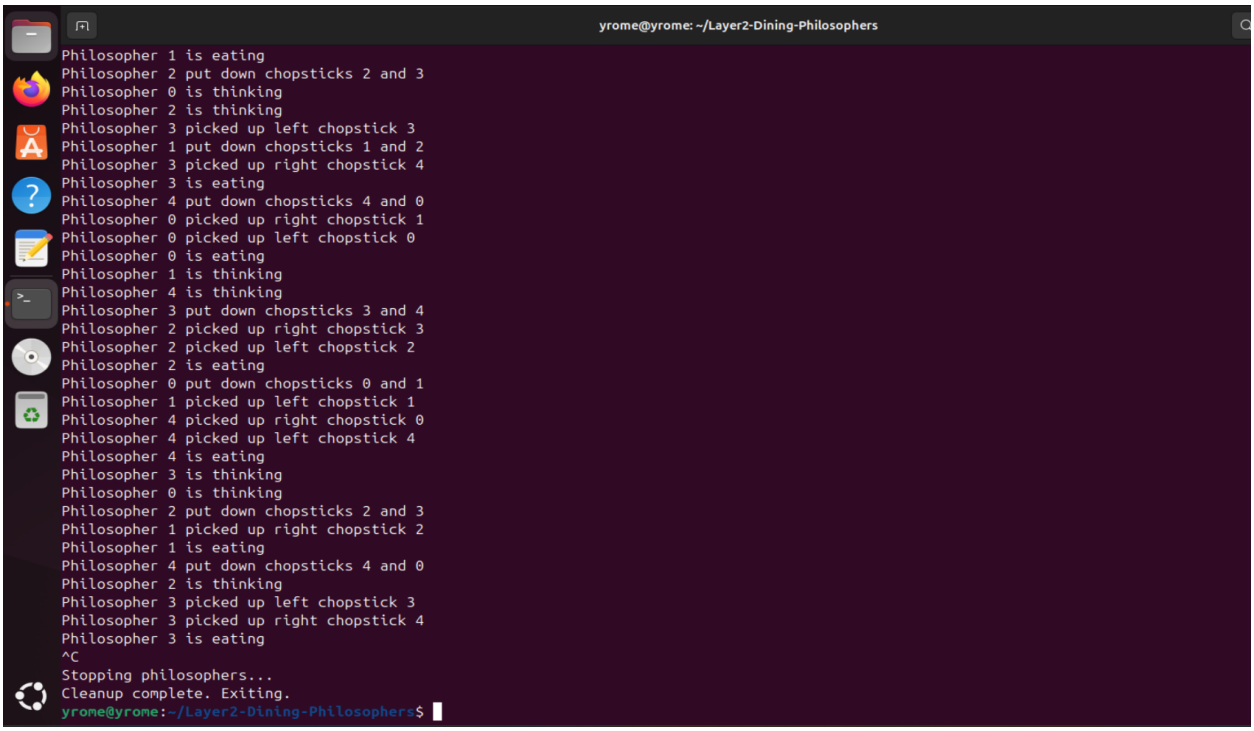
- No philosopher is stuck forever (deadlock-free)

- All philosophers eventually get a chance to eat (no starvation)

To stop the program safely, press:

Ctrl + C




yrome@yrome: ~/Layer2-Dining-Philosophers
Philosopher 1 is eating
Philosopher 2 put down chopsticks 2 and 3
Philosopher 0 is thinking
Philosopher 2 is thinking
Philosopher 3 picked up left chopstick 3
Philosopher 1 put down chopsticks 1 and 2
Philosopher 3 picked up right chopstick 4
Philosopher 3 is eating
Philosopher 4 put down chopsticks 4 and 0
Philosopher 0 picked up right chopstick 1
Philosopher 0 picked up left chopstick 0
Philosopher 0 is eating
Philosopher 1 is thinking
Philosopher 4 is thinking
Philosopher 3 put down chopsticks 3 and 4
Philosopher 2 picked up right chopstick 3
Philosopher 2 picked up left chopstick 2
Philosopher 2 is eating
Philosopher 0 put down chopsticks 0 and 1
Philosopher 1 picked up left chopstick 1
Philosopher 4 picked up right chopstick 0
Philosopher 4 picked up left chopstick 4
Philosopher 4 is eating
Philosopher 3 is thinking
Philosopher 0 is thinking
Philosopher 2 put down chopsticks 2 and 3
Philosopher 1 picked up right chopstick 2
Philosopher 1 is eating
Philosopher 4 put down chopsticks 4 and 0
Philosopher 2 is thinking
Philosopher 3 picked up left chopstick 3
Philosopher 3 picked up right chopstick 4
Philosopher 3 is eating
^C
Stopping philosophers...
Cleanup complete. Exiting.
yrome@yrome:~/Layer2-Dining-Philosophers$