https://github.com/Msisso213/SYSC4001_A3_P1/tree/main/Assignment_3

1. The FCFS (First-Come-First-Served) algorithm schedules processes in the order they arrive. In Input Set 1, a long CPU-bound process blocks others, showing the convoy effect (e.g., Process 4 waits 105ms). Once I/O-bound processes run, CPU utilization improves, as seen with Processes 2 and 3 switching back and forth. In Input Set 2, frequent I/O switching keeps the CPU busy. Some advantages are its simplicity, no starvation, low overhead, works well for batch and CPU-bound tasks. Some disadvantages are long waits for later processes, poor responsiveness for interactive systems, inefficient when short processes are delayed by long ones.

2. The Round-Robin (RR) algorithm schedules processes in fixed time slices (100ms here), called quantum. In Input Set 1, frequent I/O keep all processes progressing, preventing starvation and ensuring fairness. In Input Set 2, short processes like P1 can finish within one quantum, but bigger I/O processes still benefit from regular CPU access. Some advantages are fair scheduling, responsive, prevents convoy effect, good for interactive and I/O-bound processes, keeps CPU busy. Some disadvantages are high context switching overhead, higher average turnaround times, sensitive to quantum size, ignores process priorities, can delay very short tasks. Overall, RR is ideal for interactive, multi-user systems where fairness matter more than raw throughput.

3. The FCFS-Ordered Round-Robin algorithm is a hybrid that preempts long-running processes like Round-Robin but always picks the earliest-arrived process next. For CPU-bound tasks, it behaves like FCFS, finishing early arrivals first with few context switches. I/O-bound processes can run in between, but late arrivals may wait a long time. The main advantage is that very long CPU bursts can be interrupted, but fairness is poor and interactive tasks get delayed. Overall, it keeps FCFS order while adding limited preemption, making it mainly useful when strict arrival priority is important.