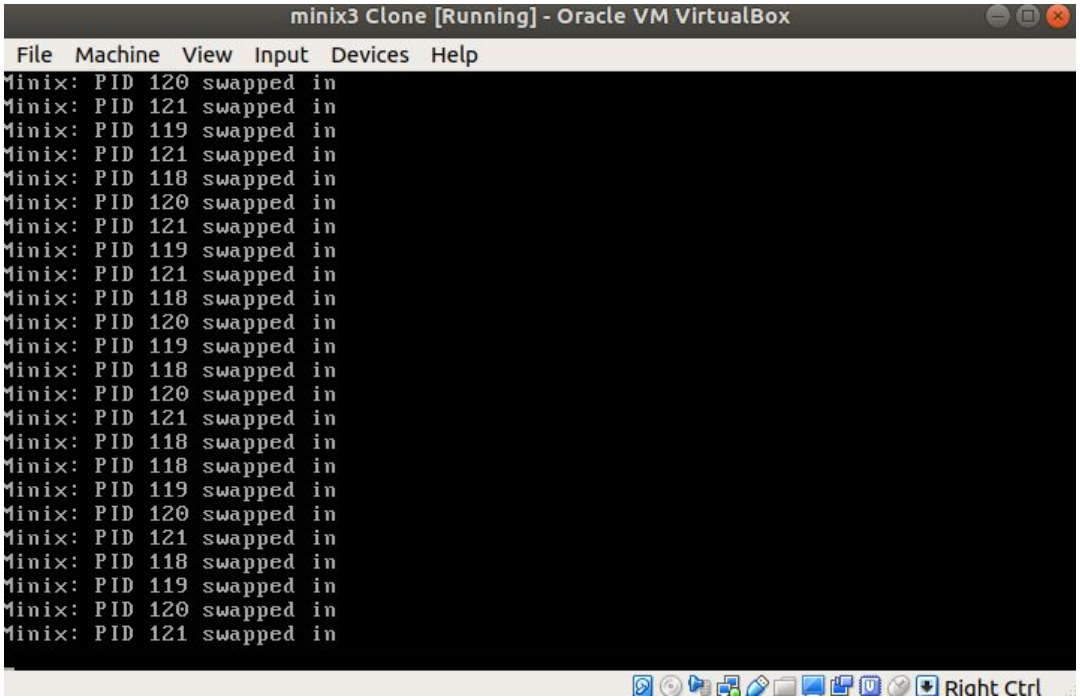
CS 314: Operating Systems Laboratory

Assignment 4

Avneet Sehgal (170010029)
Unnati Athwani (170010006)

Part I

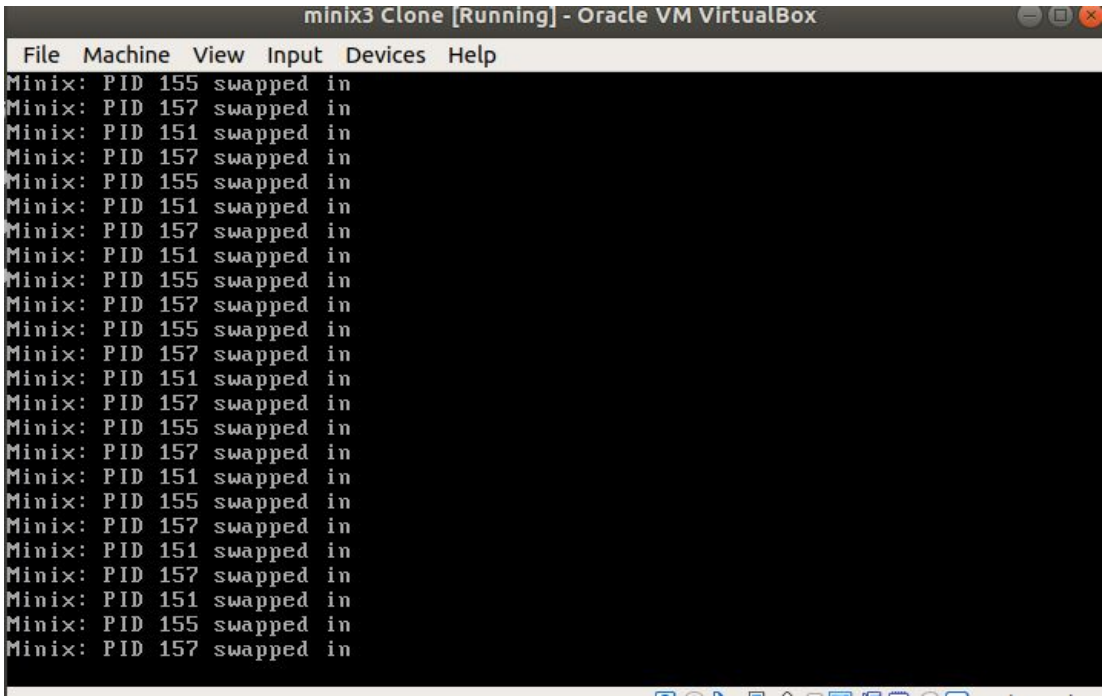
1. workload_mix1.sh: A mix of all CPU-intensive processes
   ./arithoh.sh &
   ./arithoh.sh &
   ./arithoh.sh &
   ./arithoh.sh &
   Each process uses its complete time quantum and the scheduler operates in round-robin fashion until the processes finish.



2. workload_mix2.sh: CPU-intensive with I/O intensive
   ./arithoh.sh &

./fstime.sh &
./arithoh.sh &
./fstime.sh &
./arithoh.sh &
./fstime.sh &

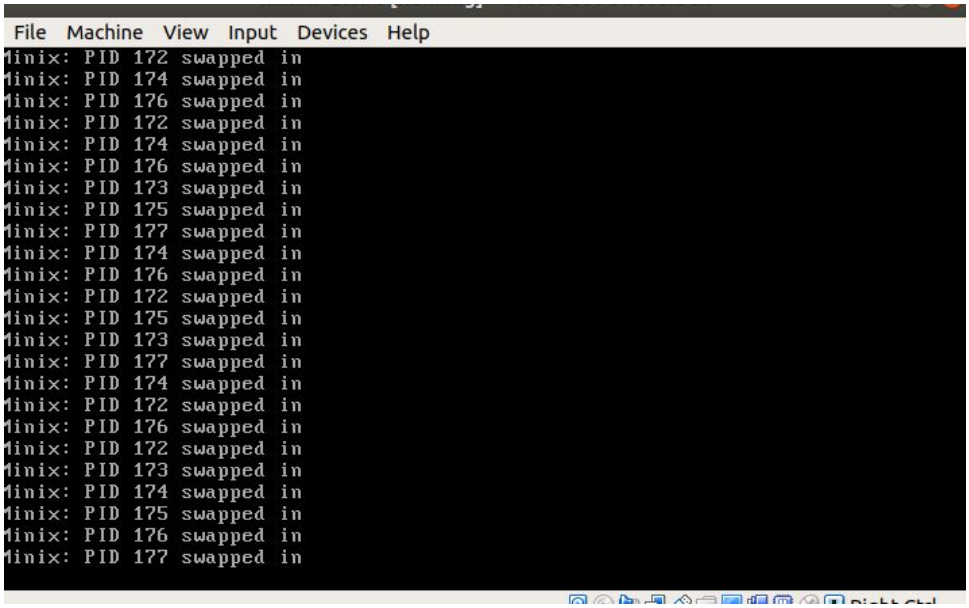
The time command shows 15.16, 0.38 and 3.75 for real, user and sys feilds respectively. This means fstime does some I/O work but is idle for a considerable time. Hence, the three arithoh's occupy most of the CPU time till they are completed.



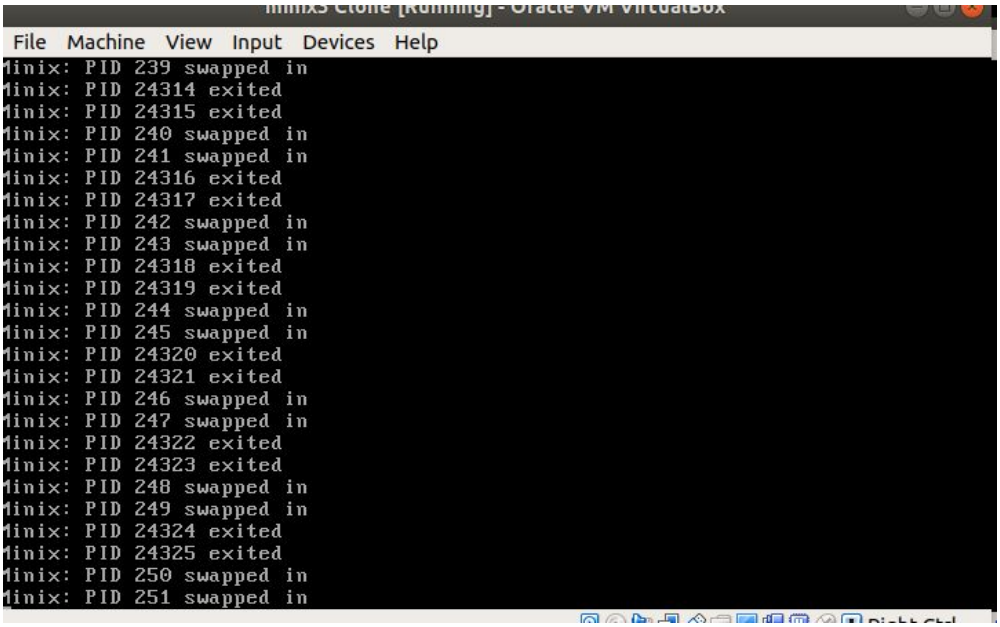
3. workload_mix3.sh: CPU-intensive with I/O intensive

./arithoh.sh &
./syscall.sh &
./arithoh.sh &
./syscall.sh &
./arithoh.sh &
./syscall.sh &

The process syscall also does I/O work but is less in the waiting queue unlike fstime.

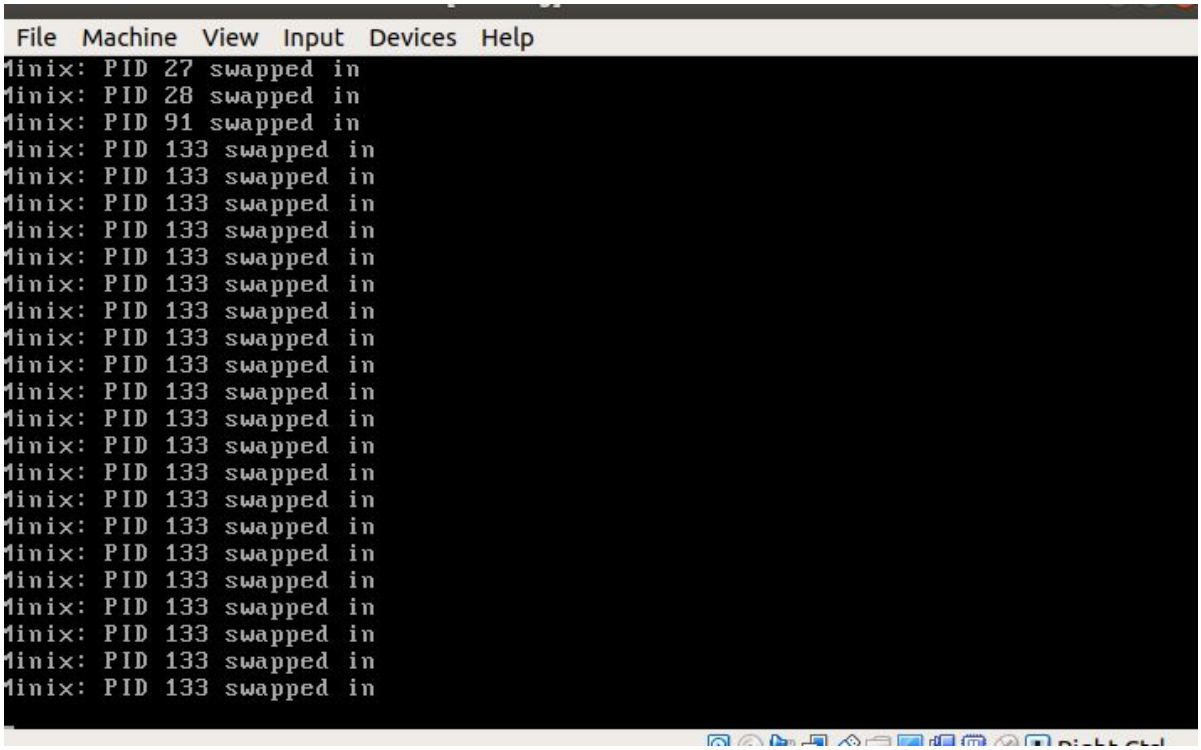


4. workload_mix4.sh: All I/O intensive processes
   ./pipe.sh &
   ./spawn.sh &
   ./pipe.sh &
   ./spawn.sh &
   All processes are I/O intensive. Hence, CPU schedules other processes as well (while all these processes are doing their respective I/O works).

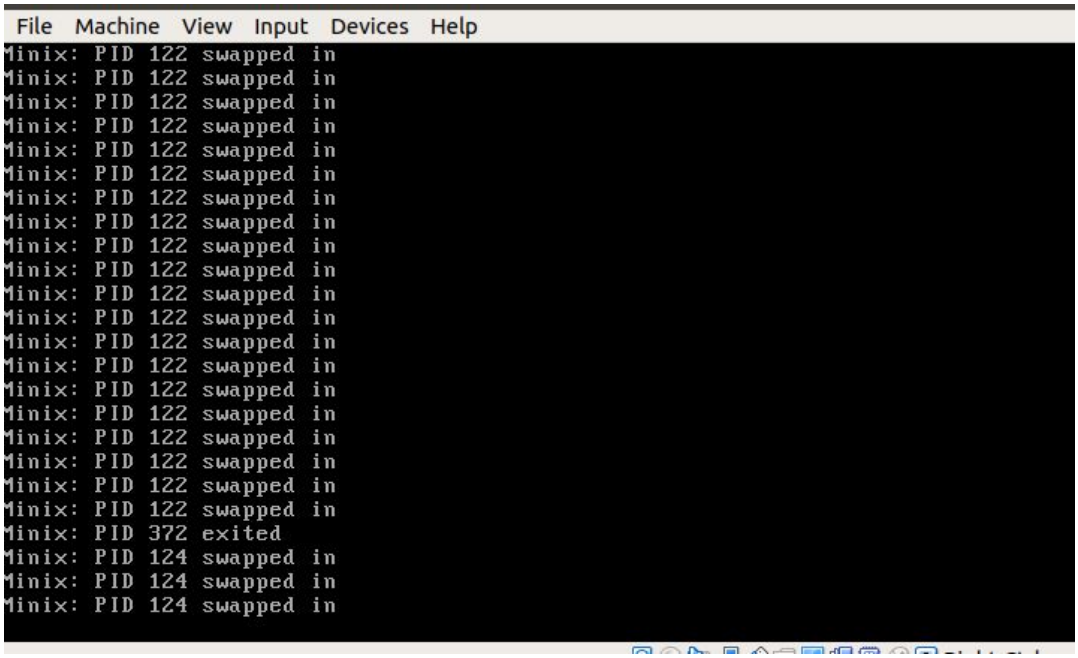


Part II

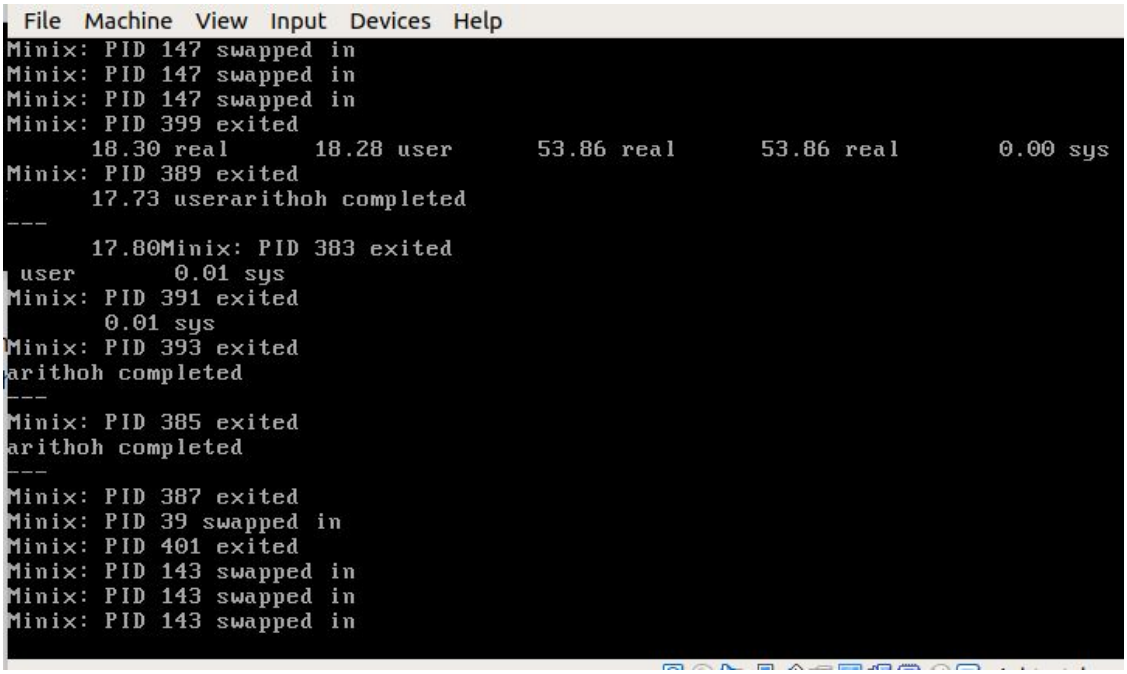
1. workload_mix1.sh:
   All the processes happen one after another, in the order in which they arrive.



2. workload_mix2.sh:
   The three arithoh's and fstime's were ordered alternatively in the file but since fstime had some I/O work to do, it left the CPU and the next process got scheduled. This way, all the three arithoh's completed first and then all the fstime's. Hence, **pseudo-FIFO**.



3. workload_mix3.sh:
   Similar to the second case, arithoh's completed first, followed by syscall's due to I/O work by syscall.



4. workload_mix4.sh:
   All the processes are I/O intensive. The scheduler executes a process as soon as it is available after its I/O work. Hence, it becomes similar to the round-robin case.