OS Lab 4

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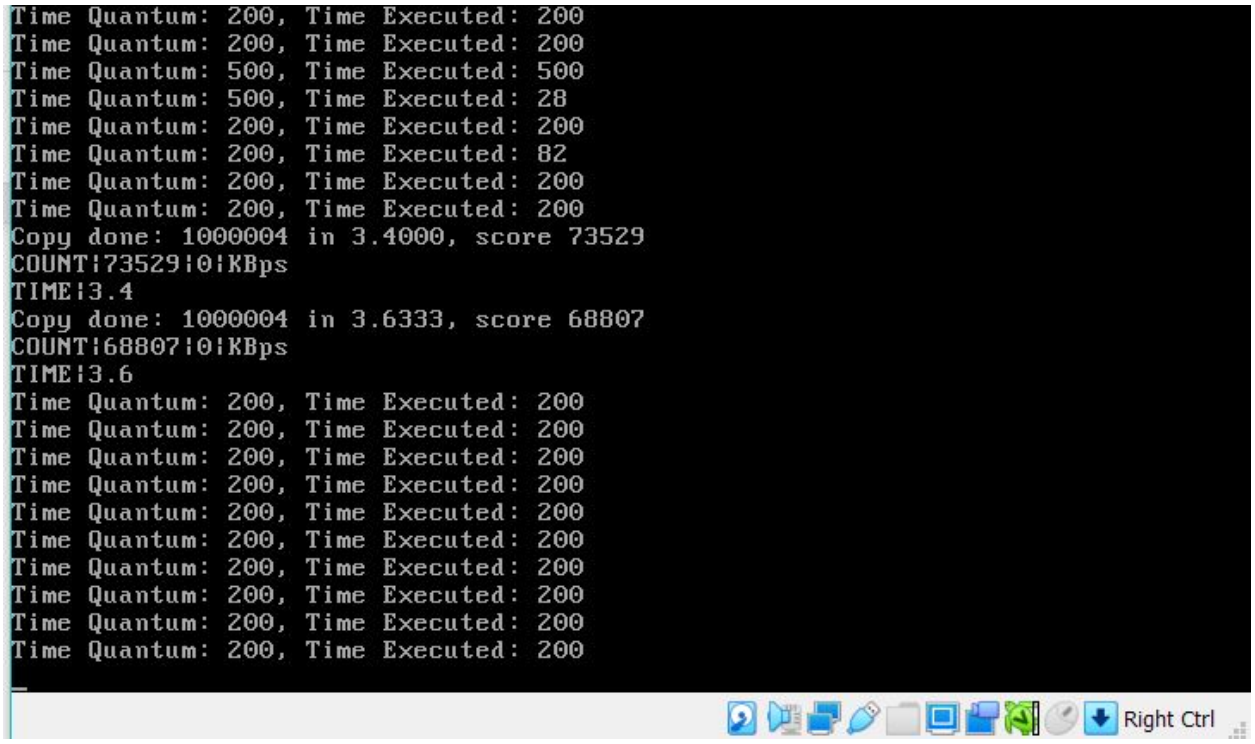
Part 1 (Standard Scheduler)

Workload Mix 1

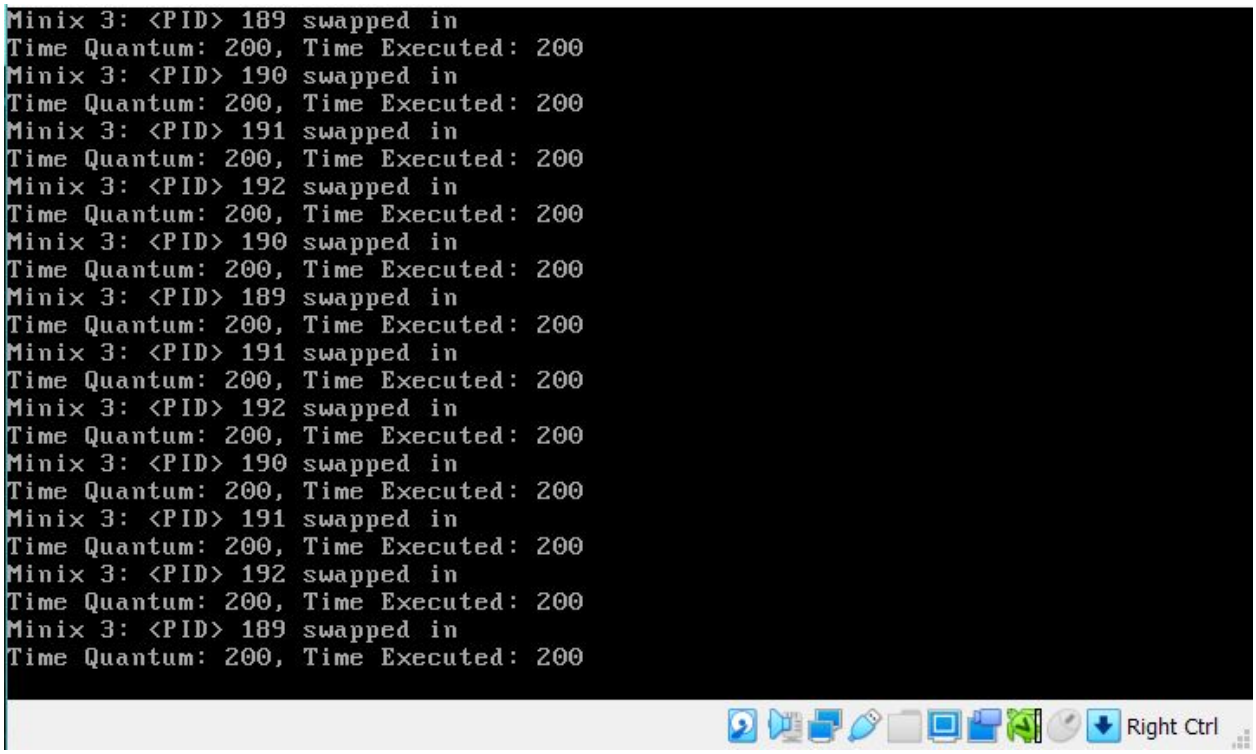
Parallel executions of 2 ./arithoh.sh and 2 ./fstime.sh
./arithoh & ./fstime & ./arithoh & ./fstime &



Observation : We see that all the processes are run in round-robin fashion (even though one is CPU intensive and one is IO intensive)

Workload Mix 2

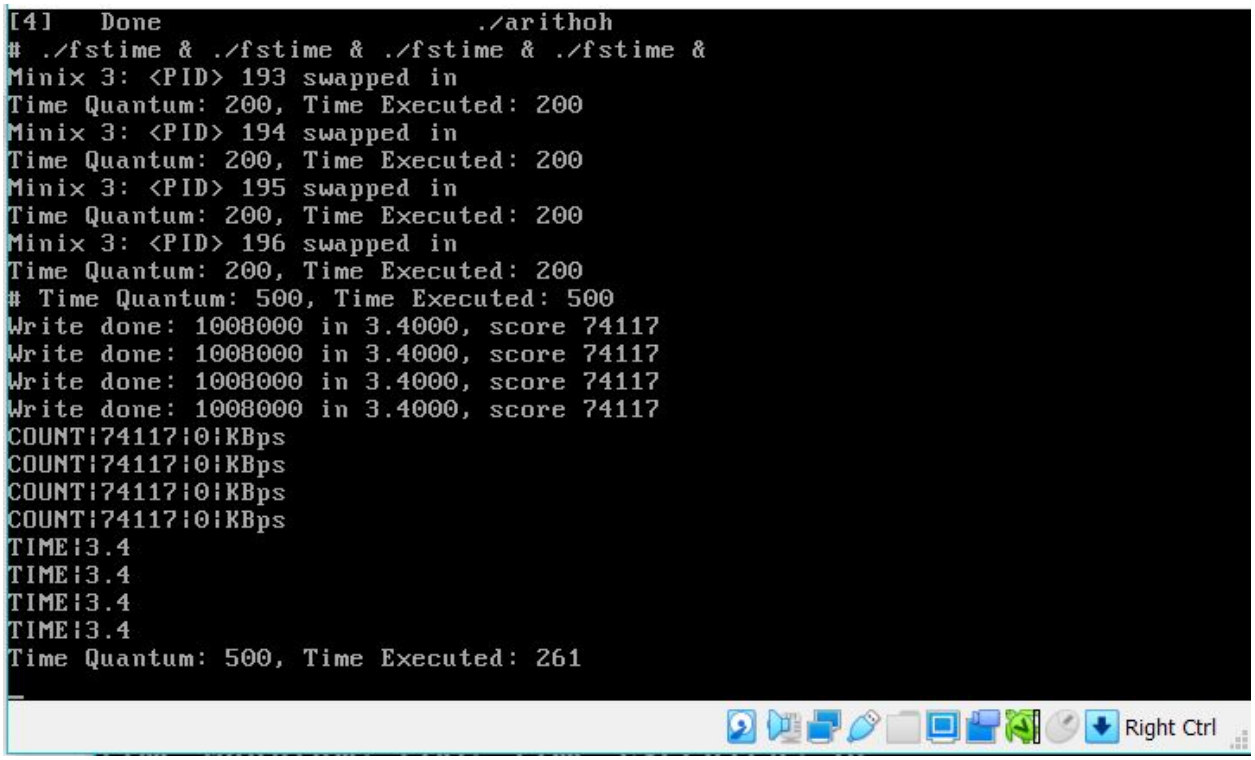
4 Parallel executions of ./arithoh.sh
./arithoh & ./arithoh & ./arithoh & ./arithoh &



Observation : all the processes are running in round robin fashion as seen in the screenshot attached. As all the processes are CPU intensive they need not to wait for I/O and execute in the time quanta that they are allocated.

Workload Mix 3

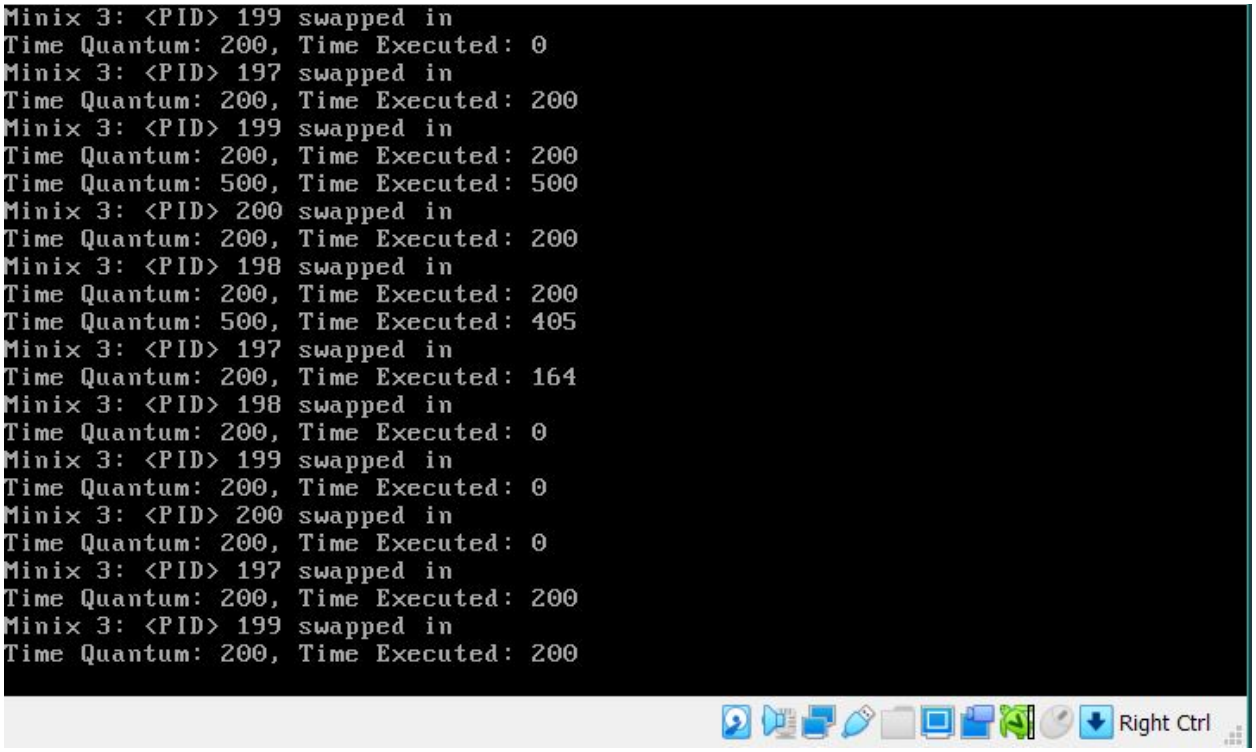
4 Parallel executions of ./fstime
./fstime & ./fstime & ./fstime & ./fstime &



Observations : All the 5 processes execute in RR fashion. And since fstime requires a higher quantum, but not all quanta are used to the fullest as they aren't CPU intensive.

Workload Mix 4

Parallel executions of 2 ./pipe and 2 ./arithoh
./pipe & ./arithoh & ./pipe & ./arithoh &

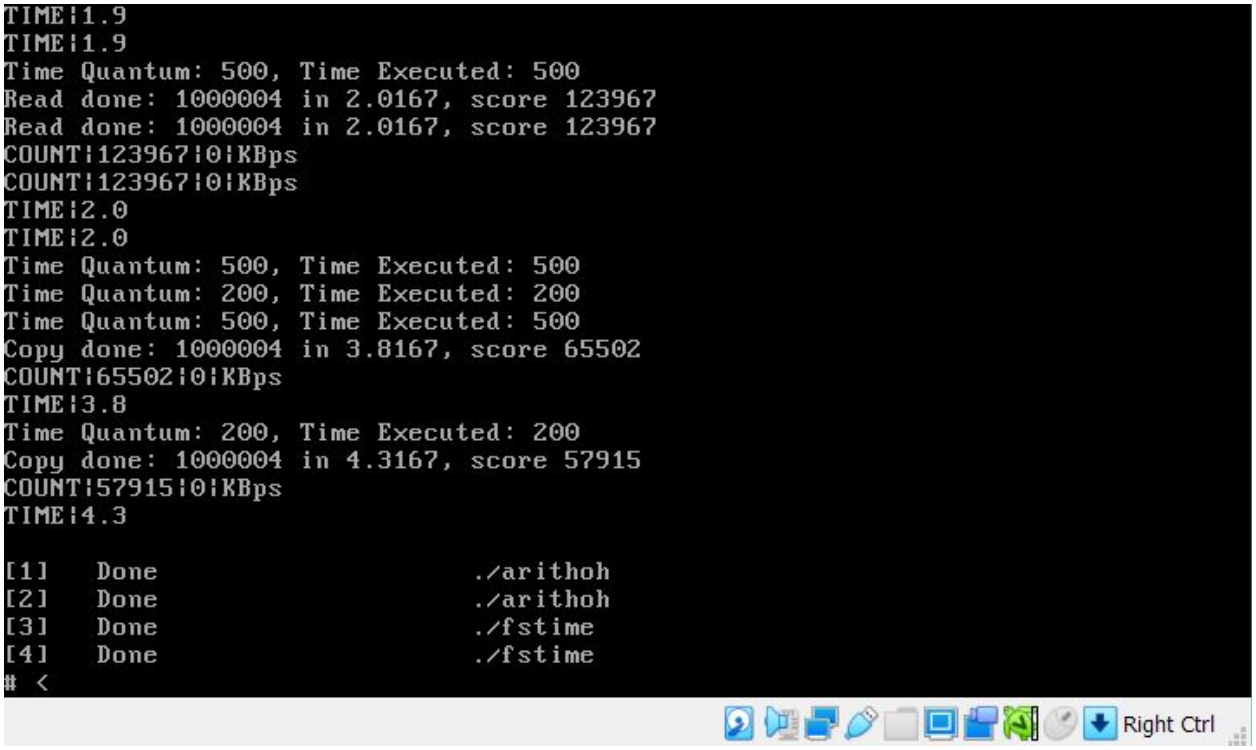


Observations ; As pipe.sh involves IPC, it invokes system calls and
hence gets a higher quantum (500 ms for system calls). But since arithoh CPU intensive it gets less quanta and is more likely to be scheduled.

Part 2 (Modified pseudo-FIFO Scheduler)

Workload Mix 1

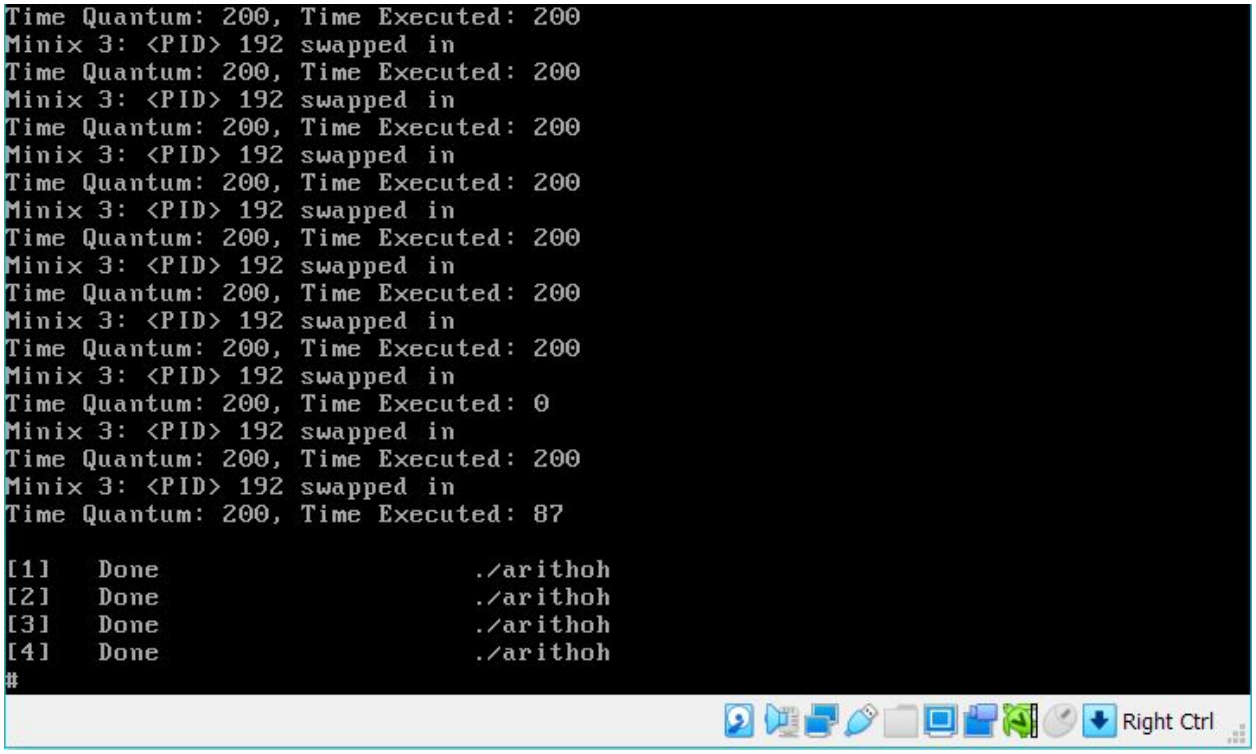
Parallel executions of 2 ./arithoh.sh and 2 ./fstime.sh
./arithoh & ./fstime & ./arithoh & ./fstime &



Observations : We see that the arithoh(CPU bound process) has tendency to complete before fstime(IO bound process). Arithoh get 200 quanta whereas fstime gets 500 quanta. As observed in the run arithoh consumes quanta, whereas fstime not always consumes its quanta.

Workload Mix 2

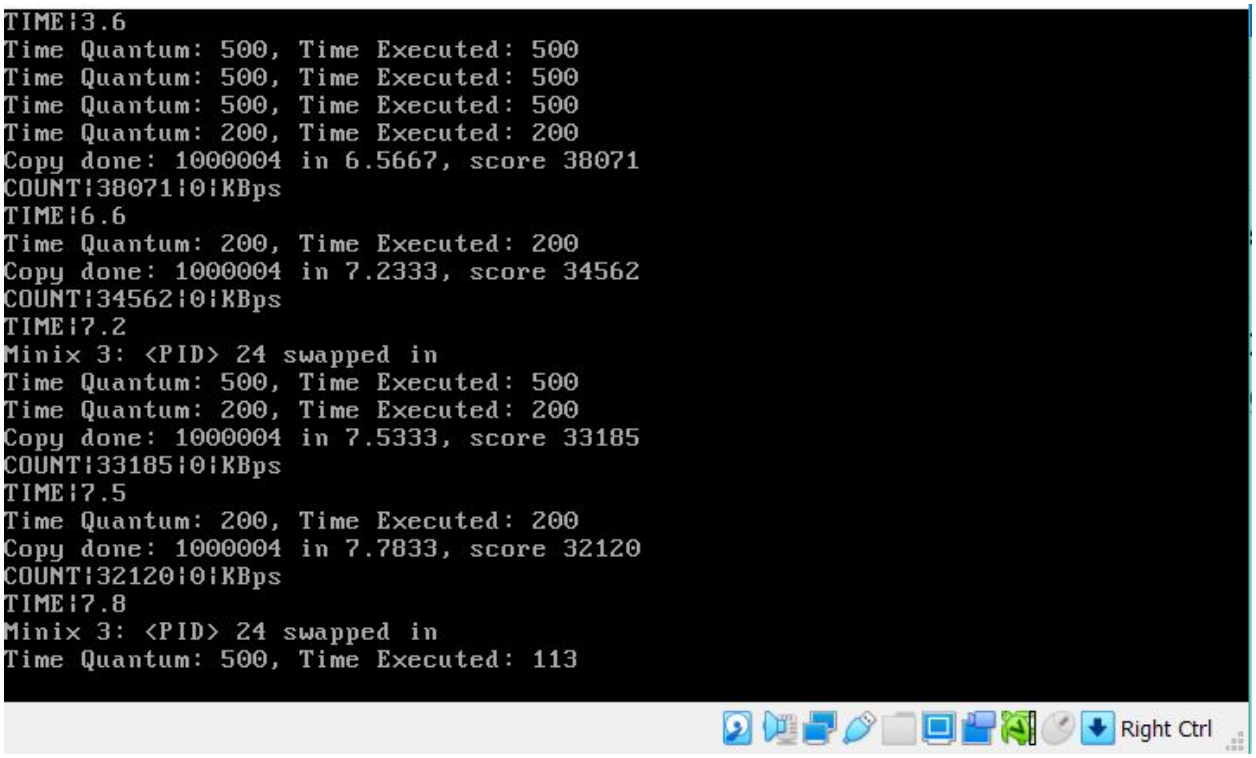
4 Parallel executions of ./arithoh.sh
./arithoh & ./arithoh & ./arithoh & ./arithoh &



Observation : 5 processes execute one after another in first come first serve basis. Occasionally, time executed other than 200.
Inference : CPU fairly schedules all the processes on a first com first serve basis. As the processes are CPU intensive process they generally execute I/O in allocated time quota.

Workload Mix 3

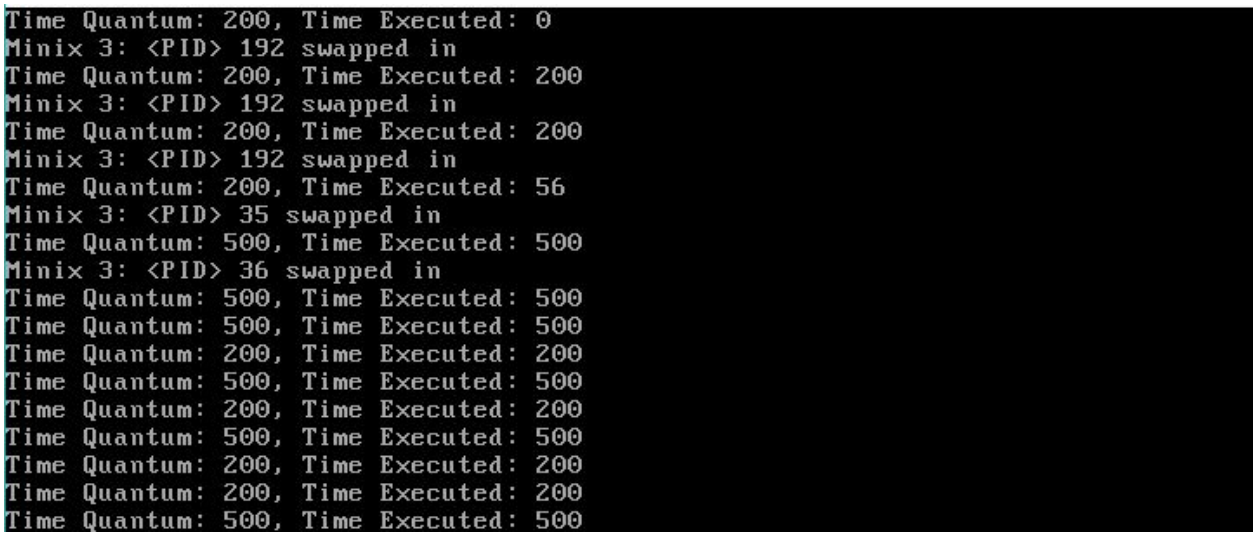
4 Parallel executions of ./fstime
./fstime & ./fstime & ./fstime & ./fstime &



Observation : The five process execute in First Come First Serve basis. Most of the time process is allocated 500 and uses a little less than 500 as process doesn't require the full quanta when nearing completion.

Workload Mix 4

Parallel executions of 2 ./pipe and 2 ./arithoh
./pipe & ./arithoh & ./pipe & ./arithoh &



Observations : We see that the arithoh(CPU bound process) has tendency to complete before pipe(process that requires IPC).