

Operating Systems Concepts

CSE 4001

Scheduler Assignment

Team Members:

- **Design:** Explain how your scheduler works (e.g., diagrams) and under what conditions it performs better (or worse) than the other scheduling algorithm(s).
- *We decided to use a First-In-First-Out Scheduler, it can handle basic scheduling, but does not necessarily beat the average response time of the Round Robin Scheduler. Round robin scheduling actually is not a great when majority of the tasks are of the same length.*
- **Implementation:** Specify what information you need to maintain to implement your scheduler, what data structures you used.
- *We used a simple queue as a data structure, which includes a First-In-First-Out (FIFO) discipline, while scheduling and allocating CPU usage to certain tasks.*
- **Benchmark:** for each of the programs in `testbin/` (i.e., `add`, `hog`, `farm`, `schedpong`) add a picture where you compare the execution of the default scheduler (i.e. round robin) versus your scheduler.
- When comparing our scheduler to the round robin scheduler we discovered that the round robin scheduler was better than our First-In-First-Out scheduler four 3 out of the four test samples. As seen below in the benchmarks we see that the FIFO scheduler is better only for one test case (add) otherwise the Round-Robin scheduler seems to complete the rest of the test samples within a smaller Average response time. Even though the difference between both schedulers is minuscule we see a small difference between the two in the decimals, but when it comes to scheduling tasks to the CPU at a much larger scale these minuscule time differences make a bigger impact.

```

cse4001@ubuntu: ~/os161/root
File Edit View Search Terminal Help
lser0 at lamebus0
con0 at lser0

cpu0: MIPS/161 (System/161 2.x) features 0x0
OS/161 kernel [? for menu]: p testbin/add
testbin/add: Usage: add num1 num2
Program (pid 2) exited with status 1
Operation took 0.207516836 seconds
OS/161 kernel [? for menu]: p testbin/hog
Program (pid 3) exited with status 0
Operation took 8.550964995 seconds
OS/161 kernel [? for menu]: p testbin/farm
cat: catfile: No such file or directory
testbin/farm: pid 8: exit 1
Program (pid 4) exited with status 0
Operation took 25.944555225 seconds
OS/161 kernel [? for menu]: p testbin/schedpong
Running with 2 thinkers, 0 grinders, and 1 pong groups of size 6 each.
Forking done; starting the workload.
.....
.....
.....
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
--- Timings ---
Thinkers: 49.462811520
Pong group 0: 58.301238280
Unknown syscall 68
Program (pid 9) exited with status 0
Operation took 59.362191678 seconds
OS/161 kernel [? for menu]:

```

First In First Out (FIFO)

```

daium@Daium-Ubuntu: ~/os161/root
ltimer0 at lamebus0
beep0 at ltimer0
rtclock0 at ltimer0
lrandom0 at lamebus0
random0 at lrandom0
lhd0 at lamebus0
lhd1 at lamebus0
lser0 at lamebus0
con0 at lser0

cpu0: MIPS/161 (System/161 2.x) features 0x0
OS/161 kernel [? for menu]: p testbin/add
testbin/add: Usage: add num1 num2
Program (pid 2) exited with status 1
Operation took 0.207611246 seconds
OS/161 kernel [? for menu]: p testbin/hog
Program (pid 3) exited with status 0
Operation took 8.550916274 seconds
OS/161 kernel [? for menu]: p testbin/farm
cat: catfile: No such file or directory
testbin/farm: pid 8: exit 1
Program (pid 4) exited with status 0
Operation took 25.924297457 seconds
OS/161 kernel [? for menu]: p testbin/schedpong
Running with 2 thinkers, 0 grinders, and 1 pong groups of size 6 each.
Forking done; starting the workload.
.....
.....
.....
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
Unknown syscall 68
--- Timings ---
Thinkers: 49.463148240
Pong group 0: 58.302561960
Unknown syscall 68
Program (pid 9) exited with status 0
Operation took 59.323401852 seconds
OS/161 kernel [? for menu]:

```

Round-Robin Scheduler