

## Lab 9: System Calls

### Part 1: Information Maintenance System Calls

```
goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ ./info
Example of system information

1. The current time of day - in nanoseconds
Current time: 1731632071405275392.00 nanoseconds

2. The system's network name
Network name: AAD-PF50KM51

3. The operating system name
Operating system: Linux

4. The operating system release and version
Release: 5.15.153.1-microsoft-standard-WSL2

5. The system's hardware type
Hardware type: x86_64

6. The number of CPUs on the system
Number of CPUs: 12

7. The total amount of physical memory IN BYTES
Total memory: 8161259520

8. The total amount of free memory IN BYTES
Free memory: 6313500672
```

Figure 1: Result of info program

### Part 2: Process Control System Calls

#### 2.1 Retrieving Process Information

- **getpid** - get the process ID of the current process
- **getpriority** - highest priority (lowest numerical value) enjoyed by any of the specified processes
- **sched\_getscheduler** - scheduling policy currently applied to the process identified by pid

- **getcpu** - identifies the processor and node on which the calling thread or process is currently running and writes them into the integers pointed to by the cpu and node arguments
- **getrusage** - return information about the resource usage of a process.
- **getrlimit** - get the resource limit for a process

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```

gcc -o pmod pmod.o
goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ ./pinfo
Results for process 19203:
Priority: 0
Scheduling method: SCHED_OTHER
goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ ./pinfo 485
Results for process 485:
Priority: 0
Scheduling method: SCHED_OTHER
goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ ./pinfo 3
sched_getscheduler: No such process
goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ █

```

**Figure 2:** Result of pinfo program

## 2.2 Altering a Process

- **nice** - takes an integer argument and adjusts the niceness value of the calling process
- **nanosleep** - suspends the execution of the calling thread until either at least the time specified in \*duration has elapsed, or the delivery of a signal

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<sup>1</sup>Research each of the system calls and be able to describe what they are used for.

<sup>2</sup>Research each of the system calls and be able to describe what they are used for.

Uptime: 1 day, 01:52:34

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
480	goetschm	20	0	164M	3496	12	S	0.0	0.0	0:00.00	(sd-pam)
485	goetschm	20	0	9224	5392	3668	S	0.0	0.1	0:00.15	-bash
44162	goetschm	30	10	2648	952	852	S	0.0	0.0	0:00.00	./pmod
22990	goetschm	20	0	9268	5872	3896	S	0.0	0.1	0:00.18	/bin/bash --init-file /home/goe
31260	goetschm	20	0	9268	5728	3752	S	0.0	0.1	0:00.15	/bin/bash --init-file /home/goe
44210	goetschm	20	0	7692	3532	3256	S	0.0	0.0	0:00.00	/bin/bash /home/goetschm/.vsco
269	root	20	0	7692	3656	3400	S	0.0	0.0	0:00.20	/bin/bash /snap/ubuntu-desktop-
407	root	20	0	7528	5000	4080	S	0.0	0.1	0:00.04	/bin/login -f

**Figure 3:** Result of pmod program in http. Note the PRI and NI columns

## Part 3: File Management System Calls

```

goetschm@AAD-PF50KM51:~/CPE2600/labs/lab9/system-calls-turney-jeffTheLandShark$ ./finfo README.md
File type: Regular file
Permissions: rw-r--r--
Owner: 1000
Size: 14 bytes
Last modification time: Thu Nov 14 16:23:51 2024

```

**Figure 4:** Result of finfo program on README.md in repo