Joshua Andrews, Miles Taylor
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# Operating Systems Lab Three Report

## Task 1:

This task shows the ps command working.

```
$ ps
name     pid     state   priority
init     1       SLEEEPING       20
sh       2       SLEEEPING       20
ps       78      RUNNING         20
$
```

## Task 2:

This task shows that the nice command is working.

```
$ PCarhienld t5  cre4 catreatinge cd
hild 5
Parent 4 creatChinig childl 6
dP are6n tc reated4 creCahtil
ing child 7
Parent 4 creating child 8
d 7 created
Child 8 created
ps
name     pid     state   priority
init     1       SLEEEPING       20
sh       2       SLEEEPING       20
lab3test         5       RUNNING         20
ps       9       RUNNING         20
lab3test         6       RUNNABLE        20
lab3test         7       RUNNING         20
lab3test         8       RUNNABLE        20
$ nice 5 18
Setting priority of pid 5 to 18
Priority of pid 5 is 18
$ ps
name     pid     state   priority
init     1       SLEEEPING       20
sh       2       SLEEEPING       20
lab3test         5       RUNNABLE        18
ps       11      RUNNING         20
lab3test         6       RUNNABLE        20
lab3test         7       RUNNING         20
lab3test         8       RUNNING         20
$ Child 6 terminated
```

## Task 3:

This task shows the implemented round robin scheduling.

```
$ lab3test2 &; lab3test2 &; lab3test2 &
$ Parent 5 creatinCg childh il9
d 9 created
Parent P8arent 7  crcrCeatihnild 1g0  ccChihld i111eadt in11r
 eatcergd
child 10
eated
ps
name     pid     state   priority
init     1       SLEEEPING       10
sh       2       SLEEEPING       10
lab3test2        9       RUNNING         20
lab3test2        8       SLEEEPING       10
lab3test2        5       SLEEEPING       10
lab3test2        7       SLEEEPING       10
lab3test2        10      RUNNING         20
lab3test2        11      RUNNABLE        20
ps       12      RUNNING         10
$ ps
name     pid     state   priority
init     1       SLEEEPING       10
sh       2       SLEEEPING       10
lab3test2        9       RUNNING         20
lab3test2        8       SLEEEPING       10
lab3test2        5       SLEEEPING       10
lab3test2        7       SLEEEPING       10
lab3test2        10      RUNNABLE        20
lab3test2        11      RUNNING         20
ps       13      RUNNING         10
$ ps
name     pid     state   priority
init     1       SLEEEPING       10
sh       2       SLEEEPING       10
lab3test2        9       RUNNABLE        20
lab3test2        8       SLEEEPING       10
lab3test2        5       SLEEEPING       10
lab3test2        7       SLEEEPING       10
```

```
lab3test2       10      RUNNING         20
lab3test2       11      RUNNING         20
ps      14      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNABLE        20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNING         20
lab3test2       11      RUNNABLE        20
ps      15      RUNNING         10
$ sp
exec sp failed
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNABLE        20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNING         20
lab3test2       11      RUNNING         20
ps      17      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNABLE        20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNING         20
lab3test2       11      RUNNING         20
ps      18      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNABLE        20
lab3test2       8       SLEEEPING       10
```

```
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNING         20
lab3test2       11      RUNNING         20
ps      19      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNING         20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNING         20
lab3test2       11      RUNNABLE        20
ps      20      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNING         20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNABLE        20
lab3test2       11      RUNNING         20
ps      21      RUNNING         10
$ ps
name    pid     state   priority
init    1       SLEEEPING       10
sh      2       SLEEEPING       10
lab3test2       9       RUNNING         20
lab3test2       8       SLEEEPING       10
lab3test2       5       SLEEEPING       10
lab3test2       7       SLEEEPING       10
lab3test2       10      RUNNABLE        20
lab3test2       11      RUNNING         20
ps      22      RUNNING         10
$ Child 10 terminated
pChild 9 terminated
sChild 11 terminated
$
```

## Task 4:

This shows the priority scheduling working.

```
$ lab3test &; lab3test&; lab3test&
$ PareChntild  71 creat6e7d crea
Parent 70 creParatintengitn  chig l6d 791
 ccrehating cilhd ild 73
72
Child 72 creChatield 73 d
created
ps
name     pid     state   priority
init     1       SLEEEPING       10
sh       2       SLEEEPING       10
lab3test         71      RUNNING         20
ps       74      RUNNING         10
lab3test         72      RUNNING         20
lab3test         73      RUNNABLE        20
$ nice 73 15
Setting priority of pid 73 to 15
Priority of pid 73 is 15
$ ps
name     pid     state   priority
init     1       SLEEEPING       10
sh       2       SLEEEPING       10
lab3test         71      RUNNING         20
ps       76      RUNNING         10
lab3test         72      RUNNABLE        20
lab3test         73      RUNNING         15
$ Child 71 terminated
Child 73 terminated
Child 72 terminated
```

To show that the priority scheduling was working I first created three background processes using lab3test. They have a default nice value of 20 so they began to run sequentially (the first ps call shows this). I then called nice 73 15 to increase the priority of the third process. This caused the third process to begin running in place of the second lab3test process due to its higher priority (shown in the second ps call).