# Operating Systems Lab Three Report

# Task 1:

This task shows the ps command working.

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

### 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
         pid
name
                  state
                           priority
init
                  SLEEEPING
                                   20
          1
          2
                  SLEEEPING
sh
                                   20
lab3test
                  5
                           RUNNING
                                            20
          9
                  RUNNING
ps
                                   20
                                            20
lab3test
                  6
                           RUNNABLE
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
          pid
                          priority
name
                  state
init
          1
                  SLEEEPING
                                   20
          2
                  SLEEEPING
                                   20
sh
lab3test
                           RUNNABLE
                                            18
          11
                  RUNNING
ps
                                   20
lab3test
                  6
                           RUNNABLE
                                            20
                  7
lab3test
                           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
       pid
            state priority
name
     1
          SLEEPING
init
                         10
     2
sh
          SLEEPING
                         10
lab3test2
            9
                RUNNING
                               20
lab3test2
            8
                 SLEEPING
                                10
lab3test2
            5
                SLEEPING
                                10
lab3test2
            7
                 SLEEPING
                                10
lab3test2
            10
                                20
                 RUNNING
lab3test2
                 RUNNABLE
                                 20
            11
ps
     12
           RUNNING
                         10
$ ps
            state priority
name
       pid
init
          SLEEPING
                         10
     1
     2
sh
          SLEEPING
                         10
lab3test2
            9
                RUNNING
                               20
lab3test2
            8
                 SLEEPING
                                10
lab3test2
            5
                SLEEPING
                                10
lab3test2
            7
                 SLEEPING
                                10
lab3test2
            10
                                 20
                 RUNNABLE
lab3test2
                                20
            11
                 RUNNING
ps
     13
           RUNNING
                         10
$ ps
            state priority
name
       pid
init
     1
          SLEEPING
                         10
     2
          SLEEPING
sh
                         10
lab3test2
            9
                 RUNNABLE
                                20
            8
lab3test2
                 SLEEPING
                                10
lab3test2
            5
                SLEEPING
                                10
lab3test2
            7
                 SLEEPING
                                10
```

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

```
lab3test2
                              10
           5
                SLEEPING
lab3test2
           7
                SLEEPING
                              10
lab3test2
           10
                RUNNING
                              20
lab3test2
           11
                RUNNING
                              20
ps
     19
          RUNNING
                        10
$ ps
name pid state priority
init
     1
          SLEEPING
                        10
     2
sh
          SLEEPING
                        10
lab3test2
           9
                RUNNING
                              20
lab3test2
           8
                SLEEPING
                              10
lab3test2
           5
                SLEEPING
                              10
lab3test2
           7
                SLEEPING
                              10
lab3test2
           10
                RUNNING
                              20
lab3test2
                RUNNABLE
                               20
           11
ps
     20
          RUNNING
                        10
$ ps
name pid state priority
          SLEEPING
init
                        10
     2
          SLEEPING
                        10
sh
lab3test2
           9
                RUNNING
                              20
           8
lab3test2
                SLEEPING
                              10
lab3test2
           5
                SLEEPING
                              10
lab3test2
           7
                SLEEPING
                              10
lab3test2
           10
                RUNNABLE
                               20
lab3test2
                              20
           11
                RUNNING
ps
     21
          RUNNING
$ ps
      pid state priority
name
init
    1
          SLEEPING
                        10
     2
          SLEEPING
                        10
sh
lab3test2
           9
                RUNNING
                              20
lab3test2
           8
                SLEEPING
                              10
lab3test2
           5
                SLEEPING
                              10
lab3test2
           7
                SLEEPING
                              10
lab3test2
           10
                RUNNABLE
                               20
lab3test2
                RUNNING
                              20
           11
     22
          RUNNING
                        10
ps
$ 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 16d 791
ccrehating cilhd ild 73
72
Child 72 creChatield 73 d
created
ps
       pid
             state priority
name
init
     1
          SLEEPING
                           10
sh
      2
          SLEEPING
                           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
          SLEEPING
                          10
     2
          SLEEPING
                           10
sh
lab3test
                 RUNNING
            71
                                 20
ps
           RUNNING
                           10
      76
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).