# **CS314 Lab-3**

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#### Part-I

In Part-I, we have to print the string, "PID <pid> swapped in" when the scheduler brings a user-level process.

In order to achieve this, we have to edit the file *schedule.c* in and add the printf() statement whenever rmp->priority>= USER Q

This file *scheduler.c* is present in the folder *minix/servers/sched* directory path

After this, we run the make build command.

```
Minix: PID 25057 exited
Minix: PID 25058 created
Minix: PID 25058 exited
Minix: PID 25059 created
Minix: PID 25059 exited
Minix: PID 25060 created
Minix: PID 25060 exited
Minix: PID 25061 created
Minix: PID 25061 exited
Minix: PID 25062 created
1inix: PID 25062 exited
1inix: PID 25007 exited
1inix: PID 24974 exited
1inix: PID 24897 exited
1inix: PID 24896 exited
Minix: PID 25063 created
Build started at: Sun Jan 30 19:40:20 GMT 2022
Minix: PID 25063 exited
Minix: PID 25064 created
Build finished at: Minix: PID 25065 created
Sun Jan 30 19:44:48 GMT 2022
Minix: PID 25065 exited
Minix: PID 25064 exited
Minix: PID 396 exited
```

```
Minix/i386 (10.0.2.15) (console)
login: root
PID 183 swapped in
Password:
ID 183 swapped in
Copyright (c) 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 200
2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013
The NetBSD Foundation, Inc. All rights reserved.
Copyright (c) 1982, 1986, 1989, 1991, 1993
The Regents of the University of California. All rights reserved.
For post-installation usage tips such as installing binary
packages, please see:
http://wiki.minix3.org/UsersGuide/PostInstallation
For more information on how to use MINIX 3, see the wiki:
http://wiki.minix3.org
We'd like your feedback: http://minix3.org/community/
PID 187 swapped in
PID 188 swapped in
```

This two commands are put together in the *run.sh* file

### Part-II

UnixBench Benchmark suite was downloaded from the google drive, and then the gmake command was run.

After that, I created four workload\_mix.sh files.

### 1) workload\_mix1.sh

In this file, I run syscall and fstime.

syscall had PID 239 and it took 12.01 seconds

### fstime had PID 238 and it took 17.91 seconds

```
PID 239 swapped in
Write done: 1008000 in 1.4167, score 177882
COUNT:177882:0:KBps
TIME:1.4
PID 239 swapped in
PID 239 swapped in
PID 239 swapped in
PID 239 swapped in
PID 233 swapped in
PID 239 swapped in
Read done: 1000004 in 1.6000, score 156250
COUNT:156250:0:KBps
TIME:11.6
PID 239 swapped in
12.01 real
                                   2.90 user
                                                           6.10 sys
syscall completed
PID 238 swapped in
PID 238 swapped in
Copy done: 1000004 in 3.9000, score 64102
COUNT:64102:0:KBps
TIME:3.9
         17.91 real
                                   0.61 user
                                                           6.30 sys
 stime completed
```

# 2) workload\_mix2.sh

In this file, I run fstime and arithoh

fstime had PID 247 and it took 18.56 seconds arithoh had PID 246 and it took 24.40 seconds

```
PID 246 swapped in
PID 247 swapped in
PID 246 swapped in
PID 247 swapped in
PID 247 swapped in
PID 247 swapped in
PID 247 swapped in
PID 248 swapped in
PID 249 swapped in
PID 240 swapped in
```

```
PID 246 swapped in
```

# 3) workload\_mix3.sh

In this file, syscall and arithoh

syscall had PID 7 and it took 8.78 seconds arithoh had PID 255 and it took 21.05 seconds

```
PID 7 swapped in
PID 255 swapped in
PID 7 swapped in
PID 7 swapped in
PID 255 swapped in
PID 255 swapped in
PID 7 swapped in
PID 7 Swapped in
PID 255 swapped in
PID 7 swapped in
PID 255 swapped in
PID 7 swapped in
PID 255 swapped in
         8.78 real
                               2.21 user
                                                    4.73 sys
syscall completed
PID 255 swapped in
PID 255 swapped in
PID 255 swapped in
```

```
PID 255 swapped in
```

### 4) workload\_mix4.sh

In this file, I run *fstime* and *fstime* both times

The first *fstime* had PID 37 and it took 24.07 seconds whereas the second *fstime* had PID 23 and it took 25.40 seconds

```
COUNT:80645:0:KBps
TIME:3.1
Read done: 1000004 in 3.4667, score 72115
COUNT:72115:0:KBps
TIME:3.5
PID 37 swapped in
PID 37 swapped in
PID 38 swapped in
PID 23 swapped in
PID 38 swapped in
PID 37 swapped in
Copy done: 1000004 in 7.3500, score 34013
COUNT:34013:0:KBps
TIME:7.3
       24.70 real
                                                  6.88 sys
                             0.66 user
 stime completed
PID 23 swapped in
Copy done: 1000004 in 7.6667, score 32608
COUNT:32608:0:KBps
TIME:7.7
       25.40 real
                             0.48 user
                                                  6.73 sys
 stime completed
```

As we can see, the time taken by each of these processes didn't vary much every time they were run in different bash files.