

Xv6 PRIORITY SCHEDULER REPORT

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| Roll Number | 20171192 |
| Name | Prazwal |

Priority Based Scheduler

Priority scheduling involves priority assignment to every process, and processes with higher priorities (here having less priority number b/w 0-100) are carried out first, whereas tasks with equal priorities, in our model, are carried out based on round robin basis. Made testbench named as test.c.

To test run two separate instances of test in background. e.g test & ; test & ;

Comparison between Round Robin and Priority based scheduler on the basis of starvation

1. Round robin allocates time slices to each process in a cyclic manner and stops starvation.
2. Priority based scheduling may cause starvation because *high priority* (low number) processes will given be given preference over *low priority* (high number) processes.
3. With same priority processes, Round robin scheduler is used.

Round Robin

```

$ test & ; test &
$ ps
Name      PID    State   Priority
init       1     SLEEPING    2
sh         2     SLEEPING    2
test       7     RUNNING    60
test       6     SLEEPING    2
test       5     SLEEPING    2
test       8     RUNNABLE    60
ps         9     RUNNING    2
$ ps
Name      PID    State   Priority
init       1     SLEEPING    2
sh         2     SLEEPING    2
test       7     RUNNABLE    60
test       6     SLEEPING    2
test       5     SLEEPING    2
test       8     RUNNING    60
ps        10     RUNNING    2
$ █

```

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Priority Scheduler

```
init    1    SLEEPING    2
sh      2    SLEEPING    2
test    8    RUNNING     60
test    7    SLEEPING    2
test    6    SLEEPING    2
test    9    RUNNABLE    60
ps      10   RUNNING     2
$ set_priority 8 12
  pid=8, pr=12
Previous priority of   PID 8 is 60
New/Current priority of PID 8 is 12
$ ps
Name    PID    State    Priority
init     1    SLEEPING    2
sh       2    SLEEPING    2
test     8    RUNNING     12
test     7    SLEEPING    2
test     6    SLEEPING    2
test     9    RUNNABLE    60
ps      12    RUNNING     2
$ ps
Name    PID    State    Priority
init     1    SLEEPING    2
sh       2    SLEEPING    2
test     8    RUNNING     12
test     7    SLEEPING    2
test     6    SLEEPING    2
test     9    RUNNABLE    60
ps      13    RUNNING     2
$ ps
Name    PID    State    Priority
init     1    SLEEPING    2
sh       2    SLEEPING    2
test     8    RUNNING     12
test     7    SLEEPING    2
test     6    SLEEPING    2
test     9    RUNNABLE    60
ps      14    RUNNING     2
$ ps
Name    PID    State    Priority
init     1    SLEEPING    2
sh       2    SLEEPING    2
test     8    RUNNING     12
test     7    SLEEPING    2
test     6    SLEEPING    2
test     9    RUNNABLE    60
```

Test Bench

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```
#include "types.h"
#include "stat.h"
#include "user.h"
#include "fcntl.h"
```

```
int main(int argc, char *argv[]){
    int fork_id = fork();
    if (fork_id == 0) {
        double d = 1, x = 0;
        for (int i = 0; i < 30; ++i) {
            for (int j = 0; j < 50; ++j) {
                for (int k = 0; k < 200000; k += d) {
                    for(int l=0;l<2;l++)
                        x = x + 102;
                }
            }
        }
        printf(1, "Test function ended\n");
    }
    exit();
}
```