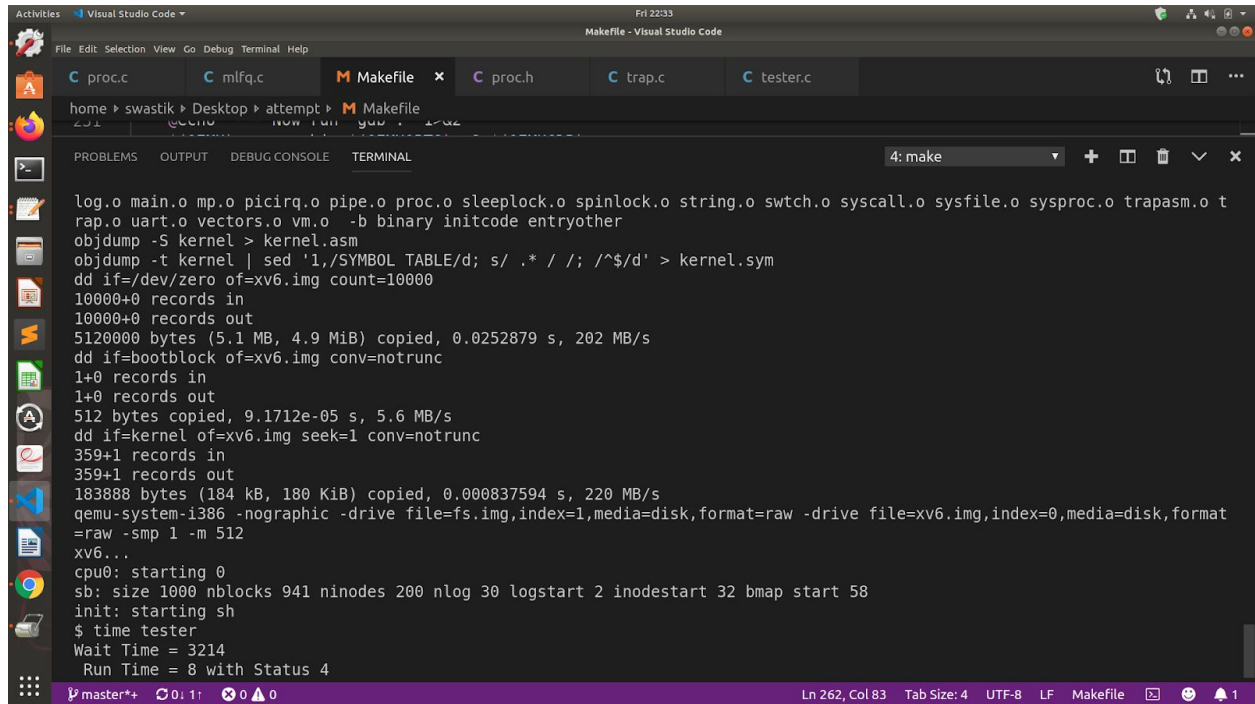


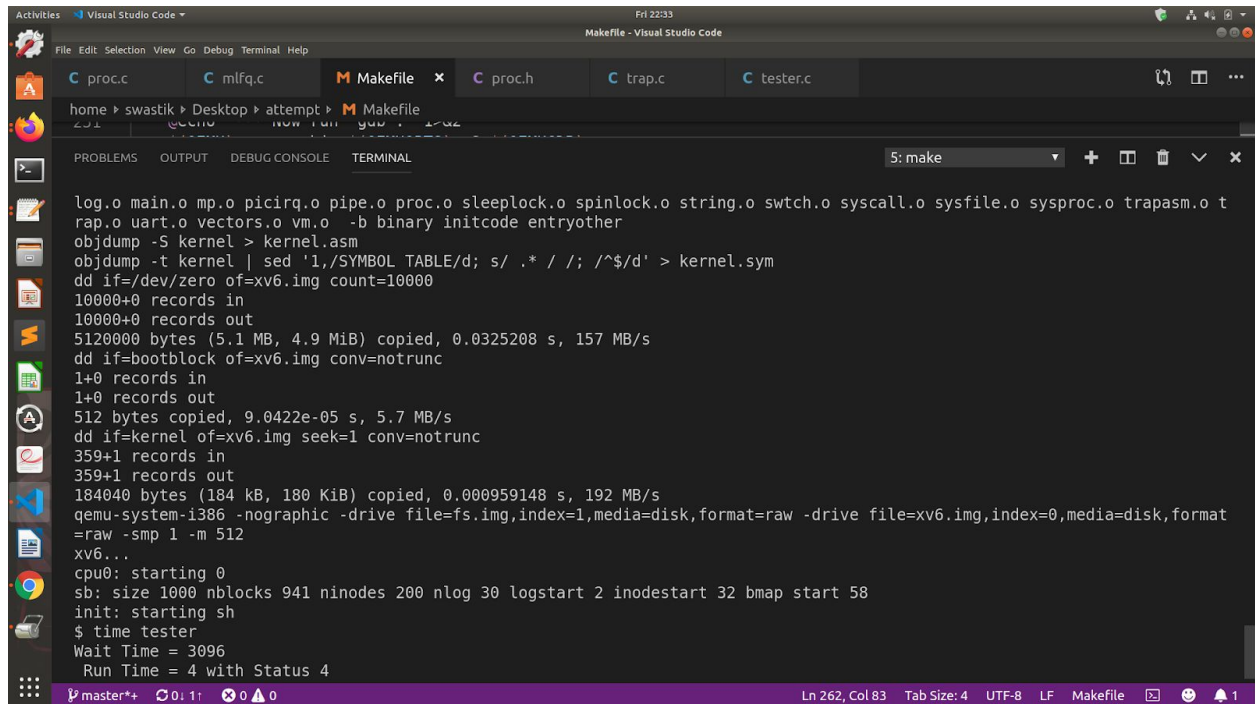
ASSIGNMENT -5

DEFAULT(ROBIN)



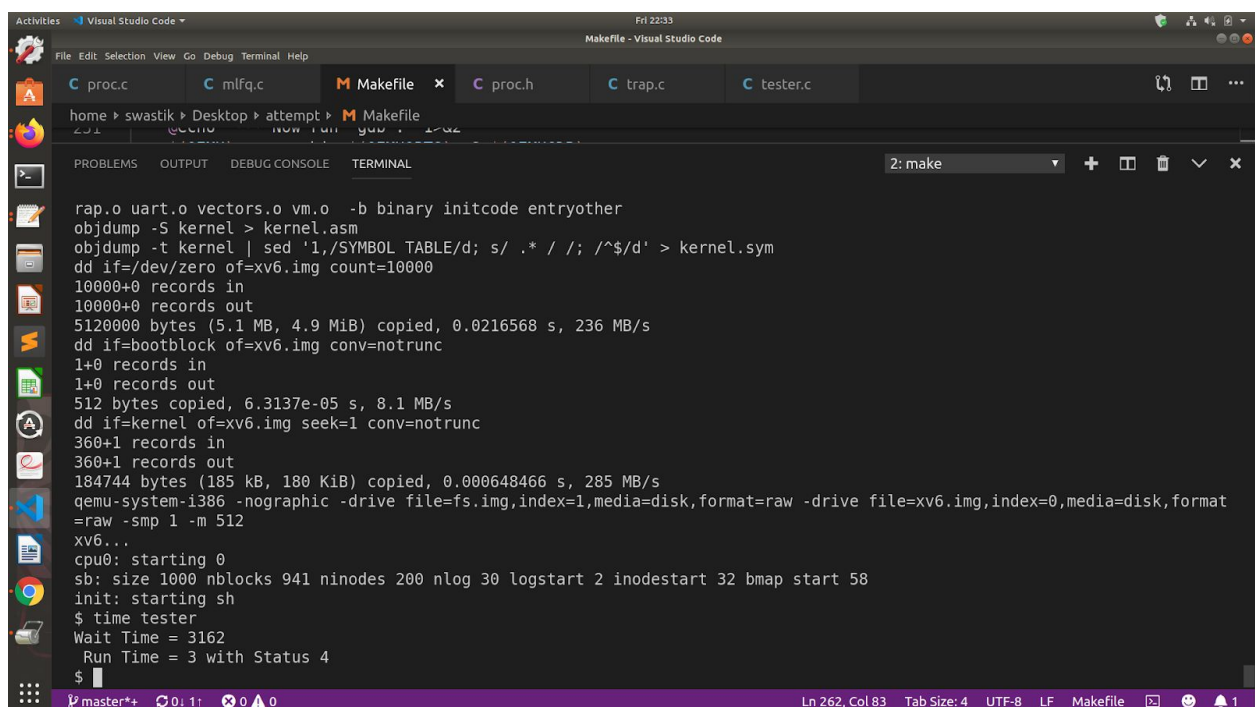
```
log.o main.o mp.o picirq.o pipe.o proc.o sleeplock.o spinlock.o string.o switch.o syscall.o sysfile.o sysproc.o trapasm.o t
rap.o uart.o vectors.o vm.o -b binary initcode entryother
objdump -S kernel > kernel.asm
objdump -t kernel | sed '1,/SYMBOL TABLE/d; s/ .* / /; /^$/d' > kernel.sym
dd if=/dev/zero of=xv6.img count=10000
10000+0 records in
10000+0 records out
5120000 bytes (5.1 MB, 4.9 MiB) copied, 0.0252879 s, 202 MB/s
dd if=bootblock of=xv6.img conv=notrunc
1+0 records in
1+0 records out
512 bytes copied, 9.1712e-05 s, 5.6 MB/s
dd if=kernel of=xv6.img seek=1 conv=notrunc
359+1 records in
359+1 records out
183888 bytes (184 kB, 180 KiB) copied, 0.000837594 s, 220 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3214
Run Time = 8 with Status 4
```

PRIORITY



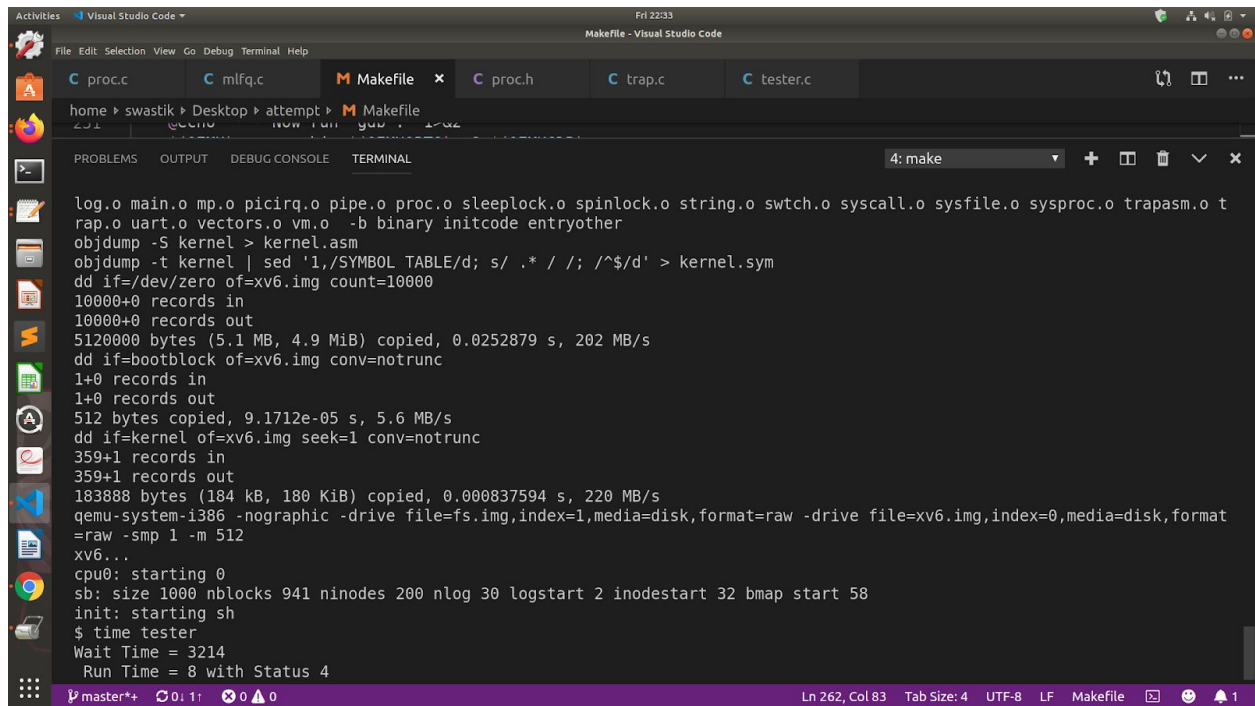
```
log.o main.o mp.o picirq.o pipe.o proc.o sleeplock.o spinlock.o string.o switch.o syscall.o sysfile.o sysproc.o trapasm.o t
rap.o uart.o vectors.o vm.o -b binary initcode entryother
objdump -S kernel > kernel.asm
objdump -t kernel | sed '1,/SYMBOL TABLE/d; s/ .* / /; /^$/d' > kernel.sym
dd if=/dev/zero of=xv6.img count=10000
10000+0 records in
10000+0 records out
5120000 bytes (5.1 MB, 4.9 MiB) copied, 0.0325208 s, 157 MB/s
dd if=bootblock of=xv6.img conv=notrunc
1+0 records in
1+0 records out
512 bytes copied, 9.0422e-05 s, 5.7 MB/s
dd if=kernel of=xv6.img seek=1 conv=notrunc
359+1 records in
359+1 records out
184040 bytes (184 kB, 180 KiB) copied, 0.000959148 s, 192 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3096
Run Time = 4 with Status 4
```

MLFQ



```
rap.o uart.o vectors.o vm.o -b binary initcode entryother
objdump -S kernel > kernel.asm
objdump -t kernel | sed '1,/SYMBOL TABLE/d; s/ .* / /; /^$/d' > kernel.sym
dd if=/dev/zero of=xv6.img count=10000
10000+0 records in
10000+0 records out
5120000 bytes (5.1 MB, 4.9 MiB) copied, 0.0216568 s, 236 MB/s
dd if=bootblock of=xv6.img conv=notrunc
1+0 records in
1+0 records out
512 bytes copied, 6.3137e-05 s, 8.1 MB/s
dd if=kernel of=xv6.img seek=1 conv=notrunc
360+1 records in
360+1 records out
184744 bytes (185 kB, 180 KiB) copied, 0.000648466 s, 285 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3162
Run Time = 3 with Status 4
$
```

FCFS



```
log.o main.o mp.o picirq.o pipe.o proc.o sleeplock.o spinlock.o string.o switch.o syscall.o sysfile.o sysproc.o trapasm.o t
rap.o uart.o vectors.o vm.o -b binary initcode entryother
objdump -S kernel > kernel.asm
objdump -t kernel | sed '1,/SYMBOL TABLE/d; s/ .* / /; /^$/d' > kernel.sym
dd if=/dev/zero of=xv6.img count=10000
10000+0 records in
10000+0 records out
512000 bytes (5.1 MB, 4.9 MiB) copied, 0.0252879 s, 202 MB/s
dd if=bootblock of=xv6.img conv=notrunc
1+0 records in
1+0 records out
512 bytes copied, 9.1712e-05 s, 5.6 MB/s
dd if=kernel of=xv6.img seek=1 conv=notrunc
359+1 records in
359+1 records out
183888 bytes (184 kB, 180 KiB) copied, 0.000837594 s, 220 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3214
Run Time = 8 with Status 4
```

Here Priority has better performance than MLFQ
Which will not always be true but as the no of child
process or no. of process increases MLFQ will perform
better than PBS.
And RR has almost equal performance compared to FCFS
Though the gap will increase as same above.
EXAMPLE

MLFQ

The screenshot shows the Visual Studio Code editor with a C program named `tester.c` open. The program is located at `home > swastik > Desktop > attempt > C > tester.c`. The code defines a `main` function that takes `argc` and `argv` as arguments. It initializes `id` to 0, `n` to 11, and `limit` to `1e8`. It then enters a loop where it forks a child process for each `k` from 0 to `n-1`. The terminal output shows the execution of the program using QEMU, with the following details:

```
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 2158
Run Time = 3 with Status 4
$ QEMU: Terminated
swastik@swastikpc:~/Desktop/attempt$
```

PBS

This screenshot shows the same Visual Studio Code editor with the same C program `tester.c`. The terminal output is identical to the first screenshot, showing the execution of the program using QEMU. The only difference is the `Wait Time`, which is now 2184 instead of 2158.

```
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 2184
Run Time = 4 with Status 4
$ QEMU: Terminated
swastik@swastikpc:~/Desktop/attempt$
```

RR

```
home ▸ swastik ▸ Desktop ▸ attempt ▸ C tester.c ▸ main(int, char * [])
1  #include "types.h"
2  #include "stat.h"
3  #include "user.h"
4  #include "fcntl.h"
5
6  #include <stddef.h>
7
8  int main(int argc, char *argv[]) {
9      int id, n = 11, limit = 1e8;
10     double x = 0, z;
11     x = 0;
12     id = 0;
13     for (int k = 0; k < n; k++) {
14         id = fork();
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 3: make

```
183688 bytes (184 kB, 179 KiB) copied, 0.000620081 s, 296 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3348
Run Time = 4 with Status 4
$
```

Ln 9, Col 19 Spaces: 4 UTF-8 LF C Linux 1

FCFS

```
home ▸ swastik ▸ Desktop ▸ attempt ▸ C tester.c ▸ main(int, char * [])
1  #include "types.h"
2  #include "stat.h"
3  #include "user.h"
4  #include "fcntl.h"
5
6  #include <stddef.h>
7
8  int main(int argc, char *argv[]) {
9      int id, n = 11, limit = 1e8;
10     double x = 0, z;
11     x = 0;
12     id = 0;
13     for (int k = 0; k < n; k++) {
14         id = fork();
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 4: make

```
183888 bytes (184 kB, 180 KiB) copied, 0.000619376 s, 297 MB/s
qemu-system-i386 -nographic -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format
=raw -smp 1 -m 512
xv6...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$ time tester
Wait Time = 3609
Run Time = 4 with Status 4
$
```

Ln 9, Col 19 Spaces: 4 UTF-8 LF C Linux 1