(1) In proc.h, inside struct proc added:

```
int priority;
```

(2) In proc.c, inside allocproc function:

```
p->priority = 60;
```

(3) In proc.c, modified the scheduler() function:

```
void
scheduler(void)
{
  struct proc *p;
  struct cpu *c = mycpu();
  c->proc = 0;

  for(;;){

    sti();

    struct proc *highest_priority_p = 0;
    int highest_priority = 1000;

    acquire(&ptable.lock);
    for(p = ptable.proc; p < &ptable.proc[NPROC]; p++){
      if(p->state == RUNNABLE){
        if(p->priority < highest_priority){
          highest_priority = p->priority;
          highest_priority_p = p;
        }
      }
    }

    if(highest_priority_p != 0){
      p = highest_priority_p;

      c->proc = p;
      switchuvm(p);
      p->state = RUNNING;

      swtch(&(c->scheduler), p->context);
      switchkvm();

      c->proc = 0;
    }
    release(&ptable.lock);
  }
}
```

(4) In sysproc.c, added sys_setpriority() function:

```
int sys_setpriority(void) {
  int priority;
  if(argint(0, &priority) < 0)
    return -1;
  myproc()->priority = priority;
  return 0;
}
```

(5) In syscall.h, added:

```
#define SYS_setpriority 22
```

(6) In syscall.h added:

```
extern int sys_setpriority(void);

[SYS_setpriority] sys_setpriority,
```

(7) In user.h, added:

```
int setpriority(int);
```

(8) In usys.S, added:

```
SYSCALL(setpriority)
```

(9) Created prioritytest.c:

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

int main(int argc, char *argv[]) {
  printf(1, "Starting priority scheduling test...\n");

  for(int i = 0; i < 5; i++) {
    int pid = fork();
    if(pid == 0) {
      int pr = 10 + i*10;
      setpriority(pr);
      printf(1, "Child %d (pid %d) with priority %d started.\n", i+1, getpid(), pr);

      for(int j = 0; j < 50000000; j++);
```

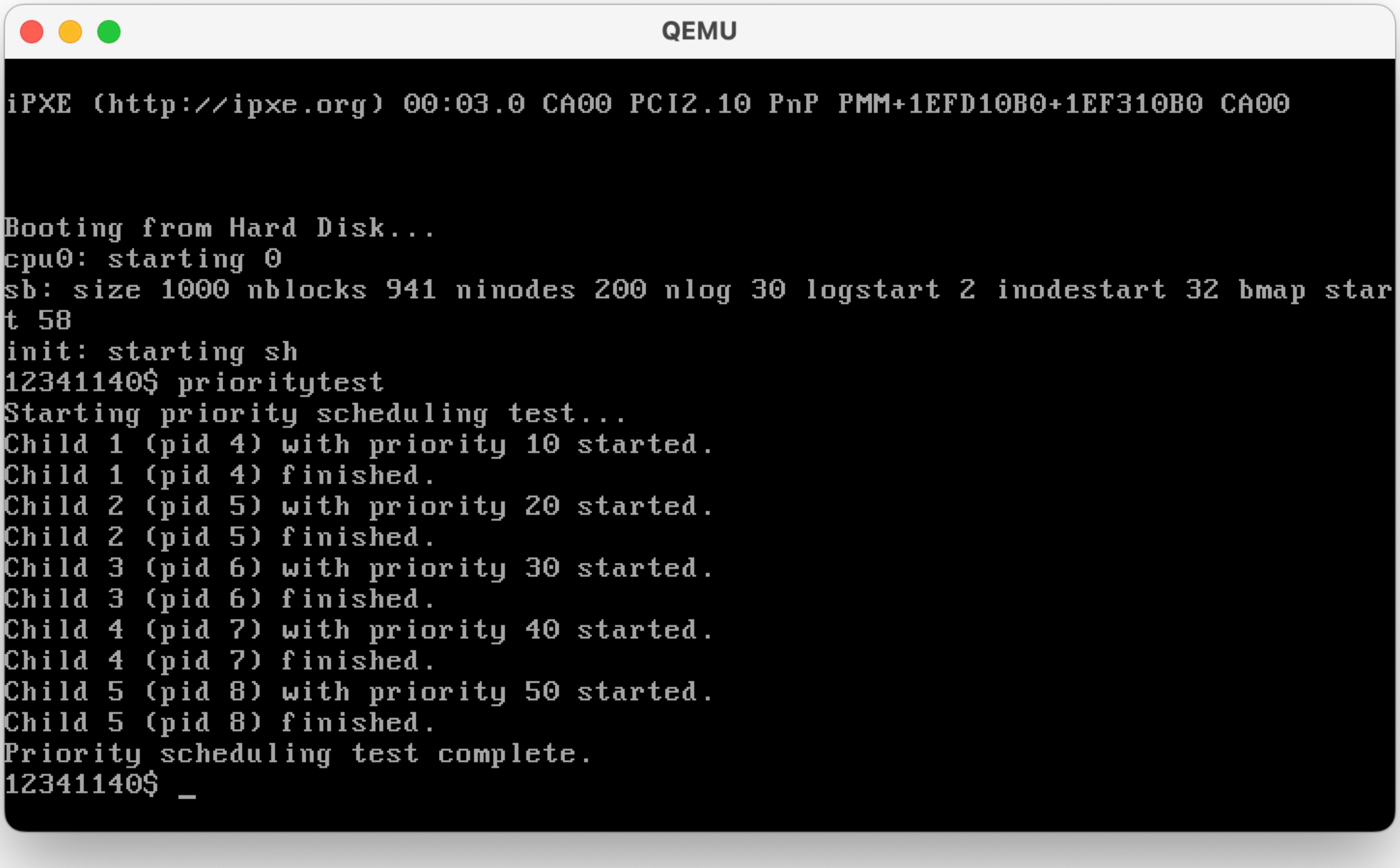
```
        printf(1, "Child %d (pid %d) finished.\n", i+1, getpid());
        exit();
      }
    }

    for(int i = 0; i < 5; i++) wait();
    printf(1, "Priority scheduling test complete.\n");
    exit();
  }
```

(10) In Makefile, added inside UPROGS section:

```
_prioritytest\
```

(11) Also to change the shell prompt, in sh.c, added inside getcmd() function:

```
printf(2, "12341140$ ");
```



```
iPXE (http://ipxe.org) 00:03.0 CA00 PCI2.10 PnP PMM+1EFD10B0+1EF310B0 CA00



Booting from Hard Disk...
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap star
t 58
init: starting sh
12341140$ prioritytest
Starting priority scheduling test...
Child 1 (pid 4) with priority 10 started.
Child 1 (pid 4) finished.
Child 2 (pid 5) with priority 20 started.
Child 2 (pid 5) finished.
Child 3 (pid 6) with priority 30 started.
Child 3 (pid 6) finished.
Child 4 (pid 7) with priority 40 started.
Child 4 (pid 7) finished.
Child 5 (pid 8) with priority 50 started.
Child 5 (pid 8) finished.
Priority scheduling test complete.
12341140$ _
```

Screenshot of the QEMU terminal