

Lab 1 Tips

Circular Buffer (step 16)

- Just an array acts like a queue, implemented with a head and tail pointer
- Adding to the buffer
 - Move **tail** forward and insert character
- Removing from buffer
 - Get character from **head** and move head forward

Read Semaphores

- nelem - notes the amount of space taken up
- nslots - notes the amount of space left in buffer
- consolewait - notes that a character is read to be read

- Used to sync read interrupt, console_buf, and do_read

ReadInterrupt:

V(consolewait)

Buffer:

P(consolewait)

P(nslots)

V(nelem)

Do_read:

P(nelem)

V(nslots)

```
main()
{
    int i;
    char s[100];

    i = write(1, "Hello world\n", strlen("Hello world\n"));
    sprintf(s, "the write statement just returned %d\n", i);
    write(1, s, strlen(s));
    return i;
}
```

Overall control flow (step 12)

InitUserProcess:

Puts your program into memory, makes pcb for it and puts it on the readyq

Calls scheduler:

Takes the first pcb from the queue and runs it (with run_user_process)

Hw:

First write system call

Exception handler (SYS_write):

Forks off do_write, and calls kt_joinall

Do_write:

Calls console_write(), which prints "H"
 P(writeok) - **blocks** till you get the write interrupt

Scheduler gets past the joinall:

Nothing on queue → noop()

Write interrupt comes in

Interrupt handler (ConsoleWriteInt):

Calls V(writeok) → which unblocks do_write fork
 And calls kt_joinall

Do_write:

Finishes with Syscallreturn(pcb, 1)

Syscallreturn:

Modifies registers and adds pcb onto readyq

Do_write fork exits

Scheduler gets past the joinall:

Calls run_user_code for hw

Same thing happens for the second write

Hw returns from main

Exception handler (SYS_exit):

Simulation ends.

Errors

- Run man 2 read/write
- Write has (fd, add, size)
 - Fd has to be 1 or 2
 - Add/size cannot be less than 0
 - write(1, 1241414141414, 14)
 - You can either return -EBIGF or -EFAULT
- Read has (fd, add, size)
 - Fd has to be 0
 - Add/size cannot be less than 0
- Run the errors.c test program to test some errors

Rest is office hours