Zhenyu Yan

Question 2: Shared Memory (4 pts)

How are shared memory segments finally destroyed? What UNIX utility can be used to to determine whether a memory segment has been destroyed or not?

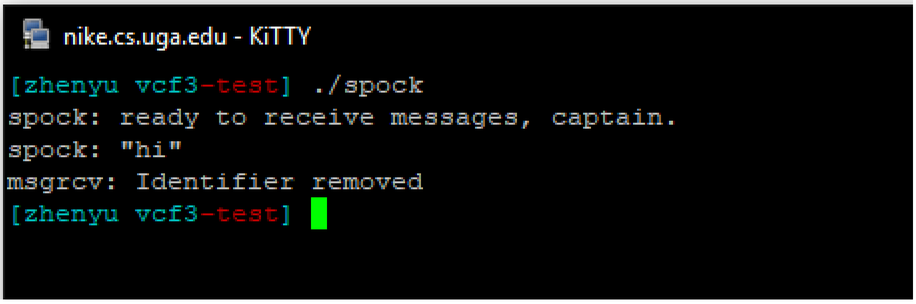
The shared memory segments need to be destroyed by using unix utility. You can use ipcs -m to check current shared memory. Then you can use ipcrm -M "key" to remove shared memory segments.

Question 3: Message Queues (6 pts)

Review the programs (spock.c and kirk.c) that we discussed in class Tuesday on Beej's Message Queue section and also read Beej's discussion (link is here). Code is also available for copy (here and here).

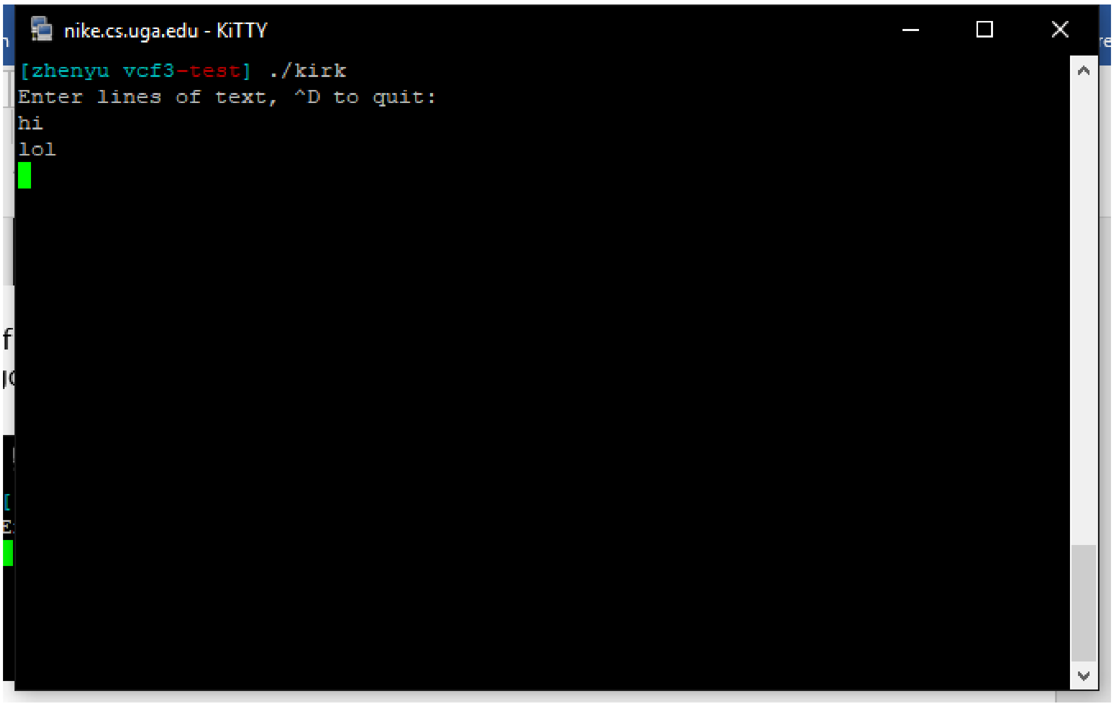
Answer (or discuss) Beej's questions (also listed below):

a) Discuss and evaluate what happens when you're running both in separate windows and you kill one or the other.



```
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "hi"
msgrcv: Identifier removed
[zhenyu vcf3-test] 
```

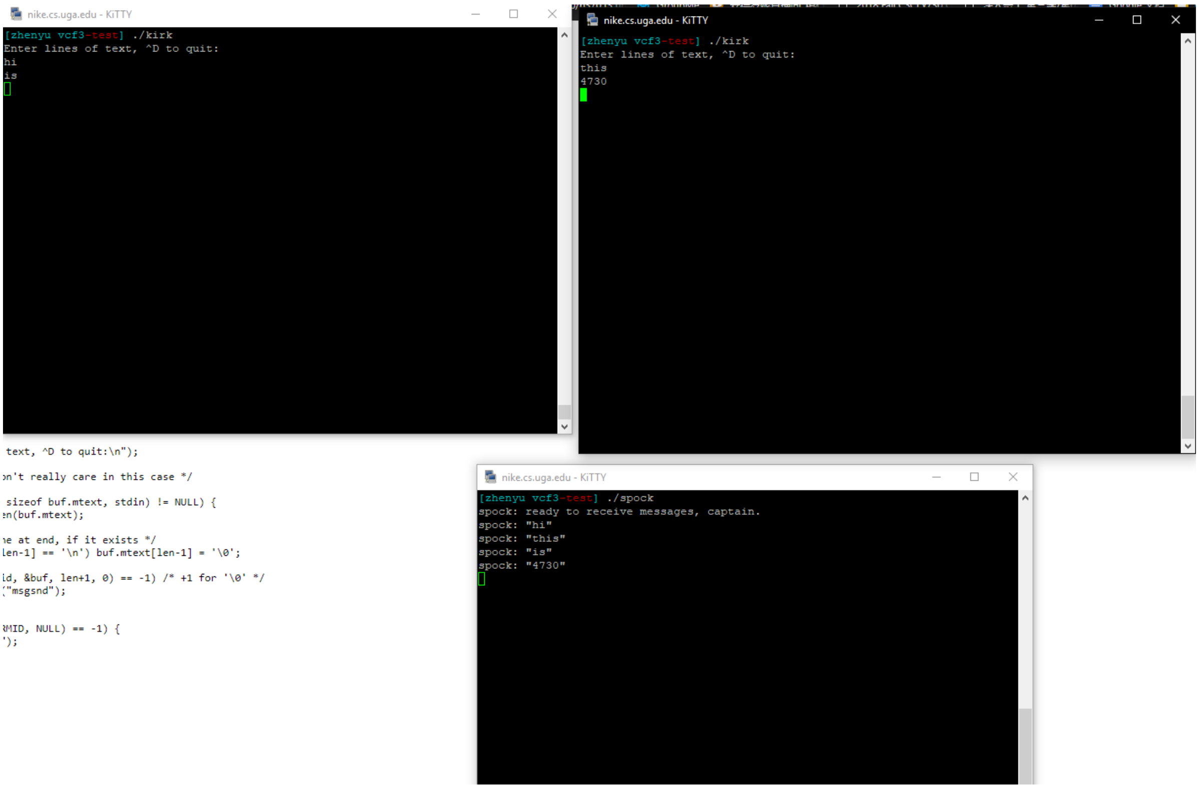
If you kill kirk, it cannot receive anymore, because the queue is gone.



```
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
hi
lol
```

If you kill spock, the kirk is still running, because it just create the queue and it is waiting for another spock to receive message.

b) Discuss what happens (and why) when you run two copies of kirk.



```
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
hi
is
```

```
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
this
4730
```

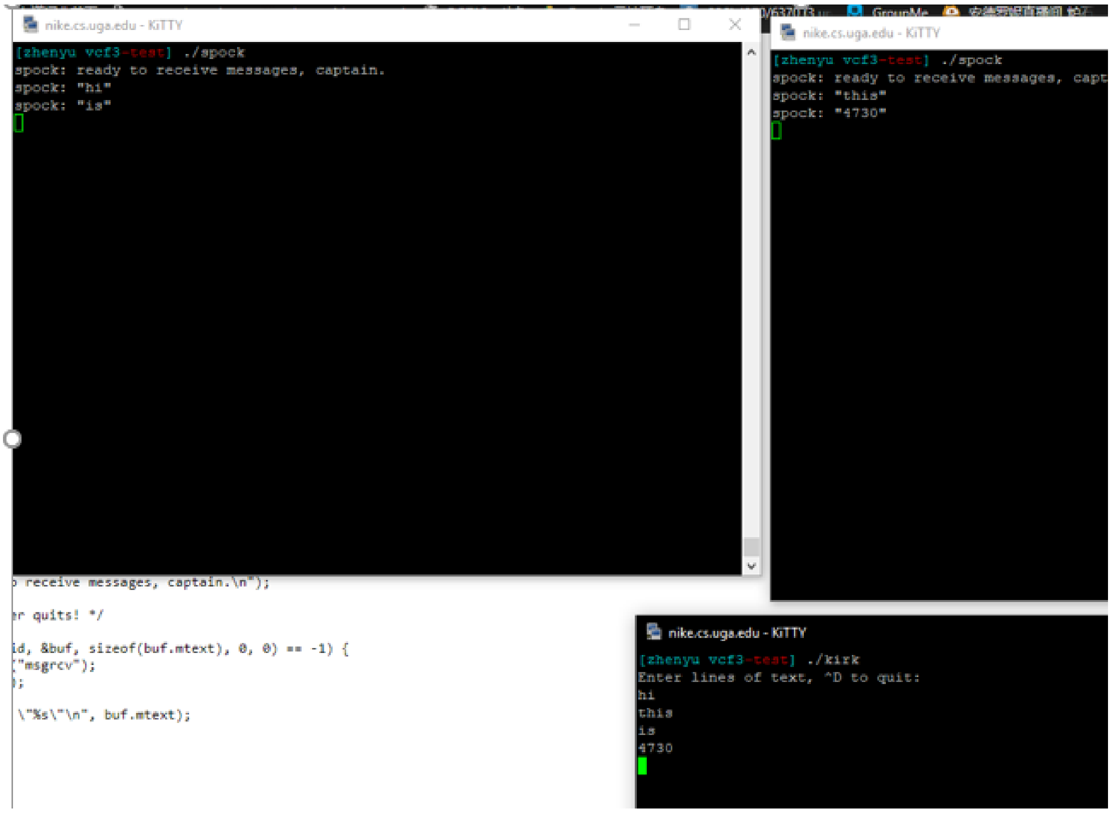
```
 text, ^D to quit:\n");

on't really care in this case */

 sizeof buf.mtext, stdin) != NULL) {
en(buf.mtext);

ne at end, if it exists */
len-1] == '\n') buf.mtext[len-1] = '\0';

id, &buf, len+1, 0) == -1) /* +1 for '\0' */
("msgsnd");


RMID, NULL) == -1) {
');
```

```
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "hi"
spock: "this"
spock: "is"
spock: "4730"
```

When you run two copy of kick, the spock will receive all the message from the two different kick. The reason is because the first kirk create the queue, then the

IPC_CREATE in the second queue will returns the identifier for a segment which exists with the same key value. So when the spock receive message, it will receive the message from this two kirk.

c) Discuss what happens (and why) when your run two copies of spock.



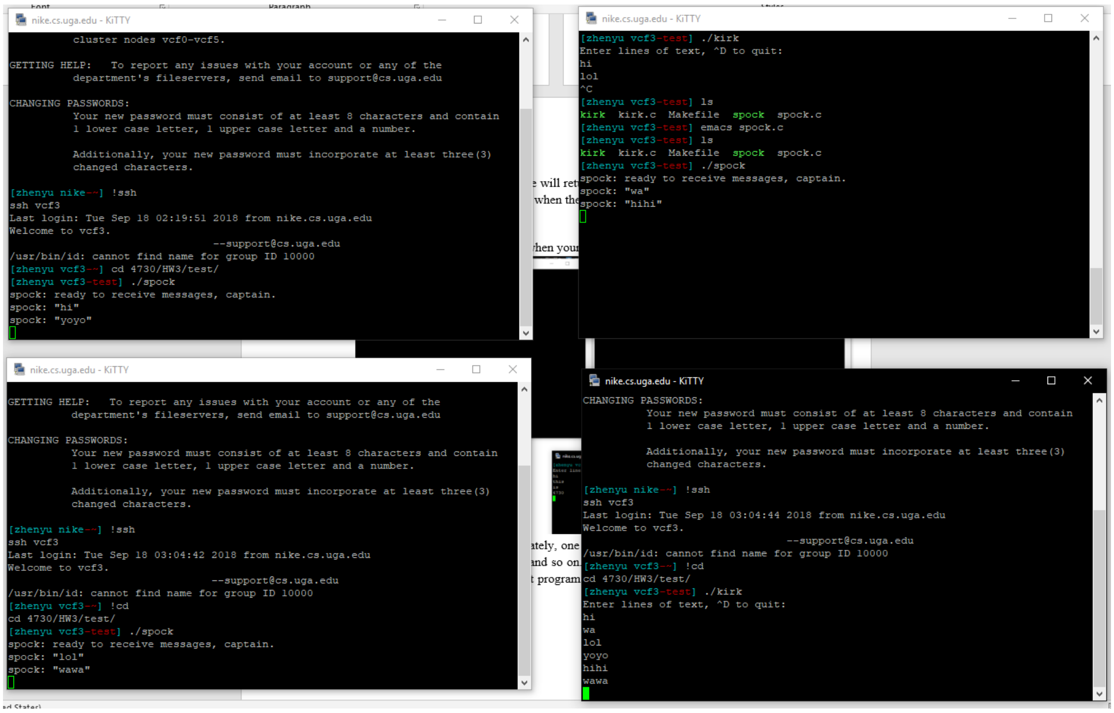
```
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "hi"
spock: "is"
```

```
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, capt
spock: "this"
spock: "4730"
```

```
o receive messages, captain.\n");

er quits! */

id, &buf, sizeof(buf.mtext), 0, 0) == -1) {
("msgrcv");
);

 \"%s\"\n", buf.mtext);
```

```
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
hi
this
is
4730
```

Spock will receive message separately, one message go to the first spock, second message go to the second spock, and so on. The reason is because the shared the same msqid, because I opened left program first, then right program secondly, for example, the first message id is 0, the msgrcv functions(The msgrcv() system call removes a message from the queue specified by msqid and places it in the buffer pointed to by msgp.) remove the message id 0 to print it out, then the second process will call msgrcv for message id 1, and so on. I also test if I opened 3 spock, it also proves what I throught.(pic in the next pages)



```
          cluster nodes vcf0-vcf5.

GETTING HELP:   To report any issues with your account or any of the
          department's fileservers, send email to support@cs.uga.edu

CHANGING PASSWORDS:
          Your new password must consist of at least 8 characters and contain
          1 lower case letter, 1 upper case letter and a number.

          Additionally, your new password must incorporate at least three(3)
          changed characters.

[zhenyu nike-~] !ssh
ssh vcf3
Last login: Tue Sep 18 02:19:51 2018 from nike.cs.uga.edu
Welcome to vcf3.
                                --support@cs.uga.edu
/usr/bin/id: cannot find name for group ID 10000
[zhenyu vcf3-~] cd 4730/HW3/test/
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "hi"
spock: "yoyo"
```

```
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
hi
lol
^C
[zhenyu vcf3-test] ls
kirk  kirk.c  Makefile  spock  spock.c
[zhenyu vcf3-test] emacs spock.c
[zhenyu vcf3-test] ls
kirk  kirk.c  Makefile  spock  spock.c
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "wa"
spock: "hihi"
```

```
GETTING HELP:   To report any issues with your account or any of the
          department's fileservers, send email to support@cs.uga.edu

CHANGING PASSWORDS:
          Your new password must consist of at least 8 characters and contain
          1 lower case letter, 1 upper case letter and a number.

          Additionally, your new password must incorporate at least three(3)
          changed characters.

[zhenyu nike-~] !ssh
ssh vcf3
Last login: Tue Sep 18 03:04:42 2018 from nike.cs.uga.edu
Welcome to vcf3.
                                --support@cs.uga.edu
/usr/bin/id: cannot find name for group ID 10000
[zhenyu vcf3-~] !cd
cd 4730/HW3/test/
[zhenyu vcf3-test] ./spock
spock: ready to receive messages, captain.
spock: "lol"
spock: "wawa"
```

```
CHANGING PASSWORDS:
          Your new password must consist of at least 8 characters and contain
          1 lower case letter, 1 upper case letter and a number.

          Additionally, your new password must incorporate at least three(3)
          changed characters.

[zhenyu nike-~] !ssh
ssh vcf3
Last login: Tue Sep 18 03:04:44 2018 from nike.cs.uga.edu
Welcome to vcf3.
                                --support@cs.uga.edu
/usr/bin/id: cannot find name for group ID 10000
[zhenyu vcf3-~] !cd
cd 4730/HW3/test/
[zhenyu vcf3-test] ./kirk
Enter lines of text, ^D to quit:
hi
wa
lol
yoyo
hihi
wawa
```