YouTube demo: https://youtu.be/GB6F1bqfTO4

1. Checking single and double quotes:

```
osboxes@osboxes:~/CSCE313/PA2$ g++ shell3.cpp
osboxes@osboxes:~/CSCE313/PA2$ ./a.out
osboxes Sat Mar  6 14:25:47 2021 $ echo "Hello world | Life is Good > Great $"
Hello world | Life is Good > Great $
osboxes Sat Mar  6 14:25:54 2021 $ echo 'Hello world | Life is Good > Great $'
Hello world | Life is Good > Great $
osboxes Sat Mar  6 14:26:08 2021 $
```

2. Simple commands with arguments:

```
osboxes Sat Mar  6 14:28:27 2021 $ ls
a.out  shell2.cpp  shell3.cpp  shell.cpp
osboxes Sat Mar  6 14:28:31 2021 $ ls -l
total 92
-rwxrwxr-x 1 osboxes osboxes 67488 Mar  6 14:25 a.out
-rw-rw-r-- 1 osboxes osboxes  4421 Mar  6 12:49 shell2.cpp
-rw-rw-r-- 1 osboxes osboxes  4739 Mar  6 14:15 shell3.cpp
-rw-rw-r-- 1 osboxes osboxes  4936 Mar  6 11:07 shell.cpp
osboxes Sat Mar  6 14:28:35 2021 $ ls -l -a
total 104
drwxrwxr-x 3 osboxes osboxes  4096 Mar  6 14:27 .
drwxrwxr-x 8 osboxes osboxes  4096 Mar  5 23:07 ..
-rwxrwxr-x 1 osboxes osboxes 67488 Mar  6 14:25 a.out
-rw-rw-r-- 1 osboxes osboxes  4421 Mar  6 12:49 shell2.cpp
-rw-rw-r-- 1 osboxes osboxes  4739 Mar  6 14:15 shell3.cpp
-rw-rw-r-- 1 osboxes osboxes  4936 Mar  6 11:07 shell.cpp
drwxrwxr-x 2 osboxes osboxes  4096 Mar  4 20:52 .vscode
osboxes Sat Mar  6 14:28:41 2021 $ ls -la
total 104
drwxrwxr-x 3 osboxes osboxes  4096 Mar  6 14:27 .
drwxrwxr-x 8 osboxes osboxes  4096 Mar  5 23:07 ..
-rwxrwxr-x 1 osboxes osboxes 67488 Mar  6 14:25 a.out
-rw-rw-r-- 1 osboxes osboxes  4421 Mar  6 12:49 shell2.cpp
-rw-rw-r-- 1 osboxes osboxes  4739 Mar  6 14:15 shell3.cpp
-rw-rw-r-- 1 osboxes osboxes  4936 Mar  6 11:07 shell.cpp
drwxrwxr-x 2 osboxes osboxes  4096 Mar  4 20:52 .vscode
osboxes Sat Mar  6 14:28:51 2021 $
```
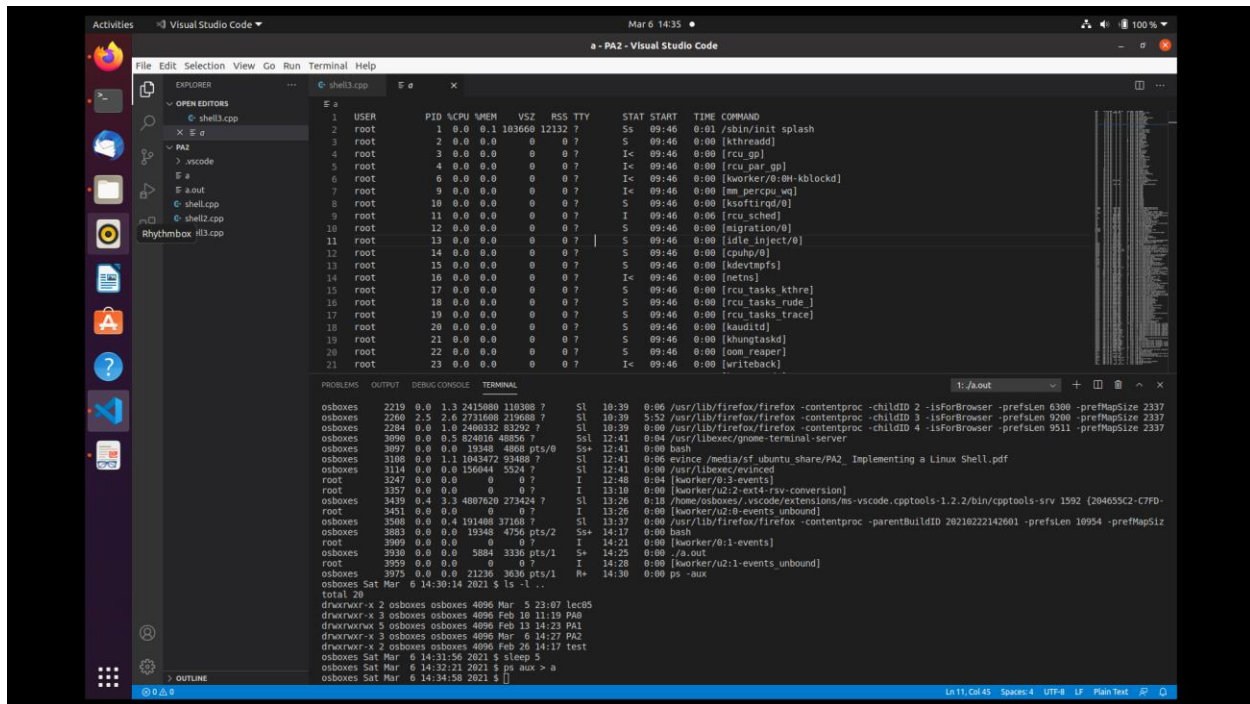
The result of "ps -aux" is too long, so I will not show it here. Just show the result in the demo video.

```
osboxes Sat Mar  6 14:30:14 2021 $ ls -l ..
total 20
drwxrwxr-x 2 osboxes osboxes 4096 Mar  5 23:07 lec05
drwxrwxr-x 3 osboxes osboxes 4096 Feb 10 11:19 PA0
drwxrwxrwx 5 osboxes osboxes 4096 Feb 13 14:23 PA1
drwxrwxr-x 3 osboxes osboxes 4096 Mar  6 14:27 PA2
drwxrwxr-x 2 osboxes osboxes 4096 Feb 26 14:17 test
```

"sleep 5" will be shown in the demo video.

3. Input/Output redirection:
   A. ps aux > a

   B. grep /init < a
   C. grep /init < a > b

```
osboxes Sat Mar  6 14:37:57 2021 $ grep /init < a
root           1  0.0  0.1 103660 12132 ?        Ss   09:46   0:01 /sbin/init splash
osboxes Sat Mar  6 14:38:18 2021 $ grep /init < a > b
osboxes Sat Mar  6 14:38:47 2021 $
```
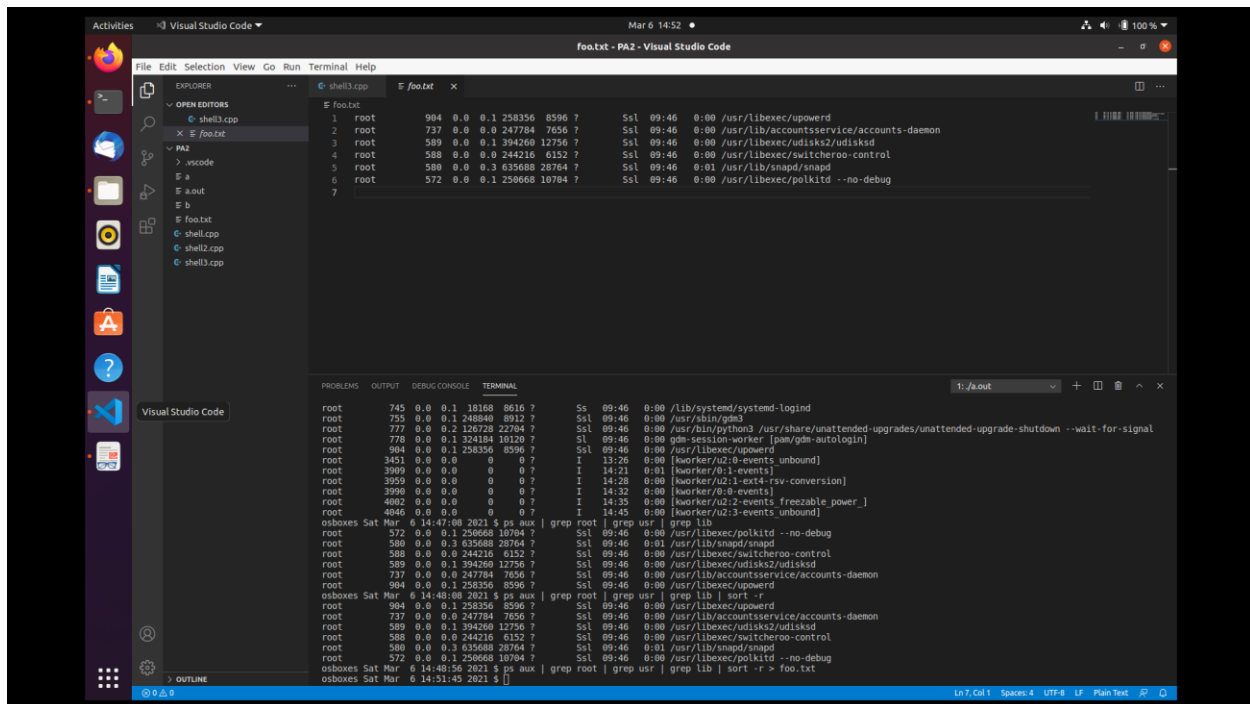
4. Single pipe:

```
osboxes Sat Mar  6 14:40:32 2021 $ ls -l | grep cpp
-rw-rw-r-- 1 osboxes osboxes  4421 Mar  6 12:49 shell2.cpp
-rw-rw-r-- 1 osboxes osboxes  4739 Mar  6 14:15 shell3.cpp
-rw-rw-r-- 1 osboxes osboxes  4936 Mar  6 11:07 shell.cpp
osboxes Sat Mar  6 14:40:49 2021 $
```

5. Two or more pipes:

```
osboxes Sat Mar  6 14:48:08 2021 $ ps aux | grep root | grep usr | grep lib | sort -r
root         904  0.0  0.1 258356  8596 ?        Ssl  09:46   0:00 /usr/libexec/upowerd
root         737  0.0  0.0 247784  7656 ?        Ssl  09:46   0:00 /usr/lib/accountsservice/accounts-daemon
root         589  0.0  0.1 394260 12756 ?        Ssl  09:46   0:00 /usr/libexec/udisks2/udisksd
root         588  0.0  0.0 244216  6152 ?        Ssl  09:46   0:00 /usr/libexec/switcheroo-control
root         580  0.0  0.3 635688 28764 ?        Ssl  09:46   0:01 /usr/lib/snapd/snapd
root         572  0.0  0.1 250668 10704 ?        Ssl  09:46   0:00 /usr/libexec/polkitd --no-debug
osboxes Sat Mar  6 14:48:56 2021 $
```

6. Two or more pipes with input and output redirection:

7. Background processes:
   Will be shown in the demo video.
8. Directory processing:
   A. cd ../../
   B. cd .
   C. cd /home/