Consider the following piece of C code:

```
void main( ) {
    fork( );
    fork( );
    exit( );
}
```

1. How many child processes are created upon execution of this program?

We can use the equation $2^n - 1 = m$, where m = child processes. n = 2 is for the two fork() functions, and we have $2^2 - 1 =$ **3**

2. When you start a browser, you will notice the browser process appear in the

top display. What does it consume? **VM is 5285M, RES 404M, CPU% 29.3, MEM% 9.2**

3. How much memory is available in the system? **3.34 Gigabytes remaining.**

4. Which process consumes the most CPU? **Snap, Firefox, user/bin/gnome-shell**

5. Which process has the most memory? **Snap and bash**

6. Could you please explain the following commands?

apt-get, yum, wget, gzip, tar, rar

The command apt-get is a command line tool for interacting with the Advanced Package Tool (APT) library (a package management system for Linux distributions). It allows you to search for, install, manage, update, and to remove the software.

YUM – Yellowdog Updater, Modified YUM is a package management utility for RPM-based distributions. RPM (Red Hat Package Manager) is the package manager that systems like RHEL and CentOS are based on. YUM uses RPM under the hood, hiding its complexity through a high-level abstraction. Fedora 22 and RHEL 8 introduced a rewrite of YUM, that is DNF, which is likely to become the new standard for RPM-based systems.

GNU Wget is a free software package for retrieving files using HTTP, HTTPS, FTP, and FTPS, the most widely used Internet protocols. It is a non-interactive command line tool, so it may easily be called from scripts, and terminals without X-Windows support, etc. GNU Wget has many features to make retrieving large files or mirroring entire web or FTP sites easy, including:

- Can resume aborted downloads, while using REST and RANGE

- **Can use filename wild cards and recursively mirror directories**

- **NLS-based message files for many different languages**

- **Optionally converts absolute links in downloaded documents to relative so that downloaded documents may link to each other locally**

- **Runs on most UNIX-like operating systems as well as Microsoft Windows**

- **Supports HTTP proxies**

- **Supports HTTP cookies**

- **Supports persistent HTTP connections**

- **Unattended / background operation**

- **Uses local file timestamps to determine whether documents need to be re-downloaded when mirroring**

- **GNU Wget is distributed under the GNU General Public License.**

The tool does not build software from the source code. Instead, it compiles the source code or uses precompiled files to install software packages.

A tar file often called a tarball, is a collection of files wrapped up in one single file for easy storage. Rather than keep track of a whole folder of files, you only need to keep track of one. Tar files are often compressed after being created, giving it the .tar.gz file extension. Technically these are TGZ files, but nearly everyone calls both .tar and .tar.gz files simple "tar files."

The term "tar" was derived from "tape archive," originally designed for devices like tape drives that didn't have a regular file system—back in the Version 7 Unix released in 1979. Tar has been supported since then on almost every platform outside of Windows.

Interestingly enough, the latest versions of Windows finally include native support for tar in the command prompt. Still, they can't handle gzip, making it almost entirely useless since almost every tar archive is compressed with gzip. The gzip data compression tool was written in the early 1990s, and it's still found in every Linux distribution. There are other compression tools available, but no matter which Linux computer you need to work on, you'll find gzip. So, if you know how to use gzip, you can go without installing anything.

gzip is an implementation of the DEFLATE algorithm, invented—and patented—by Phil Katz of PKZIP fame. The DEFLATE algorithm improved on earlier compression algorithms which all operated on theme variations. The data to be compressed is scanned, and unique strings are identified and added to a binary tree.

The unique strings are allocated a unique ID token by their position in the tree. The tokens are used to replace the strings in the data; because the tokens are smaller than the

data they replaced, and the file is compressed. Substituting the tokens for the original strings re-inflates the data to its uncompressed state.

A RAR file, short for a Roshal Archive Compressed file, is a compressed file, or data container, that holds one or more other files and folders inside. Think of a RAR file as a regular folder on your computer, where there are sometimes many other files and folders inside of it to organize them.

7. Write a program that will generate a child process. In a loop, the child process writes "I am a child process" 200 times and the parent process repeatedly prints "I am a parent process" in a loop. **See heir.c**

8. Write a program that create a child process with the fork () system call. The parent process waits for the child process to finish before printing the contents of the current directory. **See heir.c**

9. Write a program that creates a child process with the fork () system call and print its PID. Following a fork () system call, both parent and child processes print their process type and PID. Additionally, the parent process prints the PID of its child, and the child process prints the PID of its parent. **See heir.c**

cscwuos@cscwuos-VirtualBox: ~/Desktop/cProgramSysCallsLab3/Lab3

```
  0[||||||                                              4.5%] Tasks: 121, 436 thr, 95 kthr; 1 running
  1[|||||||||                                          10.1%] Load average: 1.74 0.70 0.32
  2[||||||                                              4.7%] Uptime: 01:54:17
  3[|||||                                               5.3%]
Mem[|||||||||||||||||||||||||||||||||||||||||||||]  1.23G/4.69G]
Swp[                                                ]  0K/3.08G]

Main  I/O
  PID USER       PRI  NI  VIRT   RES   SHR S CPU% MEM%  TIME+  Command
 1611 cscwuos     20   0  5256M  379M  150M S 29.8  7.9  8:17.49 /usr/bin/gnome-shell
 1650 cscwuos     20   0  5256M  379M  150M S  6.0  7.9  1:12.66 /usr/bin/gnome-shell
 1652 cscwuos     20   0  5256M  379M  150M S  5.3  7.9  1:22.01 /usr/bin/gnome-shell
 1649 cscwuos     20   0  5256M  379M  150M S  4.6  7.9  1:11.91 /usr/bin/gnome-shell
 1651 cscwuos     20   0  5256M  379M  150M S  4.6  7.9  1:14.93 /usr/bin/gnome-shell
 8500 cscwuos     20   0  7028   5772  3556 R  3.3  0.1  0:02.80 /snap/htop/3417/usr/local/bin/htop
 1676 cscwuos     20   0  5256M  379M  150M S  0.7  7.9  0:22.23 /usr/bin/gnome-shell
 1757 cscwuos     20   0  307M  11800  7104 S  0.7  0.2  0:09.55 /usr/bin/ibus-daemon --panel disable
 8725 cscwuos     20   0  3233M  338M  148M S  0.7  7.1  0:00.17 /snap/firefox/2311/usr/lib/firefox/firefox
    1 root        20   0  164M  13492  8416 S  0.0  0.3  0:03.09 /sbin/init splash
  254 root        19  -1  72916 39668 30096 S  0.0  0.8  0:01.48 /lib/systemd/systemd-journald
  315 root        20   0  26468  6908  4672 S  0.0  0.1  0:00.39 /lib/systemd/systemd-udevd
  501 systemd-oo  20   0  14824  6052  5256 S  0.0  0.1  0:05.65 /lib/systemd/systemd-oomd
  502 systemd-re  20   0  25520 13960  9636 S  0.0  0.3  0:00.51 /lib/systemd/systemd-resolved
  504 systemd-ti  20   0  89376  6480  5620 S  0.0  0.1  0:00.16 /lib/systemd/systemd-timesyncd
  578 systemd-ti  20   0  89376  6480  5620 S  0.0  0.1  0:00.00 /lib/systemd/systemd-timesyncd
  653 root        20   0  242M   7948  7012 S  0.0  0.2  0:00.40 /usr/libexec/accounts-daemon
  655 root        20   0  2812   1172  1088 S  0.0  0.0  0:00.48 /usr/sbin/acpid
  659 avahi       20   0  7628   3700  3360 S  0.0  0.1  0:00.13 avahi-daemon: running [cscwuos-VirtualBox.local]
  662 root        20   0  18148  2968  2716 S  0.0  0.1  0:00.06 /usr/sbin/cron -f -P
  664 messagebus  20   0  10992  6560  4136 S  0.0  0.1  0:02.11 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
  668 root        20   0  263M  18672 15788 S  0.0  0.4  0:01.47 /usr/sbin/NetworkManager --no-daemon
  677 root        20   0  242M   7948  7012 S  0.0  0.2  0:00.27 /usr/libexec/accounts-daemon
  686 root        20   0  82696  3948  3608 S  0.0  0.1  0:00.24 /usr/sbin/irqbalance --foreground
  695 root        20   0  49712 20756 11472 S  0.0  0.4  0:00.33 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
  698 root        20   0  231M  10260  6940 S  0.0  0.2  0:02.20 /usr/libexec/polkitd --no-debug
  700 root        20   0  242M   7468  6780 S  0.0  0.2  0:00.07 /usr/libexec/power-profiles-daemon
  704 root        20   0  231M  10260  6940 S  0.0  0.2  0:00.00 /usr/libexec/polkitd --no-debug
  705 syslog      20   0  217M   5296  4472 S  0.0  0.1  0:00.29 /usr/sbin/rsyslogd -n -iNONE
  708 root        20   0  1432M 37448 19424 S  0.0  0.8  0:16.30 /usr/lib/snapd/snapd
  709 root        20   0  239M   6840  6296 S  0.0  0.1  0:00.07 /usr/libexec/switcheroo-control
  712 root        20   0  23644  7884  6676 S  0.0  0.2  0:00.50 /lib/systemd/systemd-logind
  713 root        20   0  383M  13412 10700 S  0.0  0.3  0:00.38 /usr/lib/udisks2/udisksd
  714 root        20   0  16492  5684  4872 S  0.0  0.1  0:00.11 /sbin/wpa_supplicant -u -s -O /run/wpa_supplicant
  720 syslog      20   0  217M   5296  4472 S  0.0  0.1  0:00.11 /usr/sbin/rsyslogd -n -iNONE
  721 syslog      20   0  217M   5296  4472 S  0.0  0.1  0:00.00 /usr/sbin/rsyslogd -n -iNONE
  722 syslog      20   0  217M   5296  4472 S  0.0  0.1  0:00.13 /usr/sbin/rsyslogd -n -iNONE
  723 avahi       20   0  7440    340     0 S  0.0  0.0  0:00.00 avahi-daemon: chroot helper
  725 root        20   0  263M  18672 15788 S  0.0  0.4  0:00.19 /usr/sbin/NetworkManager --no-daemon
  729 root        20   0  231M  10260  6940 S  0.0  0.2  0:00.59 /usr/libexec/polkitd --no-debug
  731 root        20   0  242M   7948  7012 S  0.0  0.2  0:00.02 /usr/libexec/accounts-daemon
  732 root        20   0  263M  18672 15788 S  0.0  0.4  0:00.26 /usr/sbin/NetworkManager --no-daemon
  737 root        20   0  82696  3948  3608 S  0.0  0.1  0:00.00 /usr/sbin/irqbalance --foreground
  751 root        20   0  309M  11984 10128 S  0.0  0.2  0:00.23 /usr/sbin/ModemManager
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice - F8Nice + F9Kill F10Quit
```

```
0[||||||||||||||||||]                                    19.0%] Tasks: 123, 479 thr, 96 kthr; 1 running
1[|||||||||||||||||]                                     19.3%] Load average: 0.78 0.56 0.33
2[||||||||||||||||||||]                                  20.3%] Uptime: 01:58:11
3[|||||||||]                                             16.7%]
Mem[|||||||||||||||||||||||||||||||||||||||||||||||]     1.38G/4.69G]
Swp[                                                     0K/3.08G]

Main  I/O
  PID USER       PRI  NI  VIRT   RES   SHR S CPU% MEM%   TIME+  Command
 1611 cscwuos     20   0 5277M  484M  143M S 50.4  8.4  8:42.58 /usr/bin/gnome-shell
 8535 cscwuos     20   0 11.6G  462M  220M S 40.6  9.6  0:43.97 /bin/bash /snap/firefox/2311/snap/command-chain/desktop-launch /snap/firefox/2311/firefox.launcher
 8696 cscwuos     20   0 11.6G  462M  220M S 13.5  9.6  0:04.49 /snap/firefox/2311/usr/lib/firefox/firefox
 8763 cscwuos     20   0 19.0G  197M  132M S 11.3  4.1  0:03.04 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
 1652 cscwuos     20   0 5277M  484M  143M S  9.8  8.4  1:26.22 /usr/bin/gnome-shell
 8746 cscwuos     20   0 11.6G  462M  220M S  8.3  9.6  0:01.67 /snap/firefox/2311/usr/lib/firefox/firefox
 1649 cscwuos     20   0 5277M  484M  143M S  7.5  8.4  1:15.66 /usr/bin/gnome-shell
 1650 cscwuos     20   0 5277M  484M  143M S  6.8  8.4  1:16.55 /usr/bin/gnome-shell
 8618 cscwuos     20   0  219M 89252 74356 S  6.8  1.8  0:03.67 /usr/bin/Xwayland :0 -rootless -noreset -accessx -core -auth /run/user/1000/.mutter-Xwaylandauth.QQ7FZ1 -listen 4 -listen 5 -displayfd 6 -i
 1651 cscwuos     20   0 5277M  484M  143M S  4.5  8.4  1:18.84 /usr/bin/gnome-shell
 8694 cscwuos     20   0 11.6G  462M  220M S  4.5  9.6  0:01.91 /snap/firefox/2311/usr/lib/firefox/firefox
 8734 cscwuos     20   0 2392M  115M 85440 S  3.8  2.4  0:04.87 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 1 -isForBrowser -prefsLen 26469 -prefMapSize 228363 -jsInitLen 246772 -par
 8680 cscwuos     20   0 11.6G  462M  220M R  3.0  9.6  0:00.52 /snap/firefox/2311/usr/lib/firefox/firefox
 1676 cscwuos     20   0 5277M  484M  143M S  2.3  8.4  0:23.16 /usr/bin/gnome-shell
 8500 cscwuos     20   0  7028  5772  3556 R  2.3  0.1  0:07.04 /snap/htop/3417/usr/local/bin/htop
 8705 cscwuos     20   0 11.6G  462M  220M S  2.3  9.6  0:01.29 /snap/firefox/2311/usr/lib/firefox/firefox
 8742 cscwuos     20   0 11.6G  462M  220M S  2.3  9.6  0:00.93 /snap/firefox/2311/usr/lib/firefox/firefox
 8766 cscwuos     20   0 19.0G  197M  132M S  2.3  4.1  0:00.21 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
 8653 cscwuos     20   0 11.6G  462M  220M S  1.5  9.6  0:00.20 /snap/firefox/2311/usr/lib/firefox/firefox
 8743 cscwuos     20   0 11.6G  462M  220M S  1.5  9.6  0:01.20 /snap/firefox/2311/usr/lib/firefox/firefox
 9390 cscwuos     20   0 19.0G  197M  132M S  1.5  4.1  0:00.16 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
  501 systemd-oo  20   0 14824  6052  5256 S  0.8  0.1  0:05.88 /lib/systemd/systemd-oomd
 2722 cscwuos     20   0  558M 61332 47096 S  2.9  1.2  0:40.20 /usr/libexec/gnome-terminal-server
 8657 cscwuos     20   0 11.6G  462M  220M S  0.8  9.6  0:01.24 /snap/firefox/2311/usr/lib/firefox/firefox
 8741 cscwuos     20   0 2392M  115M 85440 S  0.8  2.4  0:00.53 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 1 -isForBrowser -prefsLen 26469 -prefMapSize 228363 -jsInitLen 246772 -par
 8960 cscwuos     20   0 2346M 63540 51508 S  0.8  1.3  0:00.30 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 4 -isForBrowser -prefsLen 31999 -prefMapSize 228363 -jsInitLen 246772 -par
 9391 cscwuos     20   0 2346M 61636 49944 S  0.8  1.3  0:00.16 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 6 -isForBrowser -prefsLen 32002 -prefMapSize 228363 -jsInitLen 246772 -par
    1 root        20   0  164M 13496  8416 S  0.0  0.3  0:03.09 /sbin/init splash
  254 root        19  -1 72916 39744 38172 S  0.0  0.8  0:01.57 /lib/systemd/systemd-journald
  315 root        20   0 26468  6908  4672 S  0.0  0.1  0:00.39 /lib/systemd/systemd-udevd
  502 systemd-re  20   0 25520 13960  9636 S  0.0  0.3  0:00.53 /lib/systemd/systemd-resolved
  504 systemd-ti  20   0 89376  6480  5620 S  0.0  0.1  0:00.16 /lib/systemd/systemd-timesyncd
  578 systemd-ti  20   0 89376  6480  5620 S  0.0  0.1  0:00.00 /lib/systemd/systemd-timesyncd
  653 root        20   0  242M  7948  7012 S  0.0  0.2  0:00.41 /usr/libexec/accounts-daemon
  655 root        20   0  2812  1172  1088 S  0.0  0.1  0:00.13 avahi-daemon: running [cscwuos-VirtualBox.local]
  659 avahi       20   0  7628  3700  3360 S  0.0  0.1  0:00.13 avahi-daemon: running [cscwuos-VirtualBox.local]
  662 root        20   0 18148  2968  2716 S  0.0  0.1  0:00.07 /usr/sbin/cron -f -P
  664 messagebus  20   0 10992  6560  4136 S  0.0  0.1  0:02.13 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
  668 root        20   0  263M 18672 15788 S  0.0  0.4  0:01.49 /usr/sbin/NetworkManager --no-daemon
  677 root        20   0  242M  7948  7012 S  0.0  0.2  0:00.28 /usr/libexec/accounts-daemon
  686 root        20   0 82696  3948  3608 S  0.0  0.1  0:00.25 /usr/sbin/irqbalance --foreground
  695 root        20   0 49712 28756 11472 S  0.0  0.4  0:00.33 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
  698 root        20   0  231M 10260  6940 S  0.0  0.2  0:02.20 /usr/libexec/polkitd --no-debug
  700 root        20   0  242M  7468  6780 S  0.0  0.2  0:00.07 /usr/libexec/power-profiles-daemon
F1Help  F2Setup  F3Search  F4Filter  F5Tree  F6SortBy  F7Nice -  F8Nice +  F9Kill  F10Quit
```

```
0[|||||||||||||||||]                                     20.3%] Tasks: 123, 456 thr, 92 kthr; 3 running
1[|||||||||||||||||]                                     14.6%] Load average: 0.64 0.57 0.39
2[||||||||||||||]                                        12.9%] Uptime: 02:03:29
3[||||||||||||]                                          16.2%]
Mem[||||||||||||||||||||||||||||||||||||||||||||||]      1.35G/4.69G]
Swp[                                                     0K/3.08G]

Main  I/O
  PID USER       PRI  NI  VIRT   RES   SHR S CPU% MEM%   TIME+  Command
 1611 cscwuos     20   0 5285M  484M  143M S 37.1  8.4  8:53.01 /usr/bin/gnome-shell
 8535 cscwuos     20   0 3476M  443M  220M S 29.3  9.2  2:01.26 /bin/bash /snap/firefox/2311/snap/command-chain/desktop-launch /snap/firefox/2311/firefox.launcher
 8696 cscwuos     20   0 3476M  443M  220M S  8.6  9.2  0:32.67 /snap/firefox/2311/usr/lib/firefox/firefox
 1652 cscwuos     20   0 5285M  484M  143M S  7.1  8.4  1:28.50 /usr/bin/gnome-shell
 8746 cscwuos     20   0 3476M  443M  220M S  7.1  9.2  0:16.05 /snap/firefox/2311/usr/lib/firefox/firefox
 8763 cscwuos     20   0 2625M  189M  132M S  6.4  4.0  0:19.52 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
 1650 cscwuos     20   0 5285M  484M  143M S  5.7  8.4  1:18.34 /usr/bin/gnome-shell
 1649 cscwuos     20   0 5285M  484M  143M S  4.3  8.4  1:17.49 /usr/bin/gnome-shell
 8694 cscwuos     20   0 3476M  443M  220M S  4.3  9.2  0:08.91 /snap/firefox/2311/usr/lib/firefox/firefox
 1651 cscwuos     20   0 5285M  484M  143M S  3.6  8.4  1:20.80 /usr/bin/gnome-shell
 8500 cscwuos     20   0  7028  5772  3556 R  2.9  0.1  0:15.15 /snap/htop/3417/usr/local/bin/htop
 8618 cscwuos     20   0  219M 89252 74356 S  2.9  1.8  0:10.09 /usr/bin/Xwayland :0 -rootless -noreset -accessx -core -auth /run/user/1000/.mutter-Xwaylandauth.QQ7FZ1 -listen 4 -listen 5 -displayfd 6 -i
 8680 cscwuos     20   0 3476M  443M  220M S  2.9  9.2  0:08.31 /snap/firefox/2311/usr/lib/firefox/firefox
 8705 cscwuos     20   0 3476M  443M  220M S  2.1  9.2  0:08.40 /snap/firefox/2311/usr/lib/firefox/firefox
 1676 cscwuos     20   0 5285M  484M  143M S  1.4  8.4  0:23.26 /usr/bin/gnome-shell
 2722 cscwuos     20   0  558M 61332 47096 S  1.4  1.2  0:41.89 /usr/libexec/gnome-terminal-server
 8657 cscwuos     20   0 3476M  443M  220M S  1.4  9.2  0:04.36 /snap/firefox/2311/usr/lib/firefox/firefox
 8742 cscwuos     20   0 3476M  443M  220M S  1.4  9.2  0:04.26 /snap/firefox/2311/usr/lib/firefox/firefox
 1640 cscwuos     20   0 5285M  484M  143M S  0.7  8.4  0:05.91 /usr/bin/gnome-shell
 1785 cscwuos     20   0  387M 11800  7104 S  0.7  0.2  0:07.30 /usr/bin/ibus-daemon --panel disable
 1793 cscwuos     20   0  348M 28480 17692 S  0.7  0.6  0:02.48 /usr/libexec/ibus-extension-gtk3
 1862 cscwuos     20   0  794M 61812 50964 S  0.7  1.3  0:00.02 /usr/libexec/evolution-data-server/evolution-alarm-notify
 8653 cscwuos     20   0 3476M  443M  220M S  0.7  9.2  0:01.44 /snap/firefox/2311/usr/lib/firefox/firefox
 8743 cscwuos     20   0 3476M  443M  220M S  0.7  9.2  0:03.18 /snap/firefox/2311/usr/lib/firefox/firefox
 8766 cscwuos     20   0 2625M  189M  132M S  0.7  4.0  0:02.54 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
 8771 cscwuos     20   0 2625M  189M  132M S  0.7  4.0  0:00.63 /snap/firefox/2311/usr/lib/firefox/firefox -contentproc -childID 2 -isForBrowser -prefsLen 26510 -prefMapSize 228363 -jsInitLen 246772 -par
    1 root        20   0  164M 13496  8416 S  0.0  0.3  0:03.11 /sbin/init splash
  254 root        19  -1 72916 39748 38176 S  0.0  0.8  0:01.59 /lib/systemd/systemd-journald
  315 root        20   0 26468  6908  4672 S  0.0  0.1  0:00.39 /lib/systemd/systemd-udevd
  501 systemd-oo  20   0 14824  6052  5256 S  0.0  0.1  0:06.24 /lib/systemd/systemd-oomd
  502 systemd-re  20   0 25520 13960  9636 S  0.0  0.3  0:00.53 /lib/systemd/systemd-resolved
  504 systemd-ti  20   0 89376  6480  5620 S  0.0  0.1  0:00.16 /lib/systemd/systemd-timesyncd
  578 systemd-ti  20   0 89376  6480  5620 S  0.0  0.1  0:00.00 /lib/systemd/systemd-timesyncd
  653 root        20   0  242M  7948  7012 S  0.0  0.2  0:00.42 /usr/libexec/accounts-daemon
  655 root        20   0  2812  1172  1088 S  0.0  0.1  0:00.48 /usr/sbin/acpid
  659 avahi       20   0  7628  3700  3360 S  0.0  0.1  0:00.13 avahi-daemon: running [cscwuos-VirtualBox.local]
  662 root        20   0 18148  2968  2716 S  0.0  0.1  0:00.07 /usr/sbin/cron -f -P
  664 messagebus  20   0 10992  6560  4136 S  0.0  0.1  0:02.14 @dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
  668 root        20   0  263M 18672 15788 S  0.0  0.4  0:01.50 /usr/sbin/NetworkManager --no-daemon
  677 root        20   0  242M  7948  7012 S  0.0  0.2  0:00.29 /usr/libexec/accounts-daemon
  686 root        20   0 82696  3948  3608 S  0.0  0.1  0:00.26 /usr/sbin/irqbalance --foreground
  695 root        20   0 49712 28756 11472 S  0.0  0.4  0:00.33 /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
  698 root        20   0  231M 10260  6940 S  0.0  0.2  0:02.20 /usr/libexec/polkitd --no-debug
  700 root        20   0  242M  7468  6780 S  0.0  0.2  0:00.07 /usr/libexec/power-profiles-daemon
F1Help  F2Setup  F3Search  F4Filter  F5Tree  F6SortBy  F7Nice -  F8Nice +  F9Kill  F10Quit
```

```
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18340 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18341 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18342 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18343 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18344 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18345 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18346 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18347 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18348 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18349 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18350 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18351 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 18151

I am the child process PID = 18352 , PPID = 18151
Interupt, process active in 'CRITICAL REGION'...

End of the program.
cscwuos@cscwuos-VirtualBox:~/Desktop/cProgramSysCallsLab3/Lab3$
```

```
cscwuos@cscwuos-VirtualBox:~/Desktop/cProgramSysCallsLab3/Lab3$ gcc -o program helr.c
cscwuos@cscwuos-VirtualBox:~/Desktop/cProgramSysCallsLab3/Lab3$ ./program
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17920 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17921 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17922 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17923 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17924 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17925 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17926 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17927 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17928 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17929 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17930 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17931 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919

I am the child process PID = 17932 , PPID = 17919
Interupt, process active in 'CRITICAL REGION'...
I am the parent process PPID = 17901, PID = 17919
```