

Operating Systems Lab

Lab 2 Report

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Part 1:

- a. The output of the given task is:

[illegible]

I was able to write the code to this task in a minimum of 24 lines. The code file is provided in the appropriate zip file. To run the code simply use the **gmake hello** command in minix OS.

Part 2:

To achieve this task, I have modified the **forkexit.c** file present in the **minix/servers/pm** location. To print a message when a process is created, I have added the following line in the **do_fork()** function.

```
printf("Minix: PID %d created\n", rmc->mp_pid);
```

To print a message when a process is exited, I have added the following line in the **do_exit()** function.

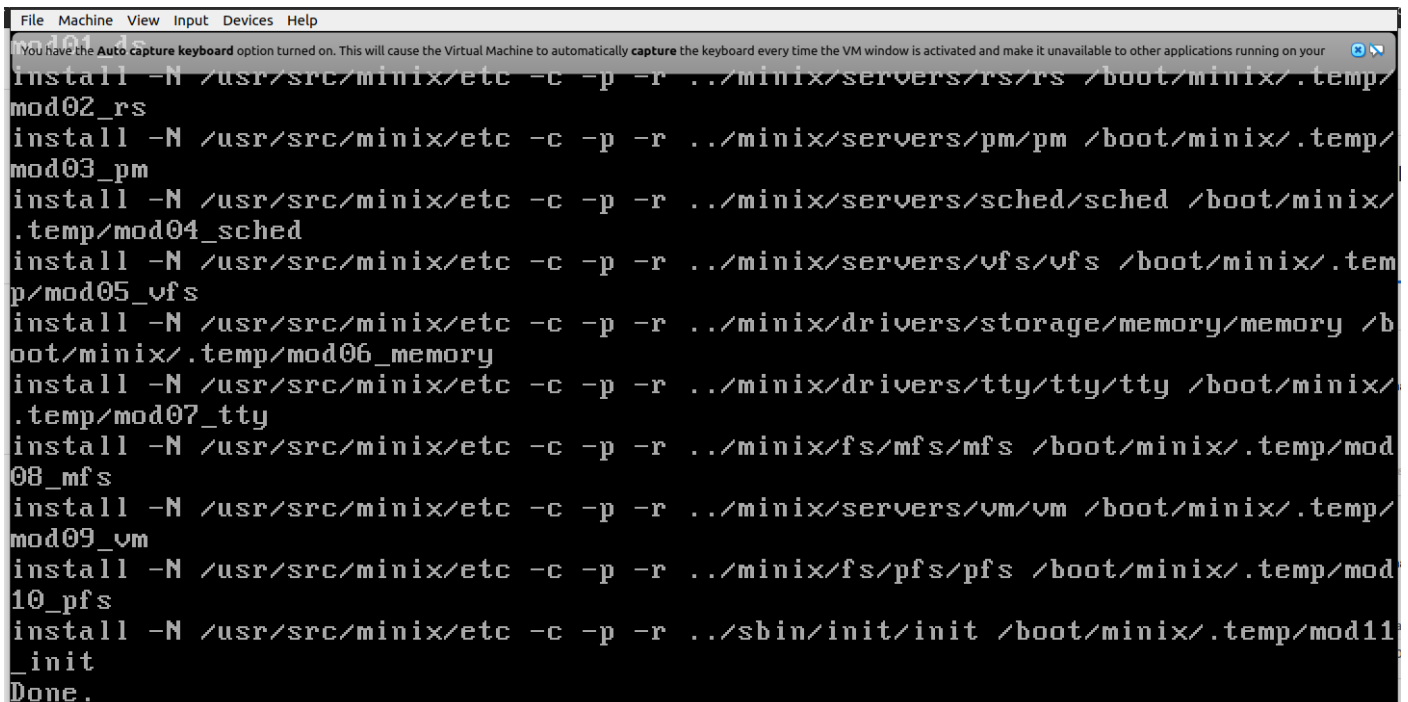
```
printf("Minix: PID %d exited\n", mp->mp_pid);
```

The forkexit.c file is provided in the appropriate zip file, to make changes simply run the script file run.sh using **bash run.sh** command. After a successful build, reboot the minix OS and the process IDs would be printed every time a process is created or exited.

Working Of Processes:

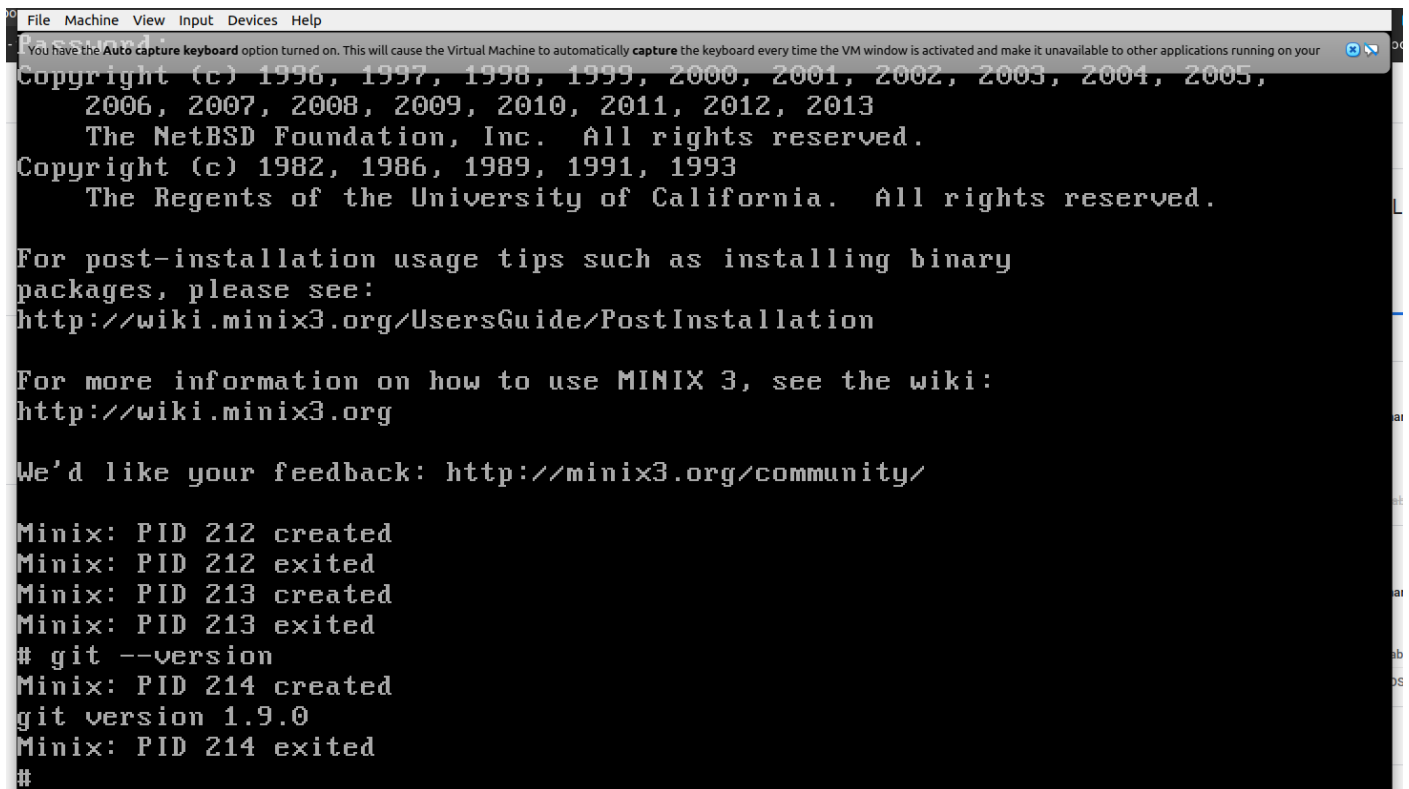
The process works in the same way we write parenthesis in a programming language. We need to always always start with open parenthesis first, the same way a parent process is created first, then this parent process could fork child process, in the same way we can write a new open parenthesis in the already open parenthesis. Then to close the parenthesis we close the inner parenthesis first, the same way the child process exits first, only then we can close outer parenthesis, same way only then the parent process exits. This is justified because the parent process needs to be created first, only then it can fork the child process and it waits for the child process to exit first, only then it can exit.

The build screenshot of the minix OS is given below:



```
File Machine View Input Devices Help
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your
install -N /usr/src/minix/etc -c -p -r ../minix/servers/rs/rs /boot/minix/.temp/
mod02_rs
install -N /usr/src/minix/etc -c -p -r ../minix/servers/pm/pm /boot/minix/.temp/
mod03_pm
install -N /usr/src/minix/etc -c -p -r ../minix/servers/sched/sched /boot/minix/.temp/
mod04_sched
install -N /usr/src/minix/etc -c -p -r ../minix/servers/vfs/vfs /boot/minix/.temp/
mod05_vfs
install -N /usr/src/minix/etc -c -p -r ../minix/drivers/storage/memory/memory /b
oot/minix/.temp/mod06_memory
install -N /usr/src/minix/etc -c -p -r ../minix/drivers/tty/tty/tty /boot/minix/.temp/
mod07_tty
install -N /usr/src/minix/etc -c -p -r ../minix/fs/mfs/mfs /boot/minix/.temp/mod
08_mfs
install -N /usr/src/minix/etc -c -p -r ../minix/servers/vm/vm /boot/minix/.temp/
mod09_vm
install -N /usr/src/minix/etc -c -p -r ../minix/fs/pfs/pfs /boot/minix/.temp/mod
10_pfs
install -N /usr/src/minix/etc -c -p -r ../sbin/init/init /boot/minix/.temp/mod11
_init
Done.
```

The screenshot of OS after build is given below:



The screenshot shows a terminal window titled "File Machine View Input Devices Help". A notification bar at the top states: "You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard every time the VM window is activated and make it unavailable to other applications running on your". The terminal output includes the following text:

```
Copyright (c) 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005,
2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013
The NetBSD Foundation, Inc. All rights reserved.
Copyright (c) 1982, 1986, 1989, 1991, 1993
The Regents of the University of California. All rights reserved.

For post-installation usage tips such as installing binary
packages, please see:
http://wiki.minix3.org/UsersGuide/PostInstallation

For more information on how to use MINIX 3, see the wiki:
http://wiki.minix3.org

We'd like your feedback: http://minix3.org/community/

Minix: PID 212 created
Minix: PID 212 exited
Minix: PID 213 created
Minix: PID 213 exited
# git --version
Minix: PID 214 created
git version 1.9.0
Minix: PID 214 exited
#
```