

CS 450 Lab Assignment 1

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Step 1:

Installation of xv6-public environment.

```
sudo apt-get update && sudo apt-get install git nasm build-essential qemu gdb emacs
```

```
git clone https://github.com/mit-pdos/xv6-public.git
```

```
sudo apt-get install qemu aqemu
```

Step 2:

Compiling qemu

```
cd xv6-public
```

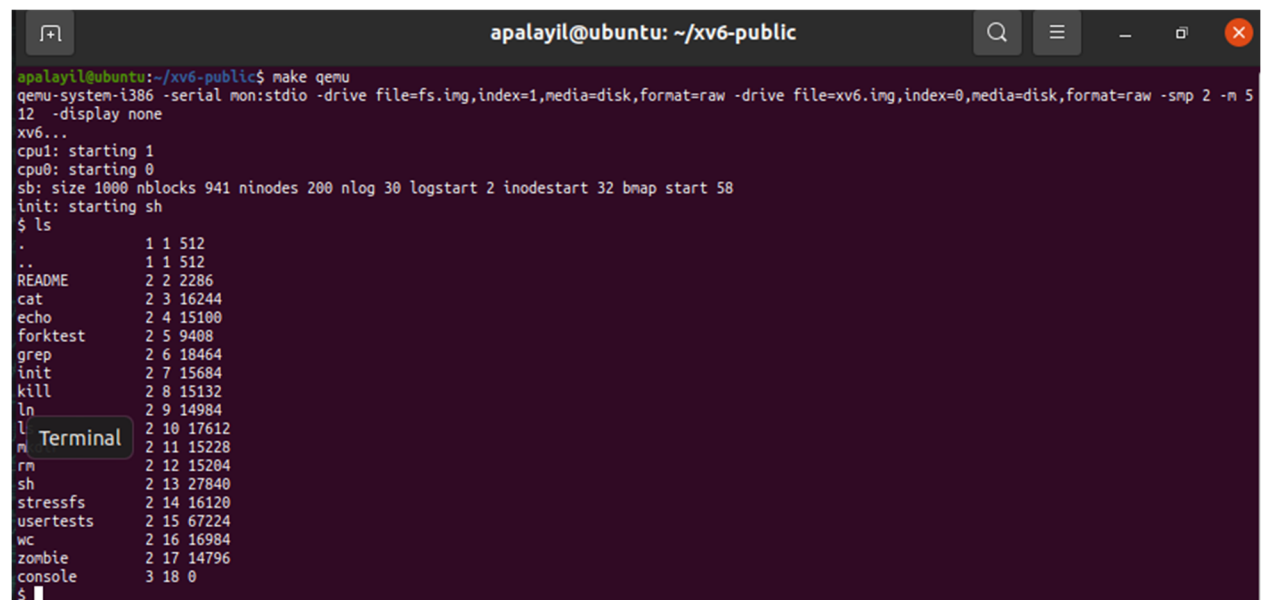
```
vim Makefile
```

```
QEMUOPTS = -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format=raw -smp $(CPUS) -m 512 $(QEMUEXTRA) -display none
```

```
make qemu
```

```
apalayil@ubuntu:~/xv6-public$ make qemu
qemu-system-i386 -serial mon:stdio -drive file=fs.img,index=1,media=disk,format=raw -drive file=xv6.img,index=0,media=disk,format=raw -smp 2 -m 512 -display none
xv6...
cpu1: starting 1
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$
```

```
ls
```



The screenshot shows a terminal window titled "apalayil@ubuntu: ~/xv6-public". The terminal displays the output of the "make qemu" command, which has started the xv6 virtual machine. The prompt is "\$". The user has entered "ls", and the terminal shows a directory listing of files and their sizes in a two-column format.

File	Size
.	1 1 512
..	1 1 512
README	2 2 2286
cat	2 3 16244
echo	2 4 15100
forktest	2 5 9408
grep	2 6 18464
init	2 7 15684
kill	2 8 15132
ln	2 9 14984
l	2 10 17612
m	2 11 15228
rm	2 12 15204
sh	2 13 27840
stressfs	2 14 16120
usertests	2 15 67224
wc	2 16 16984
zombie	2 17 14796
console	3 18 0

The prompt is "\$".

make qemu-nox

```
SeaBIOS (version 1.13.0-1ubuntu1.1)

iPXE (http://ipxe.org) 00:03.0 CA00 PCI2.10 PnP PMM+1FF8CA10+1FECCA10 CA00

Booting from Hard Disk..xv6...
cpu1: starting 1
cpu0: starting 0
sb: size 1000 nblocks 941 ninodes 200 nlog 30 logstart 2 inodestart 32 bmap start 58
init: starting sh
$
```

Step 3:

Debugging using GDB

make qemu-gdb

```
apalaytl@ubuntu:~/xv6-public$ make qemu-gdb
*** Now run 'gdb'.
qemu-system-i386 -serial mon:stdio -drive file=fs.img,index=1,media=disk,format=
raw -drive file=xv6.img,index=0,media=disk,format=raw -smp 2 -m 512 -display no
ne -S -gdb tcp::26000
```

In a new terminal, run emacs in xv6-public

cd xv6-public

emacs

Alt-x gdb



Welcome to [GNU Emacs](#), one component of the [GNU/Linux](#) operating system.

Emacs Tutorial	Learn basic keystroke commands
Emacs Guided Tour	Overview of Emacs features at gnu.org
View Emacs Manual	View the Emacs manual using Info
Absence of Warranty	GNU Emacs comes with ABSOLUTELY NO WARRANTY
Copying Conditions	Conditions for redistributing and changing Emacs
Ordering Manuals	Purchasing printed copies of manuals

To start... [Open a File](#) [Open Home Directory](#) [Customize Startup](#)
To quit a partially entered command, type control-g.

This is GNU Emacs 26.3 (build 2, x86_64-pc-linux-gnu, GTK+ Version 3.24.14)
of 2020-03-26, modified by Debian
Copyright (C) 2019 Free Software Foundation, Inc.

```
U:%%- *GNU Emacs* All L16 (Fundamental)
M-x gdb
```

```
gdb -i=mi zombie
```

```
Current directory is ~/xv6-public/
GNU gdb (Ubuntu 9.2-0ubuntu1~20.04.1) 9.2
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
Type "show copying" and "show warranty" for details.
This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
  <http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from _zombie...
+ target remote localhost:26000
The target architecture is assumed to be i8086
[f000:fff0] 0xffff0: jmp $0x3630,$0xf000e05b
0x0000fff0 in ?? ()
+ symbol-file kernel
warning: A handler for the OS ABI "GNU/Linux" is not built into this configuration
of GDB. Attempting to continue with the default i8086 settings.
(gdb)
```

This is the simple run on how xv6-public was installed and few instructions debugging using gdb with emacs.