Lab0 - Docker and QEMU

ⓘ This is a preview of the published version of the quiz.

Started: May 17 at 19:44

Quiz Instructions

The aims of this lab are:

- Set up docker and QEMU on your machine
- Note you will need this to do Lab 1

We will be present in the lab session of Week 1 to help you with this.

Part 1: Docker

- Install by following instructions for ELEC3607 here **http://phwl.org/2022/installing-docker-2022-version/ (http://phwl.org/2022/installing-docker-2022-version/)** .

Part 2: QEMU

- Install from source or binary form using the instructions at **https://www.qemu.org/download/ (https://www.qemu.org/download/)**
- Download these files to your local machine:
  - **debian-3607-aarch64-lab1.qcow2**
  - **initrd.img-5.10.0-11-arm64** ⭳ **(https://canvas.sydney.edu.au/courses/41229/files/22304681/download?download_frd=1)**
  - **Makefile** ⭳ **(https://canvas.sydney.edu.au/courses/41229/files/22304678/download?download_frd=1)**
  - **vmlinuz-5.10.0-11-arm64** ⭳ **(https://canvas.sydney.edu.au/courses/41229/files/22304680/download?download_frd=1)**

On Windows in a MobaXterm window first type the commands below to install make and set up your path (don't do this for Mac and don't use WSL2):

```
apt-cyg install make
export PATH=/cygdrive/c/Program\ Files/qemu:$PATH
```

Check that typing "make" in the directory that you downloaded the files will boot up Linux and eventually get to the login prompt. The user name and password are both "elec3607".

Your output should be something like this:

```
% make
qemu-system-aarch64 -M virt -cpu cortex-a53 -m 1G -initrd initrd.img-5.10.0-11-arm64 -kernel v
mlinuz-5.10.0-11-arm64 -append "root=/dev/vda2 console=ttyAMA0" -drive if=virtio,file=debian-3
607-aarch64-lab1.qcow2,format=qcow2,id=hd -net user,hostfwd=tcp::10022-:22 -net nic -device in
tel-hda -device hda-duplex -nographic
audio: Failed to create voice `adc'
[    0.000000] Booting Linux on physical CPU 0x0000000000 [0x410fd034]
[    0.000000] Linux version 5.10.0-11-arm64 (debian-kernel@lists.debian.org) (gcc-10 (Debian
10.2.1-6) 10.2.1 20210110, GNU ld (GNU Binutils for Debian) 2.35.2) #1 SMP Debian 5.10.92-1 (2
022-01-18)
[    0.000000] Machine model: linux,dummy-virt
[    0.000000] efi: UEFI not found.
[    0.000000] NUMA: No NUMA configuration found

...

[  OK  ] Reached target Multi-User System.
[  OK  ] Finished Remove Stale Onli…ext4 Metadata Check Snapshots.
[  OK  ] Reached target Graphical Interface.
         Starting Update UTMP about System Runlevel Changes...
[  OK  ] Finished Update UTMP about System Runlevel Changes.

Debian GNU/Linux 11 debbie ttyAMA0

debbie login:
```

I've noticed on PC and Mac that characters are dropped when directly typing into the window that appears. This won't be a problem because we will access the QEMU emulation via ssh.

- In a different terminal (which must be a MobaXterm window in the case of Windows 10), log into the QEMU emulation of Debian Linux on aarch64 using ssh (use "elec3607" as the password) and check you can run xeyes.

```
% ssh -Y elec3607@localhost -p 10022
elec3607@localhost's password:
Linux debbie 5.10.0-11-arm64 #1 SMP Debian 5.10.92-1 (2022-01-18) aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Feb 15 19:52:19 2022 from 10.0.2.2
elec3607@debbie:~$ (mailto:elec3607@debbie:~$) xeyes
```

You can copy files to/from your local machine to the target ARM machine as below:

```
% ls
lab1-gpio    lab2-i2c
% scp -r -P 10022 lab1-gpio elec3607@localhost:
elec3607@localhost's password:
Makefile                                      100%  687   218.5KB/s   00:00
gpio.h                                        100%  467   214.4KB/s   00:00
gpio_ssd.c                                    100% 6845     2.5MB/s   00:00
gpio_blink.c                                  100% 1474   778.5KB/s   00:00
gpio_count.c                                  100% 1841     1.0MB/s   00:00
% scp -r -P 10022 elec3607@localhost:lab1-gpio/gpio.h .
elec3607@localhost's password:
gpio.h                                        100%  467   122.7KB/s   00:00
```

Question 1 1 pts

Please confirm that you have successfully completed all parts of this lab.

- ○ True
- ○ False

Not saved Submit Quiz