

# Ex0: Reptilian Setup

## Overview

You will setup and build Reptilian, a pairing of the Android and Ubuntu user space environments sharing the Linux kernel. You'll then take a screenshot showing the Reptilian terminal and submit it through Canvas.

## Instructions

This exercise is broken into three steps: installing VMWare, Importing Reptilian, and building a fresh kernel.

### Software Setup

First, we need to get the virtual machine and terminal software set up.

#### Download

VMWare WorkStation: [www.vmware.com/products/workstation-pro/workstation-pro-evaluation.html](http://www.vmware.com/products/workstation-pro/workstation-pro-evaluation.html)

Reptilian VM Image: <http://www.cise.ufl.edu/research/reptilian/downloads/Reptilian-latest.ova>

**Note** - you can install the VMWare evaluation for now, but make sure you get a key from [OnTheHub](https://onthehub.com).

#### Installation

- 1) Install VMWare Workstation Pro **15.5** or later
- 2) Double-click on the Reptilian VM image file, then click "Import".
- 3) Optionally, as a sound card (right-click on VM → Settings → Add → Sound Card → Finish).
- 4) Install WSL (WSL2 Recommended): <https://docs.microsoft.com/en-us/windows/wsl/install-win10>

### VM Command Line

To connect to the VM, you will need its IPv4 address. To get it, start the VM, open the start menu, and go to Settings → System → About Tablet → IP Address. With it, you can connect to the VM through SSH via WSL (replace with your IP address):

```
finn@BMO:~$ ssh reptilian@192.168.11.130 Password is 'reptilian'
```



### Building a Fresh Kernel

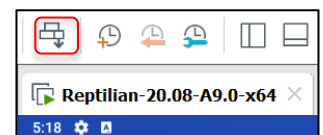
Once connected, change to the `/usr/rep/src` directory and clone the kernel repository:

```
reptilian@localhost$ cd /usr/rep/src
reptilian@localhost$ git clone https://github.com/uf-cise-os/reptilian-kernel.git
reptilian@localhost$ cd reptilian-kernel
```

Finally, build the kernel from source and install it into the operating system:

```
reptilian@localhost$ make
reptilian@localhost$ sudo make install; sudo make modules_install
```

Once the kernel is built / installed, take a snapshot, then reboot the VM. Make sure to properly shut down; otherwise, the kernel might not be properly written!



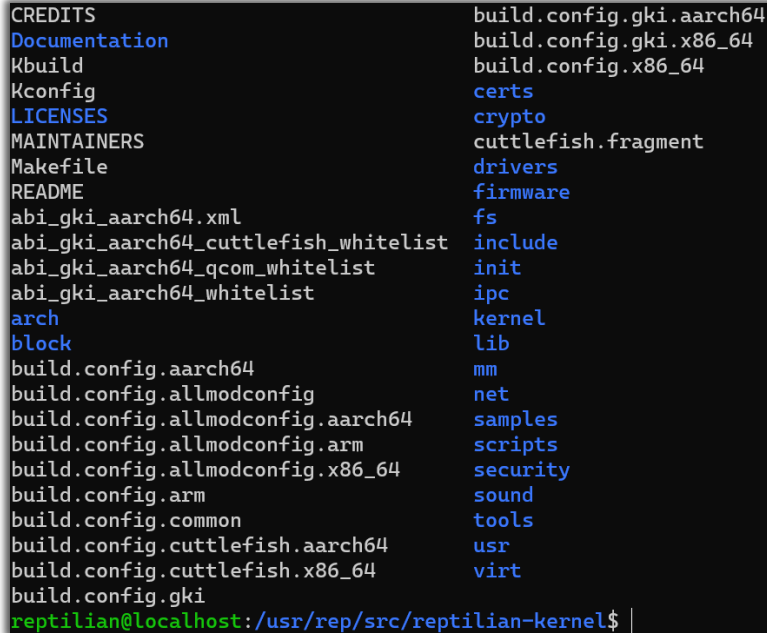
# Submissions

You will submit the following at the end of this exercise (**do not zip files**):

- Screenshot of a terminal window, connected via SSH, showing the kernel source directory (using **ls**)
- Screenshot after running the **sudo make modules\_install** command

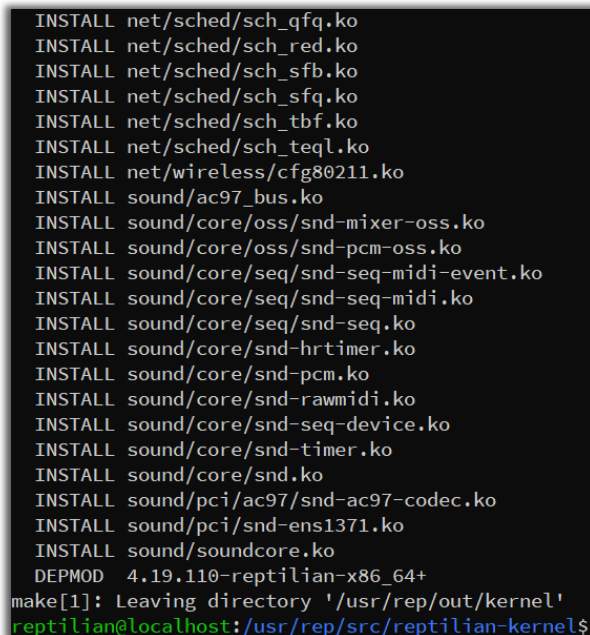
## Example Screenshots

Here are some examples of what your screenshots should look like:



```
CREDITS
Documentation
Kbuild
Kconfig
LICENSES
MAINTAINERS
Makefile
README
abi_gki_aarch64.xml
abi_gki_aarch64_cuttlefish_whitelist
abi_gki_aarch64_qcom_whitelist
abi_gki_aarch64_whitelist
arch
block
build.config.aarch64
build.config.allmodconfig
build.config.allmodconfig.aarch64
build.config.allmodconfig.arm
build.config.allmodconfig.x86_64
build.config.arm
build.config.common
build.config.cuttlefish.aarch64
build.config.cuttlefish.x86_64
build.config.gki
build.config.gki.aarch64
build.config.gki.x86_64
build.config.x86_64
certs
crypto
cuttlefish.fragment
drivers
firmware
fs
include
init
ipc
kernel
lib
mm
net
samples
scripts
security
sound
tools
usr
virt
reptilian@localhost:/usr/rep/src/reptilian-kernel$
```

Figure 1. Screenshot showing the source in /usr/rep/src/reptilian-kernel



```
INSTALL net/sched/sch_qfq.ko
INSTALL net/sched/sch_red.ko
INSTALL net/sched/sch_sfb.ko
INSTALL net/sched/sch_sfq.ko
INSTALL net/sched/sch_tbf.ko
INSTALL net/sched/sch_teql.ko
INSTALL net/wireless/cfg80211.ko
INSTALL sound/ac97_bus.ko
INSTALL sound/core/oss/snd-mixer-oss.ko
INSTALL sound/core/oss/snd-pcm-oss.ko
INSTALL sound/core/seq/snd-seq-midi-event.ko
INSTALL sound/core/seq/snd-seq-midi.ko
INSTALL sound/core/seq/snd-seq.ko
INSTALL sound/core/snd-hrtimer.ko
INSTALL sound/core/snd-pcm.ko
INSTALL sound/core/snd-rawmidi.ko
INSTALL sound/core/snd-seq-device.ko
INSTALL sound/core/snd-timer.ko
INSTALL sound/core/snd.ko
INSTALL sound/pci/ac97/snd-ac97-codec.ko
INSTALL sound/pci/snd-ens1371.ko
INSTALL sound/soundcore.ko
DEPMOD 4.19.110-reptilian-x86_64+
make[1]: Leaving directory '/usr/rep/out/kernel'
reptilian@localhost:/usr/rep/src/reptilian-kernel$
```

Figure 2. Screenshot showing terminal after running **sudo make modules\_install**