

Noah Buchanan
Problem Set 1
IoT at 2 PM

September 6, 2021

1.
 - (a) First make sure that you have Virtual Box and the Raspberry Pi OS downloaded
 - (b) Open virtual box and click new to create a new virtual machine
 - (c) Give it a name, change the type to linux and select Debian 64-bit
 - (d) Hit next and adjust the amount of ram to be allocated for the virtual machine
 - (e) Create a new virtual hard disk(VDI) and choose how much space you want to allocate for the hard drive
 - (f) Lastly to boot the virtual machine you must select settings on the created virtual machine go to storage click on the disk icon and find and select the Raspberry Pi OS downloaded earlier for this
 - (g) Now just boot the virtual machine and follow the installation process
2.
 - (a) Open the terminal on the Raspberry Pi OS VM
 - (b) Issue the following commands in order to prepare the python script and directory it will be executing from:
 - i. `mkdir PS1`
 - ii. `nano UAFfile.py`, this step allows you begin writing the script, these steps wont be included in this
 - iii. once done writing the script it can be executed as `python3 UAFfile.py`
3.
 - (a) The first way I looked into is crontab
 - i. type `sudo crontab -e`, just `-e` will work to schedule this for the user currently logged in, if they were not currently logged in you would type `sudo crontab -u {username} -e`
 - ii. scroll to the bottom of the file and type `"@reboot python3 /home-/pi/pathtofile/pythonfile.py &"` and it should now run on startup
 - (b) The second way is with init.d scripts

- i. first copy the python file to the init.d directory like so "sudo cp pythonfile.py /etc/init.d"
- ii. next modify the permissions for the file using the following command "sudo chmod 755 /etc/init.d/pythonfile.py"
- iii. add the following to the top of the python file

```
# /etc/init.d/UAFFile.py
### BEGIN INIT INFO
# Provides:          UAFFile.py
# Required-Start:    $remote_fs $syslog
# Required-Stop:     $remote_fs $syslog
# Default-Start:     2 3 4 5
# Default-Stop:      0 1 6
# Short-Description: start UAFFile.py at boot
# Description:       Lists files at boot from UAFFile.py
### END INIT INFO
```

- iv. now register the script to be run at start-up "sudo update-rc.d pythonfile.py defaults"

UAFFile.py

```
# *****
# Name: Noah Buchanan
# Problem Set: PS1
# Due Date: Sept 6, 2021
# *****

import os
#os.walk simply walks the given directory and finds all dirs and files
#file.endswith is just a boolean check to see the file type
#and check if its a python file
for root, dirs, files in os.walk("./"):
    for file in files:
        if file.endswith('.py'):
            print(os.path.join(root, file))
print('finished')
```