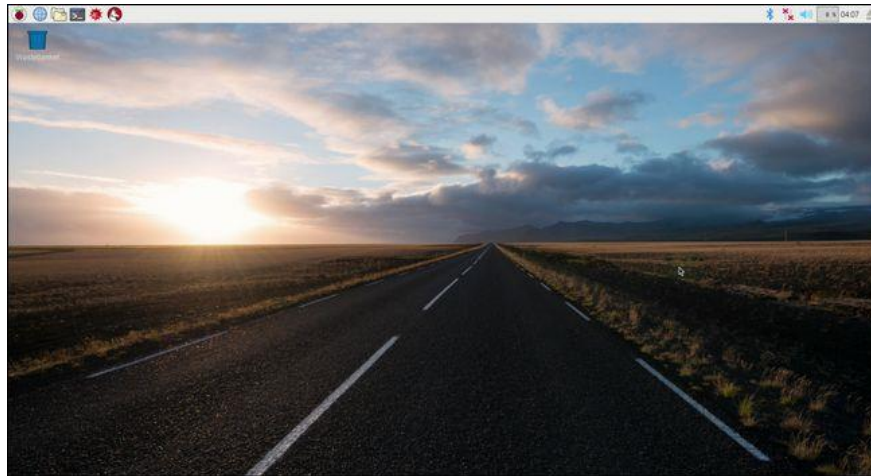


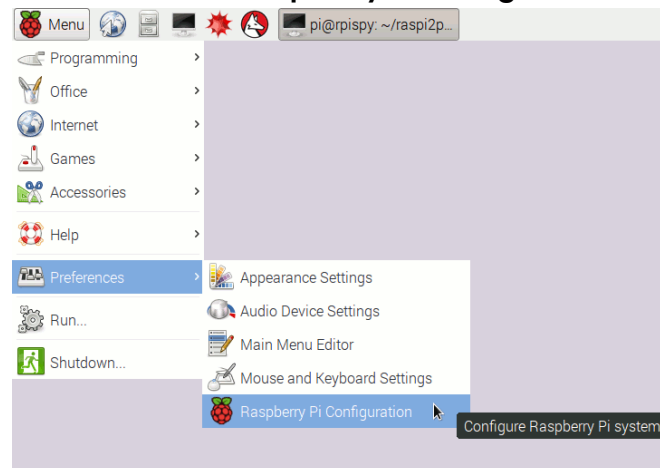
For additional information, please visit Raspberry Pi Quick Started Guide (Steps 1-6):

<https://www.raspberrypi.org/help/quick-start-guide/2/>

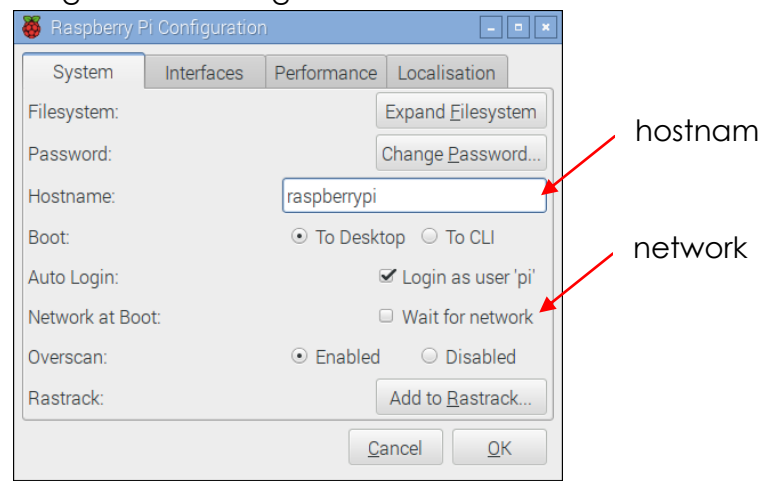
1. Connect the RPi and run it. Follow desktop environment



2. Once you are logged in, access the **Raspberry Pi Configuration:**



3. Under the **System** tab, change the following:

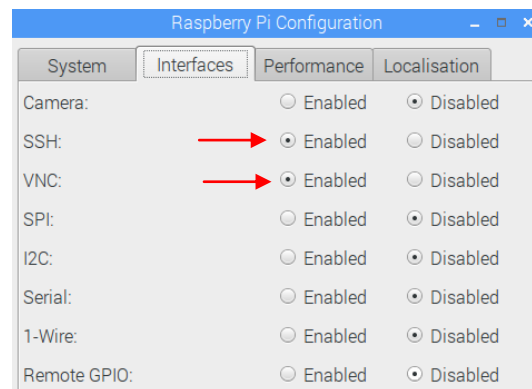


Change the following parameters/options:

- a. **hostname**: tcss573-gr## where ## represent a two digit number of your group (e.g. 05, 15, etc.)
- b. **Network at Boot**: check this option
- c. **password**: change the password (choose a challenging password)
 - i. see the following link on how to create a strong password
<https://support.google.com/accounts/answer/32040?hl=en>

*Every time you change the hostname, RPi will **require rebooting**.*

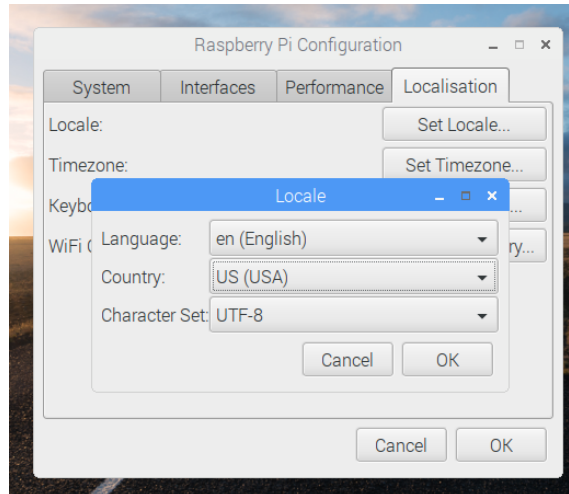
4. Under the **Interfaces** tab, enable the following options/features (for remote connectivity)



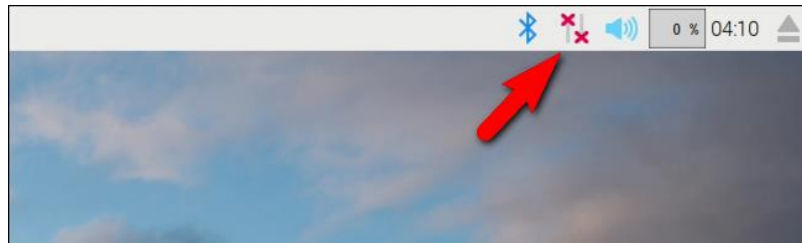
- **SSH**
- **VNC**

We will enable additional features later when needed.

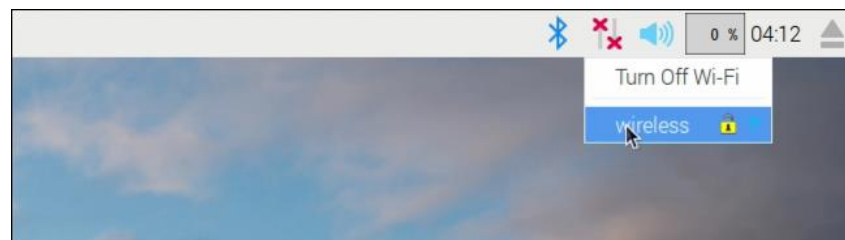
5. Under the **Localisation** tab, enable the following options
 - a. **Set Locale** (choose any preferred Locale), example
 - i. Language: **en (English)**
 - ii. Country: **US (USA)**
 - iii. Character Set: **UTF-8**



- a. **Set Timezone**
 - a. Area **USA**
 - b. Location **Pacific**
 - b. **Set Keyboard**
 - a. Keyboard **English United States**
6. Click **OK** to accept.
 7. Setup WiFi
 - a. Click on the WiFi icon on the taskbar and setup the appropriate WiFi connection



- b. Choose your wireless network to connect to the Internet from the drop down menu



- c. Some WiFi connections require authentication (e.g. UW). Once you enter the password, open the browser and then attempt to see if you have an Internet connection (e.g. type yahoo.com).

Fix Your Connection is Not Private Error

If you receive a message **"Your connection is not private"**, then click on **Advanced** link at the bottom of that page and click **"Process to (website address) (unsafe)"**. Then, authenticate. You may need to click on "Proceed to (website address)" one more time to complete WiFi setup.



Your connection is not private

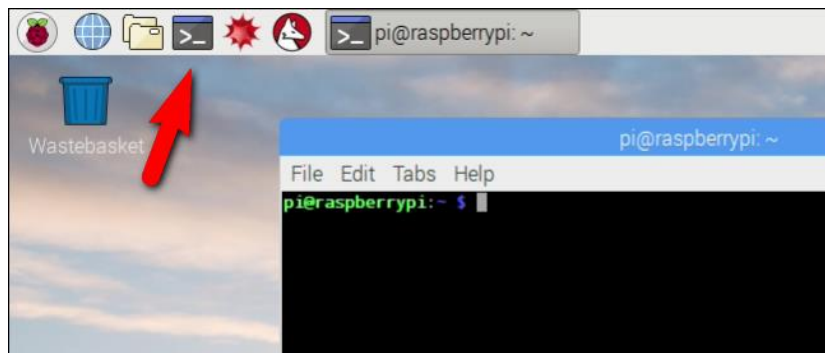
Chrome can't establish a private connection to **www.google.com**. This is probably because your computer's date is set incorrectly. You should refresh this page after you update your computer's date and time.

→ [Advanced](#)

Reload

8. Setup **Avahi**, a free zero-configuration networking

a. Access the Terminal



b. Type the following lines (one at a time)

- i. **sudo apt-get install avahi-daemon**
- ii. **sudo apt-get install insserv**
- iii. **sudo insserv avahi-daemon**
- iv. **sudo /etc/init.d/avahi-daemon restart**

9. Now, let's setup a Python email script that will automatically send an email to your Gmail account with the IP address so that you are able to connect remotely.

10. Copy/Download the Python script from Canvas → Tutorials → Getting Started → send_ip.py Python Email Script to your desktop

a. Double click on the script. This will open an editor. Modify the following

- i. Recipient email address → should be your Gmail address
- ii. Sender email address → should be your Gmail address
- iii. Gmail Password → Gmail account password

```
# *****
# Email Account Information
# Change to your own account information
# *****
Recipient = '????@gmail.com'
Sender    = '????@gmail.com'
Password  = '????'
```

- b. Save the file and then copy the code into the clipboard by pressing **Ctrl + A** (select all) and then **Ctrl + C** (to copy code into the clipboard).

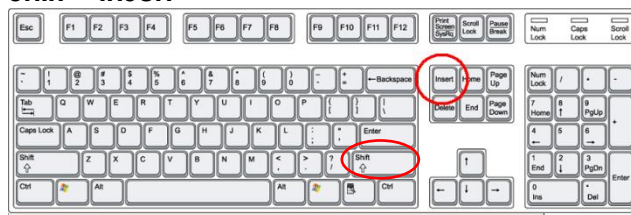
11. Let's setup the script, access the **terminal**, then type the following

- a. `mkdir code` → this will create a new folder called code
- b. `cd code` → this will change the path to the new code folder
- c. type the following line

```
sudo nano send_ip.py
```

this will open an editor in the terminal window where you can edit the file. Press the following keys together to paste:

Shift + insert



- d. Press **Ctrl + X** to exit from the terminal nano editor, then press the letter Y to accept the changes and press the Enter key to exit from the nano editor and save the changes.

For more information on how to use the nano editor, visit the following YouTube tutorial

<https://www.youtube.com/watch?v=cLyUZAabf40>

- e. Set the permissions for the script to be executable

```
sudo chmod +x send_ip.py
```

12. Now you can test the `send_ip.py` script to check if it send an email. Type the following command in the terminal window

```
sudo python send_ip.py
```

If you see the command prompt, then this means an email have been sent. If not, then check the error that the script generates (check the username and password again by editing the script if necessary).

If you receive this email: **Review blocked sign-in attempt:**

If you receive an email in Google that requires an application is blocked or it requires allowing less secure apps to access your account, you need to go to the following link and change the account access for less secure apps to be turned on.

<https://support.google.com/accounts/answer/6010255?hl=en>

Let less secure apps use your account

If an app or device doesn't meet our security standards, Google will block anyone who tries to sign in from that app or device. Because these apps and devices are easier to break into, blocking them helps keep your account safe.

Some examples of apps that do not support the latest security standards include:

- The Mail app on your iPhone or iPad with version 6 or below
- The Mail app on your Windows phone preceding the 8.1 release
- Some Desktop mail clients like Microsoft Outlook and Mozilla Thunderbird

Change account access for less secure apps

To help keep Google Accounts through work, school, or other groups more secure, we block some less secure apps from using them. If you have this kind of account, you'll see a "Password incorrect" error when trying to sign in. If so, you have two options:

- **Option 1:** Install a more secure app that uses stronger security measures. All Google products, like Gmail, use the latest security measures.
- **Option 2:** Change your settings to allow less secure apps into your account. We don't recommend this option because it can make it easier for someone to break into your account. If you want to allow access anyway, follow these steps:

1. Go to the "Less secure apps" section of my Account [link](#).
2. Turn on **Allow less secure apps**. (Note: If your administrator has locked less secure app account access, this setting is hidden.)

If you still can't sign in to your account, [learn more about the "password incorrect" error](#).

13. Let's now call the script every time the RPi boots (at startup): Type the following command in the terminal window

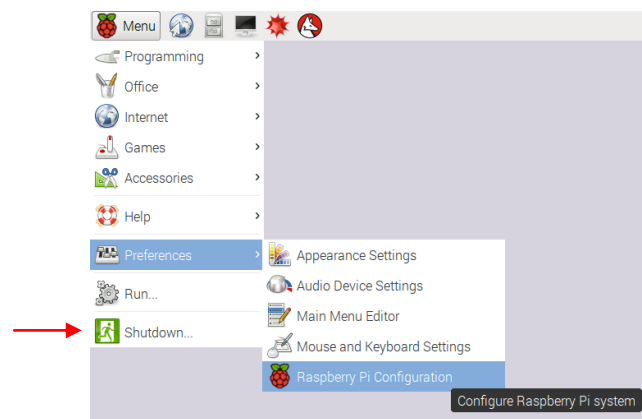
```
crontab -e
2
```

scroll all the way down the file and then enter the following line

```
@reboot python /home/pi/code/send_ip.py
```

Press Ctrl + X → Y → press enter to exit and save the file.

14. Now you are ready to reboot the RPi.



15. Now, we need to setup the GrovePi+ kit. Click on the following video to see how to connect the RPi to the GrovePi+. It is strongly recommended that you remove the casing of the RPi to be able to properly connect the RPi and GrovePi+.

<https://www.youtube.com/watch?v=xGq9sh7zD1k>

16. Go to the following address and setup GrovePi+ (click on Detailed instructions), then follow the instructions on how to setup the GrovePi+.

<https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/>

Once installed the GrovePi+ software modules, you are now ready to run sample applications that come with the kit. In the green booklet that comes with the kit, you can go through the sample applications and how to connect them (e.g. HelloWorld).

17. Once completed adding the GrovePi+, update the RPi by executing the following commands in the terminal window (this may take 10-20 minutes to complete).

```
sudo apt-get update  
sudo apt-get upgrade
```

18. You'll also need a VNC Viewer application for the Windows, Mac or Linux computer, or iOS or Android mobile device, you want to control your Pi from. Download VNC Viewer <https://www.realvnc.com/en/connect/download/viewer/>

19. Follow the instructions from VNC official documentation to set up and connect to your raspberry pi <https://www.realvnc.com/en/connect/docs/raspberry-pi.html#raspberry-pi-setup>