Initial Setup with the Raspberry Pi 💻

- Set up the hardware
- Configure the OS
- Flash and first boot
- Update and shutdown

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Hardware Requirements (Pi 4B/5)

- Computer or laptop with Pi Imager installed
- 15-25W USB-C power adapter
- >32GB MicroSD card and adapter
- GUI setup:
  - MicroHDMI to HDMI adapter and HDMI cable (for monitor)
    - Or MicroHDMI to HDMI cable
  - USB keyboard and mouse
- Headless setup:
  - Ethernet cable

Hardware Requirements (Pi Zero 2W)

- Computer or laptop with Pi Imager installed
- >32GB MicroSD card and adapter
- GUI setup:
  - Micro USB cable to power supply
  - Mini HDMI to HDMI adapter and HDMI cable (for monitor)
    - Or a Mini HDMI to HDMI cable
  - Micro USB hub (for keyboard/mouse)
- Headless setup (recommended for Zero boards):
  - Micro USB data cable to computer

Setting up the OS

- Choose the OS
  - Raspberry Pi OS (64-bit)
  - Use Lite version if GUI is not needed
- Choose Storage Device
  - Insert and select your MicroSD card
- OS Config Menu (settings cog)
  - Set certain user and system settings on boot
- Write
  - Flash the OS and config onto the MicroSD card

OS Config Menu

- Hostname - Name of the computer
- Enable SSH - Enable if setting up headless
- Set username and password - Defaults to `pi` for both fields
- Configure wireless LAN - Connect to WiFi
- Set Locale Settings - Set to `America/Los_Angeles` (same timezone)

Most of this stuff you can leave as default if on your home network. Once everything is set, flash your card*, insert it into the Pi, and give it power!

* - There is one additional step for Pi Zero 2W using Ethernet via USB

For Pi Zero 2W users

- Once the OS is flashed, reinsert the card into your computer
- Navigate to the `config.txt` file
- Scroll to the bottom and add `dtoverlay=dwc2`
- Then open the `cmdline.txt` file
- In between the words `rootwait` and `quiet`, add `modules-load=dwc2,g_ether`
- Save both files, insert the MicroSD card, and power up!

**You may also need to enable network sharing on your computer

First Boot (GUI)

- Give the Pi a minute to boot
- Once you see a first boot screen, login with your previously input username and password
- After you've logged in, make sure you have a solid internet connection to update the Pi in later instructions
- You can check on the top right of the taskbar
- Click the up-down arrow icon if you didn't set up wireless before and select your network

First Boot (Headless)

- Make sure your Pi has a local wired or wireless connection to your computer
- Ping the Pi by opening a terminal on your computer and using `ping <pi hostname>` with your configured credentials
  - If nothing comes back, give it another minute or two to boot up
  - Try adding `.local` to the end of the hostname
- Once the ping comes back, enter `ssh <username>@<hostname>`
- Type in your password (it won't be visible when you type it)
- And you should now be logged in!

Headless Troubleshooting

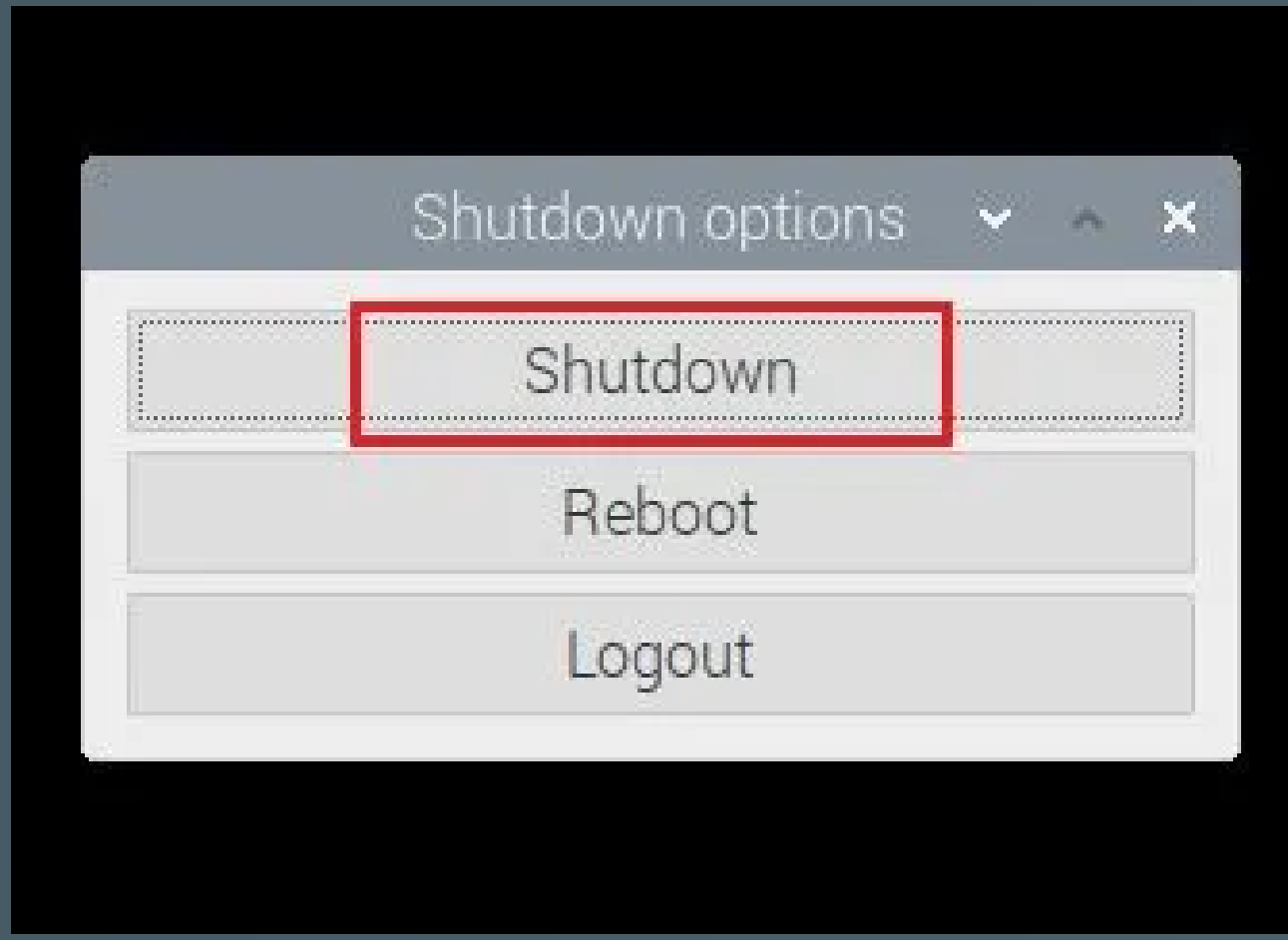
- If nothing comes back from the ping:
  - Make sure you are entering the right user and host names
  - Make sure it has the right network credentials
  - Make sure nothing else on the network is using the same hostname as the Pi (can conflict with connections)
  - If wired, make sure the ethernet cable is good
    - Or if using a Pi Zero, that its a data cable, not 'charge only'
  - Give it more time to fully boot, or reboot if waited >5-10 mins
- If none of these work, send a message in our `#electronics` channel

Updating the Pi

- Make sure you're connected to the internet before updating
- Check with `ping google.com` (should return something)
- Open a terminal and input these commands one at a time (enter `y` when prompted)
  - `sudo apt-get update` - Update `apt` repositories
  - `sudo apt-get upgrade` - Upgrade available packages
  - `sudo apt-get autoremove` - Uninstall any unused packages
  - `sudo reboot` - Reboots the computer (optional, but suggested)
- Log back in again and your Pi is now updated

Shutting Down the Pi

- GUI:
  - Click on the top left 'Start Menu'
  - Click on '🏃Shutdown...'
  - Click 'Shutdown'
- Headless:
  - Type `sudo shutdown now` and hit enter



Next steps

- Learn some Linux
  - File system, some applications, and more
- Learn to use the terminal
  - Navigation, creating and deleting files and folders, and system monitoring
- Foundational to using and troubleshooting the Raspberry Pi
- And more!!

Continue to next section: **Basic_Setup_Part_2_Slides.pdf**