Lab 1 report

CSE121

Inhle Cele

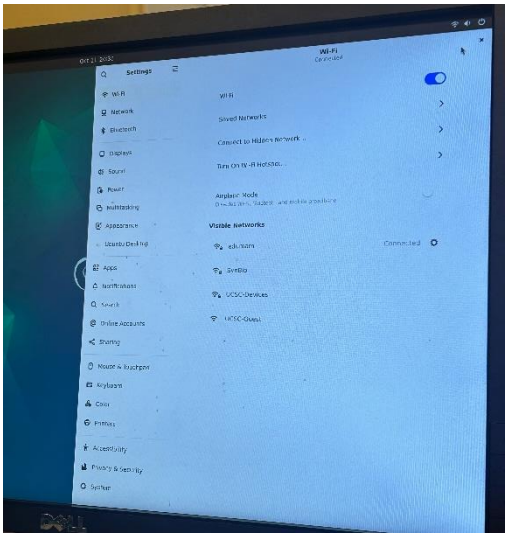
Table of Contents

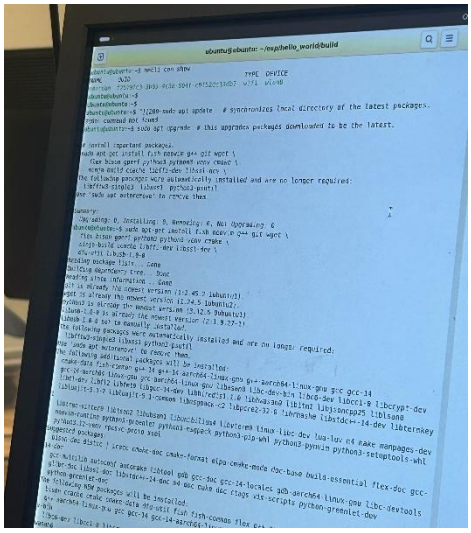
Lab 1.0 notes: Acquire CSE121 Kit 1
Lab 1.1 notes: setup Pi4 1
Lab 1.2 notes: Run hello world in ESP32 4
Lab 1.3 notes: Flash LED on ESP32 5

Lab 1.0 notes: Acquire CSE121 Kit

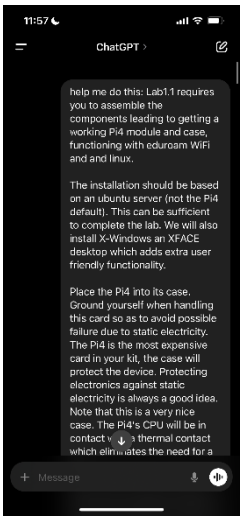
Was fine, no problems. Kit acquired :). Used google to find my location

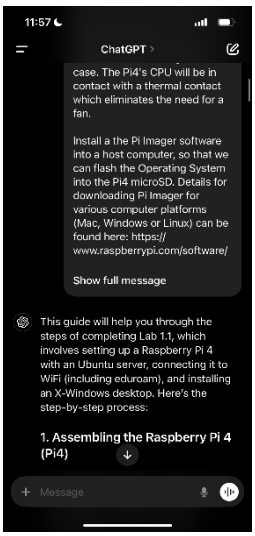
Lab 1.1 notes: setup Pi4

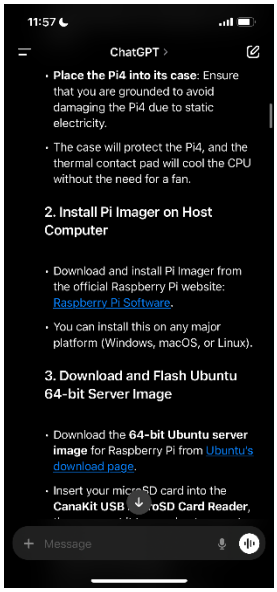


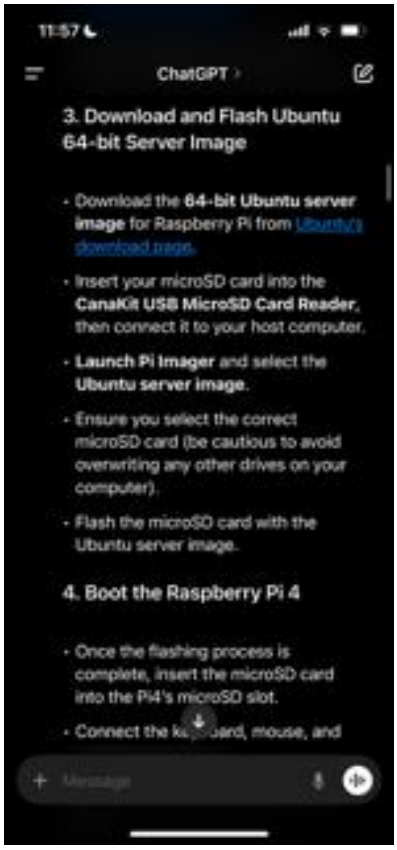


I asked chat to help me with setup cause I was a little confused cause I didn't realise I didn't receive a memory reader and this helped me realise that and get the wifi con on my CLI: https://chatgpt.com/share/670eb658-8248-8008-ba51-a08a750d4678








11:57
ChatGPT
3. Download and Flash Ubuntu 64-bit Server Image
Download the 64-bit Ubuntu server image for Raspberry Pi from Ubuntu's download page.
Insert your microSD card into the CanaKit USB MicroSD Card Reader, then connect it to your host computer.
Launch Pi Imager and select the Ubuntu server image.
Ensure you select the correct microSD card (be cautious to avoid overwriting any other drives on your computer).
Flash the microSD card with the Ubuntu server image.
4. Boot the Raspberry Pi 4
Once the flashing process is complete, insert the microSD card into the Pi4's microSD slot.
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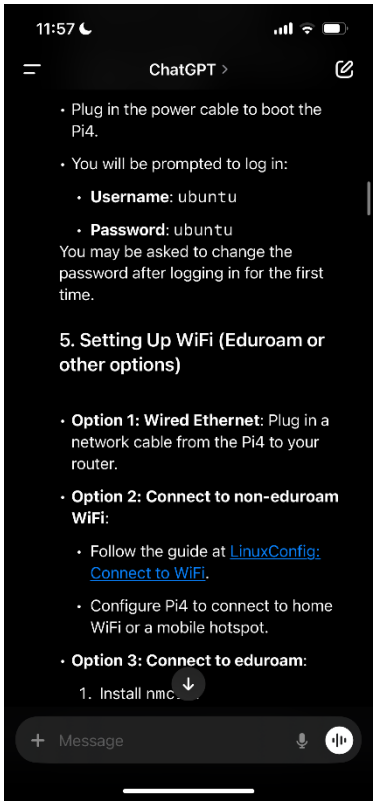
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ChatGPT
Plug in the power cable to boot the Pi4.
You will be prompted to log in:
Username: ubuntu
Password: ubuntu
You may be asked to change the password after logging in for the first time.
5. Setting Up WiFi (Eduroam or other options)
Option 1: Wired Ethernet: Plug in a network cable from the Pi4 to your router.
Option 2: Connect to non-eduroam WiFi:
Follow the guide at LinuxConfig: Connect to WiFi.
Configure Pi4 to connect to home WiFi or a mobile hotspot.
Option 3: Connect to eduroam:
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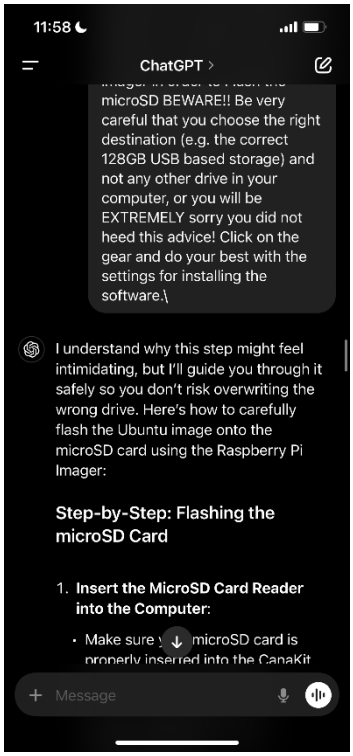
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ChatGPT
microSD BEWARE!! Be very careful that you choose the right destination (e.g. the correct 128GB USB based storage) and not any other drive in your computer, or you will be EXTREMELY sorry you did not heed this advice! Click on the gear and do your best with the settings for installing the software.\
I understand why this step might feel intimidating, but I'll guide you through it safely so you don't risk overwriting the wrong drive. Here's how to carefully flash the Ubuntu image onto the microSD card using the Raspberry Pi Imager:
Step-by-Step: Flashing the microSD Card
1. Insert the MicroSD Card Reader into the Computer:
Message

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ChatGPT
Option 3: Connect to eduroam:
1. Install nmcli:
sudo apt install network-manager
2. Set up a connection for eduroam:
nmcli con add type wifi con-name "eduroam" \
ifname wlan0 ssid "eduroam" wifi-sec.k \
wpa-eap 802-1x.identity "XXX@ucsc.edu" \
802-1x.password "XXX" \
802-1x.system-ca-certs yes \
802-1x.eap "peap" \
802-1x.phase2-auth mschapv2
3. Bring up the eduroam connection:
nmcli connection up eduroam --ask
Replace XXX@ucsc.edu with your university email and XXX with your password.
6. Update and Install XFCE Desktop
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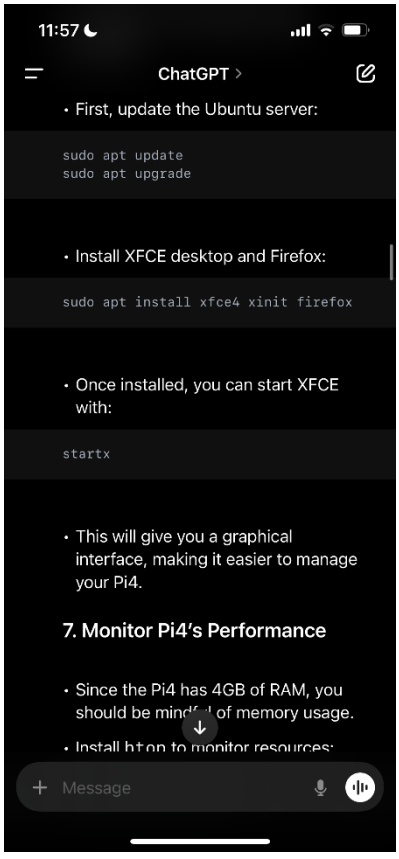
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ChatGPT
First, update the Ubuntu server:
sudo apt update
sudo apt upgrade
Install XFCE desktop and Firefox:
sudo apt install xfce4 xinit firefox
Once installed, you can start XFCE with:
startx
This will give you a graphical interface, making it easier to manage your Pi4.
7. Monitor Pi4's Performance
Since the Pi4 has 4GB of RAM, you should be mindful of memory usage.
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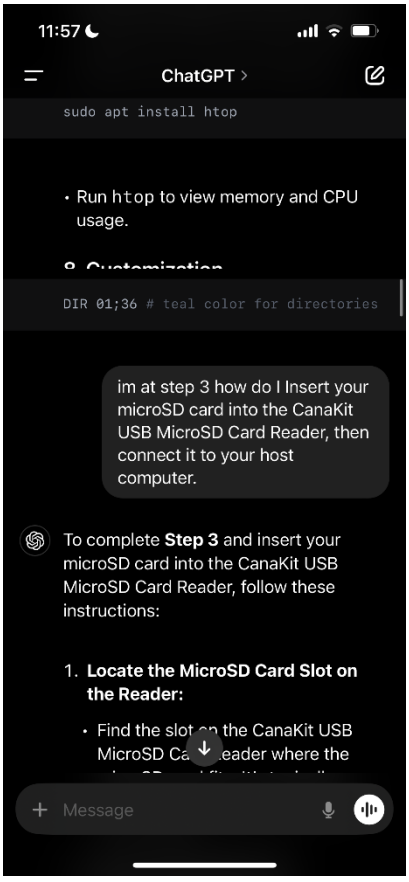
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ChatGPT
sudo apt install htop
Run htop to view memory and CPU usage.
DIR 01;36 # teal color for directories
im at step 3 how do I Insert your microSD card into the CanaKit USB MicroSD Card Reader, then connect it to your host computer.
To complete Step 3 and insert your microSD card into the CanaKit USB MicroSD Card Reader, follow these instructions:
1. Locate the MicroSD Card Slot on the Reader:
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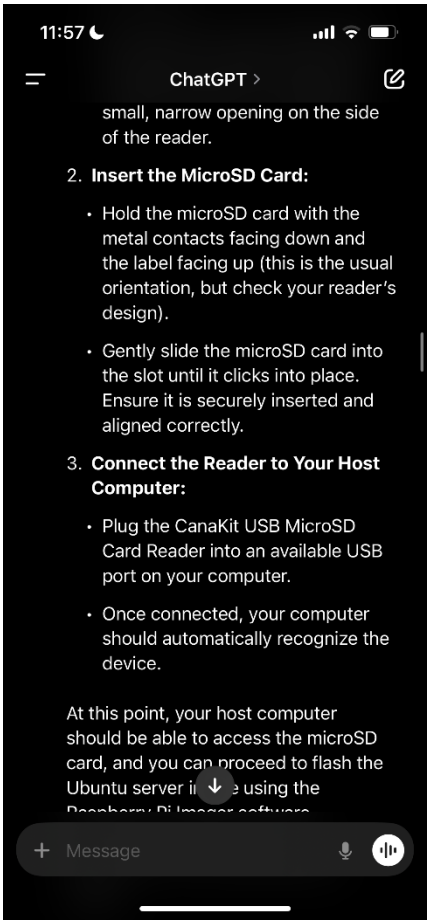
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ChatGPT
small, narrow opening on the side of the reader.
2. Insert the MicroSD Card:
Hold the microSD card with the metal contacts facing down and the label facing up (this is the usual orientation, but check your reader's design).
Gently slide the microSD card into the slot until it clicks into place. Ensure it is securely inserted and aligned correctly.
3. Connect the Reader to Your Host Computer:
Plug the CanaKit USB MicroSD Card Reader into an available USB port on your computer.
Once connected, your computer should automatically recognize the device.
At this point, your host computer should be able to access the microSD card, and you can proceed to flash the Ubuntu server image using the Raspberry Pi Imager software.
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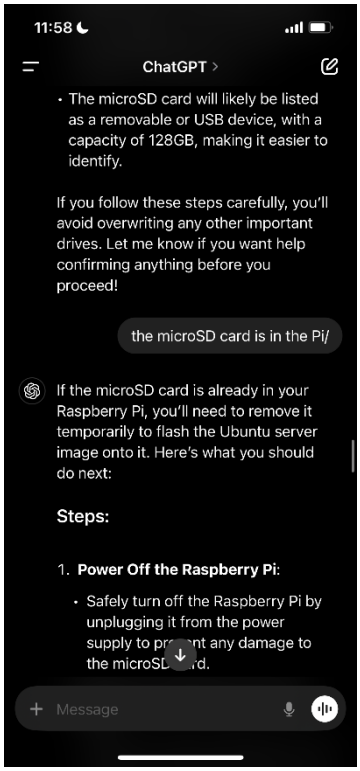
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ChatGPT
• The microSD card will likely be listed as a removable or USB device, with a capacity of 128GB, making it easier to identify.
If you follow these steps carefully, you'll avoid overwriting any other important drives. Let me know if you want help confirming anything before you proceed!
the microSD card is in the Pi/
If the microSD card is already in your Raspberry Pi, you'll need to remove it temporarily to flash the Ubuntu server image onto it. Here's what you should do next:
Steps:
1. Power Off the Raspberry Pi:
• Safely turn off the Raspberry Pi by unplugging it from the power supply to pr nt any damage to the microSD rd.
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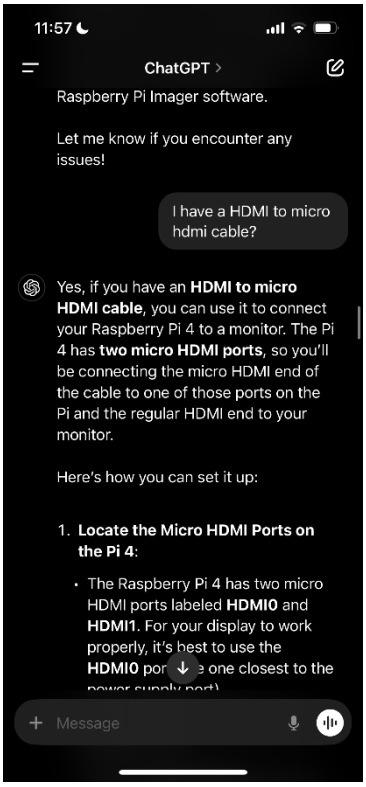
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ChatGPT
Raspberry Pi Imager software.
Let me know if you encounter any issues!
I have a HDMI to micro hdmi cable?
Yes, if you have an HDMI to micro HDMI cable, you can use it to connect your Raspberry Pi 4 to a monitor. The Pi 4 has two micro HDMI ports, so you'll be connecting the micro HDMI end of the cable to one of those ports on the Pi and the regular HDMI end to your monitor.
Here's how you can set it up:
1. Locate the Micro HDMI Ports on the Pi 4:
• The Raspberry Pi 4 has two micro HDMI ports labeled HDMI0 and HDMI1. For your display to work properly, it's best to use the HDMI0 por e one closest to the
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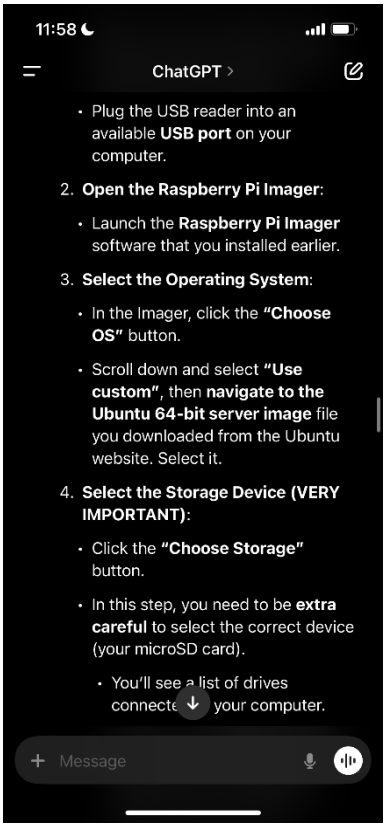
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ChatGPT
• Plug the USB reader into an available USB port on your computer.
2. Open the Raspberry Pi Imager:
• Launch the Raspberry Pi Imager software that you installed earlier.
3. Select the Operating System:
• In the Imager, click the "Choose OS" button.
• Scroll down and select "Use custom", then navigate to the Ubuntu 64-bit server image file you downloaded from the Ubuntu website. Select it.
4. Select the Storage Device (VERY IMPORTANT):
• Click the "Choose Storage" button.
• In this step, you need to be extra careful to select the correct device (your microSD card).
• You'll see a list of drives connecte your computer.
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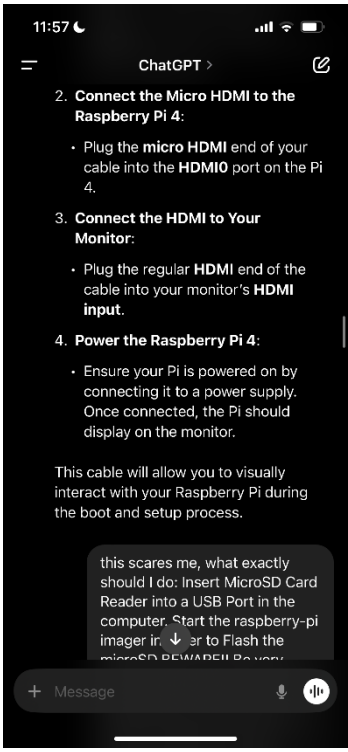
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ChatGPT
2. Connect the Micro HDMI to the Raspberry Pi 4:
• Plug the micro HDMI end of your cable into the HDMI0 port on the Pi 4.
3. Connect the HDMI to Your Monitor:
• Plug the regular HDMI end of the cable into your monitor's HDMI input.
4. Power the Raspberry Pi 4:
• Ensure your Pi is powered on by connecting it to a power supply. Once connected, the Pi should display on the monitor.
This cable will allow you to visually interact with your Raspberry Pi during the boot and setup process.
this scares me, what exactly should I do: Insert MicroSD Card Reader into a USB Port in the computer. Start the raspberry-pi imager in er to Flash the
Message

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ChatGPT
• You'll see a warning that all data on the selected drive will be erased. Confirm that you've selected the right microSD card, then proceed.
7. Wait for the Process to Complete:
• The imager will write the Ubuntu server image to the microSD card. This will take a few minutes.
• After it's done, the imager will verify the write process to ensure there were no errors.
8. Safely Eject the MicroSD Card:
• Once the flashing process is complete, safely eject the microSD card from your computer.
• Insert the microSD card back into the Raspberry Pi 4's microSD slot.
Key Tips to Avoid Mistakes:
• Double-check the storage device before flashing make sure you select the microSD c and not your
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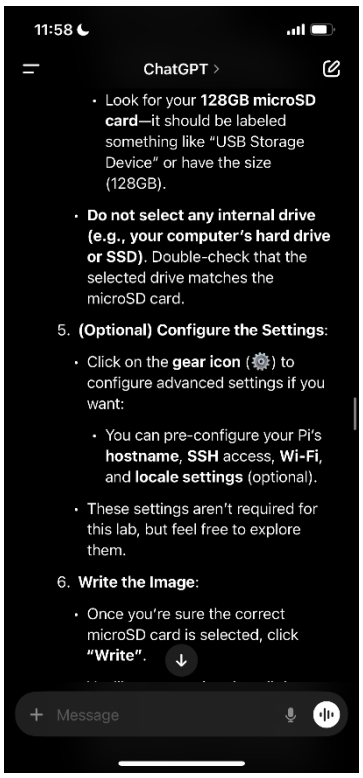
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ChatGPT
• Look for your 128GB microSD card—it should be labeled something like "USB Storage Device" or have the size (128GB).
• Do not select any internal drive (e.g., your computer's hard drive or SSD). Double-check that the selected drive matches the microSD card.
5. (Optional) Configure the Settings:
• Click on the gear icon (⚙️) to configure advanced settings if you want:
• You can pre-configure your Pi's hostname, SSH access, Wi-Fi, and locale settings (optional).
• These settings aren't required for this lab, but feel free to explore them.
6. Write the Image:
• Once you're sure the correct microSD card is selected, click "Write".
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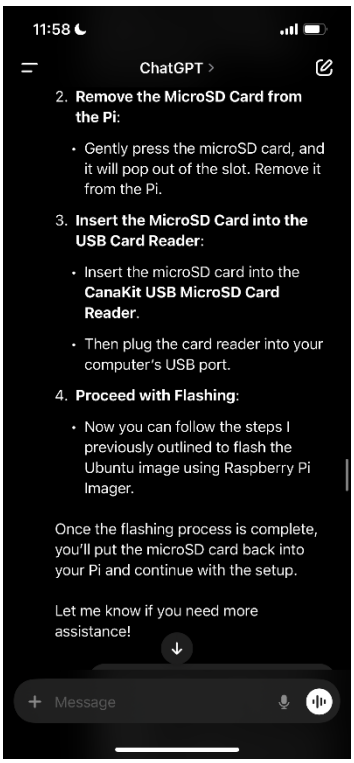
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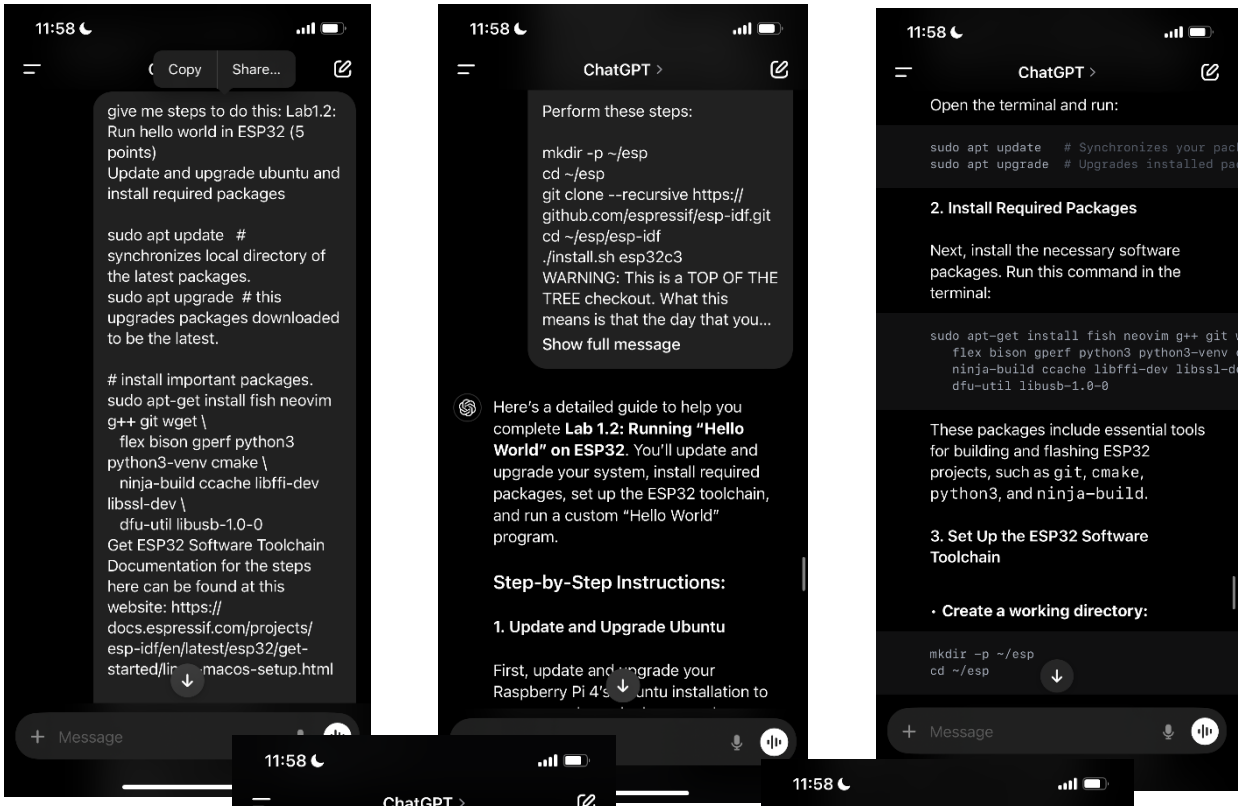
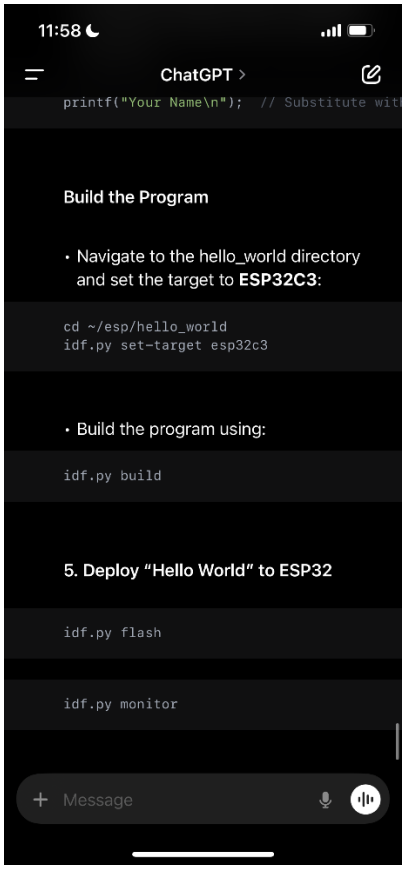
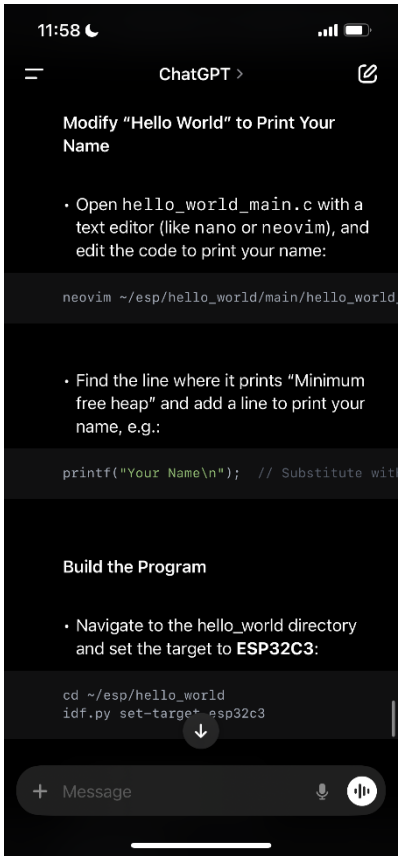
ChatGPT
2. Remove the MicroSD Card from the Pi:
• Gently press the microSD card, and it will pop out of the slot. Remove it from the Pi.
3. Insert the MicroSD Card into the USB Card Reader:
• Insert the microSD card into the CanaKit USB MicroSD Card Reader.
• Then plug the card reader into your computer's USB port.
4. Proceed with Flashing:
• Now you can follow the steps I previously outlined to flash the Ubuntu image using Raspberry Pi Imager.
Once the flashing process is complete, you'll put the microSD card back into your Pi and continue with the setup.
Let me know if you need more assistance!
Message

Lab 1.2 notes: Run hello world in ESP32

Worked in the lab from this point onwards. The TA named Dylan helped me for the most part. No major issues besides changing the permissions using sudo chmod command which TA helped with. Lab ran smoothly for the most part, I asked chat to help me with the steps for this lab. Mainly assisted in helping me use vim to add my name to the helloWorld file and helping me save it using: https://chatgpt.com/share/670eb658-8248-8008-ba51-a08a750d4678







Lab 1.3 notes: Flash LED on ESP32

Was in the lab still from this point onwards. No major issues besides finding with LED number I needed to change. I thought it was LED 7 because on the board the middle line is marked 7 but by testing and asking around I was able to find the right LED to code (Number 2). Lab ran smoothly for the most part. No added help from chatgpt