Lab 1: Setup instructions

You can setup your Raspberry Pi 5 for this assignment using the 2 options below depending on what suits you best:

1) Direct setup with monitor + keyboard & mouse
2) Setup via SSH over the same network (Hotspot or personal WiFi or UMass Devices network)

Ensure that whichever method you use, while preparing your lab, works at Duda hall for the live demo.

Option 1: Direct setup with monitor + keyboard & mouse

a. Connect Hardware

- Plug the Pi into a display monitor using an HDMI to Micro-hdmi cable
- Connect a USB keyboard and mouse to the Pi
- Insert the Raspberry Pi OS microSD card into the slot
- Power on your Raspberry Pi 5 using the power cable in the kit

b. Log In

- On boot, log in with the default Raspberry Pi OS credentials (Unless otherwise provided in your kit)
    - Username: pi
    - Password: 1234 (or raspberry) *Check kit for username and password details

c. Connect to the internet

- From the Raspberry Pi desktop, connect to your Wi-Fi network

d. Download Files

- Open a browser on the Raspberry Pi and log into your Canvas account
- Download the test and source code provided for the assignment
- Save them into a location/directory for your convenience

You can continue working on the assignment through this setup

Option 2: Setup via SSH

- **Follow step a through b in option 1**
- **Connect the Raspberry Pi to your hotspot or personal WiFi or UMass Devices WiFi network (passwd: GoUMass!)**
- **Find the Raspberry Pi's IP address**
    - If connected to monitor, run the following command in the terminal:
        - Ifconfig
    - Note the IP address (eg: 172.20.10.2)

- **SSH into the the pi**
    - In your local machine's terminal run (***make sure your local machine and the pi are connected to the same network):
        - ssh pi@<RaspberryPi_IP>
        - Eg: ssh pi@172.20.10.2
    - You will then be prompted to enter the password
- **Transferring files from local machine to Raspberry Pi**
    - Download the test file and source code, from canvas, to your local machine
    - Use scp to transfer the files from your local machine to the pi. Open a new window of the terminal and ensure it is the **local machine's terminal** run:
        - scp testfile.c pi@172.20.10.2:~
        - scp lab1.c pi@172.20.10.2:~
- **Verifying transfer**
    - Go back to the terminal window where you ssh'd into the raspberry pi
    - Run ls~ in the terminal
    - Ensure the files you transferred are present there

⚠️ **Tip:** If you encounter issues connecting over SSH, make sure:

- Your Pi and your computer are on the **same Wi-Fi/hotspot network**.
- SSH is enabled on the Raspberry Pi (sudo raspi-config → Interface Options → SSH → Enable).

Required tools

For this assignment you will need to install gdb and wiringPi
To do so:
Install WiringPi (if not already installed)

```
sudo apt update
sudo apt install wiringpi
```

To verify:

```
gpio -v
```

If it show a version number, the install has been completed

Install gdb

```
sudo apt upgrade -y
sudo apt install gdb -y
```

To verify:

```
gdb  --version
```