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## Daily Task:

* Meet with Jason, Levi, and Balaji. (Meeting records will be provided in the repository)
* Setting up the coding environments for raspberry pi
* Setting up the VNC Viewer on the laptop
* Test remote coding on raspberry pi
* Start learning the GUI

## Raspberry Pi Basic Information:

Username: portableel

Password: ENGN8170

IP Address: 192.168.31.150

VNC and SSH should be turned on. Following are the way to check:

Raspberry Pi Icon → Preferences → Raspberry Pi Configuration

## Environments Setting Instruction:

If the IP Address above is not working, follow the instruction below to get new IP Address

Connect a screen, a mouse, and a keyboard to the Raspberry Pi

Power on the raspberry pi with the official charger

Raspberry Pi Icon → Accessories → Terminal

Enter the command: hostname -I

On the laptop:

Download the VNC Viewer from the following link

VNC Viewer:

<https://www.realvnc.com/en/connect/download/viewer/>

Open the VNC viewer and skip for signing up

Use the IP address of the raspberry to make a connection between the raspberry pi and the VNC viewer.

After this step, all screens, mouses, and keyboards could be removed from the raspberry pi.

## Graphical User Interface (GUIs) Selection: Tkinter

Tkinter will be used as the GUI for this project.

Advantages:

* Already installed with the VS Code on raspberry pi.
* It offers many well known widgets, including buttons, labels, checkboxes ect.
* Easy for beginners
* Can be used on Windows, Linux, and Mac.

## Integrated Development Environments (IDE): VS Code

## Problems encountered during the process:

* Raspberry Pi screen resolution

It starts with 4k and 30 Hz refreshing rate. The screen setting using for now is 1080p with 120 Hz.

* Workaround for poor performance

VS Code on Raspberry Pi 4 may be slow with the default setup. A workaround is to disable hardware

* + - Press Ctrl+Shift+P and open the VS Code argv.json file using the **Preferences: Configure Runtime Arguments** command
    - Uncommon the "disable-hardware-acceleration": true
    - Restart VS Code

VS Code now has a better performance on raspberry pi.

* Potential Problem: A cooling module may be required for the raspberry pi since the working temperature is pretty high.

## Resources:

Build Physical Projects with Python on the Raspberry Pi

<https://realpython.com/python-raspberry-pi/>

Top 10 Python GUI Frameworks Compared

<https://www.activestate.com/blog/top-10-python-gui-frameworks-compared/>

Graphical User Interfaces with Tk

<https://docs.python.org/3.7/library/tk.html>