

## Week (8-9) Oct 17-22:

### Goals of the week:

- Understand and install python software.
- Learn how to program using Python programming
- Demonstrate the connection between the Infrared camera and the raspberry pi.

### General Notes:

This week is all about learning how to code by using Python. Python is of the most widely used programming languages on the Raspberry Pi it has an easy, beginner-friendly syntax and a wide adoption rate among the community, giving access to libraries, frameworks, and tools to help users get started.

- First step is to install the framework and the latest version on my laptop.  
<https://www.python.org/downloads/>
- Start simple Hello world program, learn how to start new file, and save file.
- Run Python interactively within the terminal or the command line.
- Setup development environment in Sublime Text.



The screenshot shows a Mac OS X terminal window with a dark theme. The title bar says "intro.py". The main pane contains the following code:

```
1 print('HELLO WORLD')
2
3
```

Below the code, the terminal output is displayed:

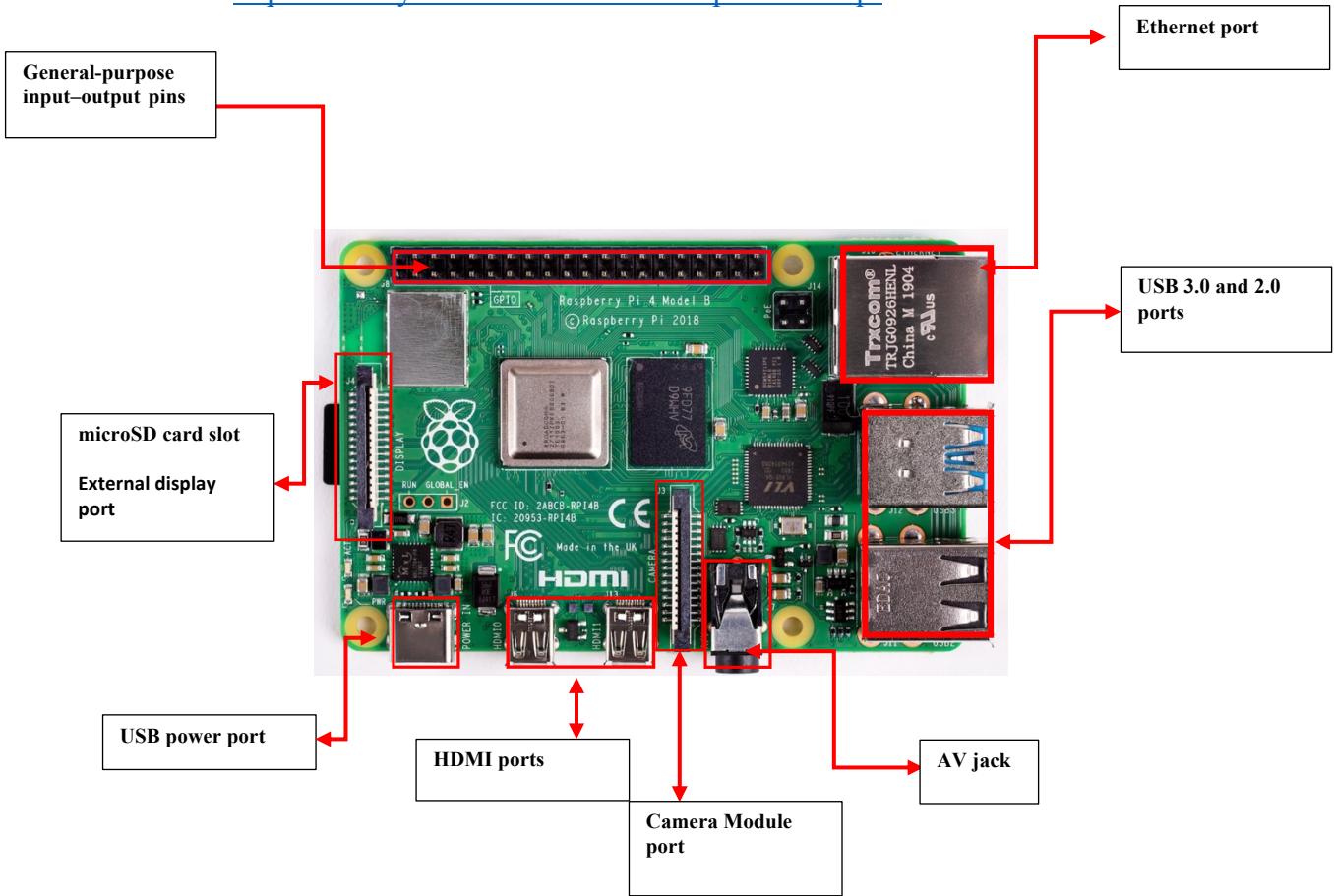
```
HELLO WORLD
[Finished in 0.2s]
```

At the bottom of the window, there is status information: "Line 1, Column 1", "Tab Size: 4", and "Python".

- <https://docs.python.org/3/using/mac.html> by using this website I was able to install mac python in macOS since version 10.8 comes with Python 2.7 pre-installed by Apple. I installed the most recent version of Python 3 from the Python website.

- To develop my own research, I purchased raspberry pi and start to learn how to use it. This video was a quick start on how to use it. It covers the basics of getting started with the Raspberry Pi also, an overview of the Raspberry Pi platform, all the accessories needed to get started, and move onto how to install the OS and connect remotely to the Pi.

<https://www.youtube.com/watch?v=BpJCAafw2qE>



### The Raspberry Pi 4 board contains the following components:

- General-purpose input–output pins:** These pins are used to connect the Raspberry Pi to electronic components.
- Ethernet port:** This port connects the Raspberry Pi to a wired network. The Raspberry Pi also has Wi-Fi and Bluetooth built in for wireless connections.
- Two USB 3.0 and two USB 2.0 ports:** These USB ports are used to connect peripherals like a keyboard or mouse. The two black ports are USB 2.0 and the two blue ports are USB 3.0.

- **AV jack:** This AV jack allows you to connect speakers or headphones to the Raspberry Pi.
- **Camera Module port:** This port is used to connect the official raspberry pi camera, which enables the Raspberry Pi to capture images.
- **HDMI ports:** These HDMI ports connect the Raspberry Pi to external monitors. The Raspberry Pi 4 features two micro-HDMI ports, allowing it to drive two separate monitors at the same time.
- **USB power port:** This USB port powers the Raspberry Pi. The Raspberry Pi 4 has a USB Type-C port, while older versions of the Pi have a micro-USB port.
- **External display port:** This port is used to connect the official seven-inch Raspberry Pi touch display for touch-based input on the Raspberry Pi.
- **microSD card slot (underside of the board):** This card slot is for the microSD card that contains the Raspberry Pi operating system and files.

### Specifications:

<b>Processor:</b>	Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
<b>Memory:</b>	4GB LPDDR4
<b>Connectivity:</b>	2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE Gigabit Ethernet 2 × USB 3.0 ports 2 × USB 2.0 ports
<b>GPIO:</b>	Standard 40-pin GPIO header (Fully backwards compatible with previous boards)
<b>Video &amp; sound:</b>	2 × micro-HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port

<b>Multimedia:</b>	H.265 (4Kp60 decode) H.264 (1080p60 decode, 1080p30 encode) OpenGL ES, 3.0 graphics
<b>SD card support:</b>	Micro SD card slot for loading operating system and data storage
<b>Input power:</b>	5V DC via USB-C connector (minimum 3A1) 5V DC via GPIO header (minimum 3A1) Power over Ethernet (PoE)-enabled (Requires separate PoE HAT)
<b>Environment:</b>	Operating temperature 0–50°C
<b>Compliance:</b>	For a full list of local and regional product approvals, please visit <a href="https://www.raspberrypi.org/documentation/hardware/raspberrypi/conformity.md">https://www.raspberrypi.org/documentation/hardware/raspberrypi/conformity.md</a>
<b>Production lifetime:</b>	The Raspberry Pi 4 Model B will remain in production until at least January 2026.

### Results and Conclusions:

programming by using python is not complicated as I previously thought. still need to practice more.

### Next Step:

Practice more coding in python and start simple project on Raspberry Pi.