⌄ Prelab 0.2 Windows Software Installation

⌄ 2.1 Prerequisite

- Hardware and accessory
  - Laptop
    - Requirement: Windows OS (Windows 10 preferred), or Linux (Ubuntu)
      - All lab manuals are written based on Windows 10. Even if you are using Linux, you can follow and perform

lab activities.

- Raspberry Pi
  - Requirement: RaspberryPi 4 Model B v1.2 GB or higher version with the previous version of Rasberry Pi OS (Raspberry Pi OS "Trixie" with desktop)
  - Accessory: a power cable, micro SD card, an ethernet cable – RJ45, a USB-Ethernet converter
    - If your laptop is not equipped with an ethernet port, you need a USB-Ethernet adapter with the ethernet cable.

Figure 1 An ethernet cable (RJ45) (left) and a USB-ethernet adapter (right)

- Software and programming language
  - Software
    - We will mainly use Python as a main programming language. Python 3.12.X (preferred) both your laptop and Raspberry Pi. Python version on your laptop must be between 3.11.X and 3.13.X. Python 3.13.x is the default software of Raspberry Pi OS "Trixie". Python with an IDE (Integrated Development Environment), such as IDLE, PyCharm, Spyder, Microsoft Visual Studio Code, and so on, has to be installed on your laptop. If you have been already using Python out of the versions above, please consider using a virtual environment.
    - VNC Viewer (https://www.realvnc.com/en/connect/download/viewer/): VNC Viewer is a VNC (Virtual Network Control) client, developed by RealVNC®. It is commercial software, but up to 5 clients are free. If you are not familiar with CLI (Command Line Interface), you will mainly use VNC Viewer to access Raspberry Pi. There are many VNC software such as TeamViewer, Remmina, TigerVNC, UltraVNC, AnyDesk, and so on. Because RealVNC server is a default software of

Raspberry Pi Desktop OS, we will use VNC Viewer of RealVNC to access Raspberry Pi from your laptop. Download and install VNC Viewer on your laptop.

- (Optional) In the CLI of Raspberry Pi, we will use GNU nano editor (simply, nano) to create and modify text files, configuration files, and even codes. If you are a beginner, please try a tutorial on the Internet. However, detailed instructions when using nano will be described in the lab manuals.

- (Online class) Purdue Cisco VPN: Off-campus students who want to take this class must download the VPN service to connect to our network. For example, the Purdue Cisco VPN allows us to access the Purdue ECN network and connect to our internal MySQL server.

  Download Links are shown as below:
  (Windows OS): [Download (ZIP)](#)
  (Linux OS): [Download (TAR.GZ)](#)
  1) extract folder, 2) go inside cisco-secure-client-linux64-.../vpn, 3) sudo sh vpn_install.sh

  Read this: https://it.purdue.edu/newsroom/2020/200318_usewebvpn2.php

  ~~prev. link: (https://it.purdue.edu/newsroom/2020/200316-webvpn.php)~~

- (Online class & only Window OS) Port Query (https://www.microsoft.com/en-us/download/details.aspx?id=24009): This program can help online class students check if they can access the network or a specific port number. If you are linux OS user, you can skip this part. It is not nesscery.

- Programming language

  - It is highly recommended to get familiar with CLI for Raspberry Pi, even if you are using VNC Viewer to access Raspberry Pi, you will frequently use 'Terminal'. There is a command line tutorial on the Internet (https://www.circuitbasics.com/useful-raspberry-pi-commands/). Try the tutorial and other practices available on the Internet. Throughout the lab, we will mostly use *'Terminal'* to run, install, manage, software and packages.
  - If you are not familiar with Python, please try a Python tutorial available on the Internet.

IoT sensors (Offline class), cables (Offline class), and sample codes will be given.

⌄ Task 1: Self-check

Check each of these boxes once you complete the installation or confirm that you have the required hardware or software. This is for you to confirm that you are ready to continue in the labs.

- ☑ **Access to Windows or Linux**

- ☑ **Raspberry_Pi**

- ☑ **Accessories**

- ☑ **VNC Viewer**

- ☑ **Python 3.11-3.13**

☑ (Only online class) Purdue Cisco VPN for laptop

☑ (Only online class w/ window OS) Port Query

Show code

Please continue to .