

1. Overview and OS Image

This process can get a little intense, as you may need to use the command line, or input code in OctoPrint. If you're familiar with SBCs (Single Board Computers) and 3D Printing, this will be simple.

What is a Raspberry Pi?

A Raspberry Pi is a SBC (Single Board Computer) with a small processor and low power consumption. These can be used for an extremely wide variety of tasks. From turning light on and off, to creating websites. These can do it all. This tutorial uses them for OctoPrint.

Image of a Pi 3B+



What is OctoPrint?

OctoPrint is a piece of software that runs on a computer connected to a 3D printer. Usually, this device is a 'dumb' 3D printer like an Ender 3 (or in our case, an Ender 3 V2). This software allows remote control of almost all functions in the device, except for manual adjustments or leveling.

It is recommended to only run one printer per-Pi. While it is possible to run more, it is not supported by OctoPrint's developers, and is not usable on a Raspberry Pi 3B+.

Why do this?

OctoPrint can be helpful for many things. The most important of which is remote management. It allows you to ditch the SD card, and print over the network with a simple (and beautiful) UI. It also can help in printer troubleshooting, filament cost estimations, and more.

Requirements

1. Laptop (Preferably windows)
2. Raspberry Pi 3B+ (During the release of this document, the Raspberry Pi 5 has just been released.. As of writing this, the STEM club does not own any Pi 4s, 5s, or 0s. This documentation is strictly based on this model.).
3. USB Cable (A to whatever the printer has).
4. Micro-SD Card \geq 8GB.
5. Basic networking and extensive 3D printing knowledge.
6. Travel router, standard router, or a mobile hotspot with Ethernet (Mrs. Menocal's "AirCard")

Optional Hardware

1. Pi Camera or Webcam
2. Raspberry Pi Case (Heat-sink strongly recommended)

This guide is made for use with a Windows PC, but should be suitable for other Operating Systems as well,

Part 0: Basic Hardware Info

The printer this tutorial is specifically made for is the Ender 3 V2. The PWB STEM Club has 3 E3V2s, and if devices need to be reset or new printers are getting set-up, this tutorial can be used.

Part 1: PC Software

1. On your computer, install the [Raspberry Pi Imager](#)

Select download for windows (on a windows PC), or whatever suits your OS.

Install Raspberry Pi OS using Raspberry Pi Imager

Raspberry Pi Imager is the quick and easy way to install Raspberry Pi OS and other operating systems to a microSD card, ready to use with your Raspberry Pi.

Download and install Raspberry Pi Imager to a computer with an SD card reader. Put the SD card you'll use with your Raspberry Pi into the reader and run Raspberry Pi Imager.

[Download for Windows](#)

[Download for macOS](#)

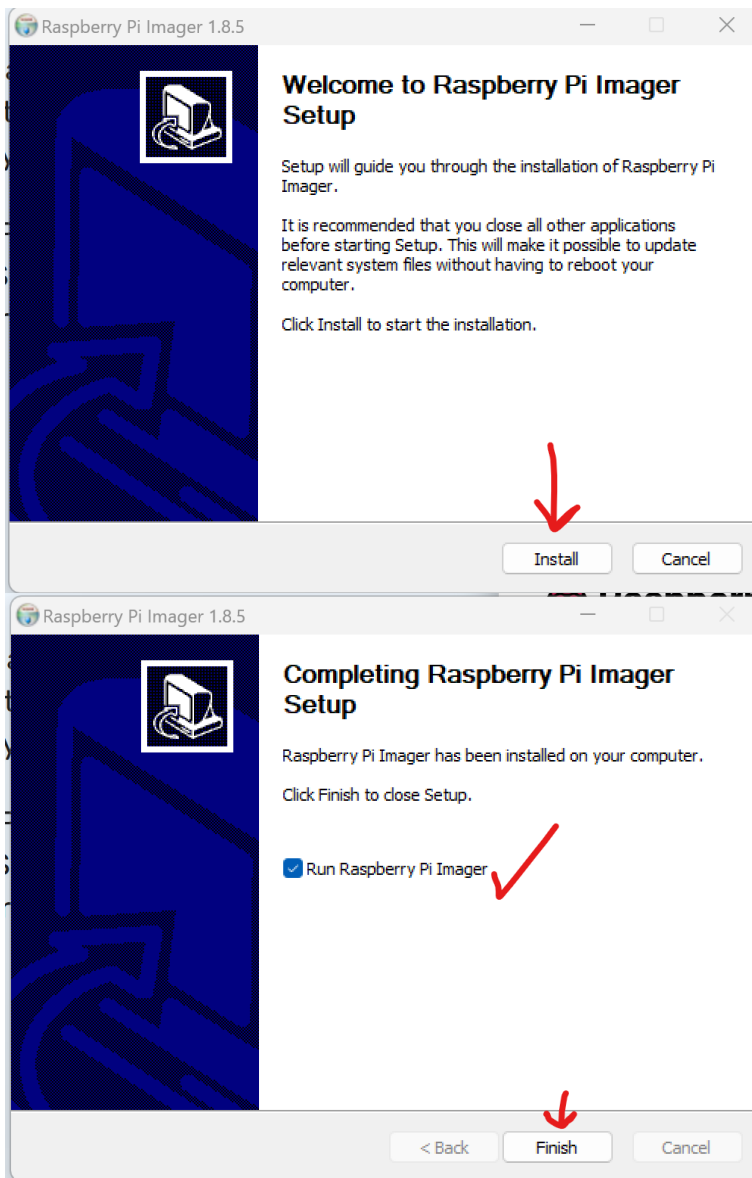
[Download for Ubuntu for x86](#)

To install on **Raspberry Pi OS**, type
`sudo apt install rpi-imager`
in a Terminal window

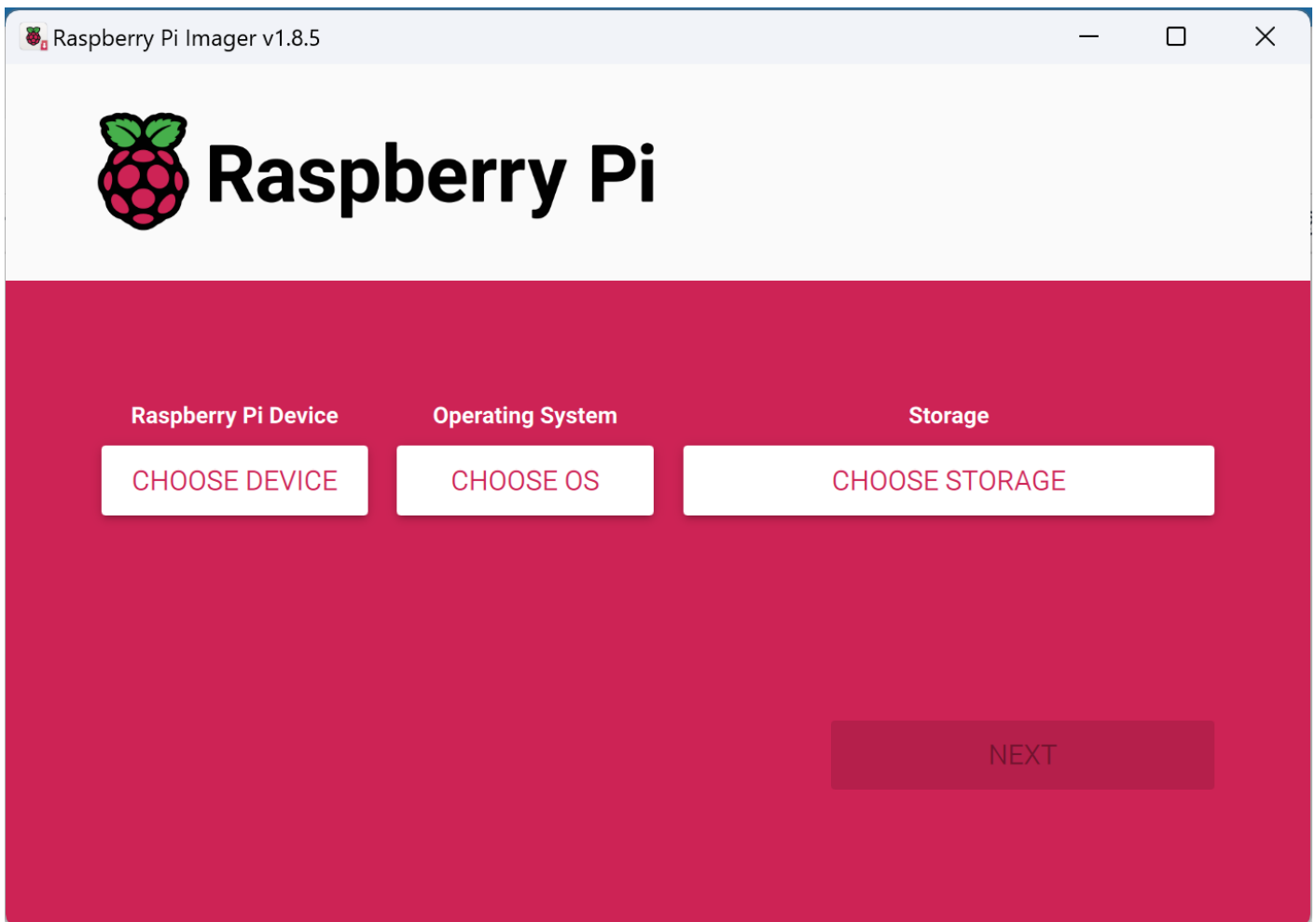


2. Go through the installer, leaving all defaults.

"Run Raspberry Pi Imager" should stay enabled.



Once you see this screen, you're all set!

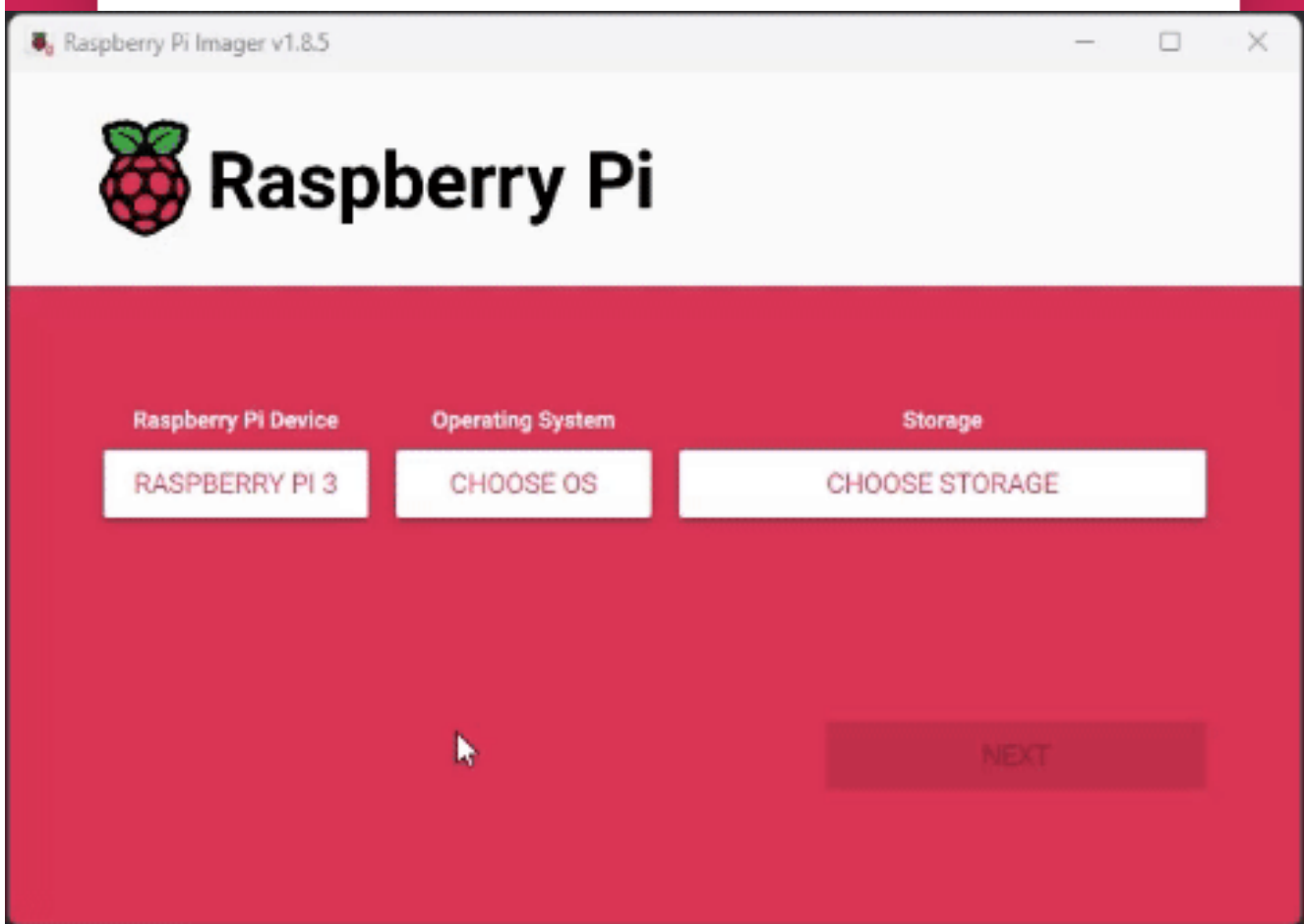
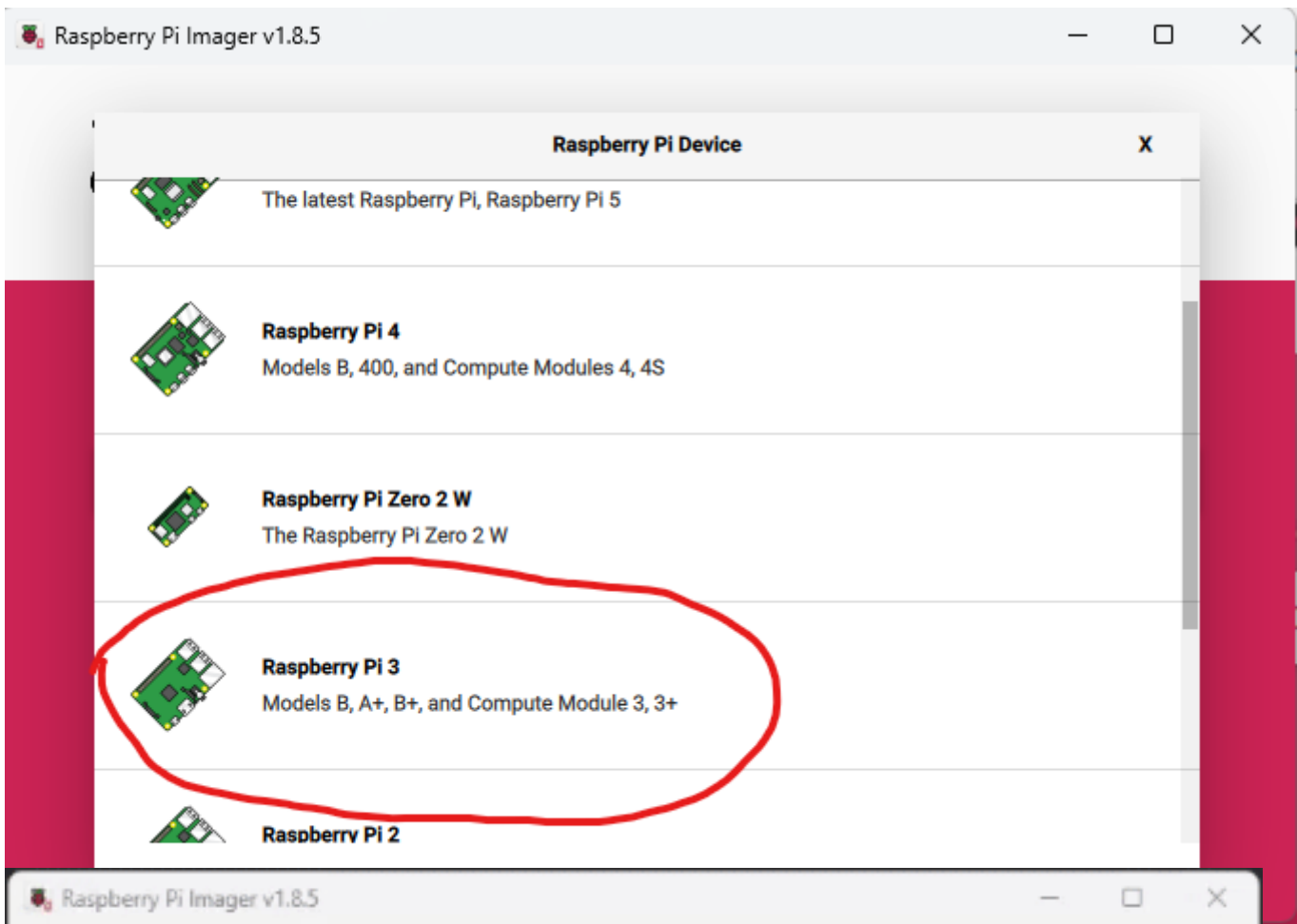


Part 2: Select the Image

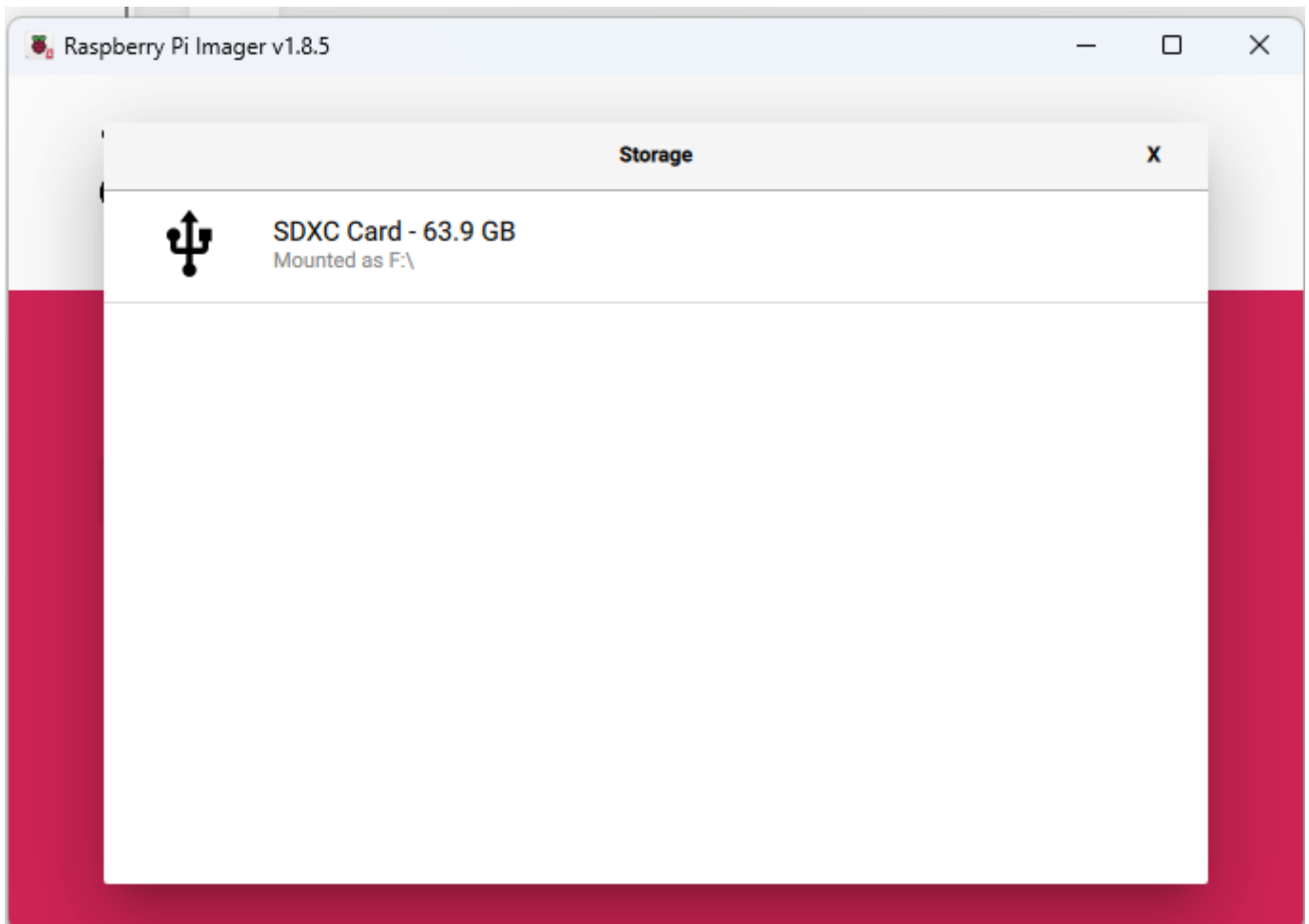
Using an SD Card (8Gb or greater) and the Raspberry Pi Imager, you can setup the SD Card for easy installation of OctoPrint.

At this point, insert the SD Card in the computer with the Raspberry Pi Imager installed.

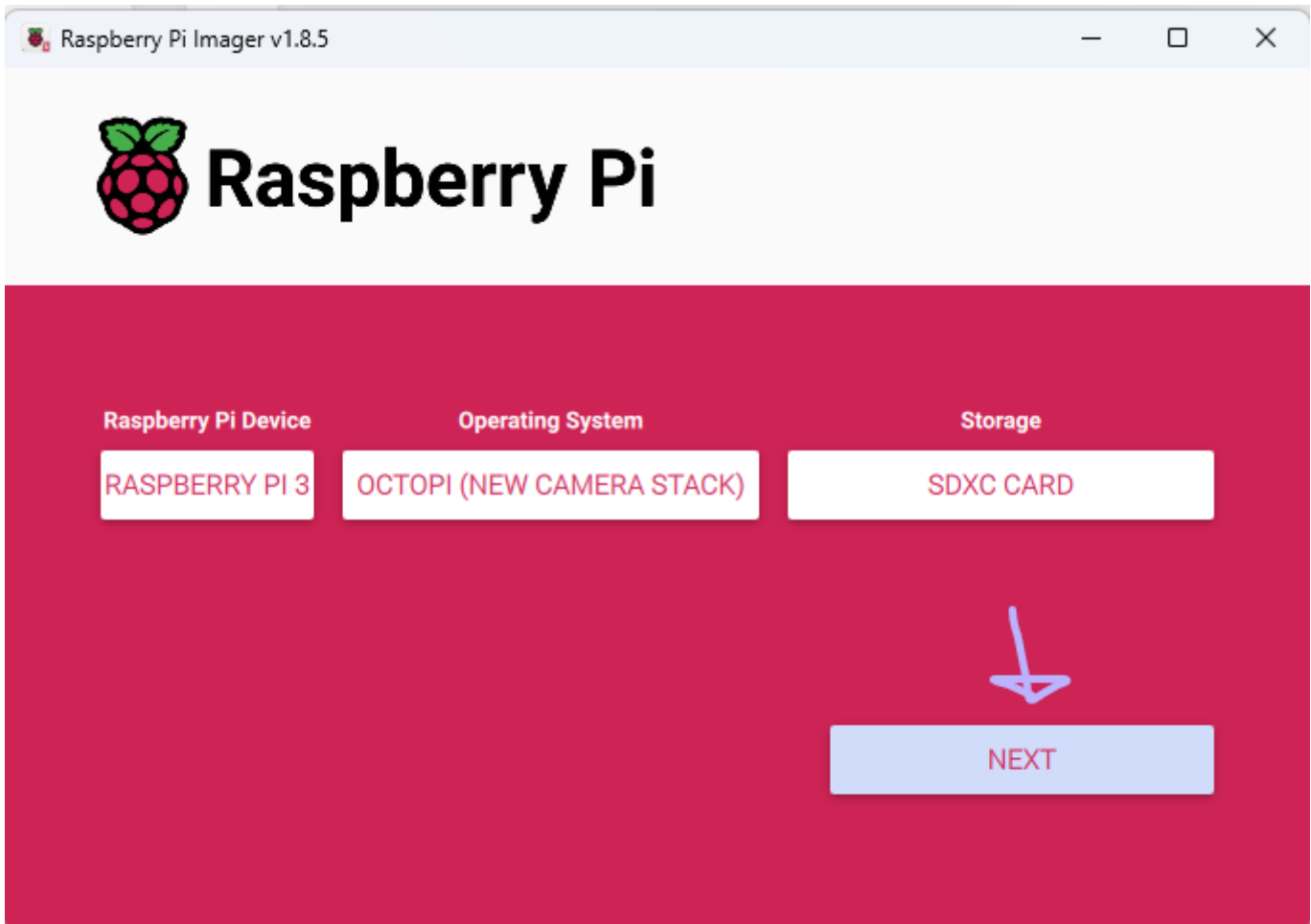
1. In Raspberry Pi Imager, select "Choose Device". This is where you will select the Raspberry Pi model that the software will be installed on. In this case, we'll use a Raspberry Pi 3.



Lastly, select "Choose Storage", and then select the SD card.



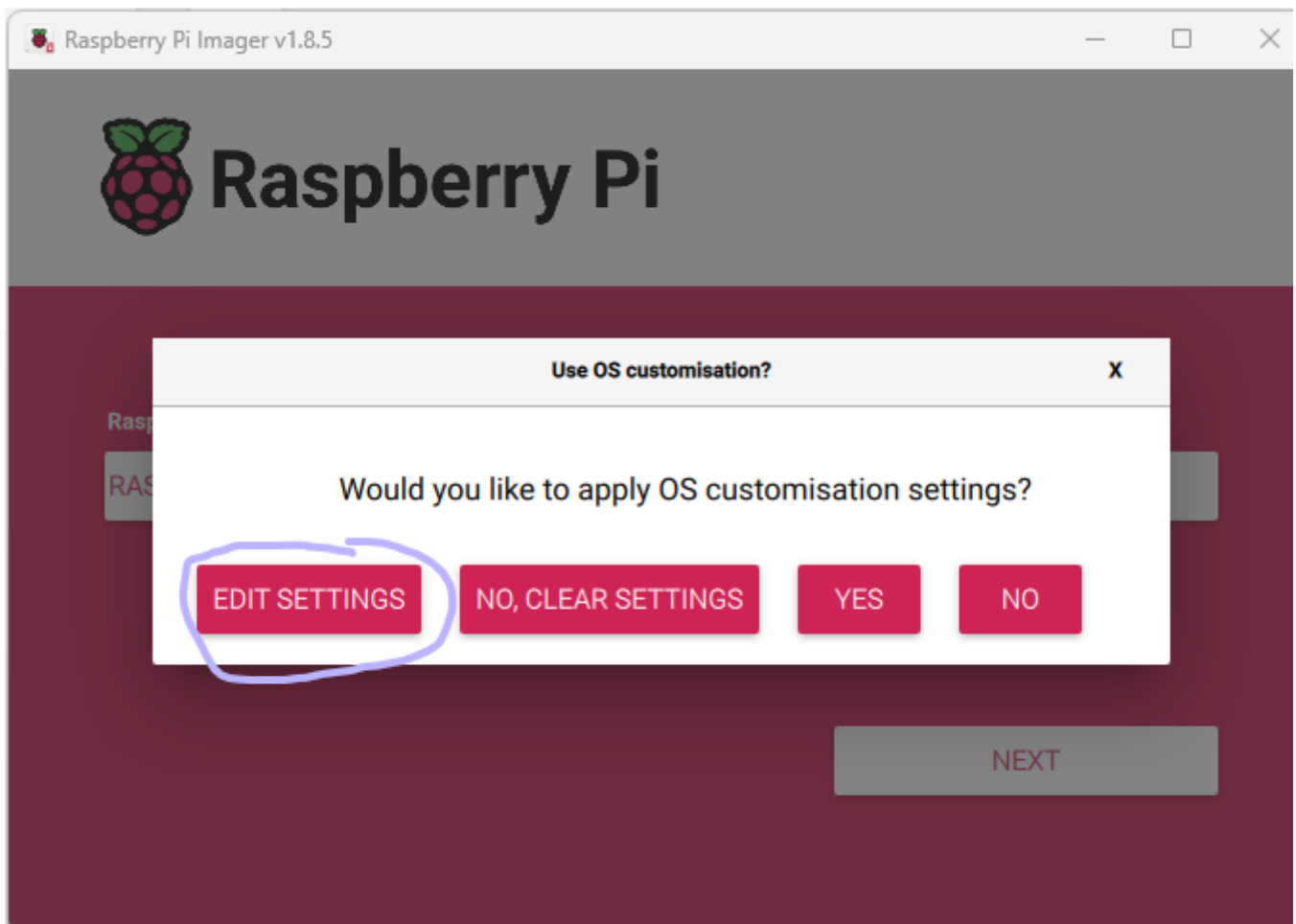
4. To complete the basic configuration, select "Next".



Part 3: The Nitty-Gritty

You will not be using Wi-Fi for the tutorial. The Pi will be directly connected to the Dadeschools Ethernet ports with "-M", "-L1", "-L2", or "-L3" appended to the end.

1. After selecting "Next", you'll be met with this screen, Select "Edit Settings".



2. **General:** Copy the following settings exactly:
 1. Set Hostname: STEM-E3V2-<PRINTERID> **Replace <PRINTERID> with the number assigned to the printer, Ex: "STEM-E3V2-1"**
 2. Set Username and Password
 1. Username: **stem**
 2. Password: **STEMROOM6041!!**
 3. Configure Wireless LAN: **disabled**
 4. Set Locale Settings:
 1. Time Zone: **America/New_York**
 1. Keyboard Layout: **us**

OS Customisation

GENERAL

SERVICES

OPTIONS

☒ Set hostname: STEM-E3V2-1.local

☒ Set username and password

Username: stem

Password: ●●●●●●●●●●

☐ Configure wireless LAN

SSID:

Password:

☐ Show password ☐ Hidden SSID

Wireless LAN country: US

☒ Set locale settings

Time zone: America/New_York

Keyboard layout: US

SAVE

3. **Services:** Copy the following settings exactly:

1. Enable SSH: **Checked**

1. Use Password Authentication: **Bubbled**

The screenshot shows a window titled "OS Customisation" with three tabs: "GENERAL", "SERVICES", and "OPTIONS". The "SERVICES" tab is selected and highlighted with a red underline. Inside the "SERVICES" tab, there is a section for SSH configuration. It starts with a checked checkbox labeled "Enable SSH". Below this, there are two radio button options: "Use password authentication" (which is selected) and "Allow public-key authentication only". Under the second option, there is a text input field labeled "Set authorized_keys for 'stem':" which is currently empty. Below the input field is a button labeled "RUN SSH-KEYGEN". At the bottom of the window, there is a red "SAVE" button.

4. Options: **Do Not Change**

Part 4. Cleanup

1. Remove the SD Card from the computer, and insert it into the bottom SD Card reader on the Pi

With that, this portion of the tutorial is over. Move on to section 2 using the navigation buttons below.

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