Automatically Execute Python Script on USB Insertion for Raspberry Pi

To define a system where a Python script is automatically executed when a USB drive is inserted into a Raspberry Pi, you need to set up a few components to detect the USB insertion and trigger the execution of the script. Here’s an outline of how it works, and how you can implement it:

# 1. Install Necessary Packages

The primary package we need is udev, which helps monitor hardware events like USB insertion.

Run the following commands:

sudo apt update  
sudo apt install udev

# 2. Create the Python Script to be Executed

This is the script that will be executed when a USB drive is inserted. For demonstration purposes, let's assume this script is located in /usr/local/bin/usb\_script.py.

Example usb\_script.py:

import os  
import subprocess  
  
def find\_and\_run\_script():  
 # Get the list of USB devices mounted  
 usb\_devices = os.listdir('/media/pi/')  
   
 # Name of the script to look for in the USB  
 script\_name = 'hotspot\_config\_script.py'  
   
 for device in usb\_devices:  
 script\_path = f'/media/pi/{device}/{script\_name}'  
 if os.path.exists(script\_path):  
 print(f"Found script: {script\_path}. Running it...")  
 # Execute the script  
 os.system(f'python3 {script\_path}')  
 break  
 else:  
 print(f"Script not found in {device}")  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 find\_and\_run\_script()

# 3. Create a udev Rule to Detect USB Insertion

udev rules help define what action should be taken when a specific event, like USB insertion, occurs.

1. Create a new udev rule by creating a file in /etc/udev/rules.d/99-usb-run-script.rules:

sudo nano /etc/udev/rules.d/99-usb-run-script.rules

2. Add the following content to this file:

ACTION=="add", KERNEL=="sd[a-z][0-9]", RUN+="/usr/local/bin/usb\_script.py"

# 4. Ensure the Python Script Has Execution Permissions

Ensure the Python script you want to run has the correct permissions to execute.

Run the following command:

sudo chmod +x /usr/local/bin/usb\_script.py

# 5. Reload the udev Rules

After creating the udev rule, reload the udev rules with the following command:

sudo udevadm control --reload-rules  
sudo udevadm trigger

# 6. Insert USB and Watch the Script Execute

After the setup is complete, when you insert a USB drive, the Raspberry Pi will automatically search for the hotspot\_config\_script.py in the root of the USB drive and execute it if found.

# How it Works

- udev continuously monitors the system for hardware changes. When it detects a USB drive being inserted (ACTION=="add"), it checks if the USB device follows the naming convention (KERNEL=="sd[a-z][0-9]").  
- If the rule matches, the script usb\_script.py is executed.  
- The usb\_script.py searches for a specific script (hotspot\_config\_script.py) on the USB drive, and if found, it executes the script.

With this system in place, you can automate the execution of specific Python scripts on Raspberry Pi by simply inserting a USB drive containing the necessary files.