DOCUMENTATION

Project Name: **Automation v3**
Description: Control 8-channel USB relay board from linux-based operating system.

Hardware Requirements

1. Denkovi 8-Channel USB Relay http://denkovi.com/usb-relay-boards
2. Raspberry Pi 3 https://www.raspberrypi.org/products/ or you can use your laptop

Software Requirements

1. Ubuntu OS (other Debian-based linux distribution should be fine)
2. Java 8 or latest https://www.java.com/en/download/

Verify Access Rights

1. Ensure that the user have sudo priviledge
    command: **usermod -aG sudo username**
    command: **sudo visudo** (to open the sudoers file)
        => Then check permission of the user **username ALL=(ALL) NOPASSWD: ALL**

Install Instruction

1. Click this link to download the installer
2. Extract the contents
3. Login as root: **sudo su**
4. Open terminal and cd to scripts folder
    command: **cd scripts**
5. Run file
    command: **bash starter.sh**
    => When prompted for username, specify the username that have sudo permision
    => It will check for existing java on your machine and previous installation
6. Navigate to desktop directory of the user you specified and locate the folder automation
    command: **cd /home/username/desktop/automation**
    => Once you are in directory, notice there are two files namely: configuration.txt and **masterlist.txt**, this is the file that you can edit to schedule timer on relay board.
    => Follow this pattern for masterlist configuration. **RELAY_POSITION=TIME:TIME-TIME**
    => Default mode (**configuration.txt**) is **HOURLY** but you can change it to **MINUTES**
    => Check the file conversion.pdf for time input

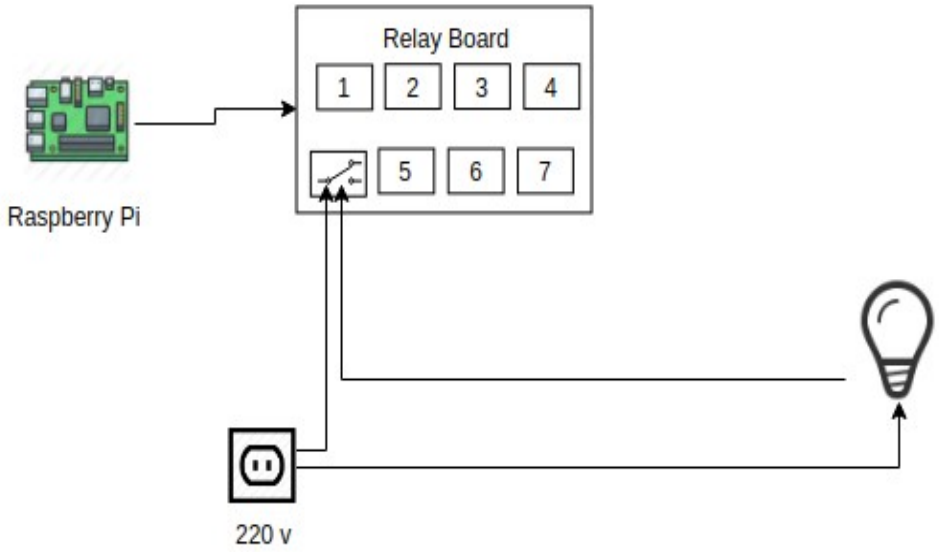
Mobile Control (Android)

1. Open PlayStore
2. Install termux
3. Install ssh client, then execute the command below to your phone
   command: **sudo apt-get update**
   command: **sudo apt-get upgrade**
   command: **sudo apt-get install openssh**
4. Find the IPv4 address of your device
   command: **ifconfig -a**
   => You can verify the IPv4 assigned from your router by comparing the physical address
4. Connect to your raspberry device or to your laptop via ssh
   command: **ssh** username@192.168.1.105
   => If your device and your phone is connected on same network you can access it.
   => If you want to connect to actual IP assigned by your ISP (*usually for remote access)*, you must enable forwarding on your router and link your device

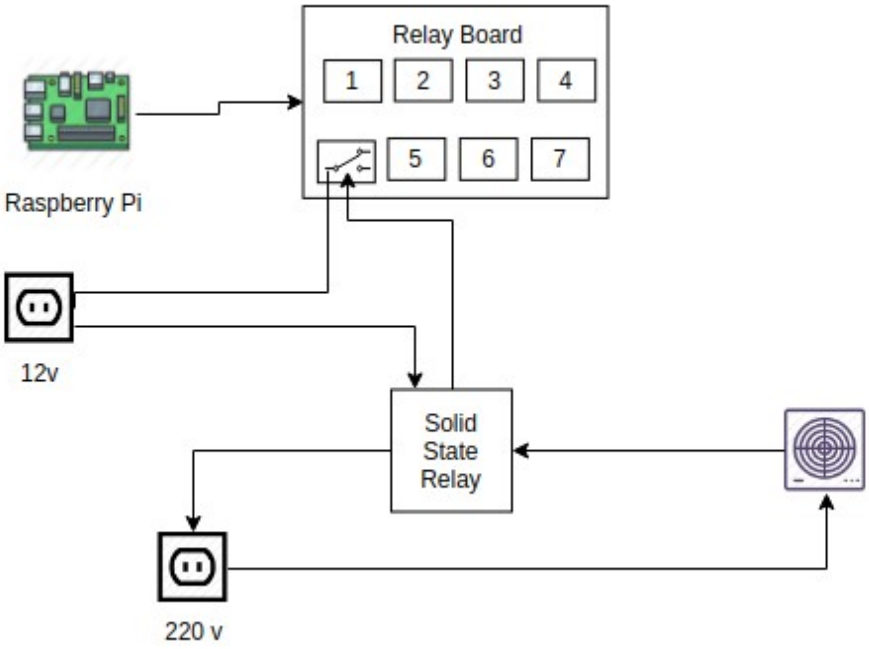
Wiring Instruction – WARNING!! LIVE WIRE IS DEADLY REFER TO PROFESSIONALS

1. The relay board consist of SPDT switch, meaning if there is power on the switch it will activate circuit 1 or activate circuit 2
   => Normally Open (NO), Common, and Normally Closed (NC)
2. Connect the first wire to common then the second wire either NO or NC
   => If you want to connect high load appliance like air conditioner, you must use solid state relay (SSR) for additional protection of your board. This is due to the fact that high load appliance generates more heat.

Wiring Diagram 1



Wiring Diagram 2 – with SSR (for high load appliance)



Additional Information

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