How to Set up and Use the Lab-in-a-Box
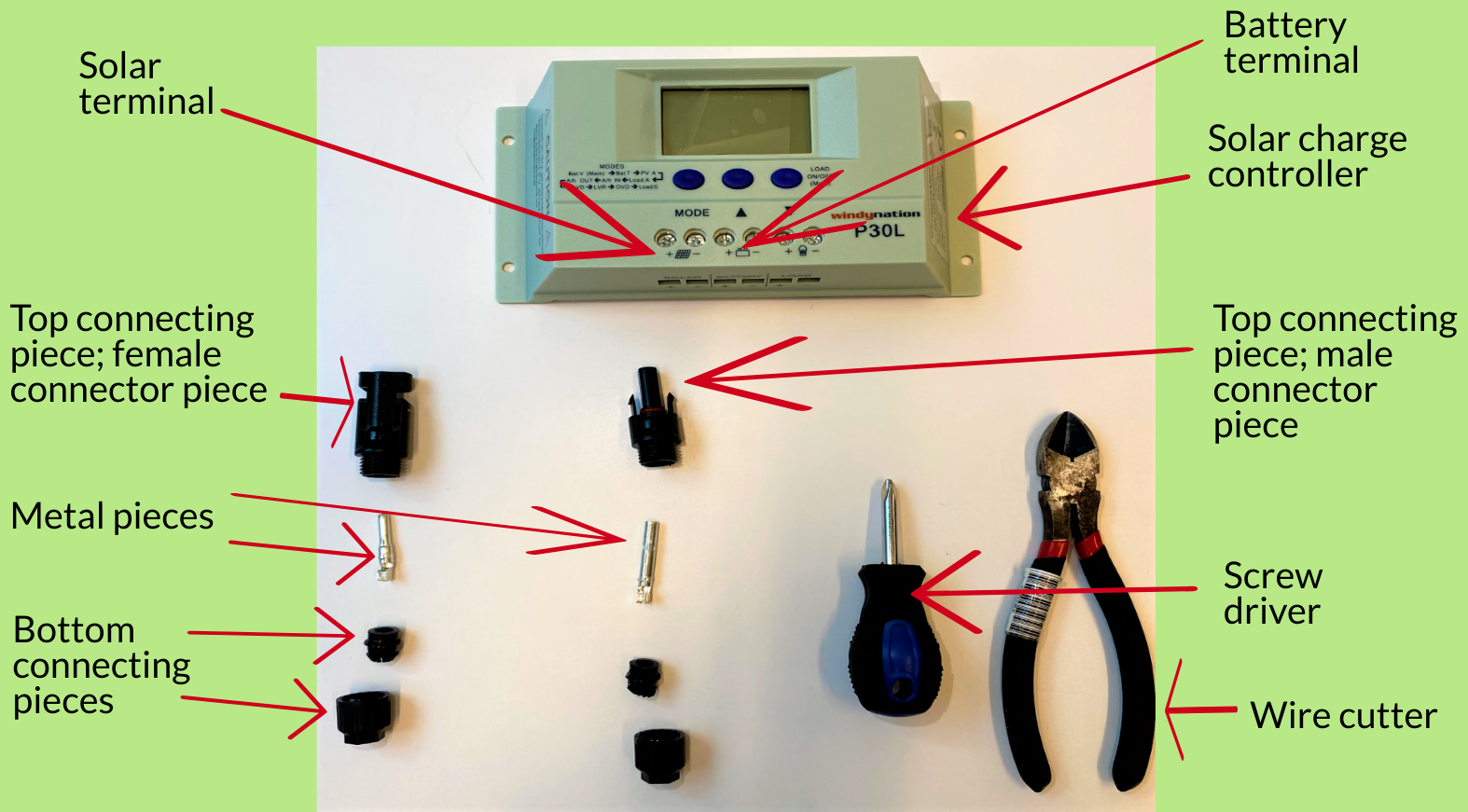
2021 Edition

Table of Contents

Setting Up Solar Power System of the Lab-in-a-Box

Requrements

Solar terminal

Battery terminal

Solar charge controller

Top connecting piece; female connector piece

Top connecting piece; male connector piece

Metal pieces

Bottom connecting pieces

Screw driver

Wire cutter

Electrical tape

Battery

6 welding cables (wires) required

Power converter

Portable router

Requirements

Solar panel with connectors
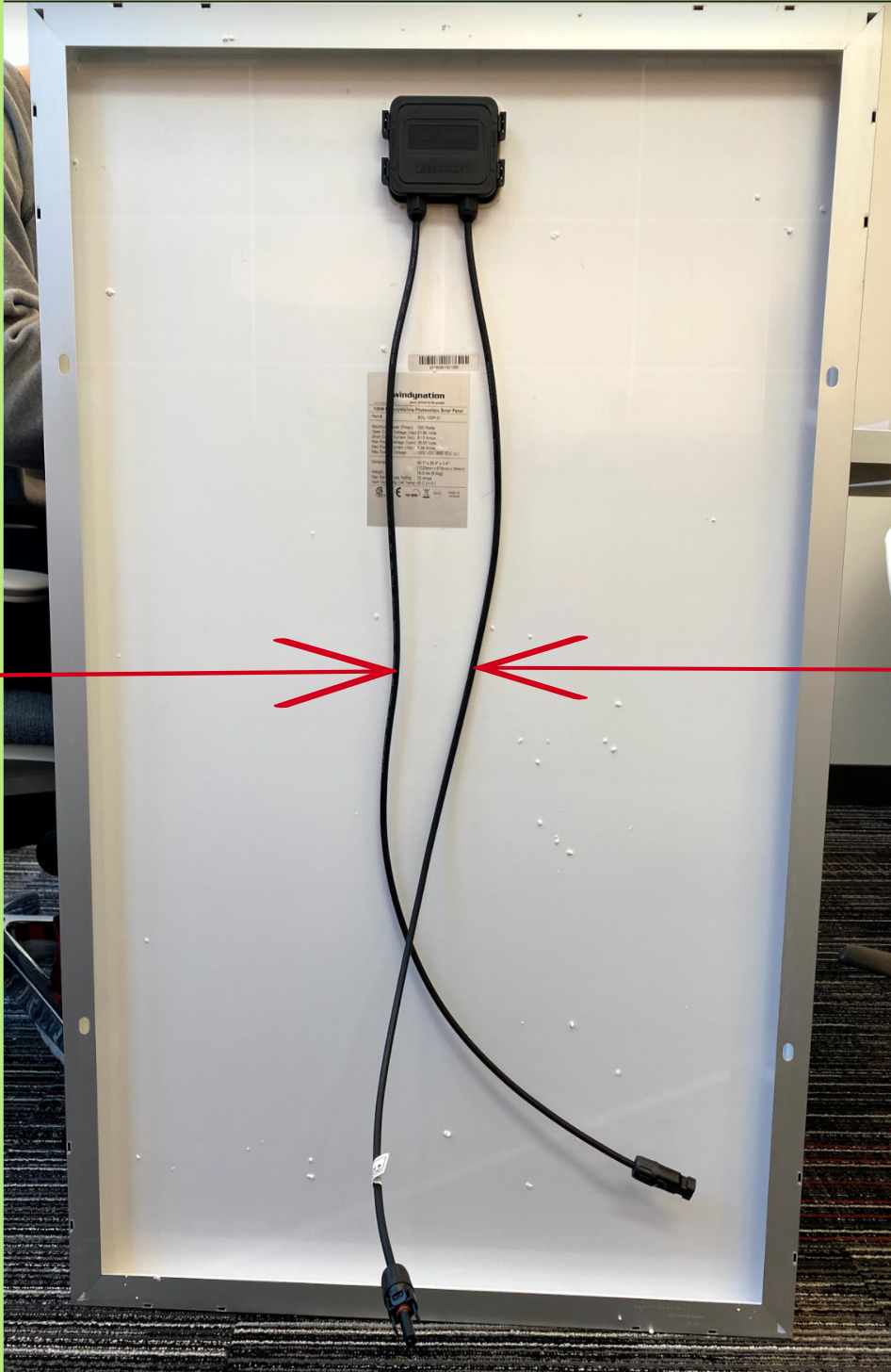
Female connector

Male connector

Step 1

Assembling the female connector:
Strip the ends of each wire to approximately 5 centimeters using the wire cutter.
Take one wire. On only one end, put the bigger bottom piece first, then the smaller bottom piece, then the metal piece, and lastly the female connector piece.

# Step 2

Assembling the male connector:
Repeat **Step 1** for another wire, but use the male connector piece instead of the female connector piece to go on top of the metal piece.

Step 3

Connecting the male connector wire to the solar terminal:
Connect the exposed end of the male connector wire from **Step 2** into the (+) side of the solar terminal of the solar charge controller and the exposed end of the female connector wire into the (-) of the solar terminal. Use the screw driver to secure the wires to the solar charge controller.
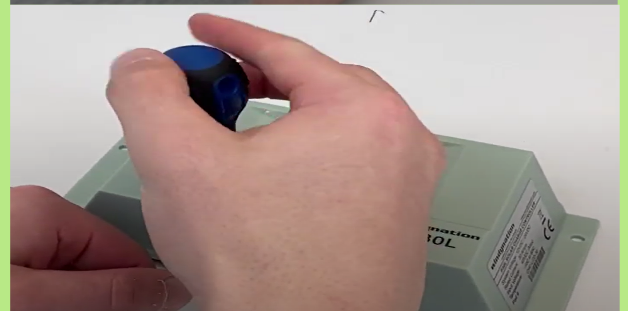
Step 4

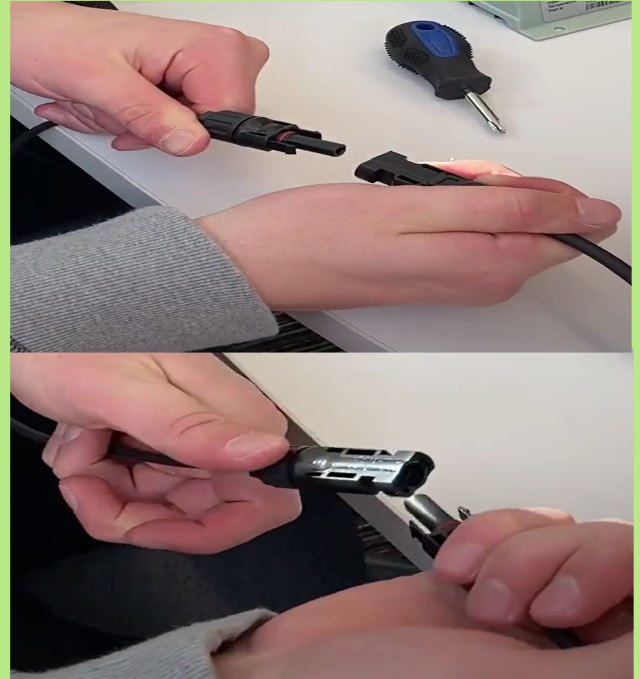**Connecting the female connector wire to the solar terminal:**
Repeat **Step 3** with the exposed end of the female connector wire into the (-) of the solar terminal. Use the screw driver to secure the wires to the solar charge controller.

Step 5

Connecting the female and male connector wires from the controller to the solar panel:
Push the male connector from the controller into the female connector from the solar panel. Repeat for the female connector from the controller and male connector from the solar panel.

Step 6

Connecting the positive wire to the battery terminal:
Obtain a wire with exposed copper ends. Connect one end of the wire to the (+) side of the battery terminal in the solar charge controller; this is now the positive wire. Use the screwdriver to secure the wires to the solar charge controller.

Step 7

Connecting the negative wire to the battery terminal:
Obtain another wire with exposed ends. Connect one of the ends to the (-) side of the battery terminal; this is now the negative wire. Use the screwdriver to secure the wires to the solar charge controller.

Step 8

Connective the positive wire from the terminal to the battery:
Connect the positive wire from the battery terminal to the positive pole of the battery.
Warning: don't touch the copper part of the wire since the wire is activated at this stage.

Step 9

Connective the negative wire from the terminal to the battery:
Connect the negative wire from the battery terminal to the negative pole of the battery.
Warning: don't touch the copper part of the wire since the wire is activated at this stage.

Step 10

Securing the positive wire to the battery with electrical tape:
Secure the positive wire to the battery by wrapping electrical tape around the pole and the copper part of the wire.
Warning: don't touch the negative side simultaneously.

Step 11

Securing the negative wire to the battery with electrical tape:
Secure the negative wire to the battery also by wrapping electrical tape around the pole and the copper part of the wire.
Warning: don't touch the positive side simultaneously.

Step 12

Connecting the negative wire to the side of the power converter:
Obtain a wire with exposed ends. Connect one end to the side of the power converter; this will be the negative wire in the next steps.

Step 13

Securing the side with tape:
Wrap electrical tape around the side of the converter to secure the wire.

Step 14

Connecting the positive wire to the top of the power converter:
Obtain another wire with exposed ends. Connect one end to the top of the power converter using tape to secure the connection; this is now the positive wire.
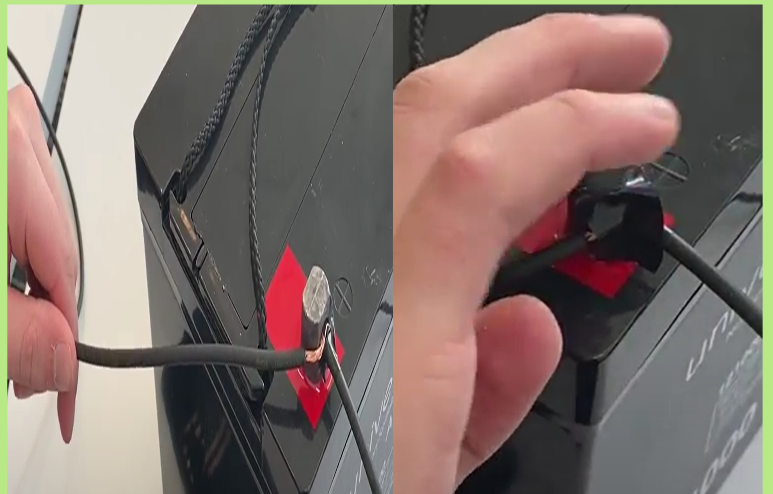

Step 15

Connecting the positive wire to the positive terminal of the battery:
Connect the positive wire (the one already connected to the top of the power converter) to the positive pole of the battery. Secure the wire to the battery using tape.
**Warning: don't touch the copper part of the wire since the wire is activated at this stage.**

Step 16

Connecting the negative wire to the negative terminal of the battery:
Connect the negative wire (the one already connected to the side of the converter) to the negative pole of the battery. Secure the wire to the battery using tape.
Warning: don't touch the copper part of the wire since the wire is activated at this stage.

Step 17

Turn on the power converter:
Run the system to show power is running through it. Light indicator on the router (on left below) blinks to show Lab-in-a-Box is receiving power.

Light indicator blinkinng

Using the Lab-in-a-Box Portal

Requirements
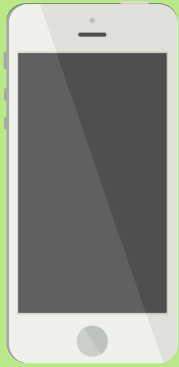
Password of Lab-in-a-Box router (different for different routers)
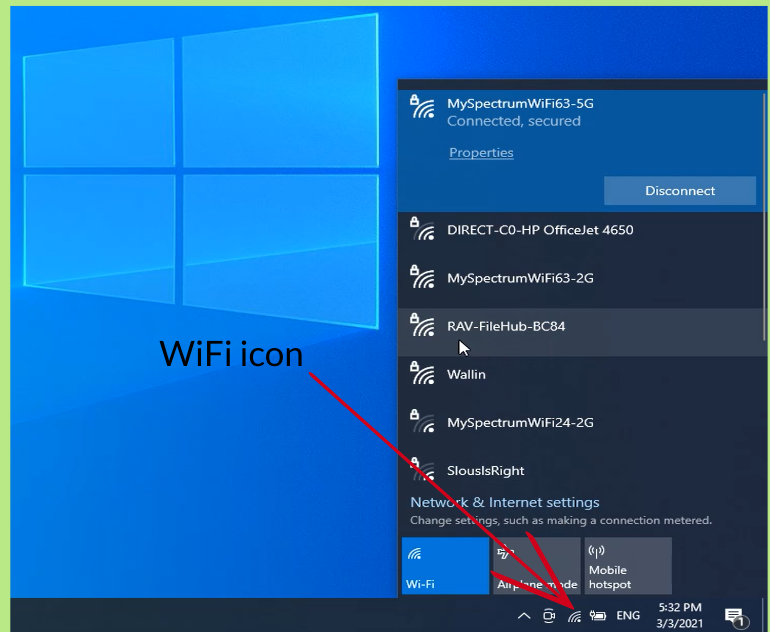
IP address of Lab-in-a-Box: 10.10.10.254

Any web browser

Step 1

Connecting the WiFi of the Lab-in-a-Box router:
On any device, go to the Network Settings and connect to the wifi called Rav-FileHub-BC84. On Windows computer, open the Network Settings by clicking the wifi icon
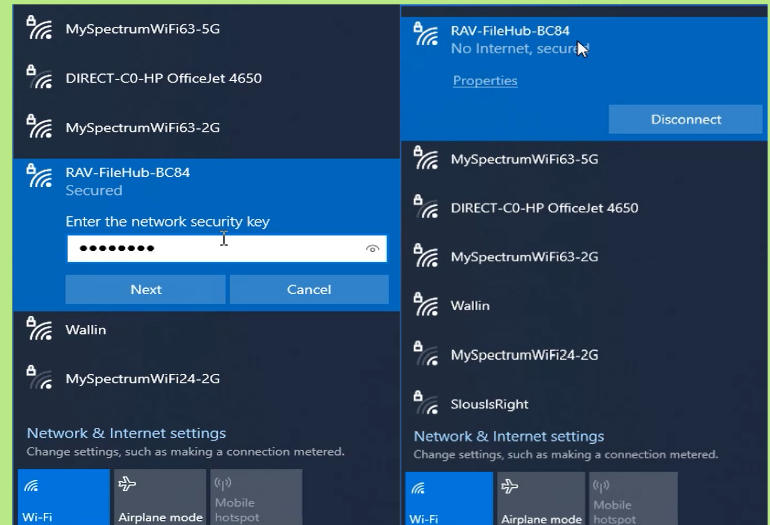on the taskbar.
**All steps below use Windows computer for example.**

WiFi icon

Step 2

Entering the password:
Click the wifi named Rav-FileHub-BC84. For password, enter the number 1 eight times like this: 11111111. Click "Next" to connect. If the password is different, ask for it or it may be written on the router. Right image shows a successful connection.
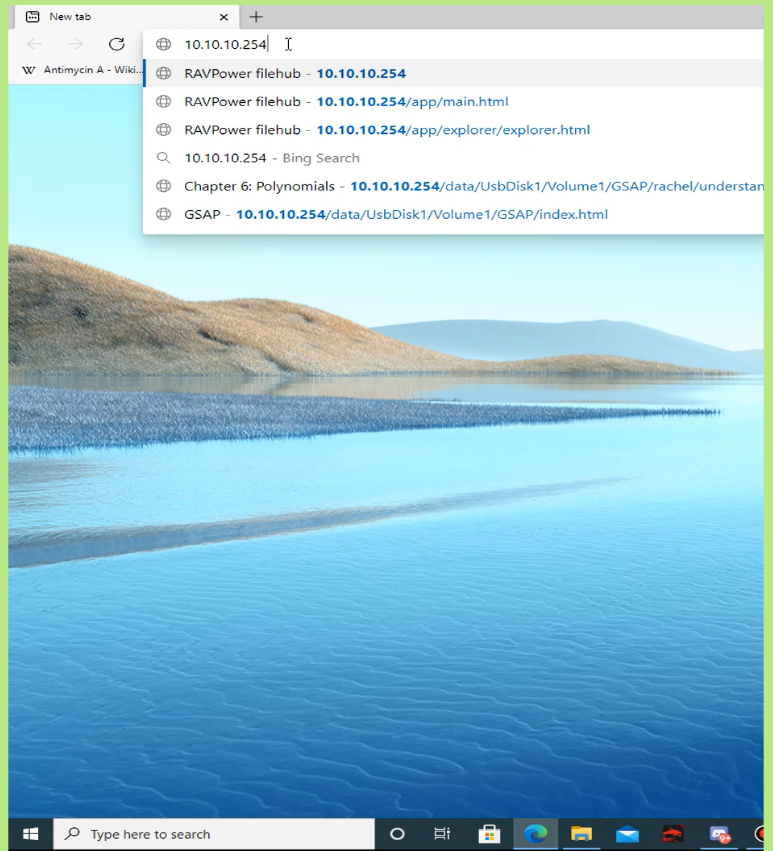
Step 3

Opening web browser:
Open any web browser
(Microsoft Edge,
Safari, Google Chrome)
on the device.

Click icon to open
Microsoft Edge
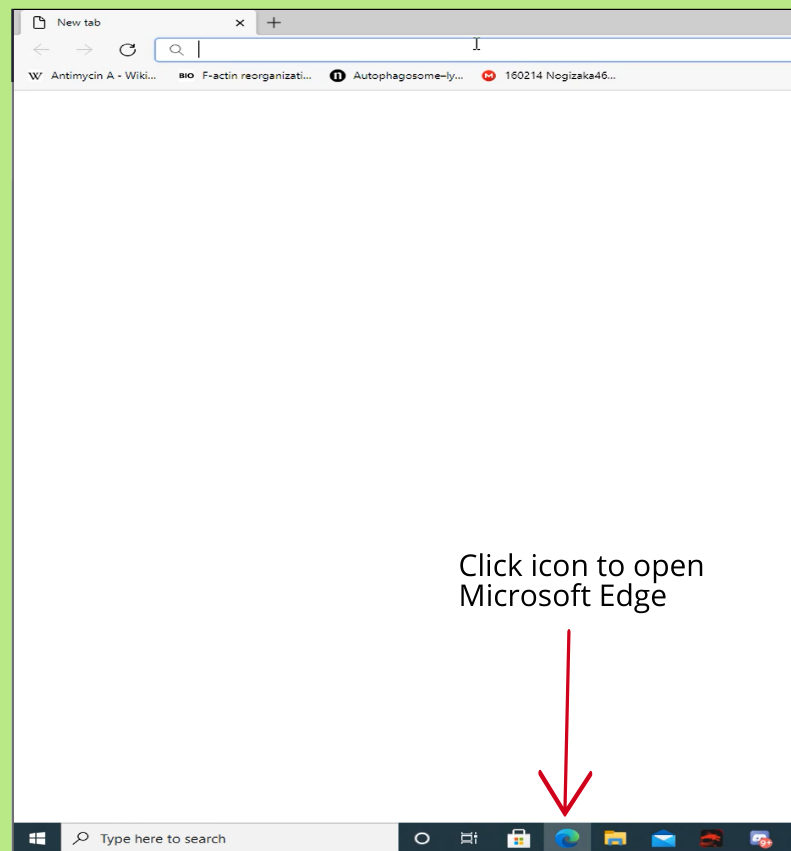
Step 4

**Entering IP address to access the Lab-in-a-Box:**
In the URL address space (where website address goes), type in the IP address to access the Lab-in-a-Box. Type in 10.10.10.254 and press enter.

Step 5

**Entering the password to access Lab-in-a-Box:**
Pressing enter in **Step 4** brings a web page shown in the image below. Click User Password and type in the same password used to connect to the Rav-FileHub-BC84 wifi, which was 11111111 in **Step 2** for the Lab-in-a-Box router used in these steps**.** Click "Log In" to sign into the Lab-in-a-Box portal.
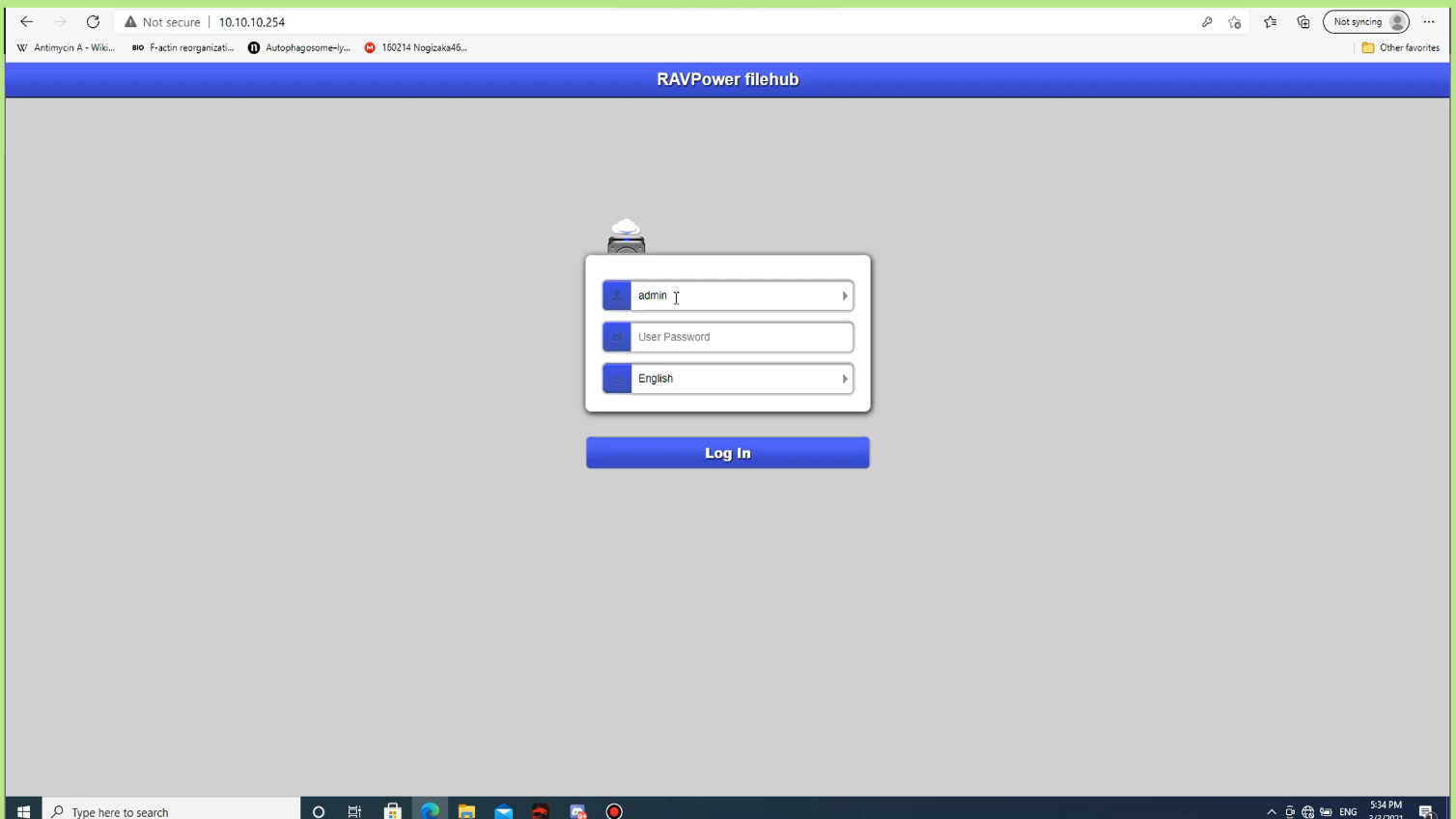
Step 6

**Accessing all the database/contents of the Lab-in-a-Box:**
Clicking "Log In" in **Step 5** leads to the web page shown on the right. Click on "Explorer" to access all the contents stored on the flash drive of the Lab-in-a-Box
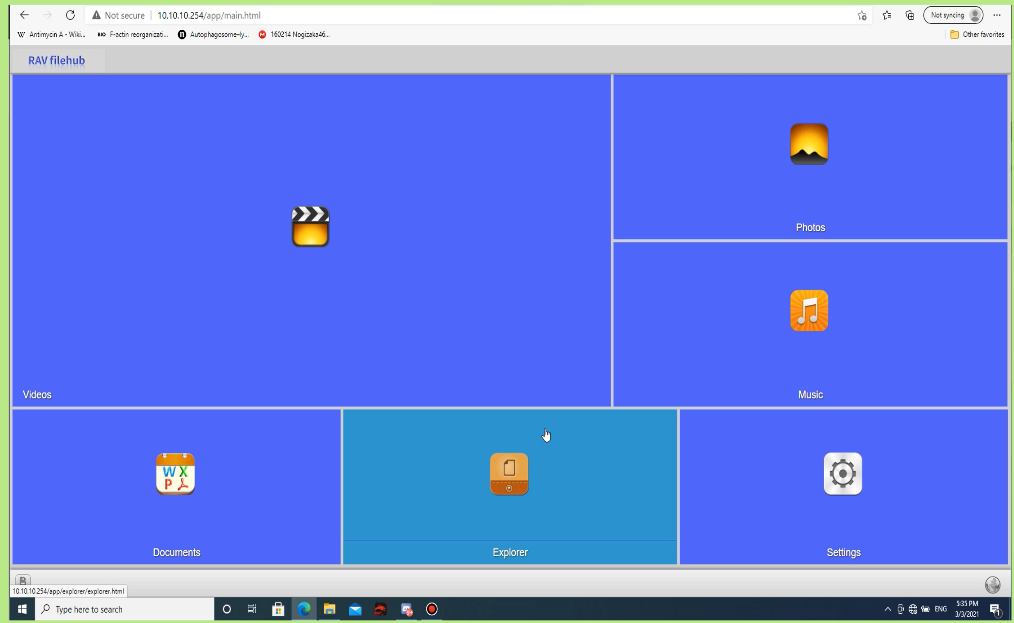
Step 7

Getting to the homepage of the Lab-in-a-Box:
- The previous step brings a web page with a folder called "UsbDisk1_Volume1" (shown in top-right image). Click on this folder, which brings another web page of several folders (shown in image bottom-right image).
- Click folder called "GSAP," which leads to another web page of many folders (shown in bottom-left image). Scroll down to the bottom of the page to find the folder called "index.html"
- Click on the "index.html" folder to get to the homepage of the Lab-in-a-Box portal.
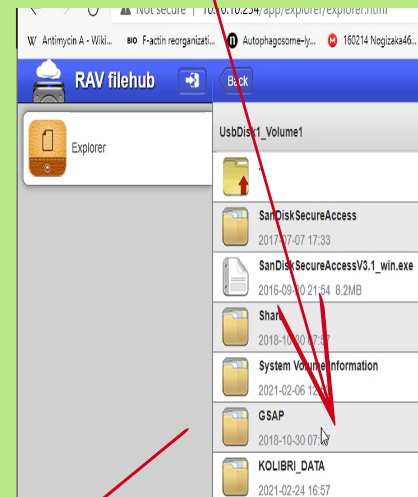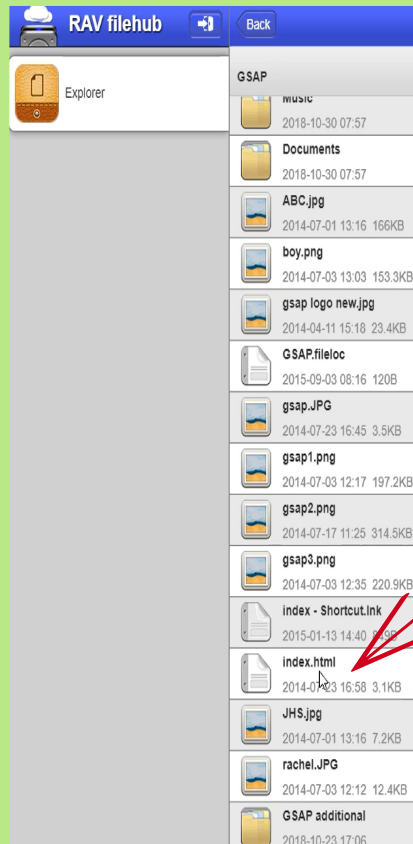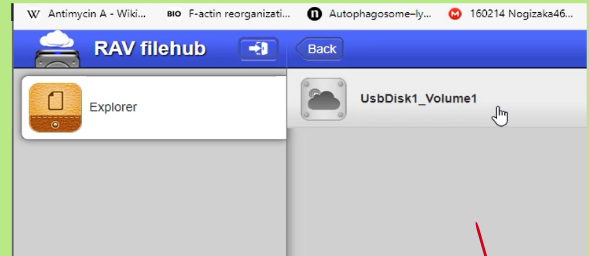
Final Step

Arrived at the homepage of the Lab-in-a-Box:
Image below shows the homepage of the Lab-in-a-Box portal. To access any of the categories listed, click on the name of the category.