Version 3 ▾

Cloud, APIs and Alerts > Bolt Python Library   ▾

LED Intensity (Brightness) Control

In the previous section we see how to turn on and off Led's connected to Bolt, and now in this section, I will show you how to control the brightness of a LED using Bolt Pi.

When I watched movies while resting on beans bag and in between I want to slow down the speed of the fan, but I am very lazy to get up from the bean bag. That's a big problem for me but thanks to Bolt IoT they have PWM (analogWrite) to control the intensity of things.

What is PWM ?

Pulse width modulation is used in a variety of applications including sophisticated control circuitry.A digital device like a microcontroller can easily work with inputs and outputs that have only two states, on and off. So you can easily use it to control a LED's state i.e. on or off. In the same way, you can use it to control any electrical device on/off by using proper drivers (transistor, relays etc). But sometimes you need more than just "on" & "off " control over the device.Like if you wanna control the brightness of a LED (or any lamp) or the speed of DC motor then digital (on/off) signals simply can't do it. This situation is very smartly handled by a technique called PWM or Pulse Width Modulation.

In Bolt Python library analogWrite function is used as PWM for controlling the Intensity(brightness) of led. Syntax :

```
analogWrite('pin numer', 'intensity value')
```

analogWrite function takes two arguments the first argument is the pin number and the second argument is the Intensity(brightness). Intensity value ranges from 0 to 255. 0 means led is off and 255 means led is in full brightness mode.

Now, let's start writing code. First login to your ubuntu server using Putty and create a Python file using nano editor. For example :

```
sudo nano led_brightness.py
```

and write the below code and save the file by typing ctrl+x.

```
from boltiot import Bolt
api_key = "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
device_id  = "BOLTXXXXX"
mybolt = Bolt(api_key, device_id)
response = mybolt.analogWrite('0', '10')
print (response)
```

In the above code, from the first line to the fourth line we are just exporting the Bolt Python library and creating an instance of Bolt Class. In the fifth line, we are calling the analogWrite function and passing the pin number 0 and intensity value 10.

Now save the file and run in terminal. For example

```
sudo python3 led_brightness.py
```

You will see the led glowing with low brightness. You brightness value could be anything between 0 to 255.

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Forum

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Q. While executing sudo python3 filename.py command.it is showing that pythn3:can't find the filename.py and there is no such file

Well, it could mean any of the following:
1. You never created the file.
2. You tried to create but did not save the file.
3. You created a file with a different file name than the one you are trying to open right now.
For all these cases, I suggest you perform the steps starting from creating the file again. Do not skip any step.
Note: You have to replace the word filename with the name of the file you have created.

see more ()

Q. How check if the boltiot python library is installed in my ubuntu?

To check whether the boltiot python library is installed in ubuntu type the following command:

```
sudo pip freeze
```

This command will output the list of all python libraries installed. Check if the name `boltiot` is present in the list. If it is

see more ()

Q. Why don't we need the IP address for Ubuntu on VirtualBox but need the IP address to access DigitalOcean server?

Every time we need to connect to any server on the Internet we need to put the IP address of the server. The IP address uniquely identifies the server on the Internet. However, in the case of VirtualBox, the virtual machine is created on your computer. Hence when you start the virtual machine, the VirtualBox assigns the IP address to that virtual machine and hence knows the IP address already. Hence it doesn't request you to enter the IP address but tells you to enter the login username and password.

Q. sudo python -m pip install boltiot
on writing this its telling me:
/usr/bin/python: No module named pip

please help me ..i have already ran this command also: sudo apt-get install python3-pip

I think aliases setup is not done properly.
If you type below command

```
sudo python3 —m pip install boltiot
```

see more ()

Q. I am getting an ImportError (No module named 'boltiot') when i run the device status code, how can i solve it?

Please try the commands in the following order:
1. Run the command for setting Pytho3 as your default

```
sudo echo "alias python=python3" >> ~/.bashrc
```

see more ()

View more

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Type what you want to ask the instructor

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