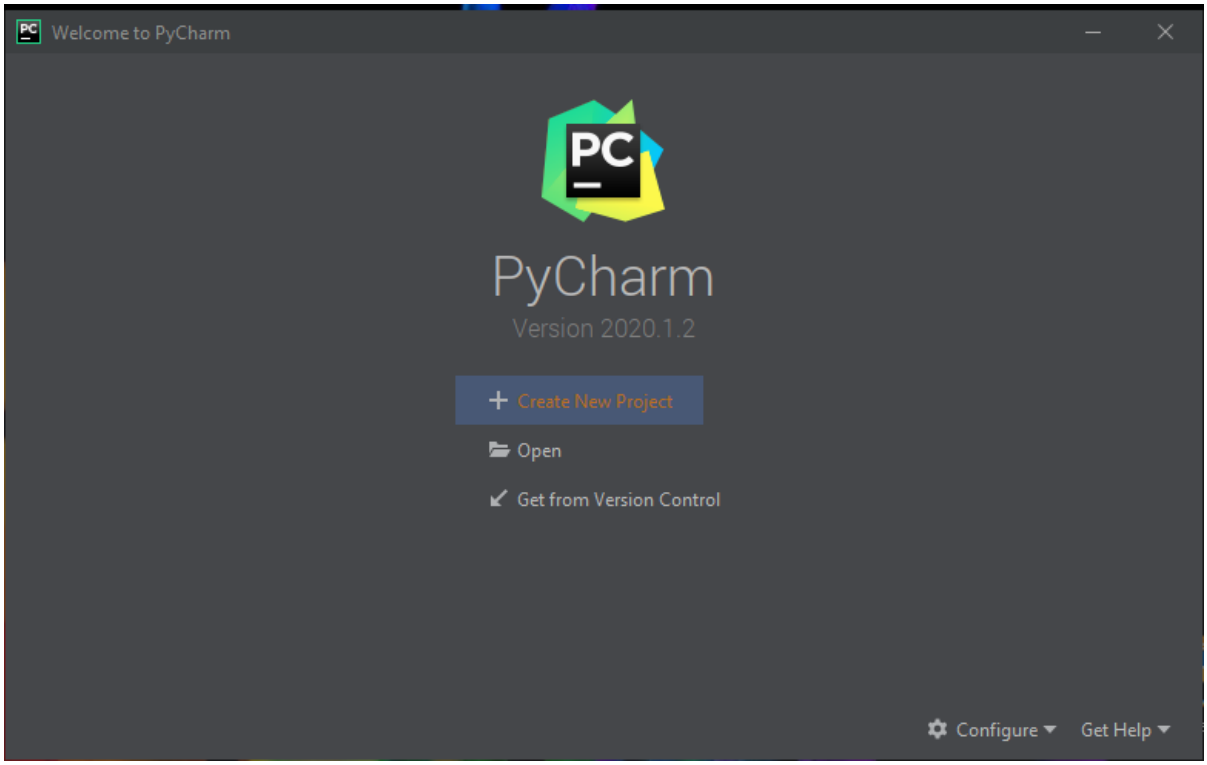
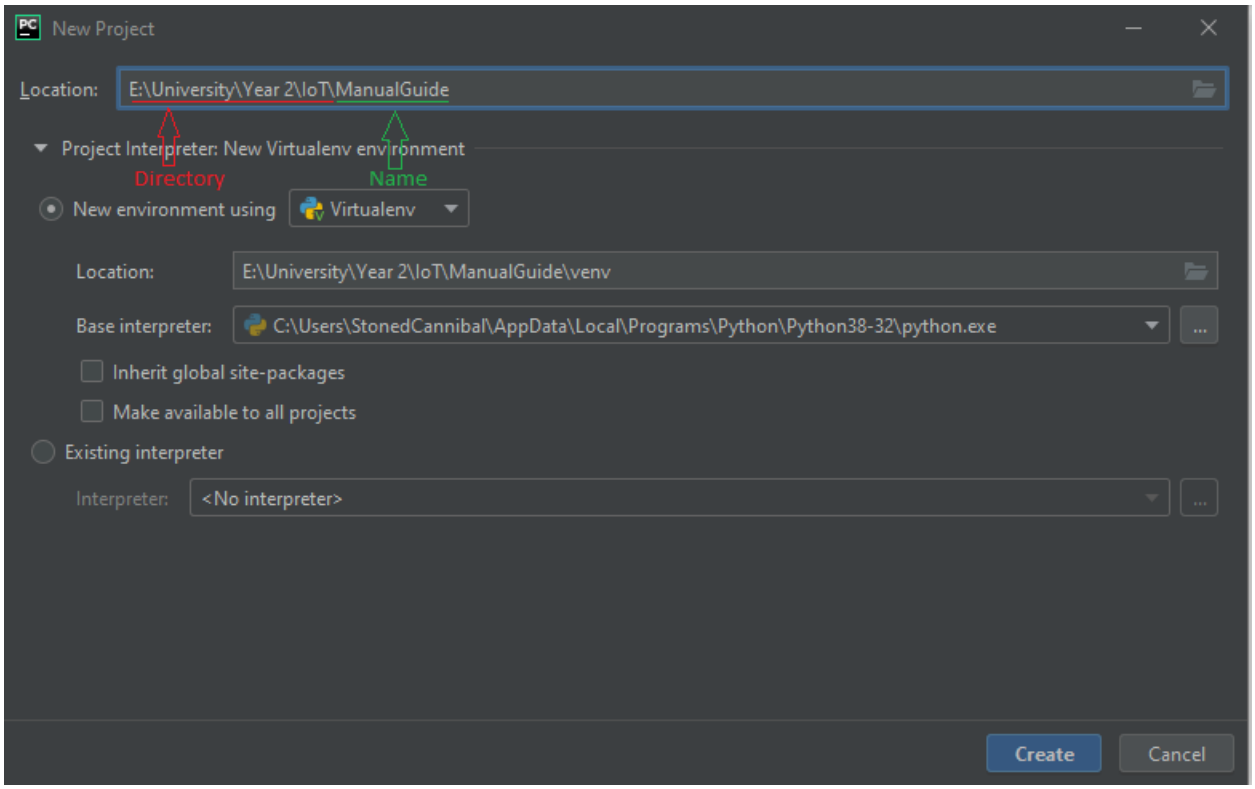
Internet of Things Manual Guide

This is a Manual guide on how to install the BME680 simulator on Windows 10 machine and anything else that is needed to run assuming that the user has PyCharm and Python installed on the machine.

1. Create a new project in PyCharm

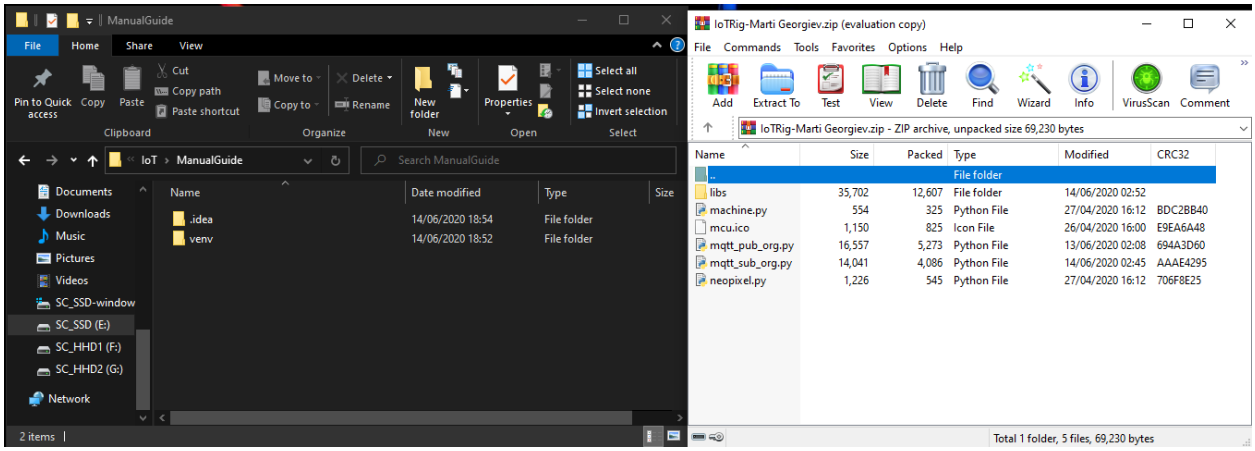


2. Select the directory of your choice for the project and give it a name and press Create.

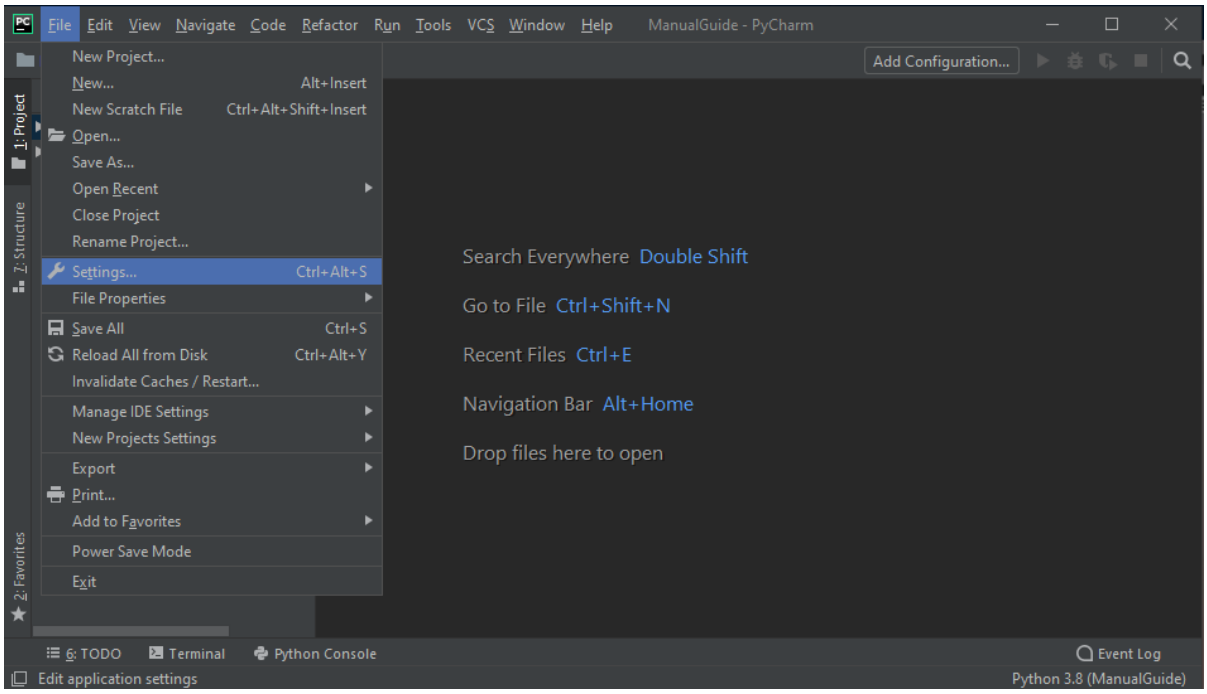


3. Extract all the files from the 'IoTRig-Marti Georgiev.zip' into the folder of your project. For example, the project we crate before called 'Manual Guide', extract the following files as showed below inside the Manual Guide's project folder.

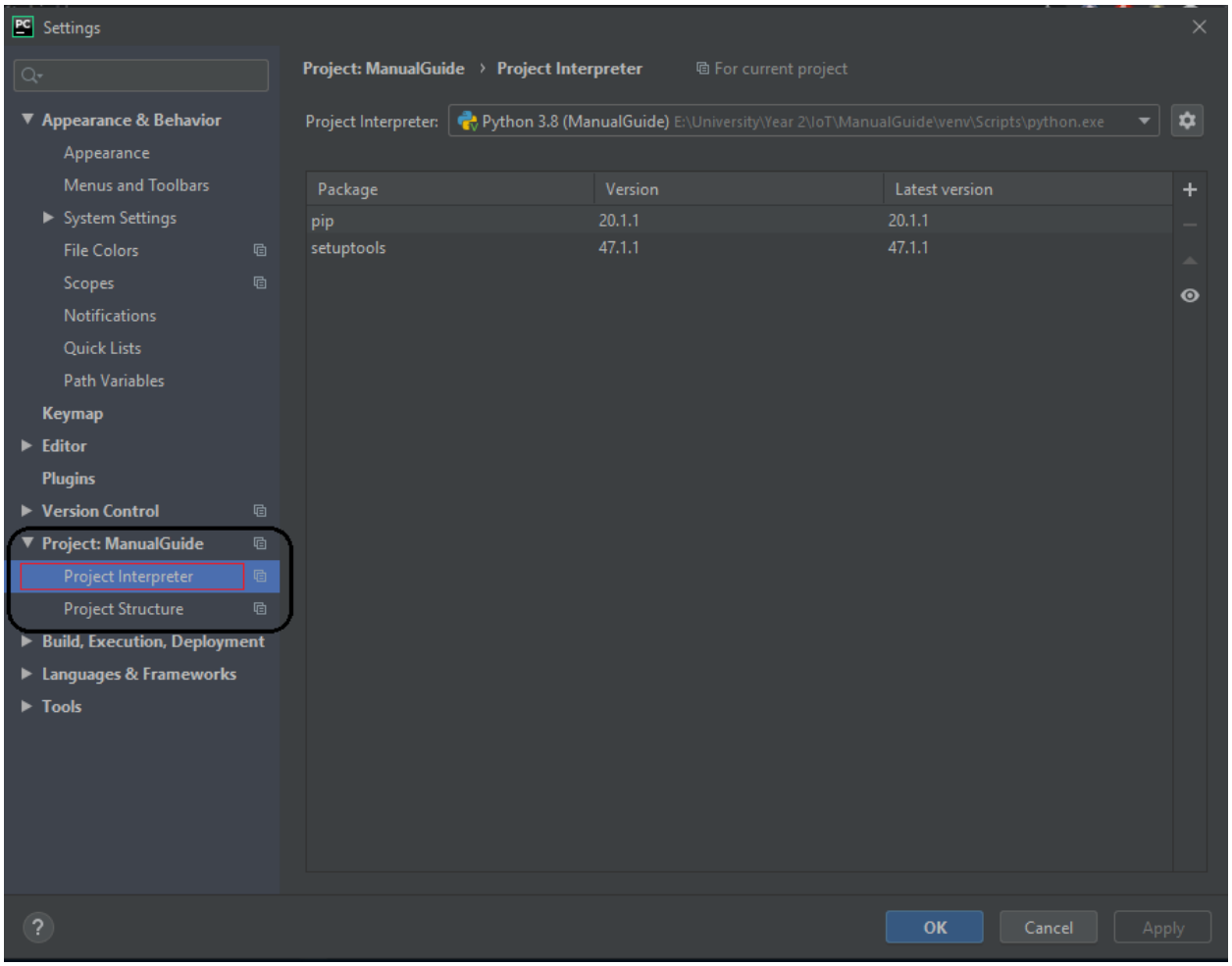
(Files in zip: machine.py, mqtt_pub_org.py, mqtt_sub_org.py ,neopixel.py, Task2.py, mcu.ico, libs)



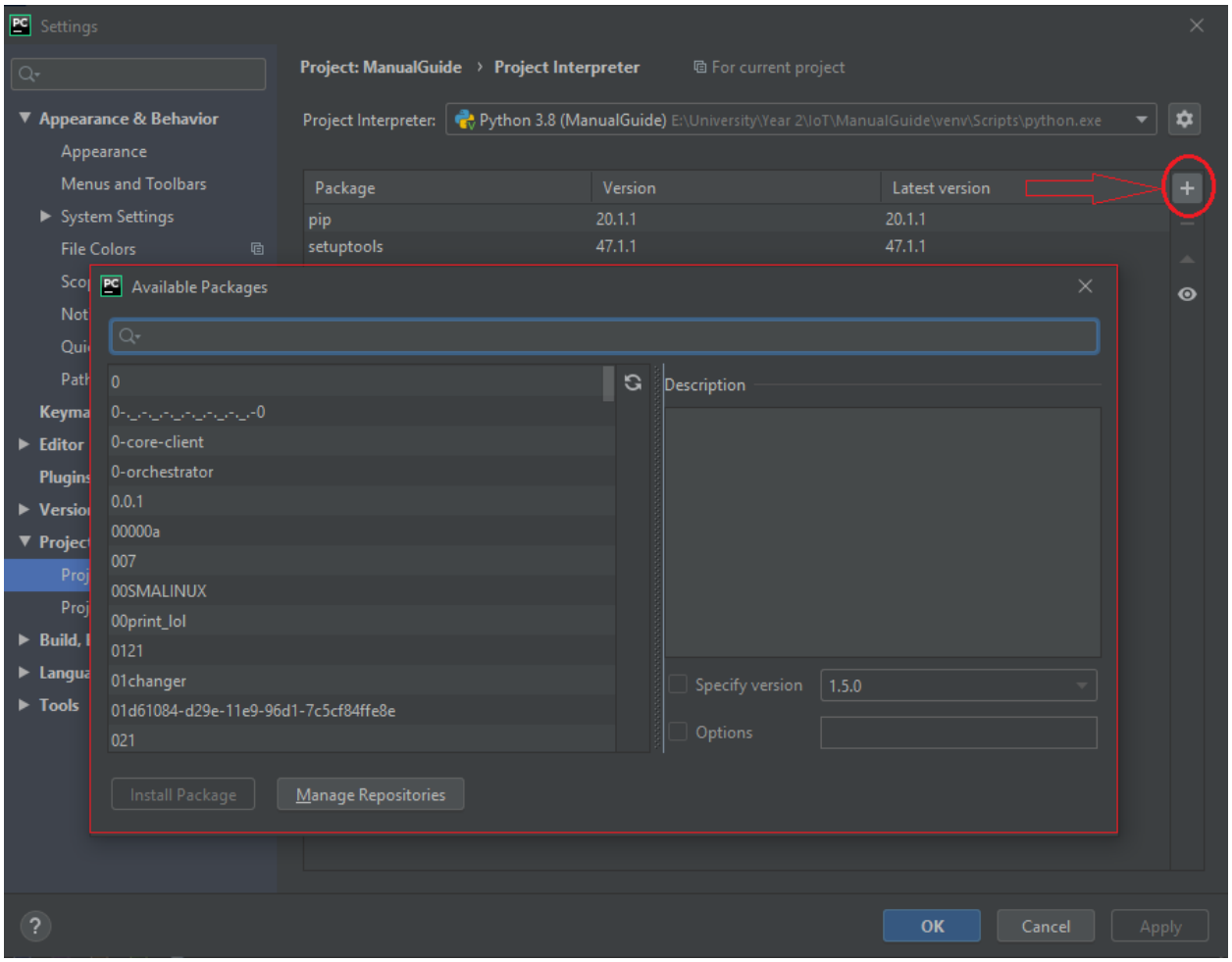
4. In order to run the simulator in PyCharm two addons has to be install as well, this will be done by pressing 'File' on the top left corner of PyCharm and select 'Settings'.



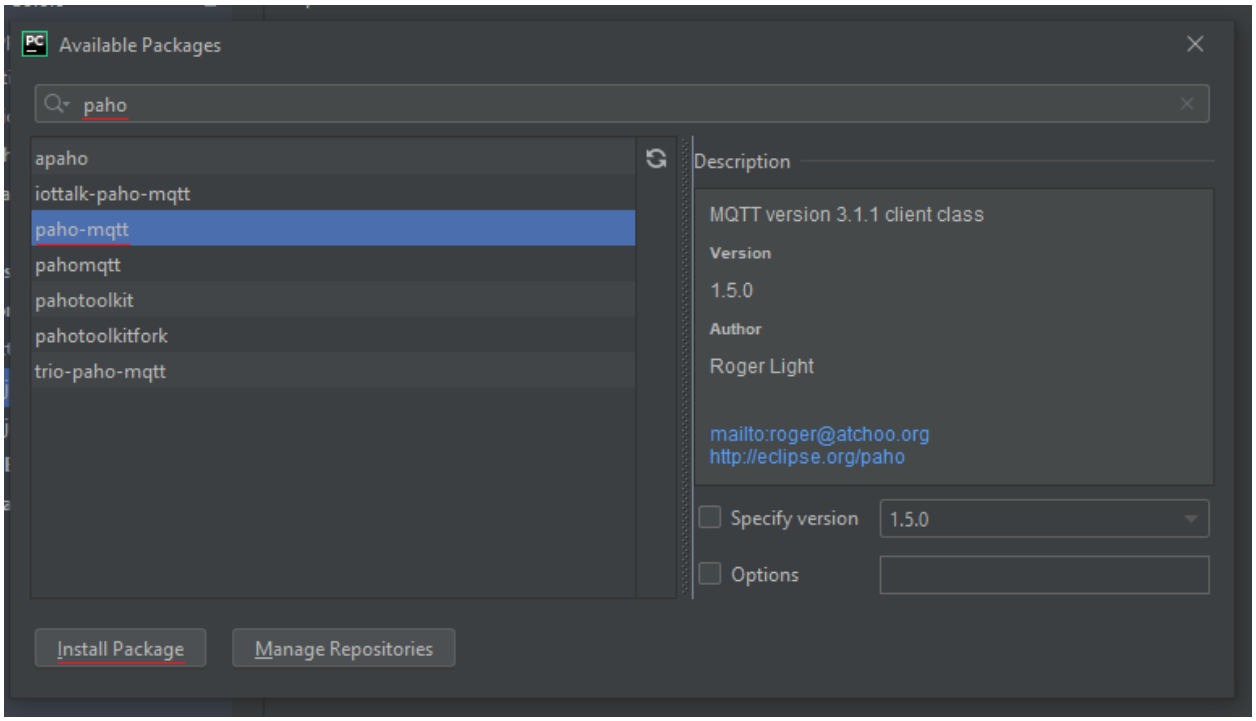
The following windows will pop up on the screen. Navigate on the entry of the project and select ‘Project Interpreter’



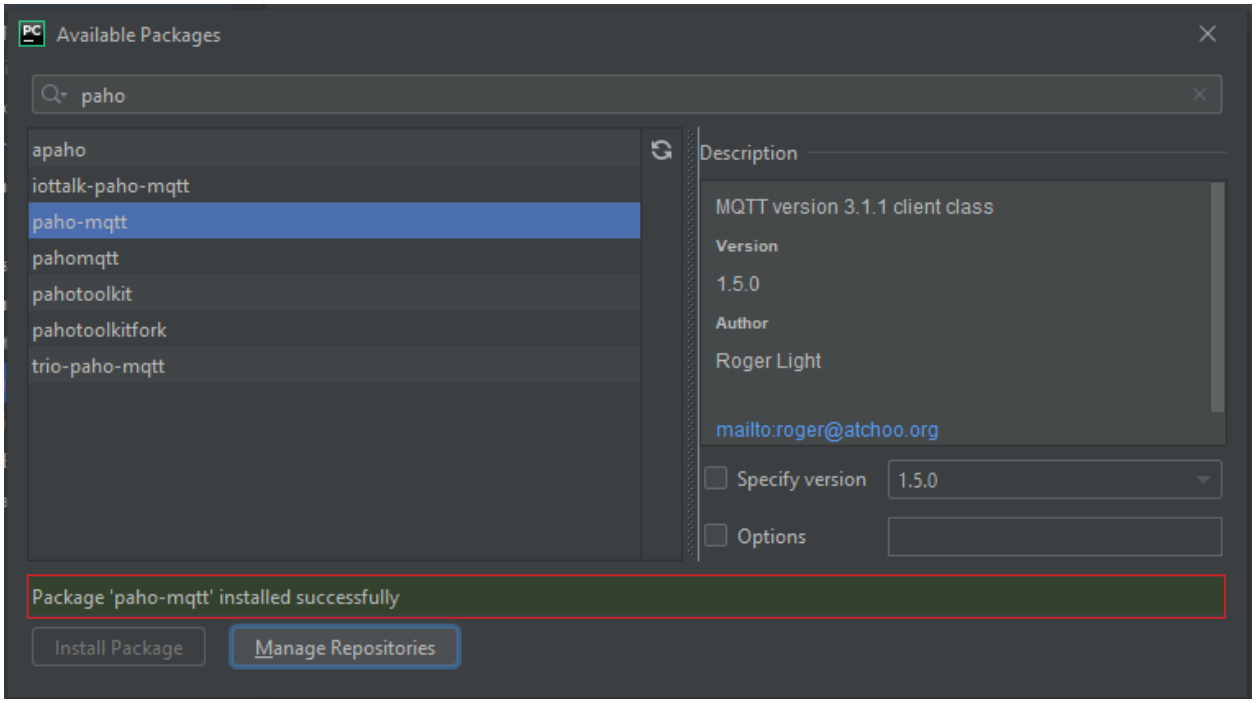
5. Once navigated to the Project Interpreter press the small ‘plus’ sing on the right top corner to open a library with all the available packages for python. It is a repository held the website pypi.org



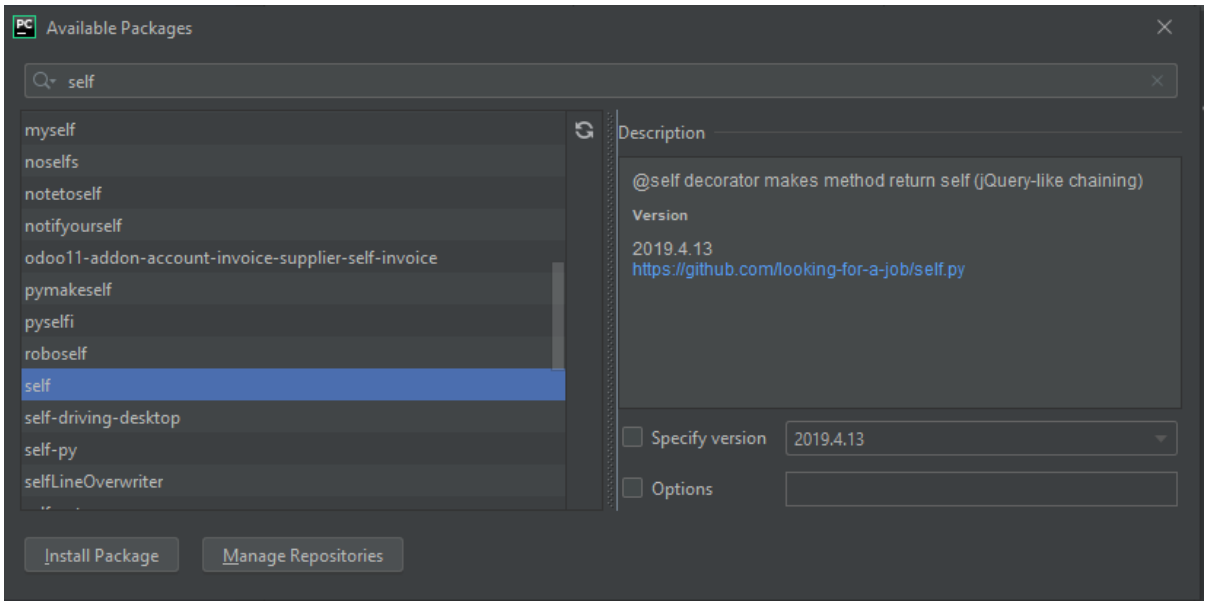
6. Search for paho-mqqt and Install it.



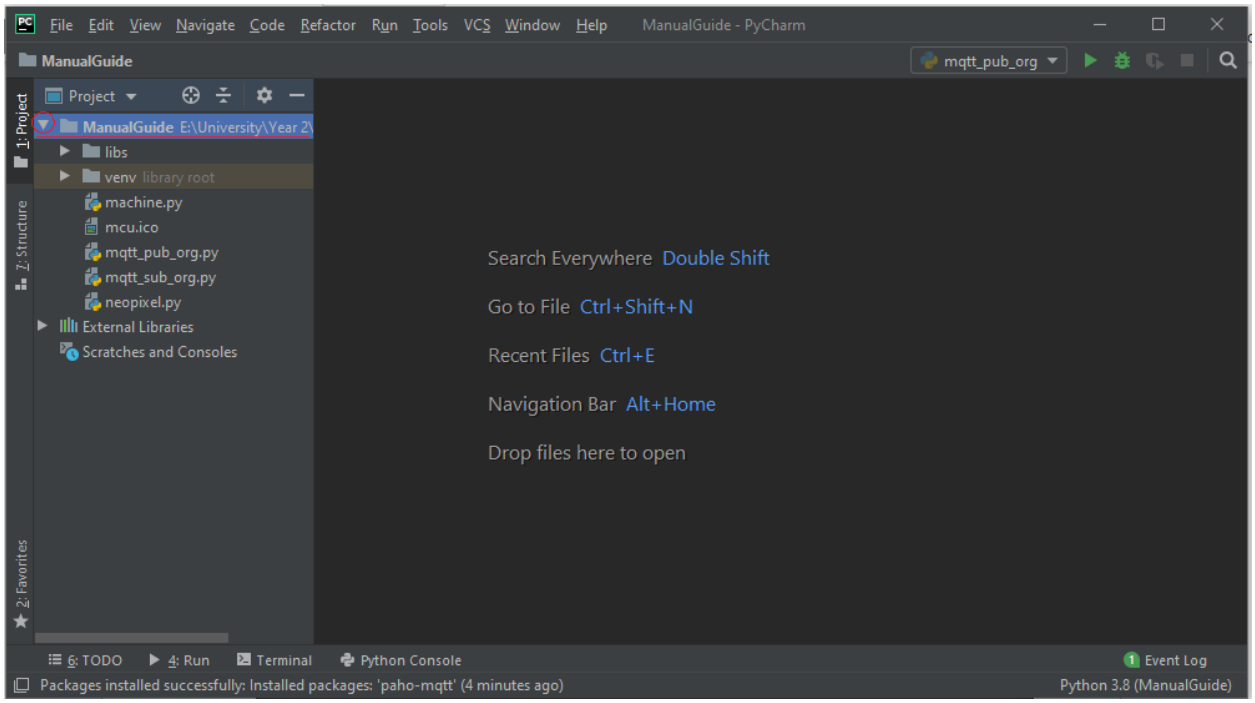
Whenever is done this will appear on the windows for conforming the installation.



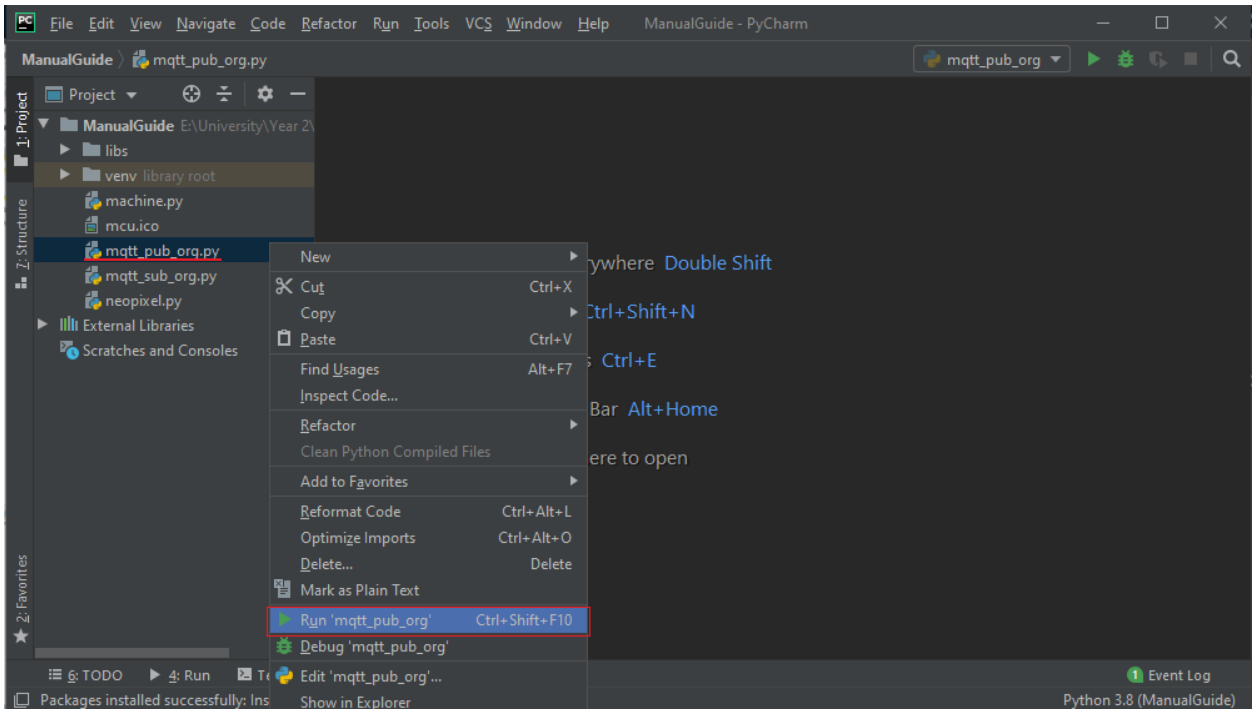
7. Search for ‘self’ as well and install it.



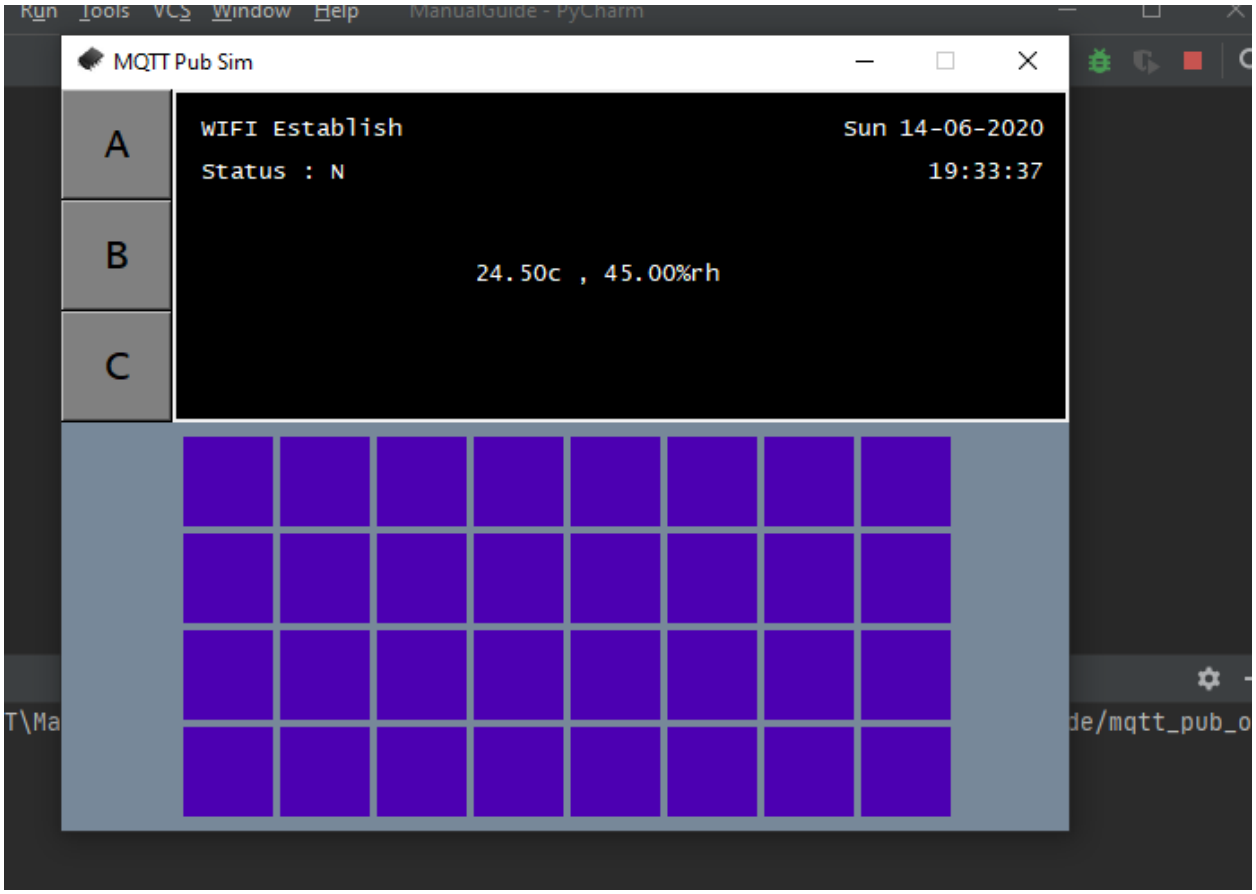
8. Close down the installer windows and the Settings and open up the ‘ManualGuide’ project.



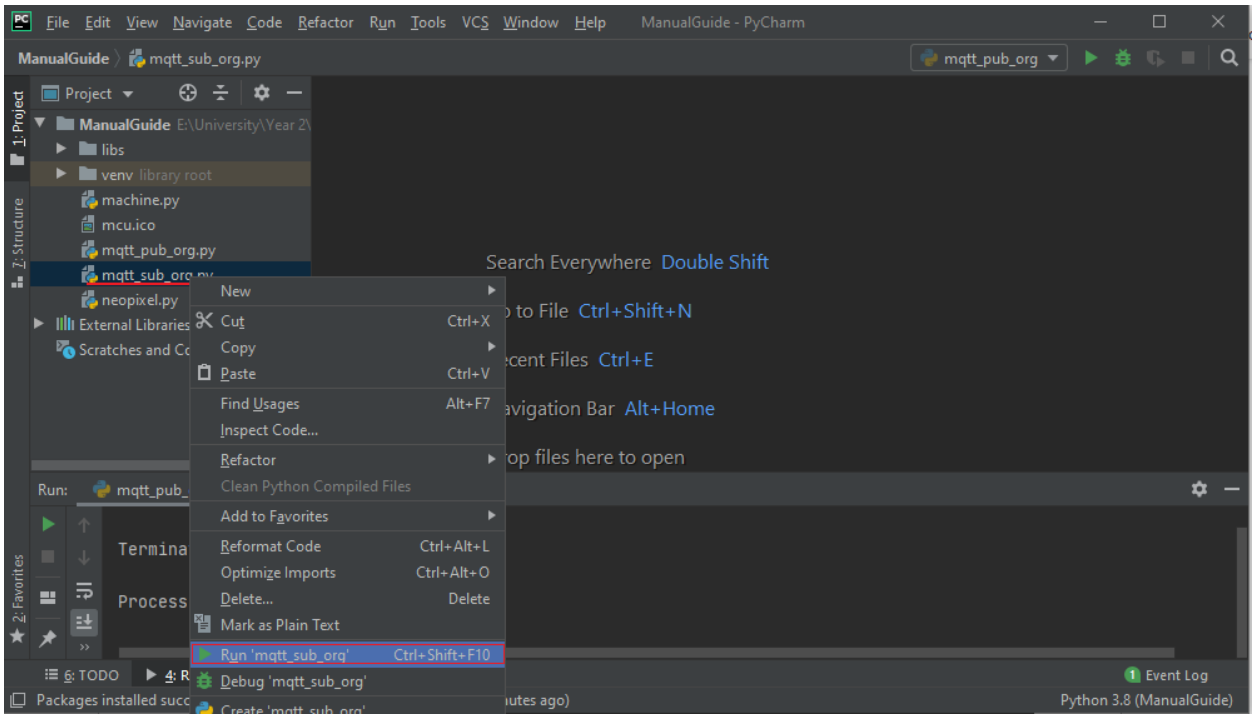
9. To power on the Sensor press right-click on the mqtt_pub_org.py and select Run.



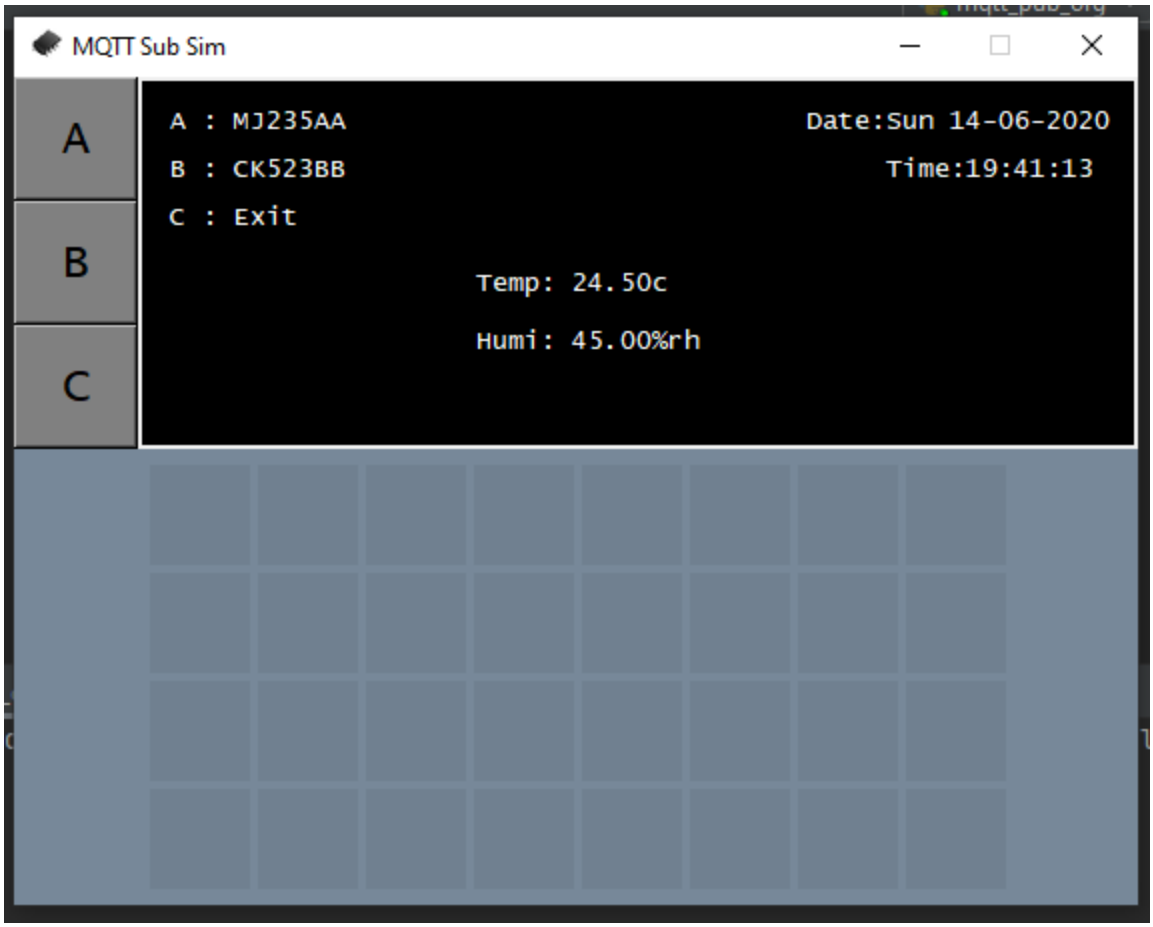
The simulated sensor will pop up and will look like this. Displaying the Wi-Fi Signal, The status of the sensor's readings, current date and time, and the temperature and humidity values.



10. Do the same process for the mqqt_sub_org.py which is the monitoring device on the outside of the room.



The monitoring device will look like this:



Now both of the devices are up and running. They are connected together using MQTT protocol. The sensor from the inside it is recording the temperature and humidity, plus is connected to a NTP server for the Real Time Clock and it is sending all the data on the monitoring device.

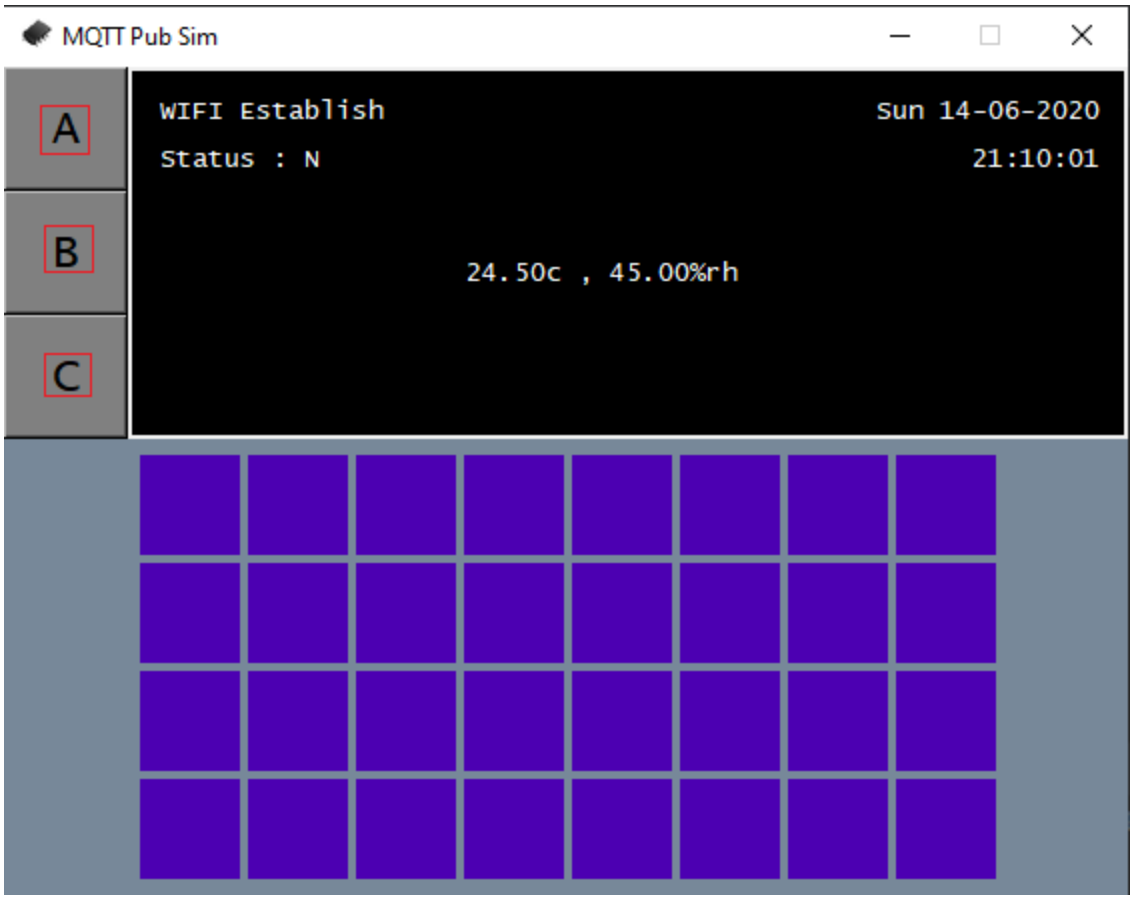
This is a Manual Guide on how to use the simulated sensor and the simulated monitoring device.

Simulated Sensor (Publisher)

For rising the temperature value press A.

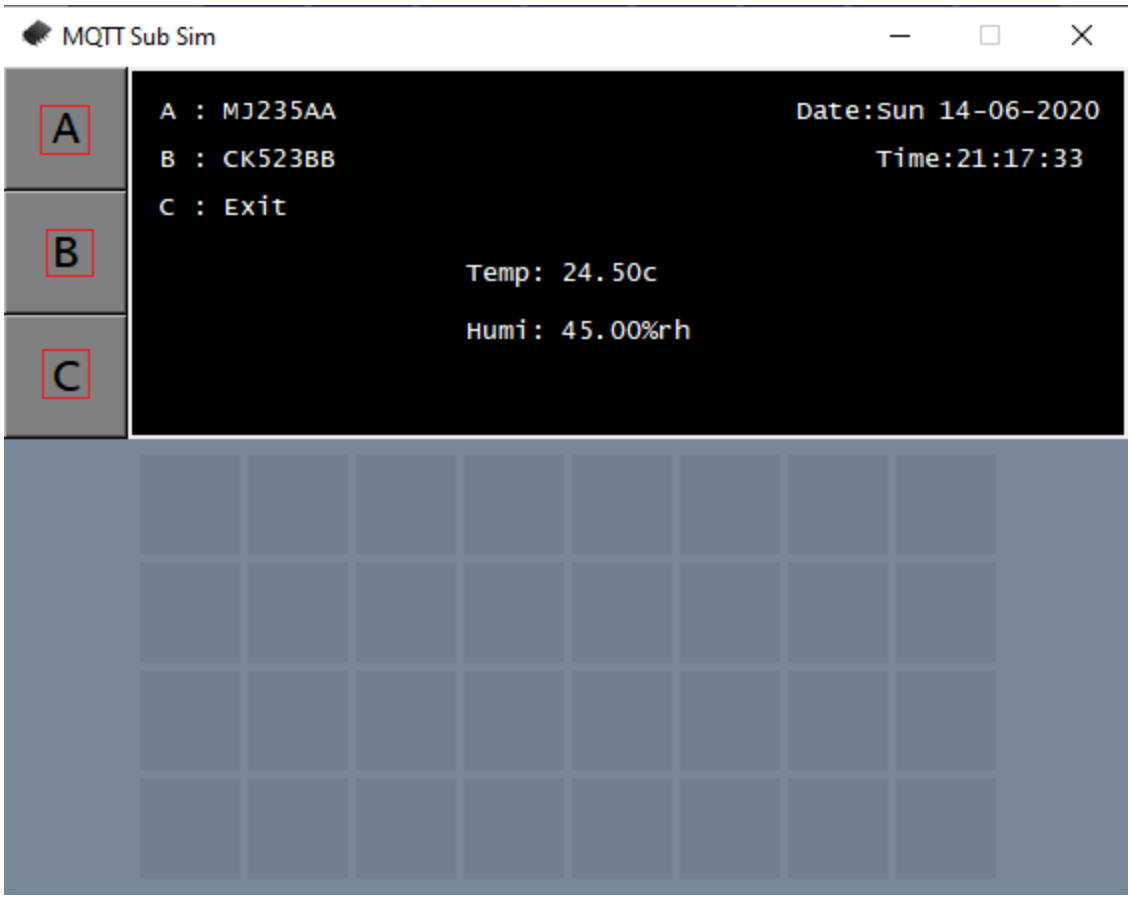
For dropping the temperature value press B.

For having a stable temperature of 24 Degree press C.



Simulated Monitoring Device

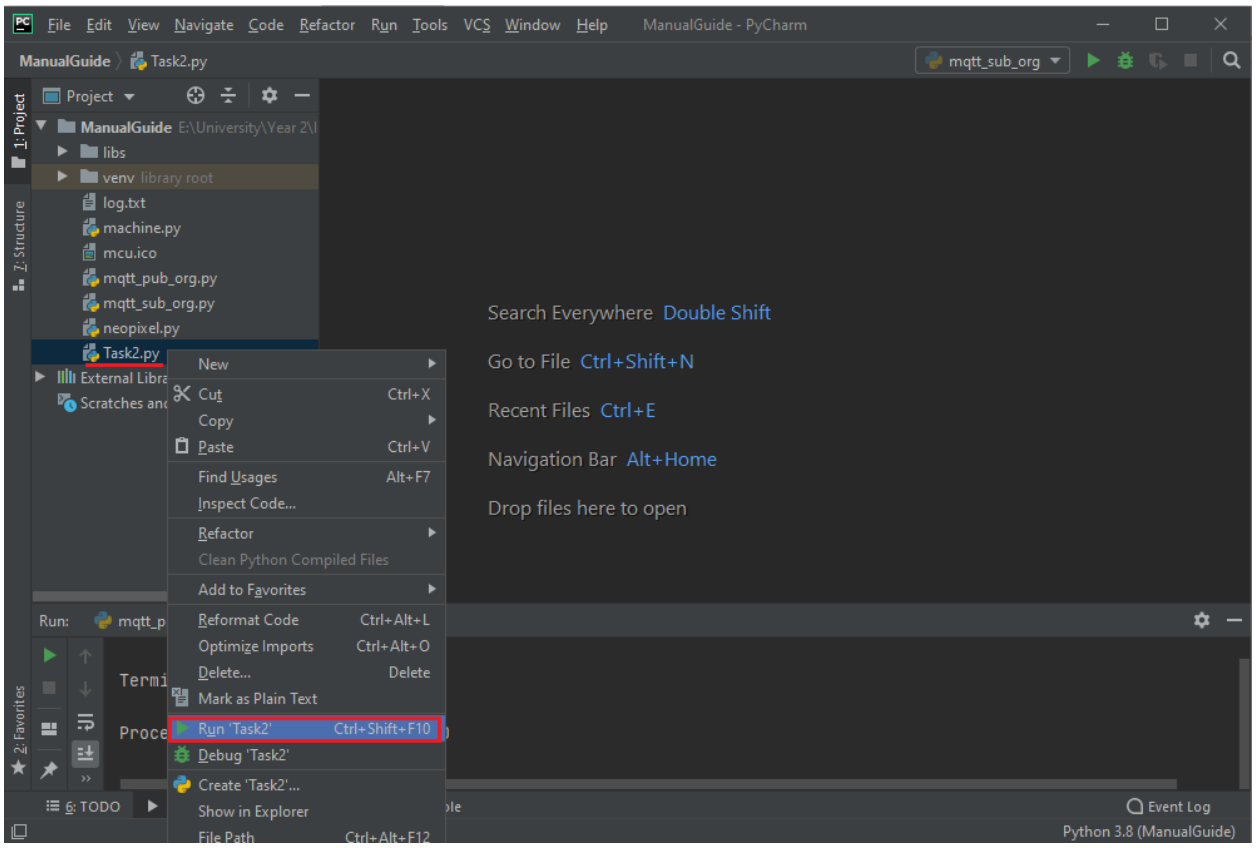
If the user who is accessing the room is MJ235AA, press A on the monitoring device before accessing the room. If the user who is accessing the room is CK523BB, then press B. On the way out please press C for closing the monitoring device.



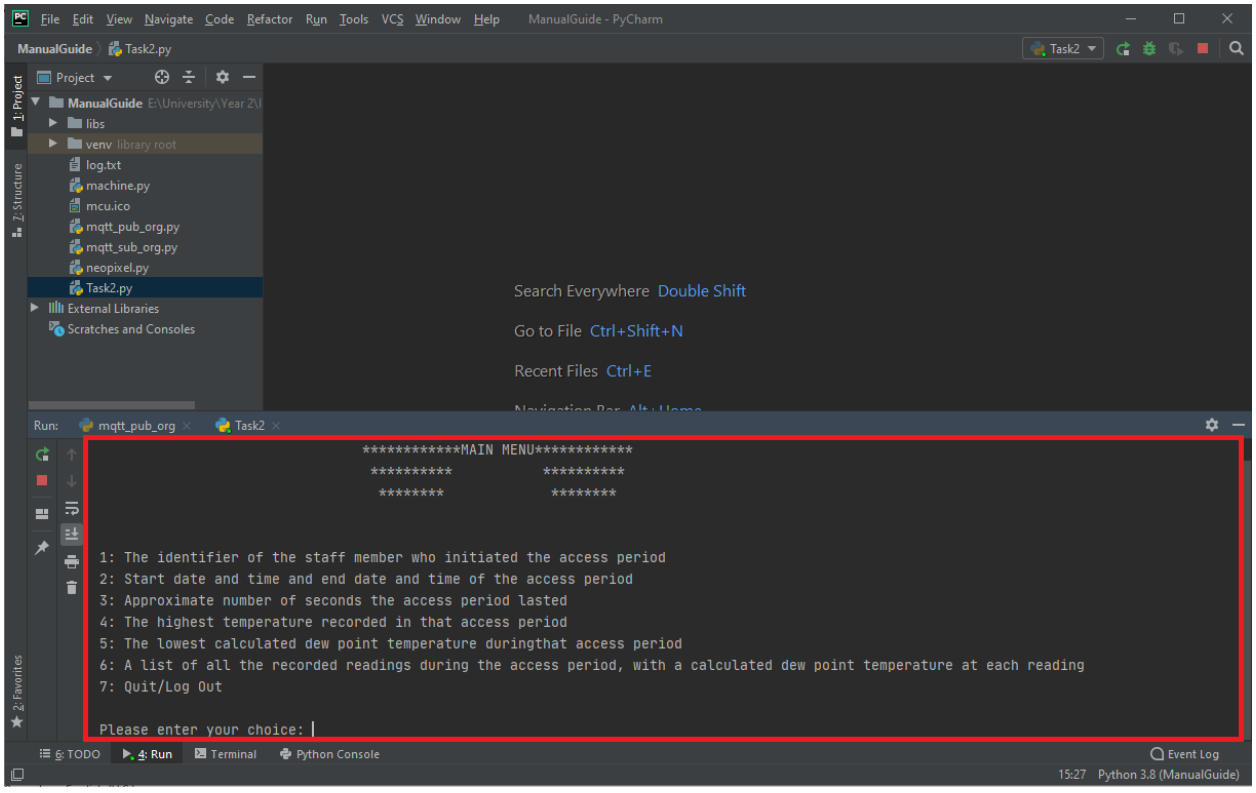
Task2 Desktop Application

This is a Manual Guide on how to use the Desktop Application in order to read the recorded readings from the sensor.

1. Press right-click on the Task2.py as showed below, and press Run.



The application should appear on the bottom of the PyCharm as like here.



To display the identifier of the staff member who initiated the access period, press 1.

```
1: The identifier of the staff member who initiated the access period
2: Start date and time and end date and time of the access period
3: Approximate number of seconds the access period lasted
4: The highest temperature recorded in that access period
5: The lowest calculated dew point temperature duringthat access period
6: A list of all the recorded readings during the access period, with a calculated dew point temperature at each reading
7: Quit/Log Out

Please enter your choice: 1
 User MJ235AA   has initiated the access period

Press ENTER key to return to main menu
```

Press Enter to return to Main Menu.

To display the start date and time and end date and time of the access period, press 2.

```
1: The identifier of the staff member who initiated the access period
2: Start date and time and end date and time of the access period
3: Approximate number of seconds the access period lasted
4: The highest temperature recorded in that access period
5: The lowest calculated dew point temperature duringthat access period
6: A list of all the recorded readings during the access period, with a calculated dew point temperature at each reading
7: Quit/Log Out

Please enter your choice: 2
Star of session:    Sun 14-06-2020    21:26:32
End of session:    Sun 14-06-2020    21:26:16

Press ENTER key to return to main menu
```

Press Enter to return to Main Menu.

For calculating the approximate number of seconds, the access period lasted, press 3 and then insert the required inputs.

```
5: The lowest calculated dew point temperature duringthat access period
6: A list of all the recorded readings during the access period, with a calculated dew point temperature at each reading
7: Quit/Log Out

Please enter your choice: 3
Started at:   00:00:09
Ended at:   00:00:25

Please insert the 'Start' seconds:9
Please insert the 'End' seconds:25
The access period in seconds lasted an average of
16.0

Press ENTER key to return to main menu
```

Press Enter to return to Main Menu.

For the highest temperature recorded in the access period, press 4.

```
1: The identifier of the staff member who initiated the access period
2: Start date and time and end date and time of the access period
3: Approximate number of seconds the access period lasted
4: The highest temperature recorded in that access period
5: The lowest calculated dew point temperature duringthat access period
6: A list of all the recorded readings during the access period, with a calculated dew point temperature at each reading
7: Quit/Log Out

Please enter your choice: 4
Highest temperature recorded.
   25.00

Press ENTER key to return to main menu
```

For the lowest recorded temperature in the access period, press 5.

```
1: The identifier of the staff member who initiated the access period
2: Start date and time and end date and time of the access period
3: Approximate number of seconds the access period lasted
4: The highest temperature recorded in that access period
5: The lowest calculated dew point temperature duringthat access period
6: A list of all the recorded readings during the access period, with a calculated dew point temperature at each reading
7: Quit/Log Out

Please enter your choice: 5
Lowest calculated dew point recorded.
   24.00

Press ENTER key to return to main menu
```

Function number 6 not completed.

To exit the application please press 7.