

Internet of things PROJECTS/INTERNSHIP

College Name

→SRM Institute of Science and Technology.

Company Name

→Vyorius.

Domain

→Internet of things.

Project topics

1. IoT based on smart Agriculture System.
2. World map covid-19 dashboard.
3. Obstacle Avoidance Robot using Ultrasonic Sensor.
4. RGB Pattern.

2.World map covid-19 dashboard

Software's In detail



Grafana

The purpose of Grafana dashboards is **to bring data together in a way that is both efficient and organized**. It allows users to better

understand the metrics of their data through queries, informative visualizations and alerts.



The Worldmap Panel is a tile map of the world that can be overlaid with circles representing data points from a query. It can be used with time series metrics, with geohash data from Elasticsearch or data in the Table format. The Worldmap panel needs two sources of data:

- a location (latitude and longitude)
- data that has a link to a location

The data comes from a database query: Prometheus, InfluxDB, Graphite, Elasticsearch, MySQL etc. It can be in the Time Series format or in the Table format.



InfluxDB provides **facilitates storage, monitoring, visualization, collecting data & providing alerts in time series data** which signifies its importance.



PyCharm is a dedicated Python Integrated Development Environment (IDE) providing a wide range of essential tools for Python developers, tightly integrated to create a convenient environment for **productive Python, web, and data science development**.

Steps to follow

1-Downlaod grafana

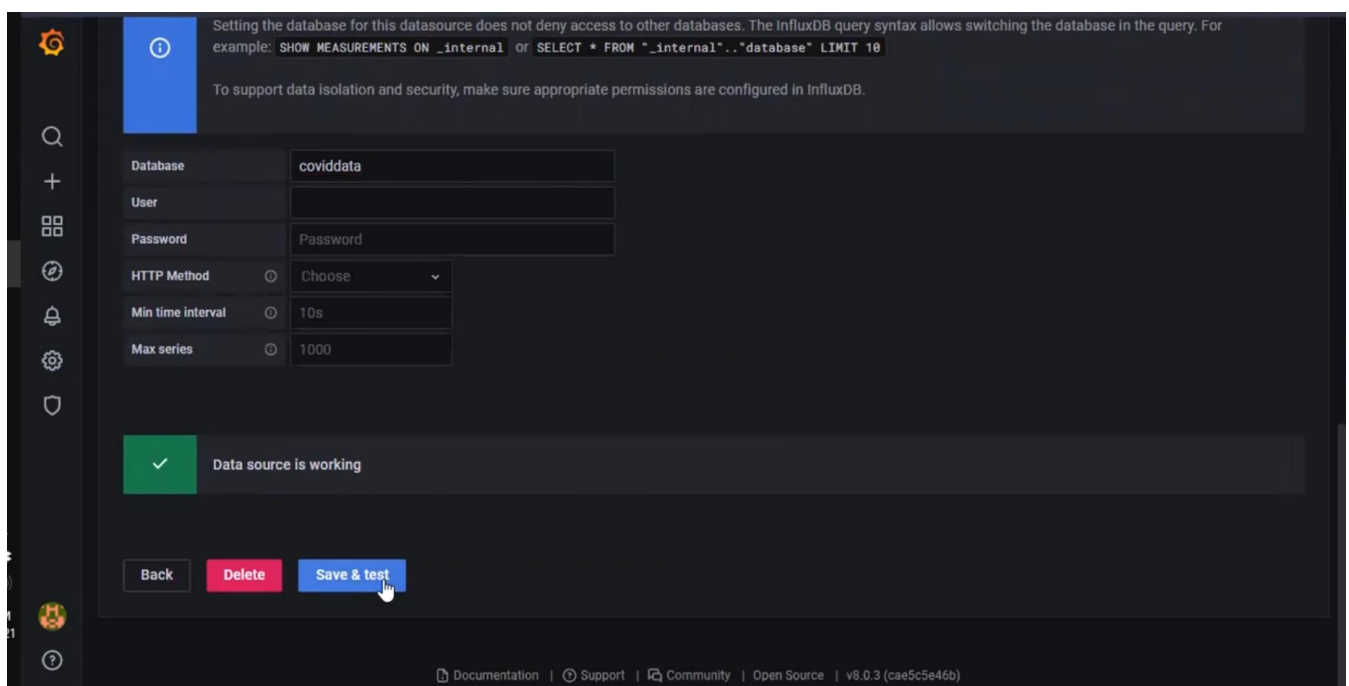
2-Dwonloadd influxDB

3- We are going to get the open-source version InfluxDB v1.8.6 , choose the platform. And copy the link just like it is shown, and paste in anew tab and then install it.

After that we have to extract and copy the file to program files to create a data base in our system

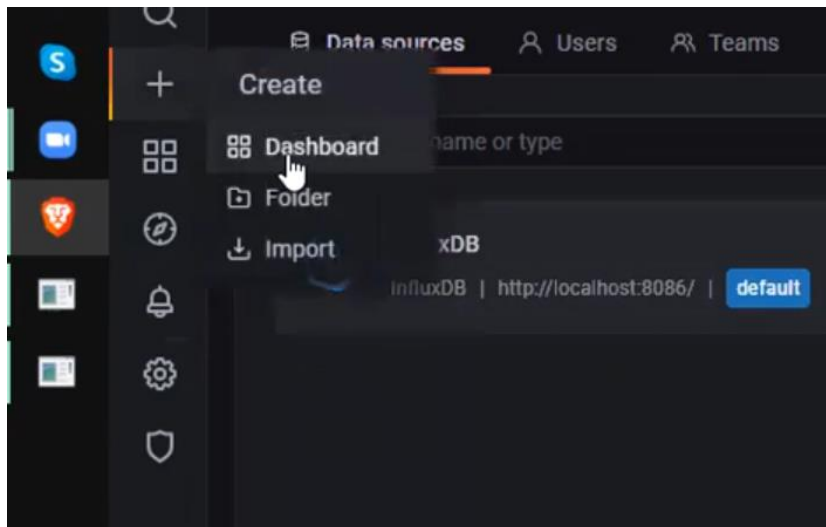

```
C:\Program Files\InfluxData\influxdb-1.8.6-1\influx.exe
Connected to http://localhost:8086 version 1.8.6
InfluxDB shell version: 1.8.6
> show databases
name: databases
name
----
_internal
corona19
corona
covid19
> create database coviddata
> use coviddata
Using database coviddata
>
```

4-After that we have to go to grafana and select influx DB where we will get an option to upload the host URL, we got by creating a data base “http://localhost:8086/” and we have to name our data base as “covid data” after that we can save and test, we will see our data base is working properly.



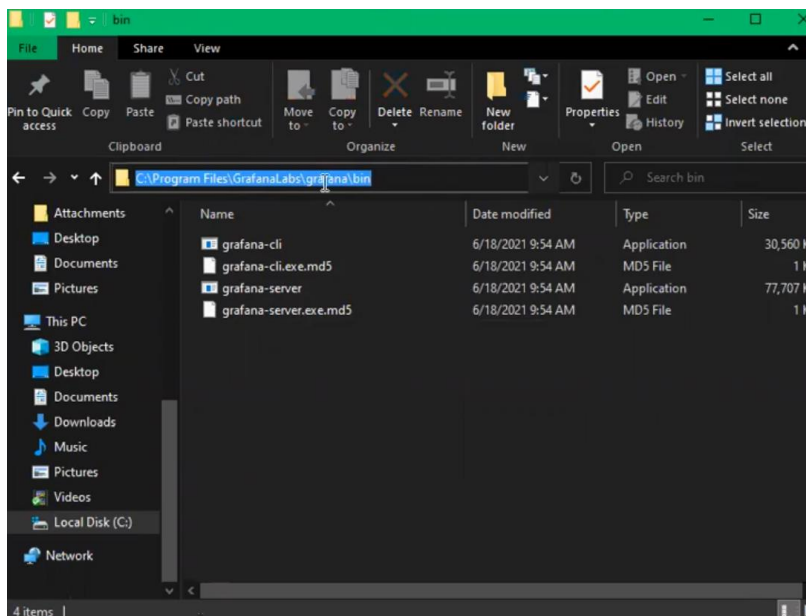
Under data sources as we can see data base is installed or interfaced with grafana or our system.

6-We now have to create a dashboard, select on empty panel, and there we can see an option to insert the world map panel into it.



7-We have to download the world map panel plugin and interface with it in grafana, how we can do that?

Go to grafana file location



Copy the location and open command prompt as an administrator, and again copy the world map panel from the webpage

Email

Submit

Dependencies

Grafana 3.x.x

Developer

Grafana Labs

Links

Project site

MIT License

Grafana Cloud

Get Grafana without the overhead involved with installing, maintaining and

Worldmap Panel not installed

For more information, visit the docs on [plugin installation](#).

Installing on a local Grafana:

For local instances, plugins are installed and updated via a simple CLI command. Plugins are not updated automatically, however you will be notified when updates are available right within your Grafana.

1. Install the Panel

Use the grafana-cli tool to install Worldmap Panel from the commandline:

`grafana-cli plugins install grafana-worldmap-panel`

The plugin will be installed into your grafana plugins directory; the default is `/var/lib/grafana/plugins`. [More information on the cli tool](#).

Alternatively, you can manually [download the .zip file](#) and unpack it into your grafana plugins directory.

2. Add the Panel to a Dashboard

Installed panels are available immediately in the Dashboards section in your Grafana main menu, and can be added like any other core panel in Grafana.

To see a list of installed panels, click the **Plugins** item in the main menu. Both core panels and installed panels will appear.

And paste it here

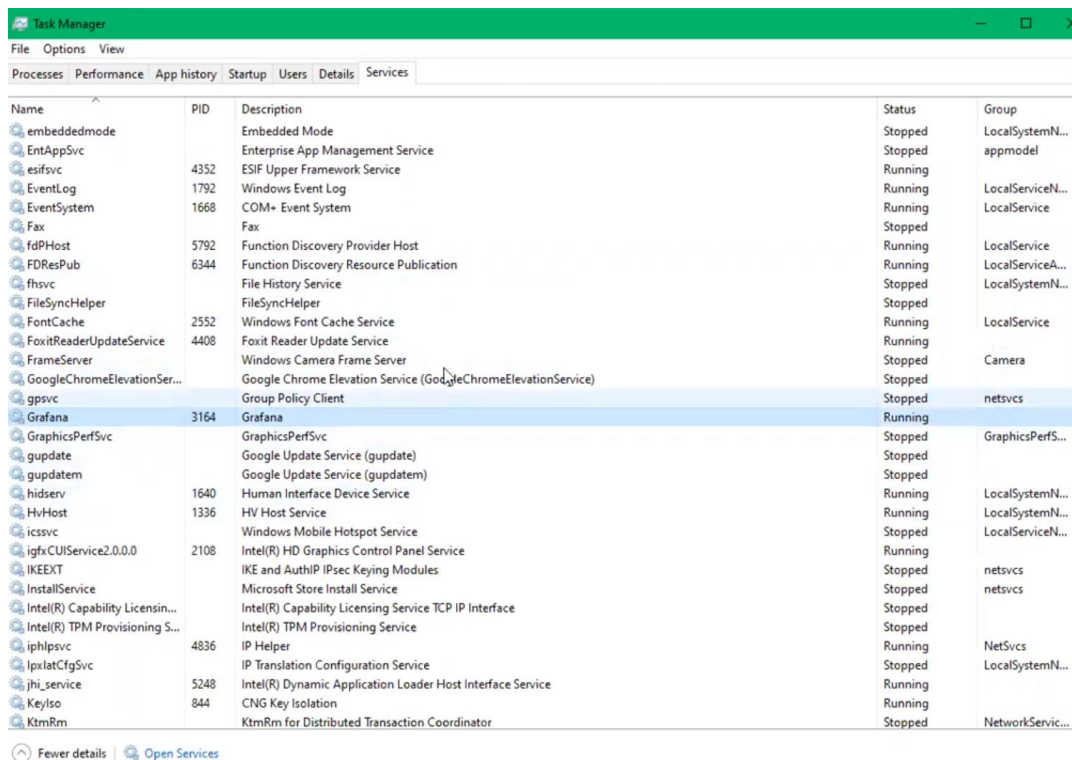
```
Select Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1052]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\GrafanaLabs\grafana\bin
C:\Program Files\GrafanaLabs\grafana\bin>
```

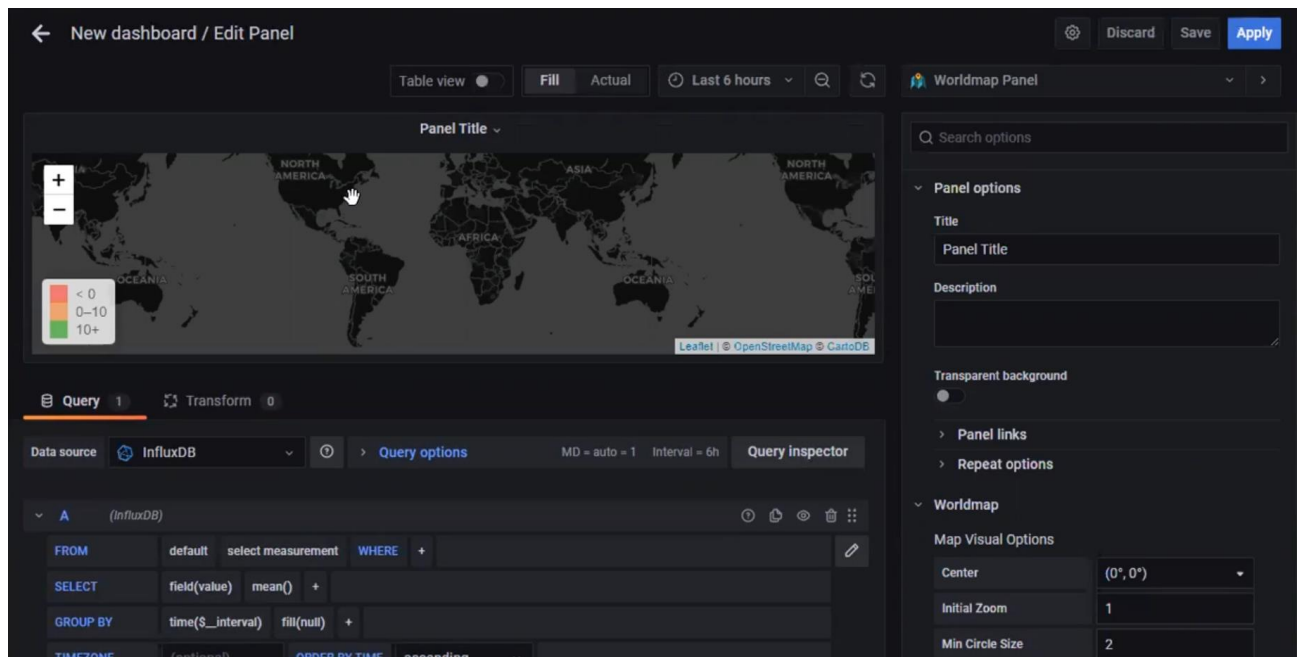
```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1052]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\GrafanaLabs\grafana\bin
C:\Program Files\GrafanaLabs\grafana\bin>grafana-cli plugins install grafana-worldmap-panel
[32m[0m Downloaded grafana-worldmap-panel v0.3.3 zip successfully
[32mPlease restart Grafana after installing plugins. Refer to Grafana documentation for instructions if necessary.
[0m
C:\Program Files\GrafanaLabs\grafana\bin>
C:\Program Files\GrafanaLabs\grafana\bin>
```


After that we can see that it is successfully installed in grafana still for betterment it is advisable to go to task manager go to services, find where grafana is and restart it.

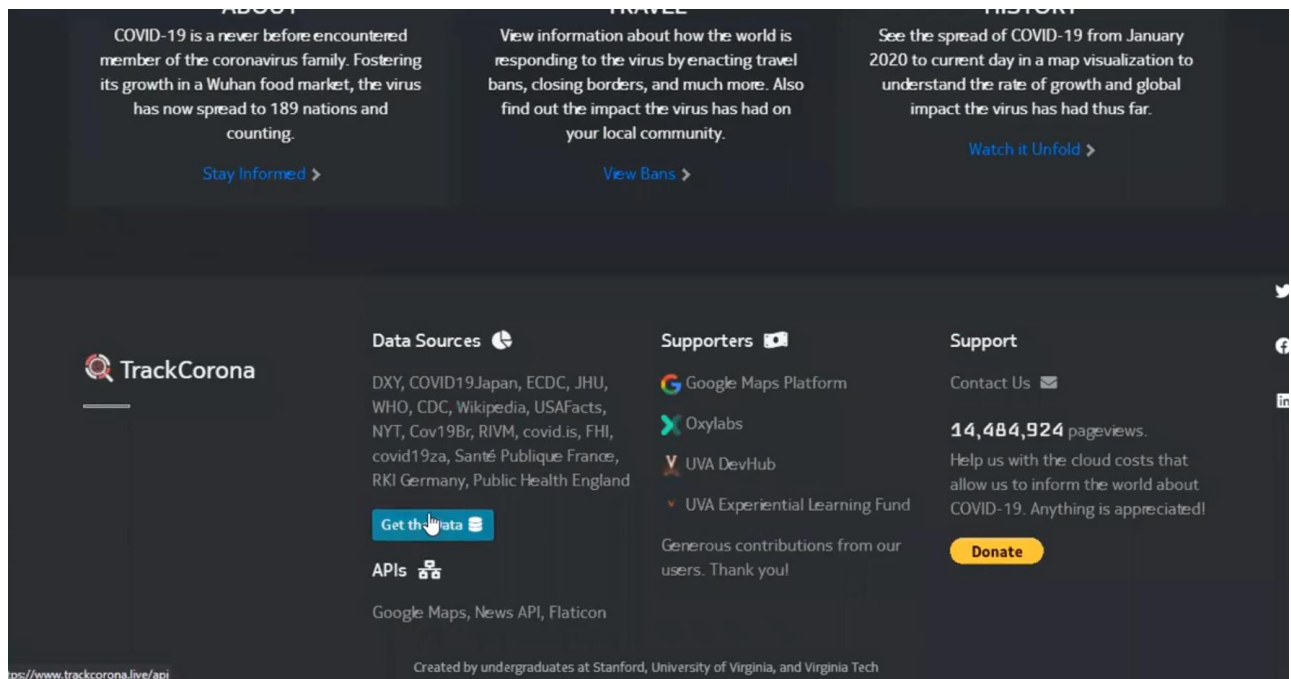


7- Go to the dashboard if it doesn't appear create a new one and access the world map panel in it



8-Now we need data for the live active cases of corona virus in the world, so what we are doing we are going to a new tab

search, track corona lives, go the website, under that you will find an option of API, then click on to get the data and download it as CSV as shown.



After downloading it can be seen that there are many excel file is installed if we open one, we can see there are data as location, country, latitude. Longitudes, confirmed cases, dead recovered dated.

countries - Excel

Anup poudel

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A

B I U

Wrap Text

General

\$ % ' 0.00

Conditional Formatting Format as Table Cell Styles Insert Delete Format Sort & Find & Filter Select

A8 Nepal

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	location	country_code	latitude	longitude	confirmed	dead	recovered	updated										
1	India	in	20.59368	78.96288	30233183	395780	29251029	2021-06-27 12:15:07.030068+00:00										
2	Brazil	br	-14.235	-51.9253	18386894	512819	16582053	2021-06-27 12:15:07.030068+00:00										
3	Iran	ir	32.42791	53.68805	2168872	65680	1749041	2021-04-15 14:15:07.782944+00:00										
4	South Africa	za	-30.5595	22.93751	1913862	103	1486873	2021-06-26 18:50:03.447208+00:00										
5	Germany	de	51.16569	10.45153	3064382	79813	2736100	2021-04-15 14:15:07.782944+00:00										
6	Russia	ru	61.52401	105.3188	4675153	104398	4301448	2021-04-15 14:15:07.782944+00:00										
7	Nepal	np	28.39486	84.12401	281564	3061	274447	2021-04-15 10:00:07.929558+00:00										
8	Saudi Arabia	sa	23.88594	45.07916	401157	6781	385441	2021-04-15 10:00:07.929558+00:00										
9	Argentina	ar	-38.4161	-63.6167	2604157	58542	2278486	2021-04-15 14:15:07.782944+00:00										
10	Austria	at	47.51623	14.55007	586883	9813	547604	2021-04-15 10:00:07.929558+00:00										
11	Jordan	jo	36.15	-95.9882	676175	7987	617096	2021-04-15 10:00:07.929558+00:00										
12	Angola	ao	-11.2027	17.87389	23841	557	22144	2021-04-15 10:00:07.929558+00:00										
13	Netherlands	nl	52.13263	5.291266	1369411	16848	0	2021-04-15 10:15:12.737432+00:00										
14	Bulgaria	bg	42.73388	25.48583	380576	14871	296998	2021-04-15 10:00:07.929558+00:00										
15	Italy	it	41.87194	12.56738	3809193	115557	3178976	2021-04-15 14:15:07.782944+00:00										
16	France	fr	46.22764	2.213749	5149834	99777	315152	2021-04-15 14:15:07.782944+00:00										
17	Belgium	be	50.50389	4.469936	935316	23603	60320	2021-04-15 10:15:12.737432+00:00										
18	Peru	pe	-9.18997	-75.0152	1667737	55812	1592937	2021-04-15 14:15:07.782944+00:00										
19	Ukraine	ua	48.37943	31.16558	1903765	38658	1453766	2021-04-15 14:15:07.782944+00:00										
20	UK	gb	55.37805	-3.43597	4378305	127161	4113338	2021-04-15 14:15:07.782944+00:00										
21	Syria	sy	34.80207	38.99682	20555	1402	14335	2021-04-15 10:00:07.929558+00:00										
22	Azerbaijan	az	40.14311	47.57693	291894	4009	255833	2021-04-15 10:00:07.929558+00:00										
23	Colombia	co	4.570868	-74.2973	2585801	66819	2419265	2021-04-15 14:15:07.782944+00:00										
24	Indonesia	id	-0.78928	113.9213	1589359	43073	1438254	2021-04-15 14:15:07.782944+00:00										

countries

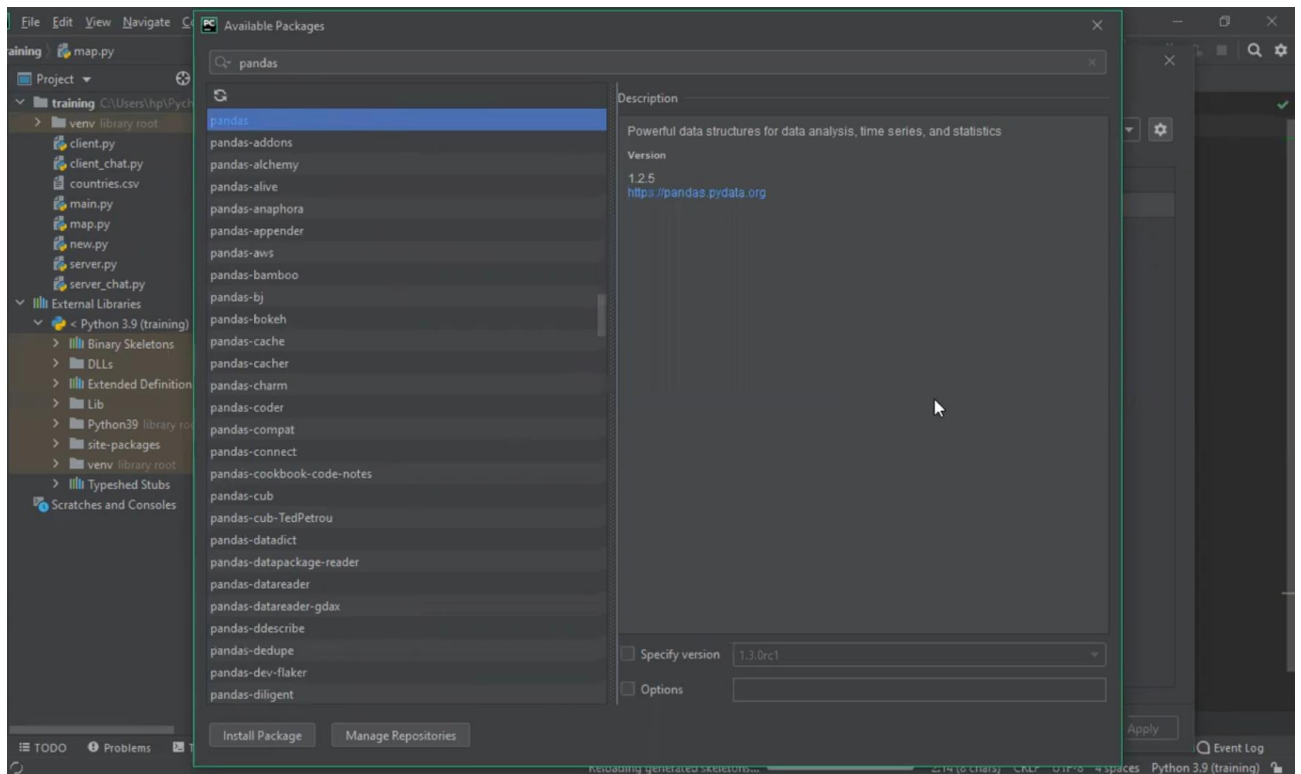
Ready

100%

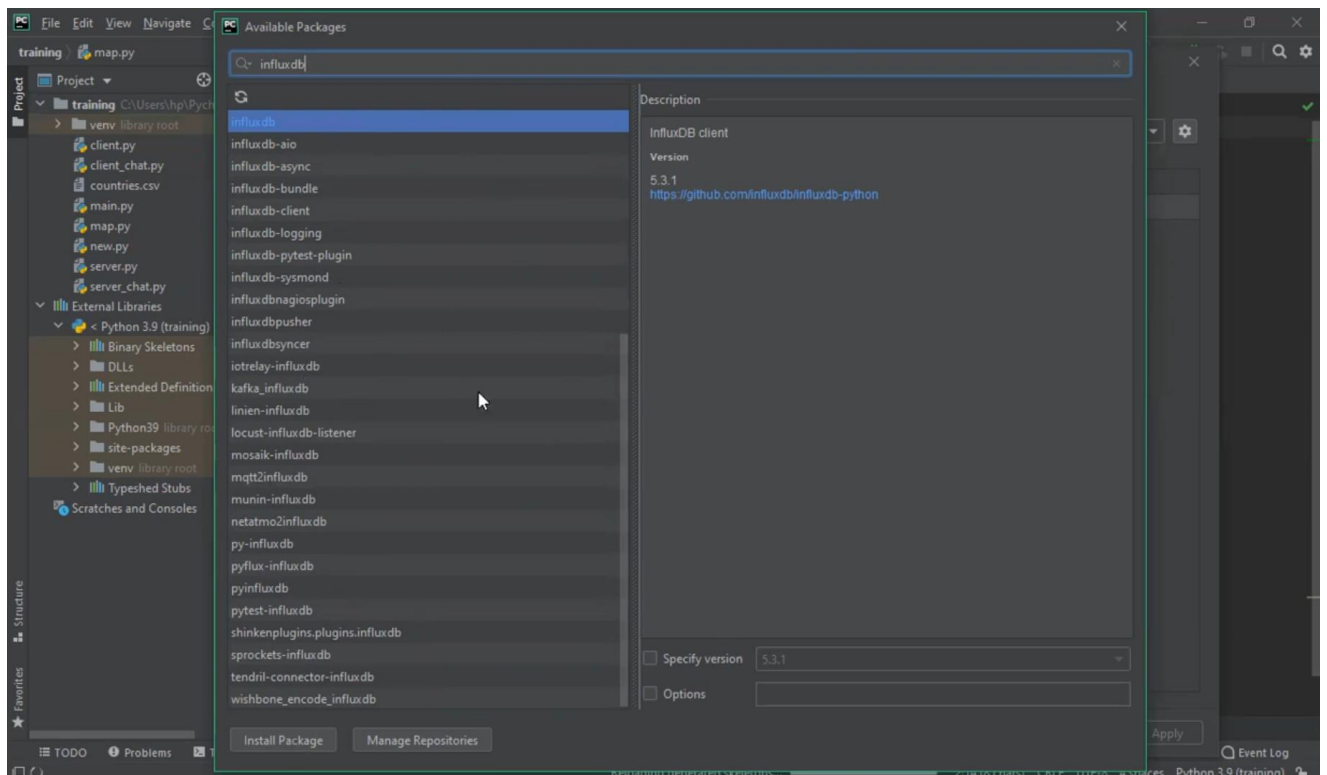
9-Now to synch the data to our dashboard we are going to take help of python programming and run PyCharm. Now all we have to do in PyCharm we have to add two libraries, one is pandas and another one is influxdb , for that

Got to file -settings – project training- Python interpreter – click on the plus sign -

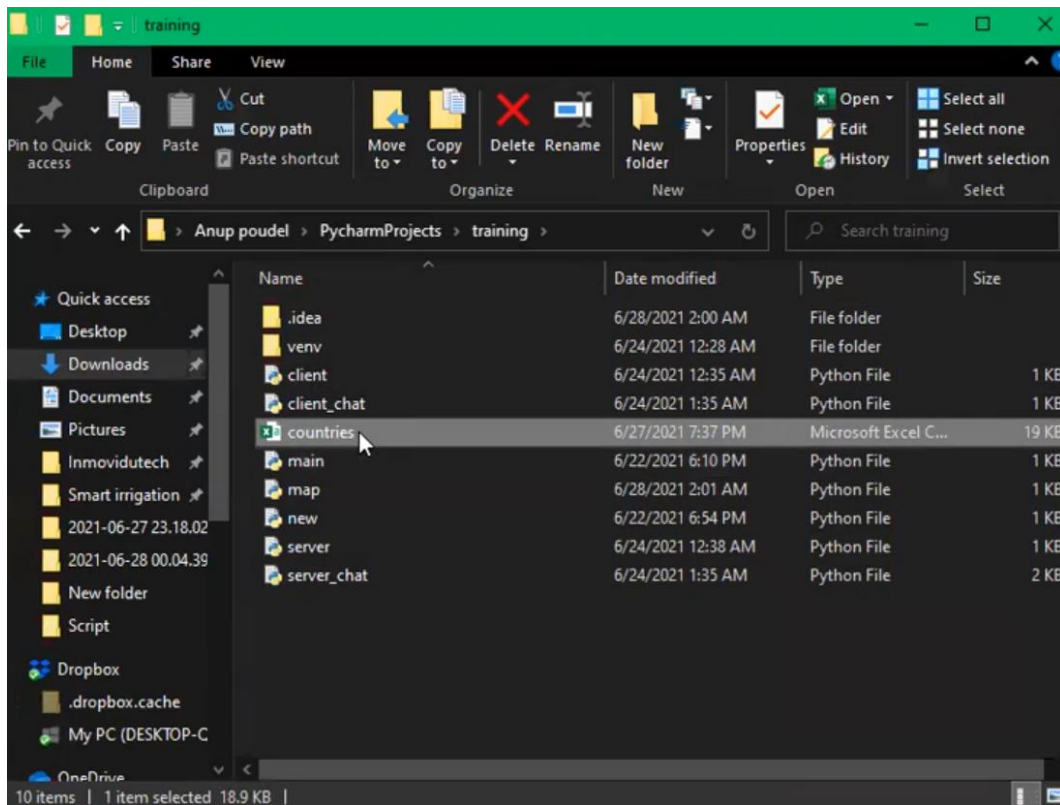
Then search the library we want in our case it is pandas, then select and install its package.



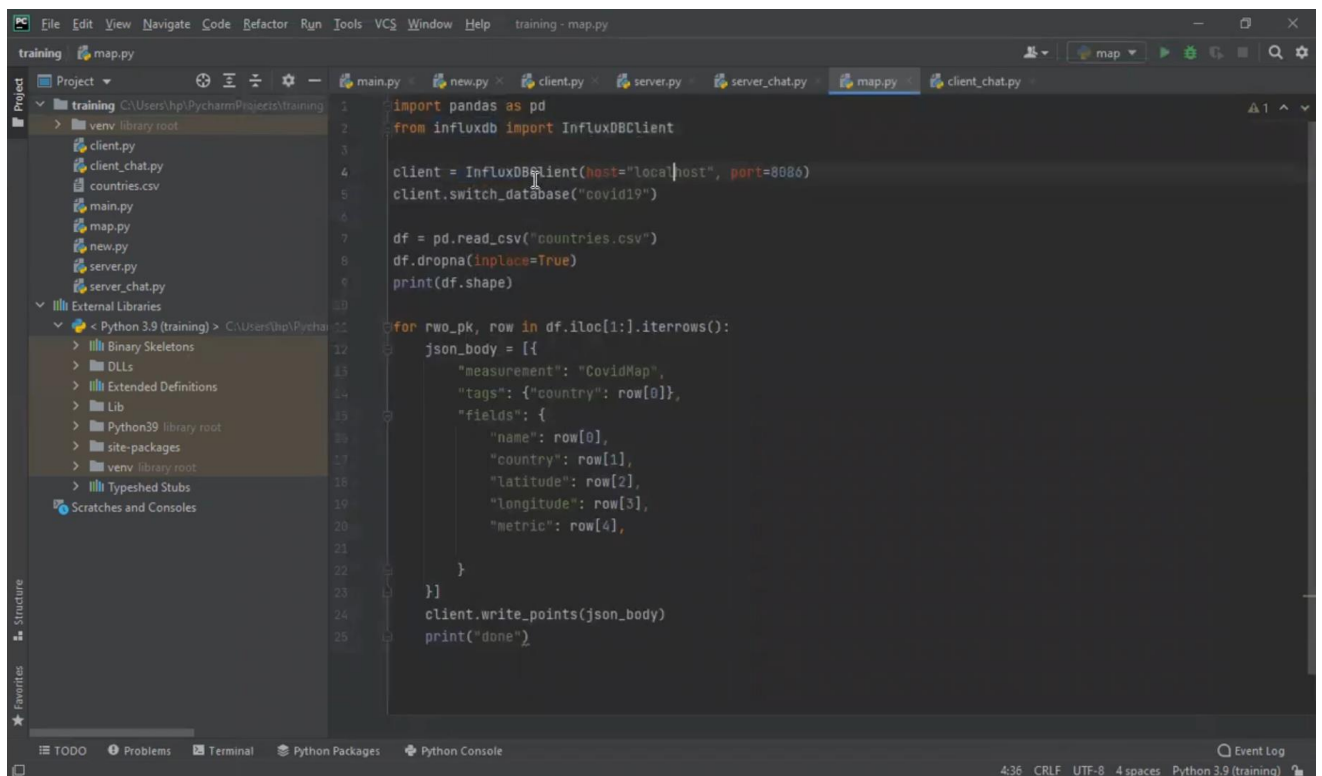
Similarly for influxDB.



Now copy the csv file of the live covid active covid cases and paste it to PyCharm.

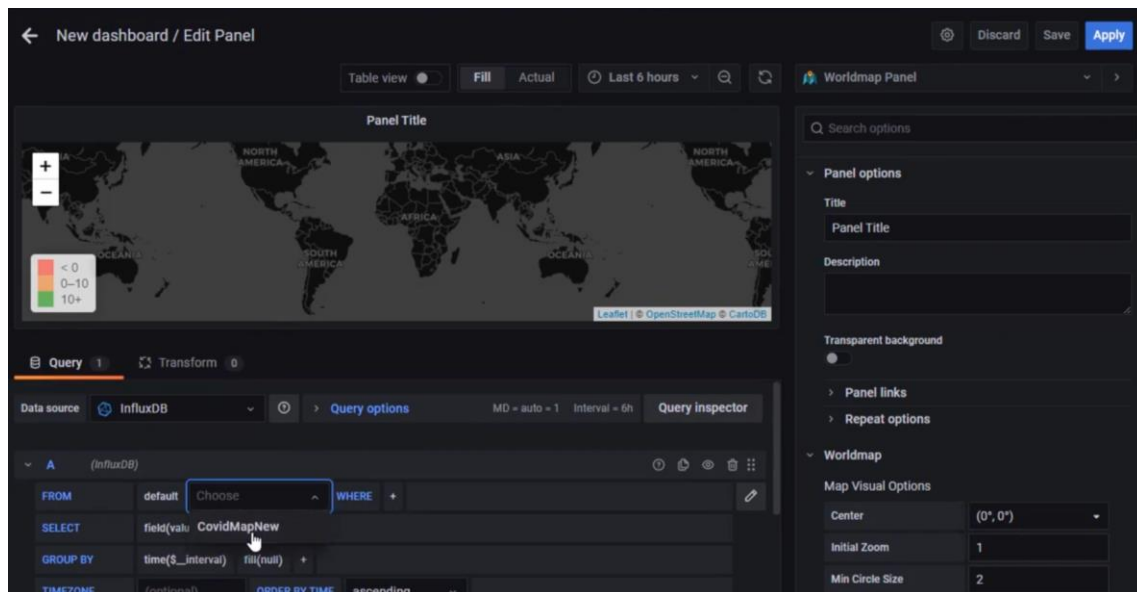


Once the installation is done as we can see and then just simply right click it and run the program.

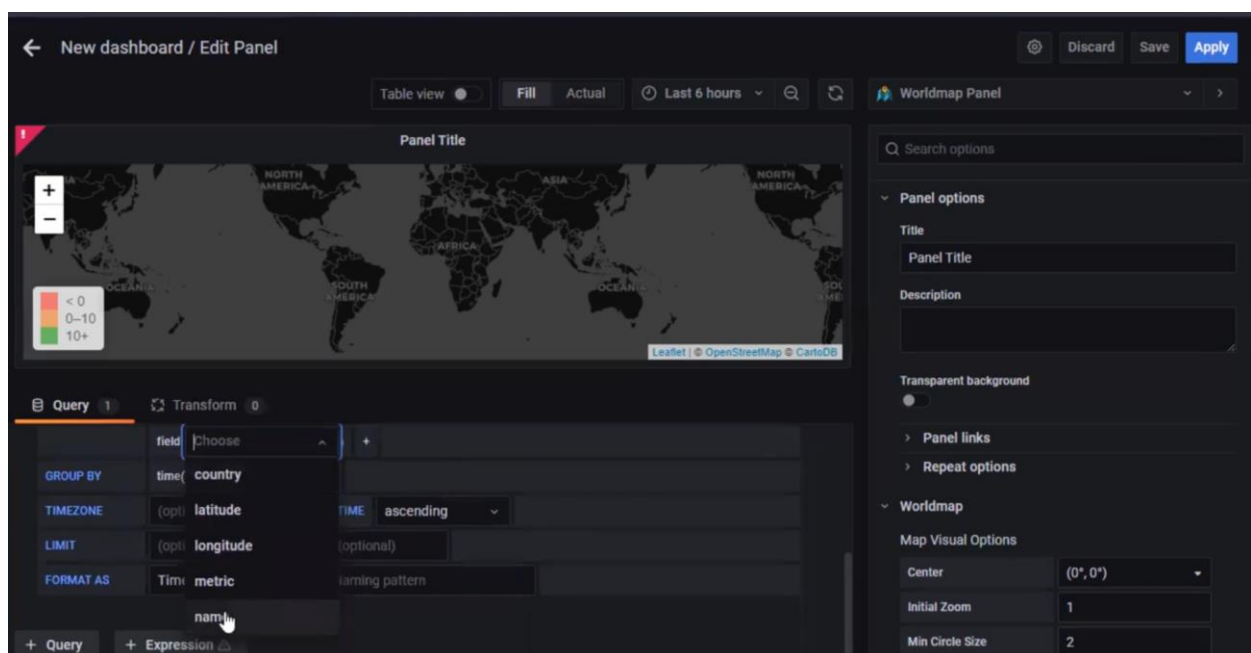


10-So finally we are almost ready getting the output, all we have to do a bit of changes in the dashboard/edit panel to interface it with the database smoothly and in a correct way.

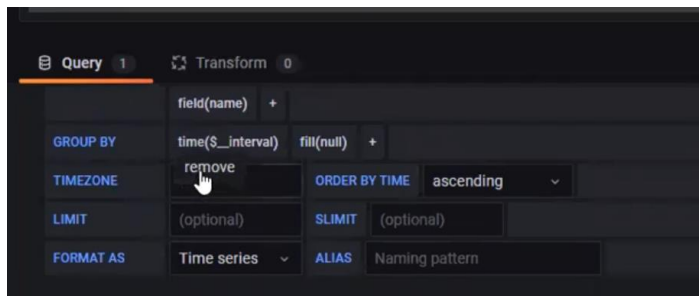
Chose Influx DB as the data source and chose the origin location "FROM"



Create 5 fields along with the country to be shown, remember that the country is not like a particular one it is as a whole every country and, and field it is the type of data we have to fill in with as country, latitude. Longitude and metric.



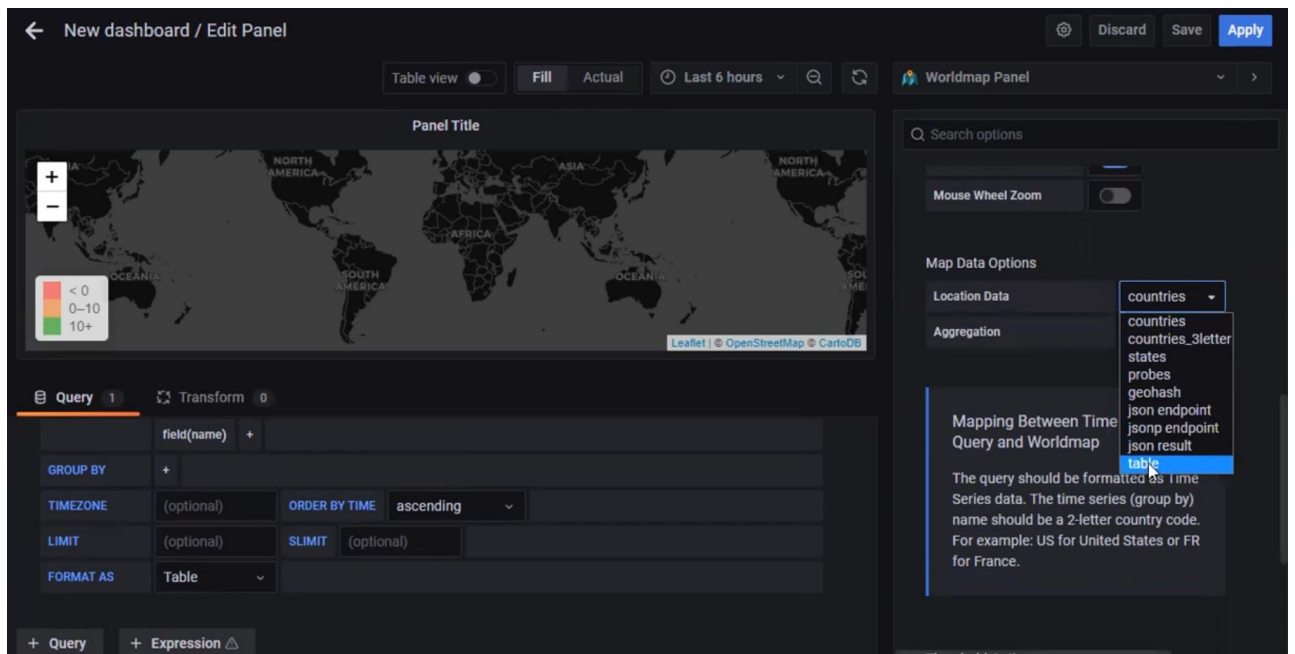
Remove the grouping as time interval, as we are not using time series plotting over here.



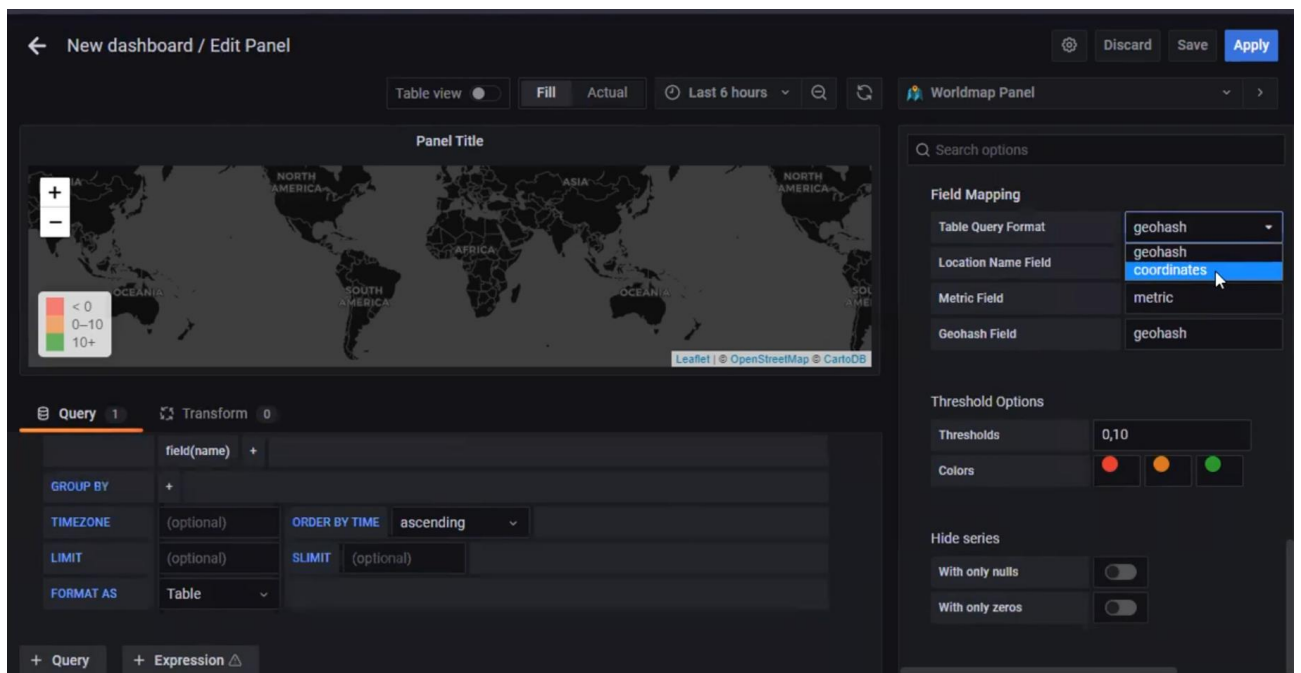
And arrange the FORMAT

AS Table.

Now under Map Data Options, Chose the location data as table format.



Now under Field Mapping chose the Table Query Format as coordinated, instead of geohash.



This is how it works we can even customize with respect to colour, threshold and so on.

