```
4/14/22 11·13 AM
    !apt-get update
    !apt-get install openjdk-8-jdk-headless -qq >/dev/null
    !wget -q http://archive.apache.org/dist/spark/spark-2.3.1/spark-2.3.1-bin-hadoop2.7.tgz
    !tar xf spark-2.3.1-bin-hadoop2.7.tgz
    !pip install -q findspark
    import os
    os.environ["JAVA_HOME"] = "/usr/lib/jvm/java-8-openjdk-amd64"
    os.environ["SPARK_HOME"] = "/content/spark-2.3.1-bin-hadoop2.7"
    !1s
    import findspark
    findspark.init()
    import pyspark
    from pyspark.sql import SparkSession
    spark = SparkSession.builder.getOrCreate()
          Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
          Hit:2 <a href="http://archive.ubuntu.com/ubuntu">http://archive.ubuntu.com/ubuntu</a> bionic InRelease
          Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
          Get:4 <a href="https://cloud.r-project.org/bin/linux/ubuntu">https://cloud.r-project.org/bin/linux/ubuntu</a> bionic-cran40/ InRelease [3,626 B]
          Ign:5 https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86 64 InRelease
          Get:6 http://ppa.launchpad.net/c2d4u.team/c2d4u4.0+/ubuntu bionic InRelease [15.9 kB]
          Ign:7 https://developer.download.nvidia.com/compute/machine-learning/repos/ubuntu1804/x86 64 InRelease
          Get:8 https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86_64 Release [696 B]
          Get:9 <a href="http://archive.ubuntu.com/ubuntu">http://archive.ubuntu.com/ubuntu</a> bionic-backports InRelease [74.6 kB]
          Hit:10 https://developer.download.nvidia.com/compute/machine-learning/repos/ubuntu1804/x86_64 Release
          Get:11 https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86 64 Release.gpg [836 B]
          Hit:12 http://ppa.launchpad.net/cran/libgit2/ubuntu bionic InRelease
          Get:13 http://ppa.launchpad.net/deadsnakes/ppa/ubuntu bionic InRelease [15.9 kB]
          Hit:14 <a href="http://ppa.launchpad.net/graphics-drivers/ppa/ubuntu">http://ppa.launchpad.net/graphics-drivers/ppa/ubuntu</a> bionic InRelease
          Get:15 <a href="http://security.ubuntu.com/ubuntu">http://security.ubuntu.com/ubuntu</a> bionic-security/main amd64 Packages [2,695 kB]
          Get:16 <a href="http://security.ubuntu.com/ubuntu">http://security.ubuntu.com/ubuntu</a> bionic-security/universe amd64 Packages [1,490 kB]
          Get:17 <a href="http://archive.ubuntu.com/ubuntu">http://archive.ubuntu.com/ubuntu</a> bionic-updates/main amd64 Packages [3,134 kB]
          Get:18 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [2,268 kB]
          Get:20 https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86 64 Packages [953 kB]
          Get:21 http://ppa.launchpad.net/c2d4u.team/c2d4u4.0+/ubuntu bionic/main Sources [1,947 kB]
          Get:22 <a href="http://ppa.launchpad.net/c2d4u.team/c2d4u4.0+/ubuntu">http://ppa.launchpad.net/c2d4u.team/c2d4u4.0+/ubuntu</a> bionic/main amd64 Packages [996 kB]
          Get:23 <a href="http://ppa.launchpad.net/deadsnakes/ppa/ubuntu">http://ppa.launchpad.net/deadsnakes/ppa/ubuntu</a> bionic/main amd64 Packages [45.3 kB]
          Fetched 13.8 MB in 8s (1,674 kB/s)
          Reading package lists... Done
          sample data spark-2.3.1-bin-hadoop2.7 spark-2.3.1-bin-hadoop2.7.tgz
          SparkSession - in-memory
          SparkContext
          Spark UI
          Version
                v2.3.1
          Master
                local[*]
          AppName
                pyspark-shell
    from google.colab import files
     #uploading the files via google collab which is another
     #way to upload files directly from computer
     # Upload the file 1000 Sales Records.csv in google colab
    mydata = files.upload()
          Choose Files covid19.csv
          • covid19.csv(text/csv) - 1366592 bytes, last modified: 4/14/2022 - 100% done
          Saving covid19.csv to covid19 (1).csv
```

```
# Upload the file in google colab
mydata=spark.read.format("csv").option("header","true").load("covid19 (1).csv")
# Upload the datafile in google colab ipython notebook and show the data file
mydata.show()
```

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Date_reported	Country_code	Country	WHO_region	New_cases	Cumulative_cases	New_deaths	Cumulative_deaths
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2/25/2020		Afghanistan		-] 5	0	1 01 1 a1
2/26/2020		Afghanistan] 5	0	l al
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2/28/2020		Afghanistan	:		l 5	0	l al
2/29/2020		Afghanistan				9	
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3/2/2020		Afghanistan	•		l 5	l al	l al
3/3/2020		Afghanistan	!		 5	9	
3/4/2020		Afghanistan	:		l 5	9	
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3/13/2020		Afghanistan	•		11	9	0
3/14/2020		Afghanistan	•		14	9	
+			, +	, +	·	·	, ++

only showing top 20 rows

[#]a) Import pandas and show 50 rows
import pandas as pd
mydata3 =pd.read_csv(r'covid19 (1).csv')
mydata3.head(50)

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0 2/24/2020 AF Afghanistan EMRO 5 5 0 0 1 2/25/2020 AF Afghanistan EMRO 0 5 0 0 2 2/26/2020 AF Afghanistan EMRO 0 5 0 0 3 2/27/2020 AF Afghanistan EMRO 0 5 0 0 5 2/29/2020 AF Afghanistan EMRO 0 5 0 0 6 3/1/2020 AF Afghanistan EMRO 0 5 0 0 8 3/3/2020 AF Afghanistan EMRO 0 5 0 0 9 3/4/2020 AF Afghanistan EMRO 0 5 0 0 10 3/5/2020 AF Afghanistan EMRO 0 5 0 0 11 3/6/2020 AF Afghanistan EMRO 0		Date_reported	Country_code	Country	WHO_region	New_cases	Cumulative_cases	New_deaths	Cumulative_deaths
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34 3/29/2020 AF Afghanistan EMRO 8 114 1 4	32	3/27/2020	AF	Afghanistan	EMRO	11	91	0	2
	33	3/28/2020	AF	Afghanistan	EMRO	15	106	1	3
35 3/30/2020 AF Afghanistan EMRO 0 1114 0 4	34	3/29/2020	AF	Afghanistan	EMRO	8	114	1	4
	35	3/30/2020	AF	Afghanistan	EMRO	0	114	0	4

#b)By using matplotlib, numpy and

#seaborn libraries you will plot histogram of new cases, your chart

import numpy as np

```
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                                                                                                                                                                   test.ipynb - Colaboratory
```

```
import seaborn as sns
f,(axl)=plt.subplots(1,1,figsize=(20,10),sharey=True)
#changed the csv file title to remove the space in the front of the columns
sns.distplot(mydata3['New_cases'], kde=True,color='blue',hist=True,bins=40)
#histogram
plt.title('New cases',fontsize = 20)
```

/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar warnings.warn(msg, FutureWarning)

Text(0, 0.5, 'Cumulative_cases')

plt.xlabel('New_cases',fontsize = 20) plt.ylabel('Cumulative_cases',fontsize =20)

import matplotlib.pyplot as plt

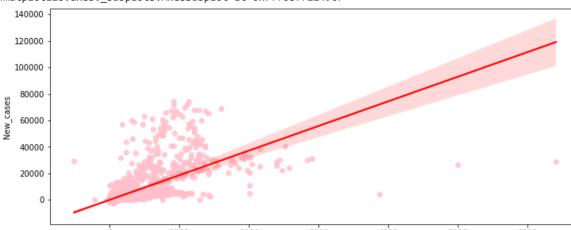
New cases 0.0007 0.0006 native cases

```
#c) You should use scientific python and sckit
#learn packages for importing linear regression and
#statistics models-with these packages you need to create
#a prediction model for the new cases and the new deaths
from scipy import stats
from sklearn.linear_model import LinearRegression
linear regression = stats.linregress(x=mydata3.New_cases,y=mydata3.New_deaths)
slope=linear_regression.slope
print(format(slope,'.6f'))
intercept = linear_regression.intercept
print(format(intercept,'.4f'))
     0.026971
     6.3321
printing=linear_regression.slope *(1000)+linear_regression.intercept
print(format(printing,'.4f'))
printing2=linear_regression.slope *(-1000)+linear_regression.intercept
print(format(printing,'.4f'))
     33.3028
     33.3028
#d) Create a linear regression line with the above data,
#new cases versus new deaths.
```

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#newcases =y cause its over new deaths

sns.regplot(x="New_deaths",y="New_cases",data=mydata3,scatter_kws={"color":"pink"},



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