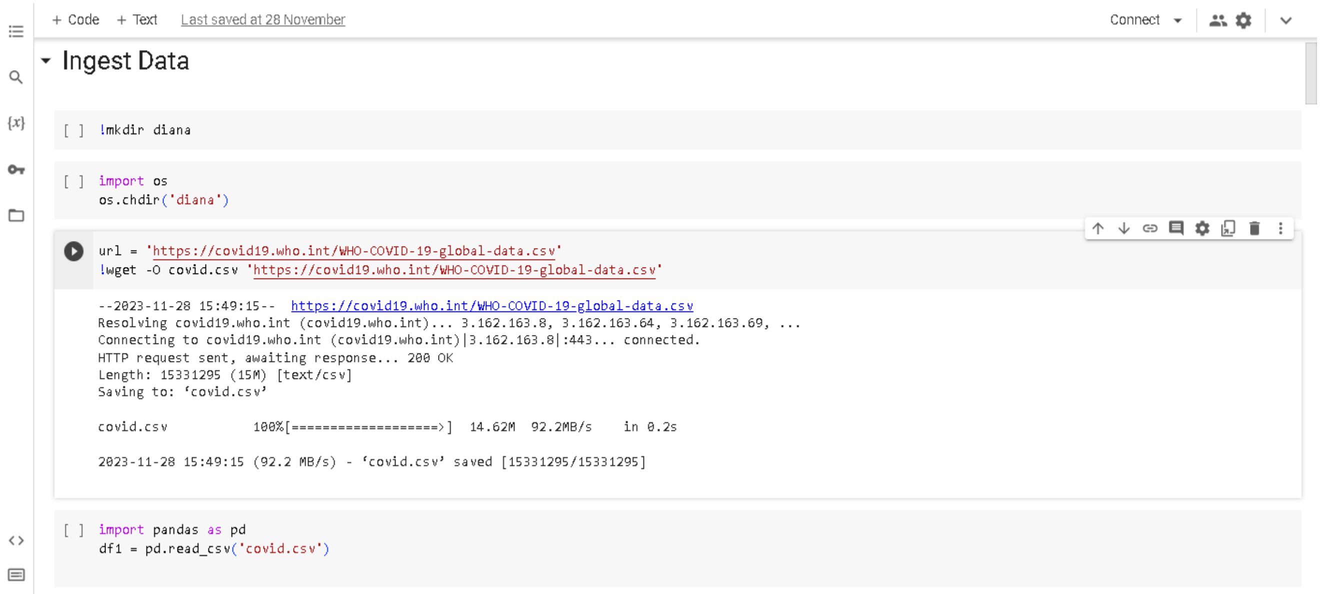
DBMS

Use Google colab for the project

Data collection

- Create a directory called Diana
- Navigate to the directory using module called os
- We obtain dataset from website using Wget command and then save to covid.csv
- Read data using pandas
- Insert screenshot here



Ingest Data

```
[ ] !mkdir diana
```

```
[ ] import os
    os.chdir('diana')
```

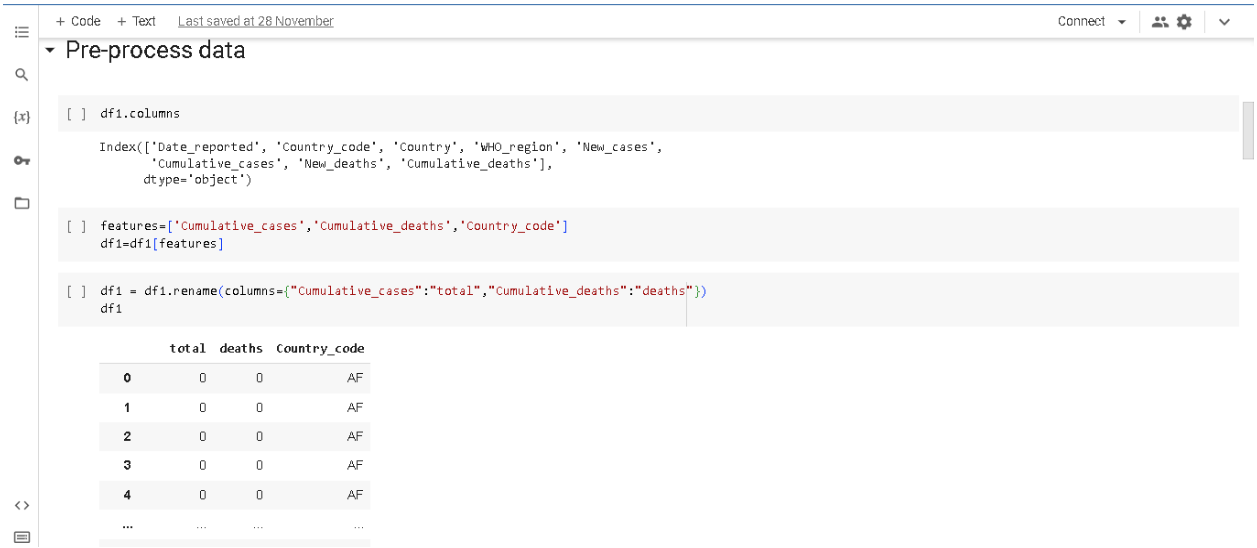
```
url = 'https://covid19.who.int/WHO-COVID-19-global-data.csv'
!wget -O covid.csv 'https://covid19.who.int/WHO-COVID-19-global-data.csv'
```

```
--2023-11-28 15:49:15--  https://covid19.who.int/WHO-COVID-19-global-data.csv
Resolving covid19.who.int (covid19.who.int)... 3.162.163.8, 3.162.163.64, 3.162.163.69, ...
Connecting to covid19.who.int (covid19.who.int)|3.162.163.8|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 15331295 (15M) [text/csv]
Saving to: ‘covid.csv’

covid.csv           100%[==================>]  14.62M  92.2MB/s    in 0.2s

2023-11-28 15:49:15 (92.2 MB/s) - ‘covid.csv’ saved [15331295/15331295]
```

```
[ ] import pandas as pd
    df1 = pd.read_csv('covid.csv')
```

Pre-processing

- Explore the dataset, that is check for the number of columns in the dataset.
- Filter out to the columns to obtain the one needed (feature engineering).
- Rename the columns to shorter names for easy understanding and developing purposes.
- Explore country column (country code).
- Filter out country code to get Kenya dataset only.
- Filter out the null cases in the total cases.
- Add recovery column by subtracting deaths from the total cases.
- Insert screenshot here



## Pre-process data

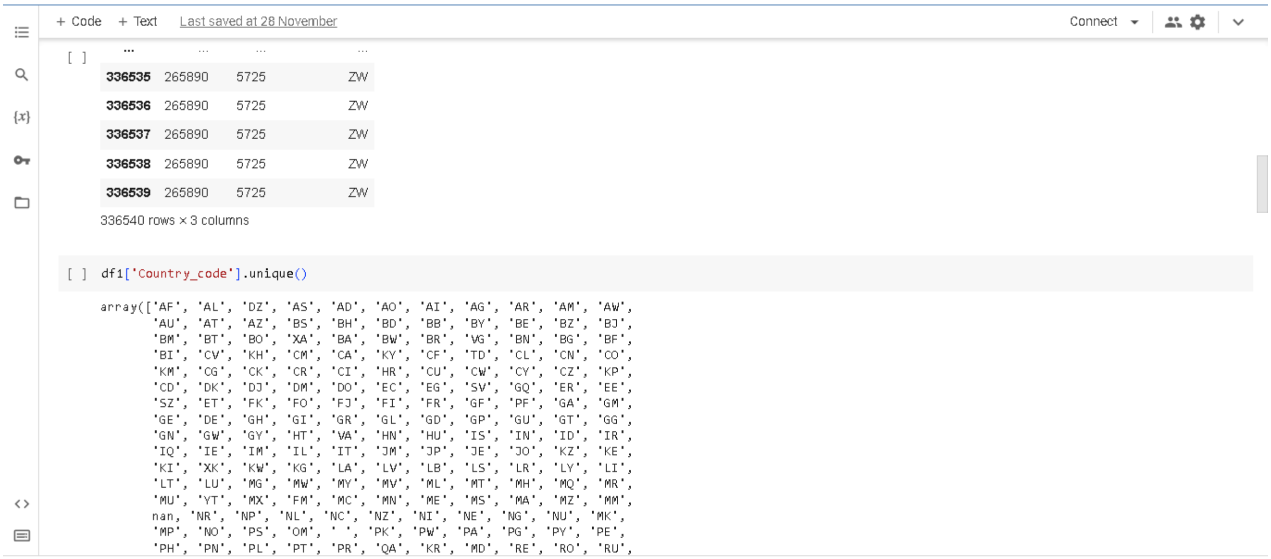
```
df1.columns
```

```
Index(['Date_reported', 'Country_code', 'Country', 'WHO_region', 'New_cases',
       'Cumulative_cases', 'New_deaths', 'Cumulative_deaths'],
      dtype='object')
```

```
features=['Cumulative_cases','Cumulative_deaths','Country_code']
df1=df1[features]
```

```
df1 = df1.rename(columns={"Cumulative_cases":"total","Cumulative_deaths":"deaths"})
df1
```

|  | total | deaths | Country_code |
|---|---|---|---|
| 0 | 0 | 0 | AF |
| 1 | 0 | 0 | AF |
| 2 | 0 | 0 | AF |
| 3 | 0 | 0 | AF |
| 4 | 0 | 0 | AF |
| ... | ... | ... | ... |

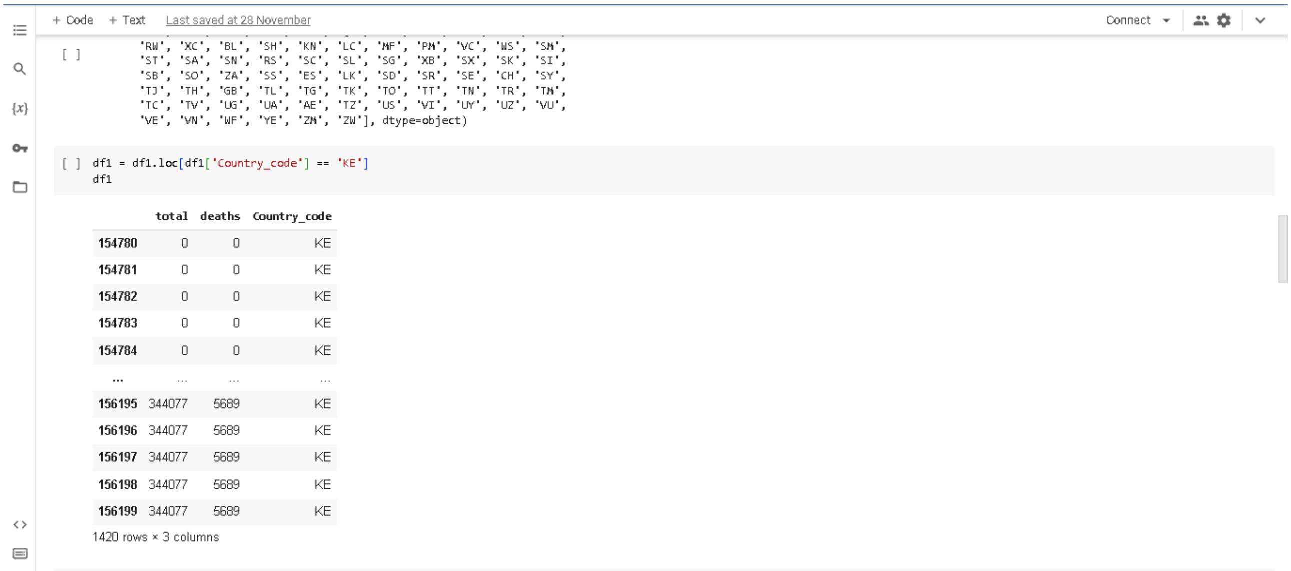


|  |  |  |  |
|---|---|---|---|
| ... | ... | ... | ... |
| 336535 | 265890 | 5725 | ZW |
| 336536 | 265890 | 5725 | ZW |
| 336537 | 265890 | 5725 | ZW |
| 336538 | 265890 | 5725 | ZW |
| 336539 | 265890 | 5725 | ZW |

336540 rows × 3 columns

```
df1['Country_code'].unique()
```

```
array(['AF', 'AL', 'DZ', 'AS', 'AD', 'AO', 'AI', 'AG', 'AR', 'AM', 'AW',
       'AU', 'AT', 'AZ', 'BS', 'BH', 'BD', 'BB', 'BY', 'BE', 'BZ', 'BJ',
       'BM', 'BT', 'BO', 'XA', 'BA', 'BW', 'BR', 'VG', 'BN', 'BG', 'BF',
       'BI', 'CV', 'KH', 'CM', 'CA', 'KY', 'CF', 'TD', 'CL', 'CN', 'CO',
       'KM', 'CG', 'CK', 'CR', 'CI', 'HR', 'CU', 'CW', 'CY', 'CZ', 'KP',
       'CD', 'DK', 'DJ', 'DM', 'DO', 'EC', 'EG', 'SV', 'GQ', 'ER', 'EE',
       'SZ', 'ET', 'FK', 'FO', 'FJ', 'FI', 'FR', 'GF', 'PF', 'GA', 'GM',
       'GE', 'DE', 'GH', 'GI', 'GR', 'GL', 'GD', 'GP', 'GU', 'GT', 'GG',
       'GN', 'GW', 'GY', 'HT', 'VA', 'HN', 'HU', 'IS', 'IN', 'ID', 'IR',
       'IQ', 'IE', 'IM', 'IL', 'IT', 'JM', 'JP', 'JE', 'JO', 'KZ', 'KE',
       'KI', 'XK', 'KW', 'KG', 'LA', 'LV', 'LB', 'LS', 'LR', 'LY', 'LI',
       'LT', 'LU', 'MG', 'MW', 'MY', 'MV', 'ML', 'MT', 'MH', 'MQ', 'MR',
       'MU', 'YT', 'MX', 'FM', 'MC', 'MN', 'ME', 'MS', 'MA', 'MZ', 'MM',
       nan, 'NR', 'NP', 'NL', 'NC', 'NZ', 'NI', 'NE', 'NG', 'NU', 'MK',
       'MP', 'NO', 'PS', 'OM', ' ', 'PK', 'PW', 'PA', 'PG', 'PY', 'PE',
       'PH', 'PN', 'PL', 'PT', 'PR', 'QA', 'KR', 'MD', 'RE', 'RO', 'RU',
```

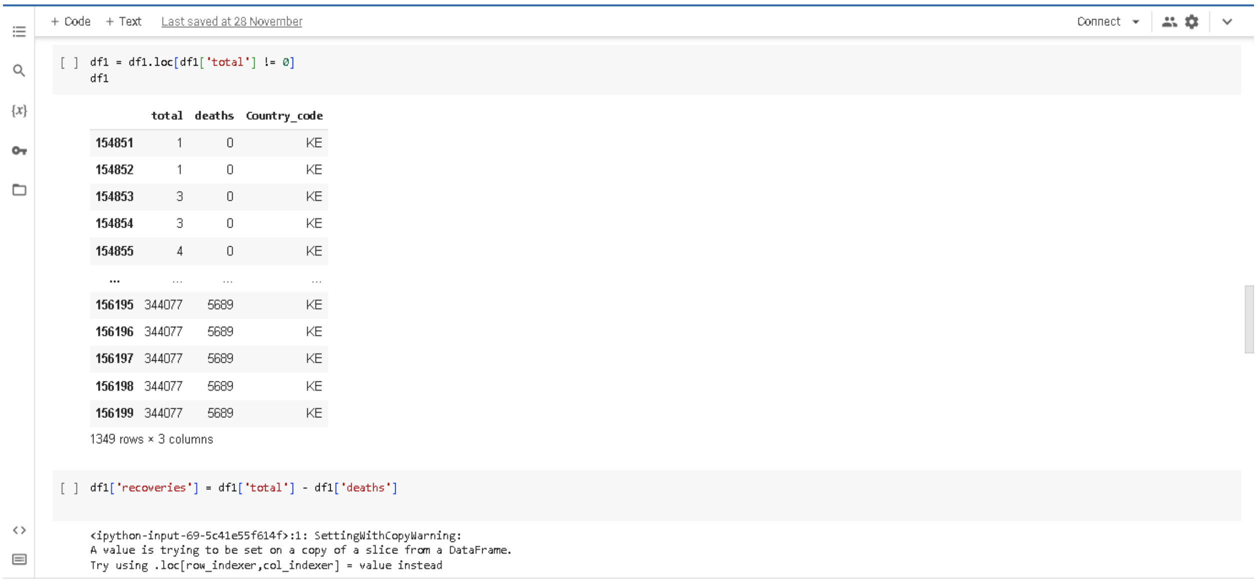


```
       'RW', 'XC', 'BL', 'SH', 'KN', 'LC', 'MF', 'PM', 'VC', 'WS', 'SM',
       'ST', 'SA', 'SN', 'RS', 'SC', 'SL', 'SG', 'XB', 'SX', 'SK', 'SI',
       'SB', 'SO', 'ZA', 'SS', 'ES', 'LK', 'SD', 'SR', 'SE', 'CH', 'SY',
       'TJ', 'TH', 'GB', 'TL', 'TG', 'TK', 'TO', 'TT', 'TN', 'TR', 'TM',
       'TC', 'TV', 'UG', 'UA', 'AE', 'TZ', 'US', 'VI', 'UY', 'UZ', 'VU',
       'VE', 'VN', 'WF', 'YE', 'ZM', 'ZW'], dtype=object)
```

```
df1 = df1.loc[df1['Country_code'] == 'KE']
df1
```

|  | total | deaths | Country_code |
|---|---|---|---|
| 154780 | 0 | 0 | KE |
| 154781 | 0 | 0 | KE |
| 154782 | 0 | 0 | KE |
| 154783 | 0 | 0 | KE |
| 154784 | 0 | 0 | KE |
| ... | ... | ... | ... |
| 156195 | 344077 | 5689 | KE |
| 156196 | 344077 | 5689 | KE |
| 156197 | 344077 | 5689 | KE |
| 156198 | 344077 | 5689 | KE |
| 156199 | 344077 | 5689 | KE |

1420 rows × 3 columns



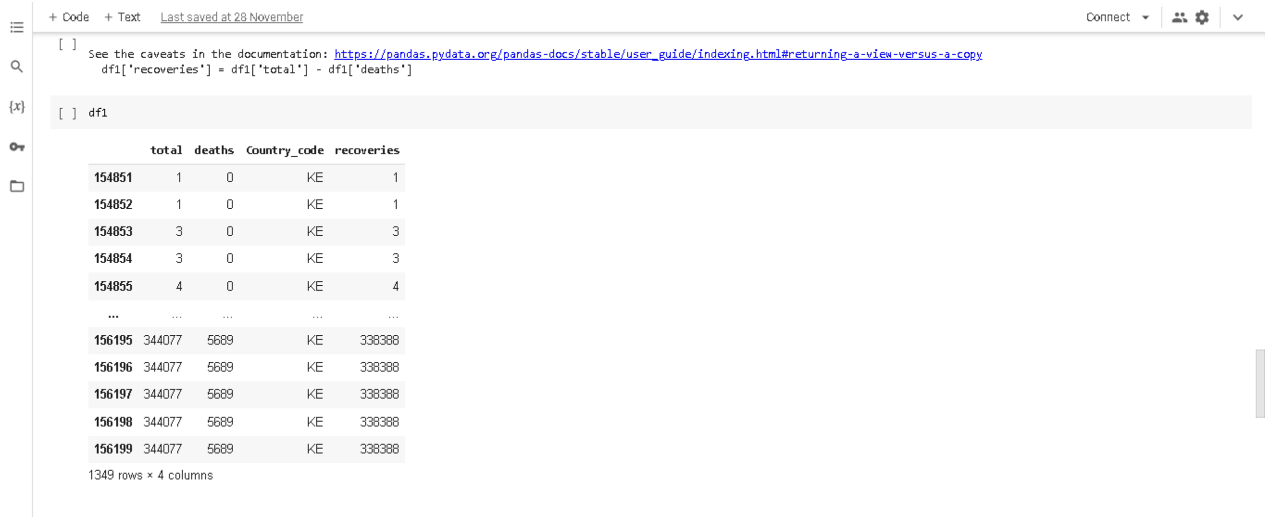
```
[ ] df1 = df1.loc[df1['total'] != 0]
    df1
```

| | total | deaths | Country_code |
|---|---|---|---|
| 154851 | 1 | 0 | KE |
| 154852 | 1 | 0 | KE |
| 154853 | 3 | 0 | KE |
| 154854 | 3 | 0 | KE |
| 154855 | 4 | 0 | KE |
| ... | ... | ... | ... |
| 156195 | 344077 | 5689 | KE |
| 156196 | 344077 | 5689 | KE |
| 156197 | 344077 | 5689 | KE |
| 156198 | 344077 | 5689 | KE |
| 156199 | 344077 | 5689 | KE |

1349 rows × 3 columns

```
[ ] df1['recoveries'] = df1['total'] - df1['deaths']
```

```
<ipython-input-69-5c41e55f614f>:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead
```



```
[ ]
See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  df1['recoveries'] = df1['total'] - df1['deaths']
```

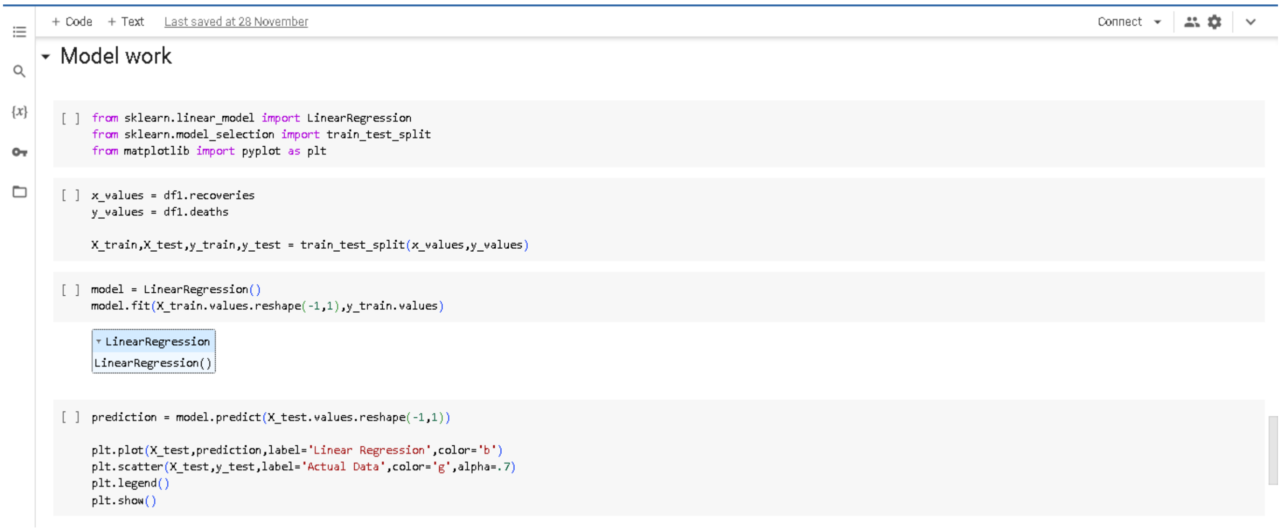
```
[ ] df1
```

| | total | deaths | Country_code | recoveries |
|---|---|---|---|---|
| 154851 | 1 | 0 | KE | 1 |
| 154852 | 1 | 0 | KE | 1 |
| 154853 | 3 | 0 | KE | 3 |
| 154854 | 3 | 0 | KE | 3 |
| 154855 | 4 | 0 | KE | 4 |
| ... | ... | ... | ... | ... |
| 156195 | 344077 | 5689 | KE | 338388 |
| 156196 | 344077 | 5689 | KE | 338388 |
| 156197 | 344077 | 5689 | KE | 338388 |
| 156198 | 344077 | 5689 | KE | 338388 |
| 156199 | 344077 | 5689 | KE | 338388 |

1349 rows × 4 columns

Model work

- Import the libraries needed, that is linear regression for Model train-test split (use to divide data between train data and test data).
- Matplotlib use to visualize data.
- Fit data into the model.
- Predict the data using the model, use the train data to test the model.
- Verify the model using train data.
- Plot the chart
- Model score, show how good the model is against the data.
- Insert screenshot here



## Model work

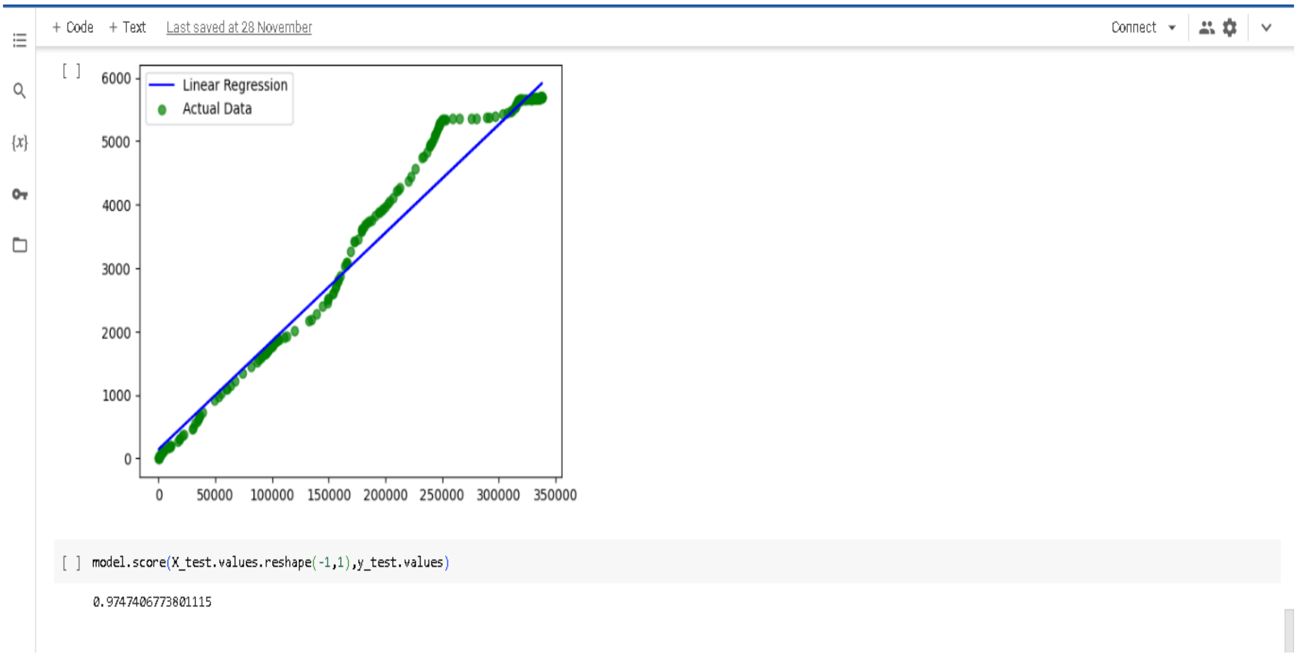
```
[ ] from sklearn.linear_model import LinearRegression
    from sklearn.model_selection import train_test_split
    from matplotlib import pyplot as plt
```

```
[ ] x_values = df1.recoveries
    y_values = df1.deaths

    X_train,X_test,y_train,y_test = train_test_split(x_values,y_values)
```

```
[ ] model = LinearRegression()
    model.fit(X_train.values.reshape(-1,1),y_train.values)
```

```
▾ LinearRegression
LinearRegression()
```

```
[ ] prediction = model.predict(X_test.values.reshape(-1,1))

    plt.plot(X_test,prediction,label='Linear Regression',color='b')
    plt.scatter(X_test,y_test,label='Actual Data',color='g',alpha=.7)
    plt.legend()
    plt.show()
```



```
[ ] model.score(X_test.values.reshape(-1,1),y_test.values)

    0.9747406773801115
```