

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
# Suppress all warnings (not recommended in practice, use specific filters instead)
warnings.filterwarnings('ignore')
```

```
In [2]: data=pd.read_csv(r'world food production.csv')
data.head()
```

Out[2]:

	Entity	Year	Maize Production (tonnes)	Rice Production (tonnes)	Yams Production (tonnes)	Wheat Production (tonnes)	Tomatoes Production (tonnes)	Tea Production (tonnes)	Sweet potatoes Production (tonnes)	Sunflower seed Production (tonnes)	...	Orang Product (tonn
0	Afghanistan	1961	700000.0	319000.0	7467702.0	2279000.0	1873812.0	56315.0	3270871.0	12000.0	...	1010
1	Afghanistan	1962	700000.0	319000.0	7420515.0	2279000.0	2044797.0	61519.0	3562524.0	12800.0	...	1010
2	Afghanistan	1963	713000.0	319000.0	8479074.0	1947000.0	2096077.0	63596.0	3409916.0	12800.0	...	1010
3	Afghanistan	1964	720000.0	380000.0	9113779.0	2230000.0	2388264.0	66604.0	3229336.0	12800.0	...	1240
4	Afghanistan	1965	720000.0	380000.0	10067913.0	2282000.0	2559608.0	72418.0	3169104.0	13200.0	...	1370

5 rows × 24 columns



```
In [3]: data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11912 entries, 0 to 11911
Data columns (total 24 columns):
#   Column                                     Non-Null Count  Dtype
---  -
0   Entity                                     11912 non-null  object
1   Year                                       11912 non-null  int64
2   Maize Production (tonnes)                 11912 non-null  float64
3   Rice Production (tonnes)                  11912 non-null  float64
4   Yams Production (tonnes)                  11912 non-null  float64
5   Wheat Production (tonnes)                 11912 non-null  float64
6   Tomatoes Production (tonnes)              11912 non-null  float64
7   Tea Production (tonnes)                   11912 non-null  float64
8   Sweet potatoes Production (tonnes)        11912 non-null  float64
9   Sunflower seed Production (tonnes)        11912 non-null  float64
10  Sugar cane Production (tonnes)            11912 non-null  float64
11  Soybeans Production (tonnes)              11912 non-null  float64
12  Rye Production (tonnes)                   11912 non-null  float64
13  Potatoes Production (tonnes)              11912 non-null  float64
14  Oranges Production (tonnes)               11912 non-null  float64
15  Peas, dry Production (tonnes)             11912 non-null  float64
16  Palm oil Production (tonnes)              11912 non-null  float64
17  Grapes Production (tonnes)                11912 non-null  float64
18  Coffee, green Production (tonnes)         11912 non-null  float64
19  Cocoa beans Production (tonnes)           11912 non-null  float64
20  Meat, chicken Production (tonnes)         11912 non-null  float64
21  Bananas Production (tonnes)              11912 non-null  float64
22  Avocados Production (tonnes)              11912 non-null  float64
23  Apples Production (tonnes)                11912 non-null  float64
dtypes: float64(22), int64(1), object(1)
memory usage: 2.2+ MB
```

```
In [4]: data.describe()
```

Out[4]:

	Year	Maize Production (tonnes)	Rice Production (tonnes)	Yams Production (tonnes)	Wheat Production (tonnes)	Tomatoes Production (tonnes)	Tea Production (tonnes)	Sweet potatoes Production (tonnes)	Sunf Produ (to
count	11912.000000	1.191200e+04	1.191200e+04	1.191200e+04	1.191200e+04	1.191200e+04	1.191200e+04	1.191200e+04	1.191200
mean	1992.115346	1.926434e+07	2.254542e+07	2.744973e+06	2.365684e+07	3.238661e+06	1.350523e+05	5.021303e+06	1.410297
std	17.606091	7.028022e+07	7.749779e+07	8.787786e+06	6.177899e+07	1.146992e+07	2.544264e+05	2.001692e+07	3.625725
min	1961.000000	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	1.000000e+01	0.000000e+00	0.000000
25%	1977.000000	2.379300e+04	3.902475e+04	1.176250e+04	8.892500e+04	1.250000e+04	2.040000e+03	7.082605e+03	1.537675
50%	1993.000000	4.000490e+05	4.543745e+05	1.236055e+05	1.650000e+06	1.291410e+05	2.564550e+04	7.828400e+04	1.481504
75%	2007.000000	4.979875e+06	4.440542e+06	5.721030e+05	1.524149e+07	8.691358e+05	1.192675e+05	7.472216e+05	1.115607
max	2021.000000	1.210235e+09	7.872939e+08	7.871405e+07	7.723055e+08	1.891340e+08	2.524670e+06	1.528620e+08	5.818563

8 rows × 23 columns



In [5]: data.isnull().sum()

Out[5]: Entity 0
Year 0
Maize Production (tonnes) 0
Rice Production (tonnes) 0
Yams Production (tonnes) 0
Wheat Production (tonnes) 0
Tomatoes Production (tonnes) 0
Tea Production (tonnes) 0
Sweet potatoes Production (tonnes) 0
Sunflower seed Production (tonnes) 0
Sugar cane Production (tonnes) 0
Soybeans Production (tonnes) 0
Rye Production (tonnes) 0
Potatoes Production (tonnes) 0
Oranges Production (tonnes) 0
Peas, dry Production (tonnes) 0
Palm oil Production (tonnes) 0
Grapes Production (tonnes) 0
Coffee, green Production (tonnes) 0
Cocoa beans Production (tonnes) 0
Meat, chicken Production (tonnes) 0
Bananas Production (tonnes) 0
Avocados Production (tonnes) 0
Apples Production (tonnes) 0
dtype: int64

In [6]: data['Entity'].value_counts()

Out[6]: Afghanistan 61
Nicaragua 61
Morocco 61
Mozambique 61
Myanmar 61
..
Malta 4
Estonia 4
Sweden 4
Latvia 4
Finland 2
Name: Entity, Length: 226, dtype: int64

In [10]: data['Year'].value_counts() # years between

Out[10]: 2021 215
2020 215
2019 214
2018 214
2006 210
...
1985 180
1986 180
1987 180
1988 180
1961 180
Name: Year, Length: 61, dtype: int64

In [8]: data.head(2)

	Entity	Year	Maize Production (tonnes)	Rice Production (tonnes)	Yams Production (tonnes)	Wheat Production (tonnes)	Tomatoes Production (tonnes)	Tea Production (tonnes)	Sweet potatoes Production (tonnes)	Sunflower seed Production (tonnes)	...	Orange Production (tonn
0	Afghanistan	1961	700000.0	319000.0	7467702.0	2279000.0	1873812.0	56315.0	3270871.0	12000.0	...	1010
1	Afghanistan	1962	700000.0	319000.0	7420515.0	2279000.0	2044797.0	61519.0	3562524.0	12800.0	...	1010

```
data.corr()
```

[illegible]

Production (tonnes)	-0.007886	0.015809	-0.025647	0.564793	0.010810	0.015805	0.009384	-0.020755	0.042343	-0.013581
Meat, chicken Production (tonnes)	0.041505	0.211127	0.108015	0.058162	0.061715	0.108893	-0.012919	-0.019026	0.006799	0.034674
Bananas Production (tonnes)	-0.008919	0.079115	-0.008619	0.064485	-0.073260	0.044206	0.021111	0.109176	-0.039228	0.100601
Avocados Production (tonnes)	0.054316	0.046068	0.009914	0.010034	0.010368	-0.027946	0.095145	-0.037484	-0.061047	-0.045881
Apples Production (tonnes)	0.009097	0.008529	0.259880	-0.042558	0.138665	0.237648	0.026699	-0.058182	0.039643	0.125021

23 rows × 23 columns



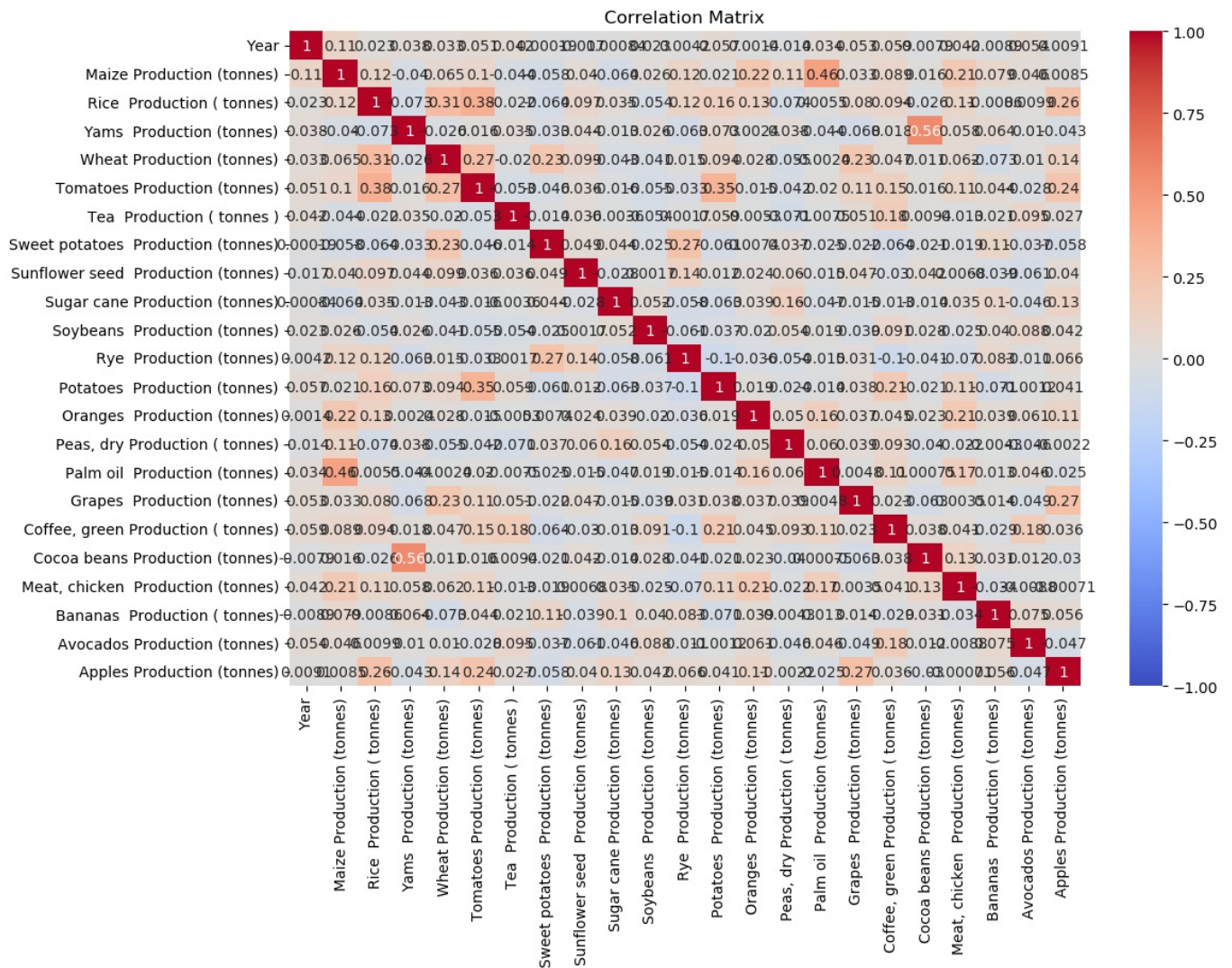
In [11]: data.nunique()

```
Out[11]: Entity                226
Year                    61
Maize Production (tonnes)  9789
Rice Production (tonnes)  9652
Yams Production (tonnes)  7285
Wheat Production (tonnes) 9946
Tomatoes Production (tonnes) 9393
Tea Production (tonnes)  4744
Sweet potatoes Production (tonnes) 8445
Sunflower seed Production (tonnes) 7739
Sugar cane Production (tonnes)  8783
Soybeans Production (tonnes)  8089
Rye Production (tonnes)    7436
Potatoes Production (tonnes) 9921
Oranges Production (tonnes) 8651
Peas, dry Production (tonnes) 8336
Palm oil Production (tonnes) 5899
Grapes Production (tonnes)  8926
Coffee, green Production (tonnes) 7882
Cocoa beans Production (tonnes) 6898
Meat, chicken Production (tonnes) 8850
Bananas Production (tonnes)  8352
Avocados Production (tonnes)  7274
Apples Production (tonnes)  8988
dtype: int64
```

In [12]: data.columns

```
Out[12]: Index(['Entity', 'Year', 'Maize Production (tonnes)',
                'Rice Production (tonnes)', 'Yams Production (tonnes)',
                'Wheat Production (tonnes)', 'Tomatoes Production (tonnes)',
                'Tea Production (tonnes)', 'Sweet potatoes Production (tonnes)',
                'Sunflower seed Production (tonnes)', 'Sugar cane Production (tonnes)',
                'Soybeans Production (tonnes)', 'Rye Production (tonnes)',
                'Potatoes Production (tonnes)', 'Oranges Production (tonnes)',
                'Peas, dry Production (tonnes)', 'Palm oil Production (tonnes)',
                'Grapes Production (tonnes)', 'Coffee, green Production (tonnes)',
                'Cocoa beans Production (tonnes)', 'Meat, chicken Production (tonnes)',
                'Bananas Production (tonnes)', 'Avocados Production (tonnes)',
                'Apples Production (tonnes)'],
                dtype='object')
```

```
In [13]: # Correlation matrix
plt.figure(figsize=(12, 8))
corr = data.corr()
sns.heatmap(corr, annot=True, cmap='coolwarm', vmin=-1, vmax=1)
plt.title('Correlation Matrix')
plt.show()
```



#RESULT: Every column of the dataset is slightly or morely dependent on each and every column. the ratio of column dependency is more than 0.5 then it is more dependent on that column. #CONCLUSION:Through this project ,we can conclude that the analysis of the production became easier and complexity is reduced.