#importing the libraries

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

import seaborn as sns

#from a csv file reading the data

En = pd.read\_csv('Energy data.csv')

print(En.head())

#defining the the function

def readcsv(file,countries):

data = pd.read\_csv('Energy data.csv')

#replacing the null values with zeroes using fillna() method

dropping\_values = En.fillna(0)

energy = dropping\_values[dropping\_values['country'].isin(countries)]

df\_countries = pd.DataFrame(energy)

print(df\_countries)

#transposing data to create a dataframe with columns representing years

transpose = pd.DataFrame.transpose(energy)

header = transpose.iloc[0].values.tolist()

transpose.columns = header

transpose = transpose.iloc[0:]

df\_years = pd.DataFrame(energy)

print(transpose)

return df\_countries,df\_years

#calling the function

df\_co,df\_yr = readcsv('Energy data.csv',['Australia','Belgium','Canada','India','United Kingdom'])

#to calculate statistical properties

df\_co.describe()

df\_yr.describe()

correlation = df\_co.iloc[[2,4,50,38,43,74,75,78,80,126,114],5:12]

#defining correlation using kendall method

print('\nKendall Correlation \n',correlation.corr(method='kendall'))

# Choose the latest year for visualization (you can change it based on your dataset)

latest\_year = En['Year'].max()

# Filter the data for the latest year

latest\_year\_data = En[En['Year'] == latest\_year]

# Sort the data by CO2 emissions in descending order

sorted\_data = latest\_year\_data.sort\_values(by='CO2 emissions from fuel combustion (MtCO2)', ascending=False)

# Bar graph for greenhouse gas emissions by countries

plt.figure(figsize=(14, 8))

sns.barplot(x='CO2 emissions from fuel combustion (MtCO2)', y='country', data=sorted\_data, palette='viridis')

plt.title(f'Greenhouse Gas Emissions by Countries ({latest\_year})', fontsize= 16, fontweight='bold')

plt.xlabel('CO2 Emissions (MtCO2)', color ='m')

plt.ylabel('Country',color= 'm')

plt.show()

# Line plot for Total energy production and consumption over the years

plt.figure(figsize=(14, 8))

sns.lineplot(x='Year', y='Total energy production (Mtoe)', dt=En, label='Total Energy Production')

sns.lineplot(x='Year', y='Total energy consumption (Mtoe)', dt=En, label='Total Energy Consumption')

plt.title('Total Energy Production and Consumption Over the Years')

plt.xlabel('Year')

plt.ylabel('Energy (Mtoe)')

plt.legend()

plt.show()

# plot for Heatmap

plt.figure(figsize=(10, 6))

heatmap\_data = En.corr()

# Customizing the heatmap

ht = sns.heatmap(heatmap\_data, annot=True, cmap='coolwarm', linewidths=.5, fmt='.2f', cbar\_kws={'label': 'Correlation Coefficient'})

plt.title('CHINA', fontsize=16)

plt.xticks(rotation=45, ha='right') # Rotate x-axis labels for better readability

plt.yticks(rotation=0) # Keep y-axis labels horizontal

plt.xlabel('Features', fontsize=12, color ='r')

plt.ylabel('Features', fontsize=12, color = 'm')

# Adding colorbar

cbar = ht.collections[0].colorbar

cbar.set\_label('Correlation Coefficient', rotation=270, labelpad=21, color = 'b' )

plt.show()