# -\*- coding: utf-8 -\*-

"""

Created on Fri Nov 3 08:14:28 2023

@author: Student

"""

# loading the libraries

import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

# Loading the Data

df = pd.read\_csv("D:/vasanth@UH/vasanth.k/seattle-weather.csv")

# Data preprocesing

# Convegrting date into datetime variab;e

df['date'] = pd.to\_datetime(df['date'])

# sample of the data

print(df.head(10))

# The data structures

print(df.info())

# The line plot function

def time\_plot(df):

'''

This function is used to display the line plots for the numeric elements in the data type.

The data must have a datetine culumn named date

Arg: The data Frame

Output: The line plots

'''

numerics = ['int16', 'int32', 'int64', 'float16', 'float32', 'float64']# Data types for all numeric

plt.figure(figsize=(17,9))

for i in df.columns:

if df[i].dtype in numerics:# selecting all the numeric features

plt.plot(df['date'], df[i],label=i) # ploting the graphs

plt.legend(title="Elements")

plt.xlabel('Date')

plt.ylabel('Value')

plt.title('Time Series Plot')

# Calling the line plot

time\_plot(df)

# The Scater plotfunction

def scatter\_plots(df,v1,v2):

'''

arg:This fucntion requires the user to suply a data frame and two variables

otput: The scater plots of variable 1 gaiansts variable 2

'''

if v1 not in df.columns or v2 not in df.columns:

raise ValueError(

" One or both variables not in the data frame"

)

plt.scatter(df[v1], df[v2])

plt.xlabel(v1)

plt.ylabel(v2)

plt.title(f'Scatter Plot of {v2} vs {v1}')

plt.show()

scatter\_plots(df, 'temp\_max', 'temp\_max')

# The pie plot builder

def piechart\_builder(df,v1,by):

'''

Arg: df continus vagriable v1 and a categorical variable by

output: The mean pie chart

'''

if v1 not in df.columns or by not in df.columns:

raise ValueError(

" One or both variables not in the data frame"

)

meanDf = df.groupby(by)[v1].mean()

# Create a pie chart

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

plt.pie(meanDf, labels=meanDf.index, autopct='%1.1f%%', startangle=140)

plt.title(F'The Distribution of {v1} by {by} Category')

plt.axis('equal') # Equal aspect ratio ensures that pie is drawn as a circle.

plt.show()

piechart\_builder(df,"wind","weather")