import pandas as pd

import matplotlib.pyplot as plt

import numpy as np

flight\_df=pd.read\_csv('FinalDataSetAirplaneCrashes')

flight\_df

#verify date types

flight\_df.dtypes

flight\_df.count()

year\_df = flight\_df[["Date"]]

year\_df.head()

flight\_df["Date"]=pd.to\_datetime(flight\_df["Date"])

flight\_df["Date"]

#Extract year

flight\_df["Year"]=flight\_df["Date"].dt.year

flight\_df.dtypes

#create bins for decades

crash\_bins = [1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020]

# Create the names for the decade bins

crashes\_by\_decade = ["1900-1909", "1910-1919", "1920-1929", "1930-1939", "1940-1949", "1950-1959", "1960-1969", "1970-1979", "1980-1989", "1990-1999", "2000-2009", "2010-2020"]

# sort crashes into bins

flight\_df["Crashes by Decade"] = pd.cut(flight\_df["Year"],crash\_bins, labels=crashes\_by\_decade)

flight\_df

# Display a statistical overview of the DataFrame

flight\_df.describe()

# The value\_counts method counts unique values in a column

count = flight\_df["Crashes by Decade"].value\_counts(sort=False)

count

###1950 - 1959 has highest number of crashes

count\_crashesbydecade = flight\_df["Crashes by Decade"].value\_counts(sort=False)

count\_crashesbydecade

# Labels for the sections of our pie chart

#crashesbydecade\_plot = count\_crashesbydecade.plot(kind='pie', subplots=True, figsize=(11, 11), autopct='%1.1f%%')

plt.pie(sizes, labels=labels, autopct='%1.1f%%',

shadow=True, startangle=90)

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

plt.title("Plane Crashes by Decade")

labels = "1900-1909", "1910-1919", "1920-1929", "1930-1939", "1940-1949", "1950-1959", "1960-1969", "1970-1979", "1980-1989", "1990-1999", "2000-2009", "2010-2020"

sizes = count\_crashesbydecade.to\_list()

explode = (0, 0, 0, 0, 0, 0.1, 0, 0, 0, 0, 0, 0) # only "explode" 1950 - 1959

fig1, ax1 = plt.subplots(figsize=(18, 20))

ax1.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%',

shadow=True, startangle=90)

ax1.axis('equal') # Equal aspect ratio ensures that pie is drawn as a circle.

ax1.set\_title("Plane Crashes by Decade")

# Generate a bar plot showing the crashes per decade using pandas.

# Count how many times each maker appears in our group

count\_crashesbydecade = flight\_df["Crashes by Decade"].value\_counts(sort=False)

count\_crashesbydecade

hope\_this\_works = flight\_df["Crashes by Decade"].value\_counts(sort=False)

hope\_this\_works

count\_again = hope\_this\_works.plot(kind='bar')

# Set the xlabel and ylabel using class methods

plt.xlabel('Crashes by Decade')

plt.ylabel('Number of Crashes per Decade')

plt.title("Plane Crashes per Decade")