6. Visualize the data using Python libraries matplotlib, seaborn by plotting the graphs

for Heart disease dataset.( Charts : Line chart, Barplot, Heatmap, Scatterplot,

histogram, boxplot, violin, timeseries chart)

import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

import seaborn as sns

df = pd.read\_csv("heart.csv")

print("Shape of dataset:", df.shape)

df.head()

Line Chart – Age vs Cholesterol

-------------Line Chart – Age vs Cholesterol---------------------------

plt.figure(figsize=(10, 5))

plt.plot(df['Age'], df['Chol'], linestyle='--', marker='o', color='blue')

plt.title("Line Chart: Age vs Cholesterol")

plt.xlabel("Age")

plt.ylabel("Cholesterol")

plt.show()

OR

import pandas as pd

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update path if needed

df = pd.read\_csv(file\_path)

# Group by age and calculate average cholesterol

age\_chol = df.groupby('age')['chol'].mean().reset\_index()

# Plotting

plt.figure(figsize=(12, 6))

plt.plot(age\_chol['age'], age\_chol['chol'], marker='o', linestyle='-')

plt.title('Average Cholesterol vs Age')

plt.xlabel('Age')

plt.ylabel('Cholesterol')

plt.grid(True)

plt.tight\_layout()

plt.show()

--------------- Barplot – Sex vs Heart Disease (Target)-------------------

plt.figure(figsize=(6, 4))

sns.countplot(x='Sex', hue='AHD', data=df)

plt.title("Barplot: Heart Disease by Sex")

plt.xlabel("Sex (0 = Female, 1 = Male)")

plt.ylabel("Count")

plt.legend(title='Target')

plt.show()

OR

import pandas as pd

import seaborn as sns

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update if needed

df = pd.read\_csv(file\_path)

# Create bar plot

plt.figure(figsize=(6, 4))

sns.countplot(x='sex', hue='target', data=df)

plt.title("Barplot: Heart Disease by Sex")

plt.xlabel("Sex (0 = Female, 1 = Male)")

plt.ylabel("Count")

plt.legend(title='Heart Disease (1 = Yes, 0 = No)')

plt.tight\_layout()

plt.show()

---------------3. Heatmap – Correlation Matrix------------------------

# Select only numeric columns

numeric\_df = df.select\_dtypes(include=[np.number])

# Plot heatmap

plt.figure(figsize=(12, 8))

sns.heatmap(numeric\_df.corr(), annot=True, cmap='coolwarm', linewidths=0.5)

plt.title("Heatmap: Feature Correlation")

plt.show()

--------------------4. Scatterplot – Age vs Maximum Heart Rate---------------

plt.figure(figsize=(8, 5))

sns.scatterplot(x='Age', y='MaxHR', hue='AHD', palette='Set1', data=df)

plt.title("Scatterplot: Age vs Max Heart Rate")

plt.xlabel("Age")

plt.ylabel("Max Heart Rate")

plt.show()

OR

import pandas as pd

import seaborn as sns

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update path if needed

df = pd.read\_csv(file\_path)

# Create scatter plot

plt.figure(figsize=(8, 5))

sns.scatterplot(x='age', y='thalach', hue='target', palette='Set1', data=df)

plt.title("Scatterplot: Age vs Max Heart Rate")

plt.xlabel("Age")

plt.ylabel("Max Heart Rate (thalach)")

plt.legend(title='Heart Disease (1 = Yes, 0 = No)')

plt.tight\_layout()

plt.show()

----------------------- 6 Violin Plot – Resting BP by Sex-------------------------

plt.figure(figsize=(6, 4))

sns.violinplot(x='Sex', y='RestBP', data=df)

plt.title("Violin Plot: Resting Blood Pressure by Sex")

plt.xlabel("Sex (0 = Female, 1 = Male)")

plt.ylabel("Resting BP")

plt.show()

OR

import pandas as pd

import seaborn as sns

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update path if needed

df = pd.read\_csv(file\_path)

# Create violin plot

plt.figure(figsize=(6, 4))

sns.violinplot(x='sex', y='trestbps', data=df)

plt.title("Violin Plot: Resting Blood Pressure by Sex")

plt.xlabel("Sex (0 = Female, 1 = Male)")

plt.ylabel("Resting Blood Pressure (trestbps)")

plt.tight\_layout()

plt.show()

-----------------------7 Boxplot – Cholesterol by Heart Disease:-----------------

plt.figure(figsize=(6, 4))

sns.boxplot(x='AHD', y='Chol', data=df)

plt.title("Boxplot: Cholesterol by Heart Disease")

plt.xlabel("AHD (0 = No, 1 = Yes)")

plt.ylabel("Cholesterol")

plt.show()

OR

import pandas as pd

import seaborn as sns

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update path if needed

df = pd.read\_csv(file\_path)

# Create boxplot

plt.figure(figsize=(6, 4))

sns.boxplot(x='target', y='chol', data=df)

plt.title("Boxplot: Cholesterol by Heart Disease")

plt.xlabel("Heart Disease (0 = No, 1 = Yes)")

plt.ylabel("Cholesterol")

plt.tight\_layout()

plt.show()

--------------------------8 Histogram – Age Distribution:--------------------------

plt.figure(figsize=(7, 4))

plt.hist(df['Age'], bins=15, color='skyblue', edgecolor='black')

plt.title("Histogram: Age Distribution")

plt.xlabel("Age")

plt.ylabel("Frequency")

plt.show()

OR

import pandas as pd

import matplotlib.pyplot as plt

# Load the dataset

file\_path = "heart - 6 charts .csv" # Update path if needed

df = pd.read\_csv(file\_path)

# Create histogram

plt.figure(figsize=(7, 4))

plt.hist(df['age'], bins=15, color='skyblue', edgecolor='black')

plt.title("Histogram: Age Distribution")

plt.xlabel("Age")

plt.ylabel("Frequency")

plt.tight\_layout()

plt.show()

------------9 Time Series Chart – Simulated Heart Rate Over Time:------------------

time = np.arange(0, 100, 1)

heart\_rate = np.random.normal(loc=80, scale=5, size=100)

plt.figure(figsize=(10, 4))

plt.plot(time, heart\_rate, color='red')

plt.title("Time Series Chart: Simulated Heart Rate Over Time")

plt.xlabel("Time")

plt.ylabel("Heart Rate (bpm)")

plt.grid(True)

plt.show()