**CODE**

import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

import seaborn as sns

import warnings

warnings.filterwarnings('ignore')

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

df.head()

### Exploring the data set in order to derive useful information

df.shape

df.columns

df.describe()

df.isnull().sum()

print(df.info())

### Finding the correlation among the attributes

plt.figure(figsize=(20,10))

sns.heatmap(df.corr(), annot=True, cmap='terrain')

sns.pairplot(data=df)

df.hist(figsize=(12,12), layout=(5,3));

# box and whiskers plot

df.plot(kind='box', subplots=True, layout=(5,3), figsize=(12,12))

plt.show()

sns.catplot(data=df, x='sex', y='age', hue='target', palette='husl')

sns.barplot(data=df, x='sex', y='chol', hue='target', palette='spring')

df['sex'].value\_counts()

df['target'].value\_counts()

df['thal'].value\_counts()

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

sns.countplot(x='target',palette='BuGn', data=df)

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

df['ca'].value\_counts()

sns.countplot(x='thal',data=df, hue='target', palette='BuPu' )

sns.countplot(x='thal', hue='sex',data=df, palette='terrain')

df['cp'].value\_counts() # chest pain type

sns.countplot(x='cp' ,hue='target', data=df, palette='rocket')

sns.countplot(x='cp', hue='sex',data=df, palette='BrBG')

sns.boxplot(x='sex', y='chol', hue='target', palette='seismic', data=df)

sns.barplot(x='sex', y='cp', hue='target',data=df, palette='cividis')

sns.barplot(x='sex', y='thal', data=df, hue='target', palette='nipy\_spectral')

sns.barplot(x='target', y='ca', hue='sex', data=df, palette='mako')

sns.barplot(x='sex', y='oldpeak', hue='target', palette='rainbow', data=df)

##### ST depression induced by exercise relative to rest, a measure of abnormality in electrocardiograms

### fbs(fasting blood sugar > 120 mg/dl) (1 = true; 0 = false) and chest pain relation

df['fbs'].value\_counts()

sns.barplot(x='fbs', y='chol', hue='target', data=df,palette='plasma' )

sns.barplot(x='sex',y='target', hue='fbs',data=df)

### Cross tables

gen = pd.crosstab(df['sex'], df['target'])

print(gen)

gen.plot(kind='bar', stacked=True, color=['green','yellow'], grid=False)

temp=pd.crosstab(index=df['sex'],

columns=[df['thal']],

margins=True)

temp

temp.plot(kind="bar",stacked=True)

plt.show()

temp=pd.crosstab(index=df['target'],

columns=[df['thal']],

margins=True)

temp

temp.plot(kind='bar', stacked=True)

plt.show()

chest\_pain = pd.crosstab(df['cp'], df['target'])

chest\_pain

chest\_pain.plot(kind='bar', stacked=True, color=['purple','blue'], grid=False)