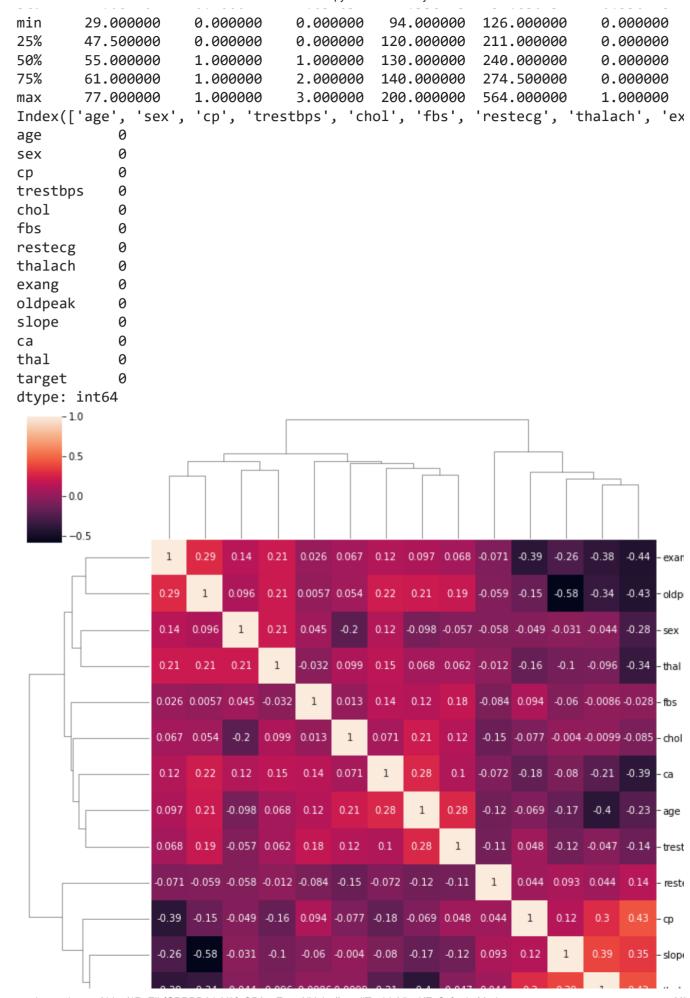
```
import warnings
warnings.filterwarnings("ignore")
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
dt = pd.read csv("heart.csv")
desired width = 520
pd.set_option('display.width', desired width)
np.set printoptions(linewidth=desired width)
pd.set option('display.max columns',25)
print(dt.head(10))
print((dt.info()))
print(dt.describe(include='all'))
print(dt.columns)
print(dt.isnull().sum())
sns.clustermap(dt.corr(),annot = True)
plt.show()
```

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dt['chest_pain_type'][dt['chest_pain_type'] == 0] = 'typical angina'

at[sex][at[sex] == 0] = temale. dt['sex'][dt['sex'] == 1] = 'male'

#print(len(dt.columns))

```
dt['chest_pain_type'][dt['chest_pain_type'] == 1] = 'atypical angina'
    dt['chest_pain_type'][dt['chest_pain_type'] == 2] = 'non-anginal pain'
    dt['chest_pain_type'][dt['chest_pain_type'] == 3] = 'asymptomatic'
    dt['fasting blood sugar'][dt['fasting blood sugar'] == 0] = 'lower than 120mg/ml'
    dt['fasting_blood_sugar'][dt['fasting_blood_sugar'] == 1] = 'greater than 120mg/ml'
    dt['rest ecg'][dt['rest ecg'] == 0] = 'normal'
    dt['rest_ecg'][dt['rest_ecg'] == 1] = 'ST-T wave abnormality'
    dt['rest_ecg'][dt['rest_ecg'] == 2] = 'left ventricular hypertrophy'
    dt['exercise_induced_angina'][dt['exercise_induced_angina'] == 0] = 'no'
    dt['exercise_induced_angina'][dt['exercise_induced_angina'] == 1] = 'yes'
    dt['st slope'][dt['st_slope'] == 0] = 'upsloping'
    dt['st slope'][dt['st_slope'] == 1] = 'flat'
    dt['st slope'][dt['st slope'] == 2] = 'downsloping'
    dt['thalassemia'][dt['thalassemia'] == 1] = 'normal'
    dt['thalassemia'][dt['thalassemia'] == 2] = 'fixed defect'
    dt['thalassemia'][dt['thalassemia'] == 3] = 'reversable defect'
    dt['sex'] = dt['sex'].astype('object')
    dt['chest_pain_type'] = dt['chest_pain_type'].astype('object')
    dt['fasting_blood_sugar'] = dt['fasting_blood_sugar'].astype('object')
    dt['rest ecg'] = dt['rest ecg'].astype('object')
    dt['exercise_induced_angina'] = dt['exercise_induced_angina'].astype('object')
    dt['st_slope'] = dt['st_slope'].astype('object')
    dt['thalassemia'] = dt['thalassemia'].astype('object')
    print(dt.head(30))
    print(dt.dtypes)
    dt = pd.get_dummies(dt,prefix=['st_slope'],columns=['st_slope'])
    dt = pd.get_dummies(dt, drop_first=True)
    print(dt.columns)
    print(dt.head(30))
    print(len(dt.columns))
    sns.countplot(x='target',data=dt,hue = 'sex_male')
    print(dt['target'].value_counts())
    print(dt['sex_male'].value_counts())
    plt.show()
    sns.clustermap(dt.corr().annot = True)
https://colab.research.google.com/drive/1RzEihfGPRBD64xY8faOP0sgEwmAlYnbe#scrollTo=bleVlyeKFsQ-&printMode=true
                                                                                         4/6
```

plt.show()

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```
1
        165
0
        138
Name: target, dtype: int64
        207
0
         96
Name: sex male, dtype: int64
           sex male
    100
     80
     60
     40
     20
                                          target
          -1.0
          - 0.5
          - 0.0
                           0.288320210170.140.084038090104050509089.40300950908.120.140.130.130.60.2 chest pain type non-a
                                        250 20 061 04080 94080 150 161 050 050 050 0410 20 190 280 420 2 -- chest pain type atypic
                                           39.028.085.16.140.230.39.064068.140.248.360.430.430.520.44-target
                                      0.290.30.087004.634.140.140.20.0902010.280.380.280.840.340.350.31-thalassemia fixed defe
                                           45000860990-7040470.40.20.0507.120.166.048.420.220.340.350.35 max heart rate achiev
                                           1 0.02.028.13.087.19.120.26.110.18.014.80.240.510.250.24 st slope downsloping
                        084061028087008602 1 ).013070.130.120.140.10.048091045030.03.1005706.02-fasting_blood_sugar_lo
                                                     0.170.120.20.071.045035.0940.12.050.06.0504071.06.-cholesterol
                        0901094.16.0334074.16.070717 1 0.130.14.08380470.101.03050370.10.0170.10.10.08- rest ecg normal
                                140.140.04070807.18.120.13 1 0.280.10.10.050907060507026.110.19.020106 - resting blood pressure
                              50.230.140.40.190.112.210.140.28<mark>1.0.28</mark>.0301.08850604.0903.180.110.210.144.09<sub>**</sub> age
                              30.390.220.240.120.10407010830.10.28 1 ).04020301060.120.140.20.220.220.12-num major vessels
                              501060409020507.260.101.0450407.10.0301.04 1 0.08020905046.250.050.39.020805 st slope upsloping
                        0095050068014.120.101.0480350.101.059080503008 1 0.098.101.0607.030210.060404 - rest ecg left ventricula
                        098036,1-D.280.160.188.09010940335076606040607090609 1 0.140.130.20.10.090806 - thalassemia normal
                         .10.040.250.36.04040-040450.10.0307.0507098112.046.110.14 1 .00902312.096.090.14-sex male
                         .110.20.360.240.420.807030305010.026.180.140.26.060.108.009 1 0.220.310.
                         .1-70.1-90.4-90.8-70.2-20.2-24.0-3-1.0-6.0-1.0-1.10.1-10.2-0.0-90.0-3-20.2-20.3-20.2-2-1 0.3-0.3-10.3 thalassemia reversable
                       -0.60.420.520.350.350.250.06.070.10.020.140.20.02080604098.090.240.310.28
                                                                                                      -chest pain type typica
                                                                                    flat
                                                                  ressels
                                                                                 male
                                                  esterol
                                                      ormal
```