In [2]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-2-e77ffe30d169> in <module>
      4 import seaborn as sns
      5 import warnings
----> 6 warningis.filterwarnings('ignore')

NameError: name 'warningis' is not defined
```

In [5]:

```
df = pd.read_csv(r'C:\Users\NODE\Downloads\Compressed\project\heart.csv')
```

In [6]:

```
df.head()
```

Out[6]:

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal	target
0	63	1	3	145	233	1	0	150	0	2.3	0	0	1	1
1	37	1	2	130	250	0	1	187	0	3.5	0	0	2	1
2	41	0	1	130	204	0	0	172	0	1.4	2	0	2	1
3	56	1	1	120	236	0	1	178	0	0.8	2	0	2	1
4	57	0	0	120	354	0	1	163	1	0.6	2	0	2	1

In [7]:

```
df.describe()
```

Out[7]:

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpe
count	303.000000	303.000000	303.000000	303.000000	303.000000	303.000000	303.000000	303.000000	303.000000	303.0000
mean	54.366337	0.683168	0.966997	131.623762	246.264026	0.148515	0.528053	149.646865	0.326733	1.0396
std	9.082101	0.466011	1.032052	17.538143	51.830751	0.356198	0.525860	22.905161	0.469794	1.1610
min	29.000000	0.000000	0.000000	94.000000	126.000000	0.000000	0.000000	71.000000	0.000000	0.0000
25%	47.500000	0.000000	0.000000	120.000000	211.000000	0.000000	0.000000	133.500000	0.000000	0.0000
50%	55.000000	1.000000	1.000000	130.000000	240.000000	0.000000	1.000000	153.000000	0.000000	0.8000
75%	61.000000	1.000000	2.000000	140.000000	274.500000	0.000000	1.000000	166.000000	1.000000	1.6000
max	77.000000	1.000000	3.000000	200.000000	564.000000	1.000000	2.000000	202.000000	1.000000	6.2000

In [8]:

```
df.isnull().sum()
```

Out[8]:

```
age         0
sex         0
cp          0
trestbps    0
```

```
chol        0
fbs         0
restecg     0
thalach     0
exang       0
oldpeak     0
slope       0
ca          0
thal        0
target      0
dtype: int64
```

In [9]:

```
print(df.info())
```

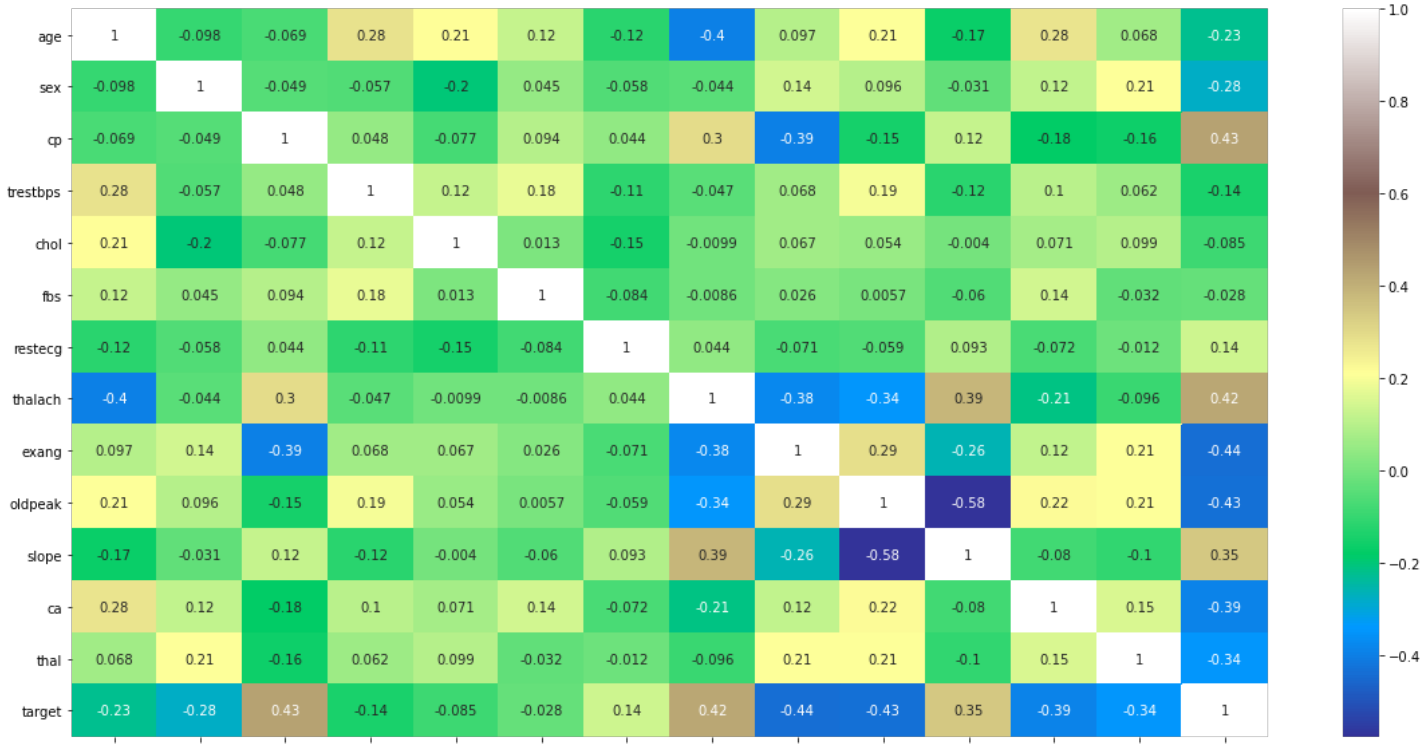
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 303 entries, 0 to 302
Data columns (total 14 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   age       303 non-null    int64  
 1   sex       303 non-null    int64  
 2   cp        303 non-null    int64  
 3   trestbps  303 non-null    int64  
 4   chol      303 non-null    int64  
 5   fbs       303 non-null    int64  
 6   restecg   303 non-null    int64  
 7   thalach   303 non-null    int64  
 8   exang     303 non-null    int64  
 9   oldpeak   303 non-null    float64
 10  slope     303 non-null    int64  
 11  ca        303 non-null    int64  
 12  thal      303 non-null    int64  
 13  target    303 non-null    int64  
dtypes: float64(1), int64(13)
memory usage: 33.3 KB
None
```

In [12]:

```
plt.figure(figsize=(20,10))
sns.heatmap(df.corr(),annot=True,cmap='terrain')
```

Out[12]:

```
<AxesSubplot:>
```



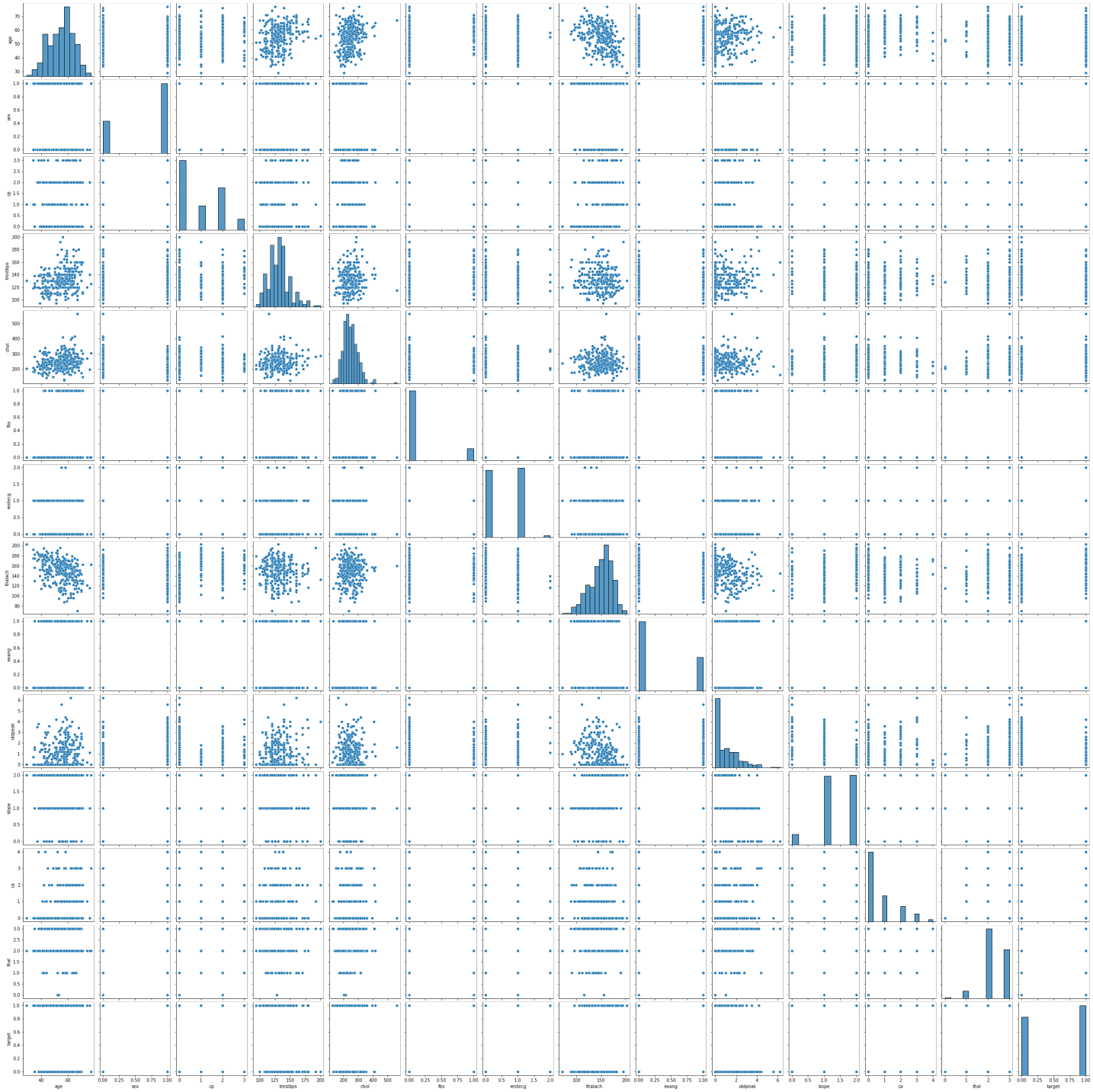
age sex cp trestbps chol fbs restecg thalach exang oldpeak slope ca thal target

In [14]:

```
sns.pairplot(data=df)
```

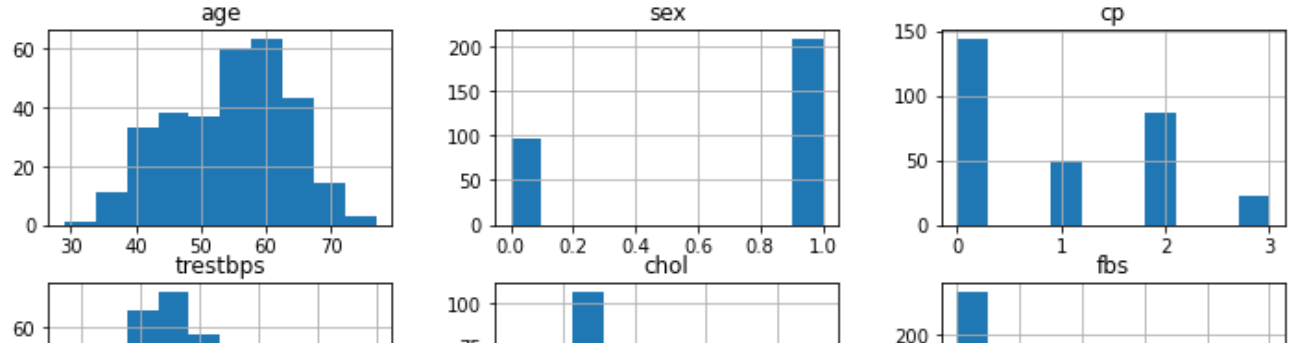
Out[14]:

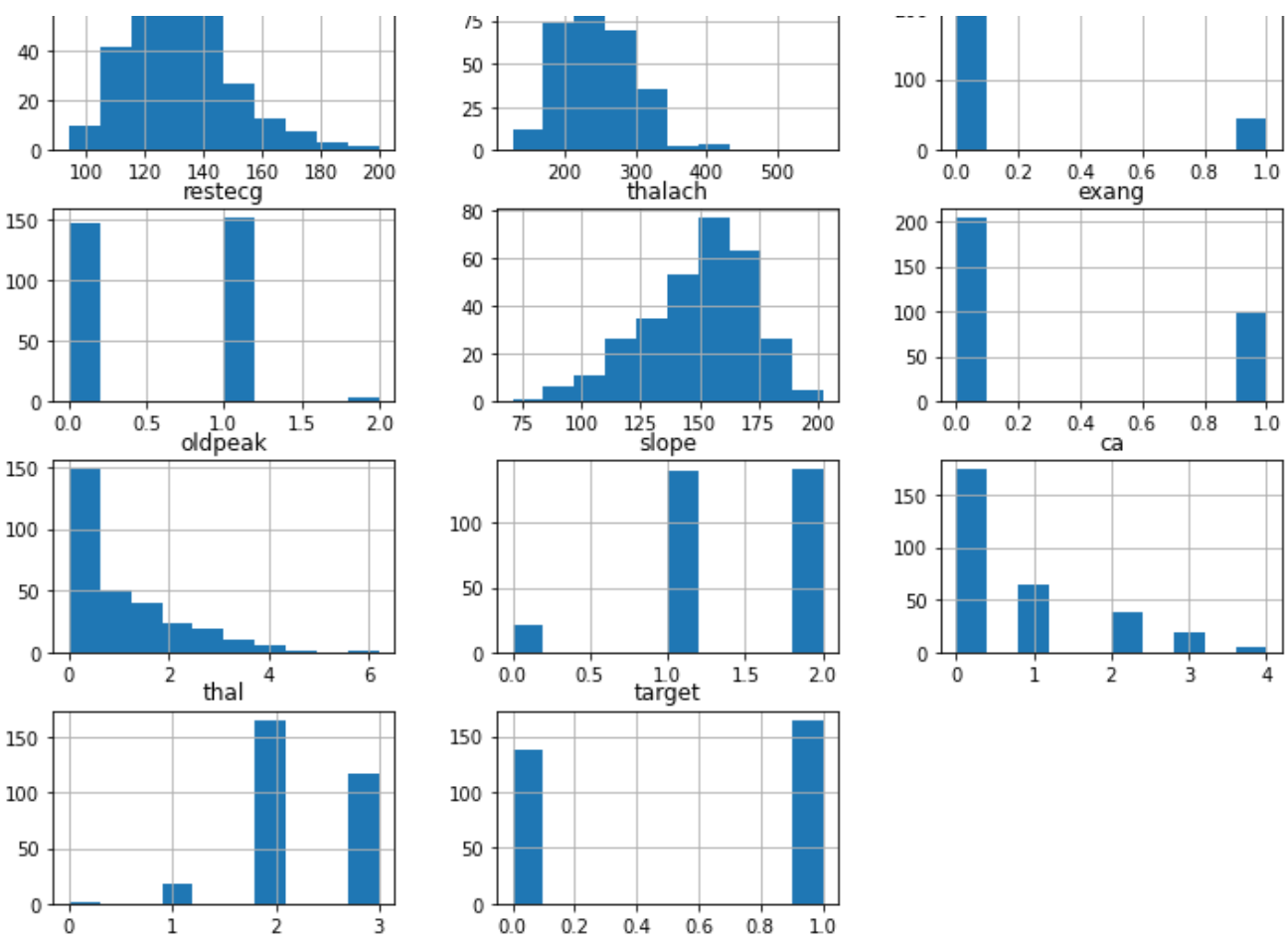
```
<seaborn.axisgrid.PairGrid at 0x20816f3f280>
```



In [16]:

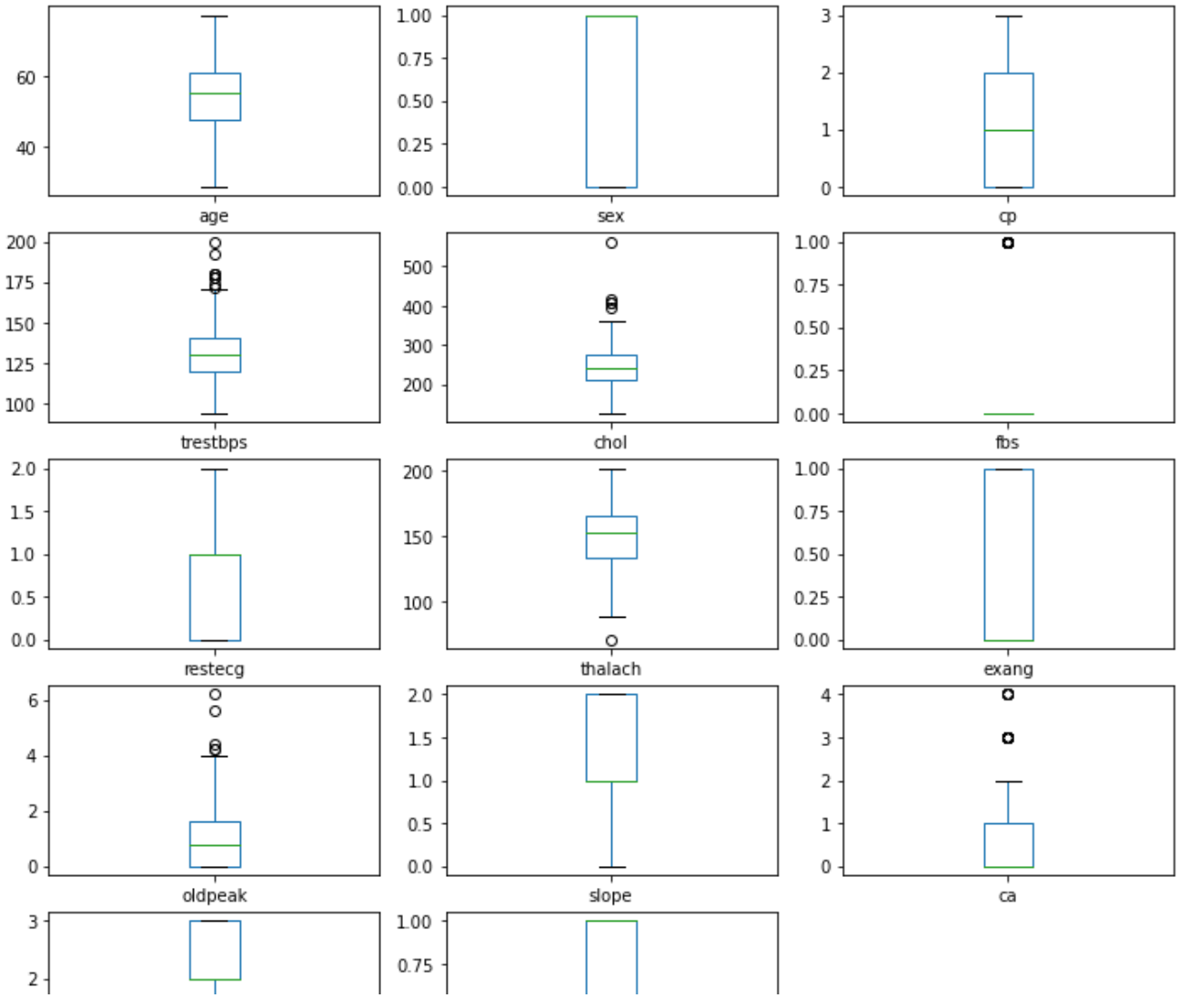
```
df.hist(figsize=(12,12),layout=(5,3));
```

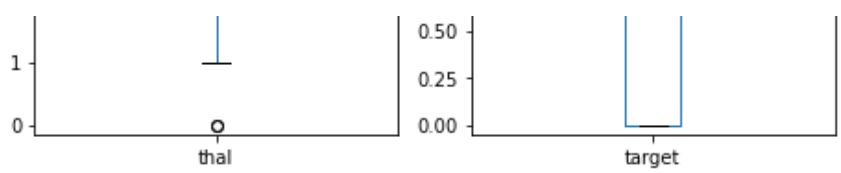




In [18]:

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



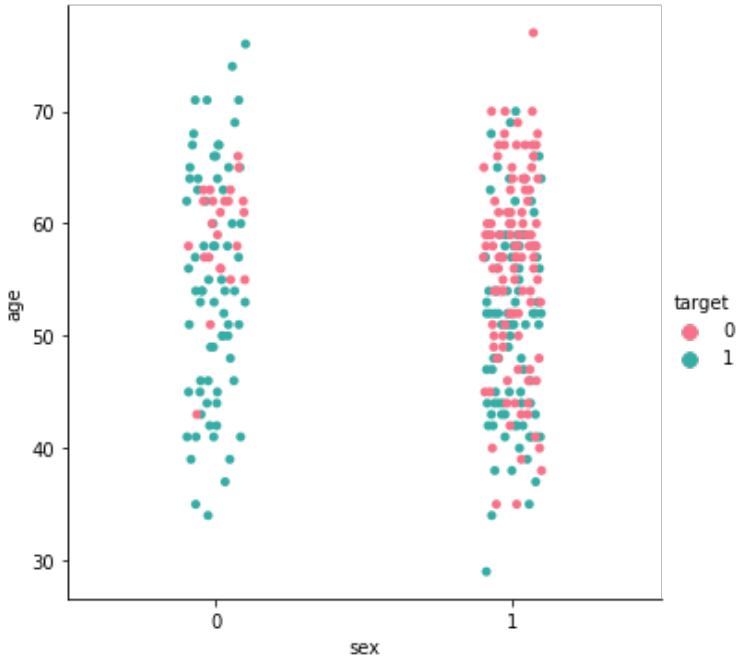


In [20]:

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

Out[20]:

```
<seaborn.axisgrid.FacetGrid at 0x20820fa19a0>
```

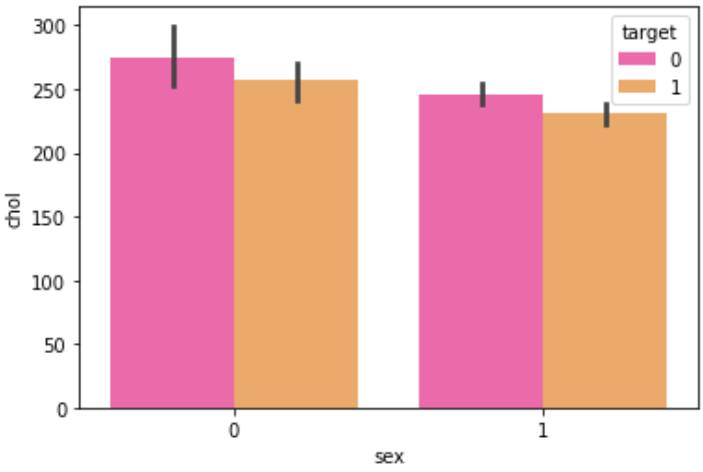


In [21]:

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

Out[21]:

```
<AxesSubplot:xlabel='sex', ylabel='chol'>
```



In [22]:

```
df['sex'].value_counts()
```

Out[22]:

```
1    207
0     96
Name: sex, dtype: int64
```

In [23]:

```
df['target'].value_counts()
```

Out[23]:

```
1    165
0    138
Name: target, dtype: int64
```

In [24]:

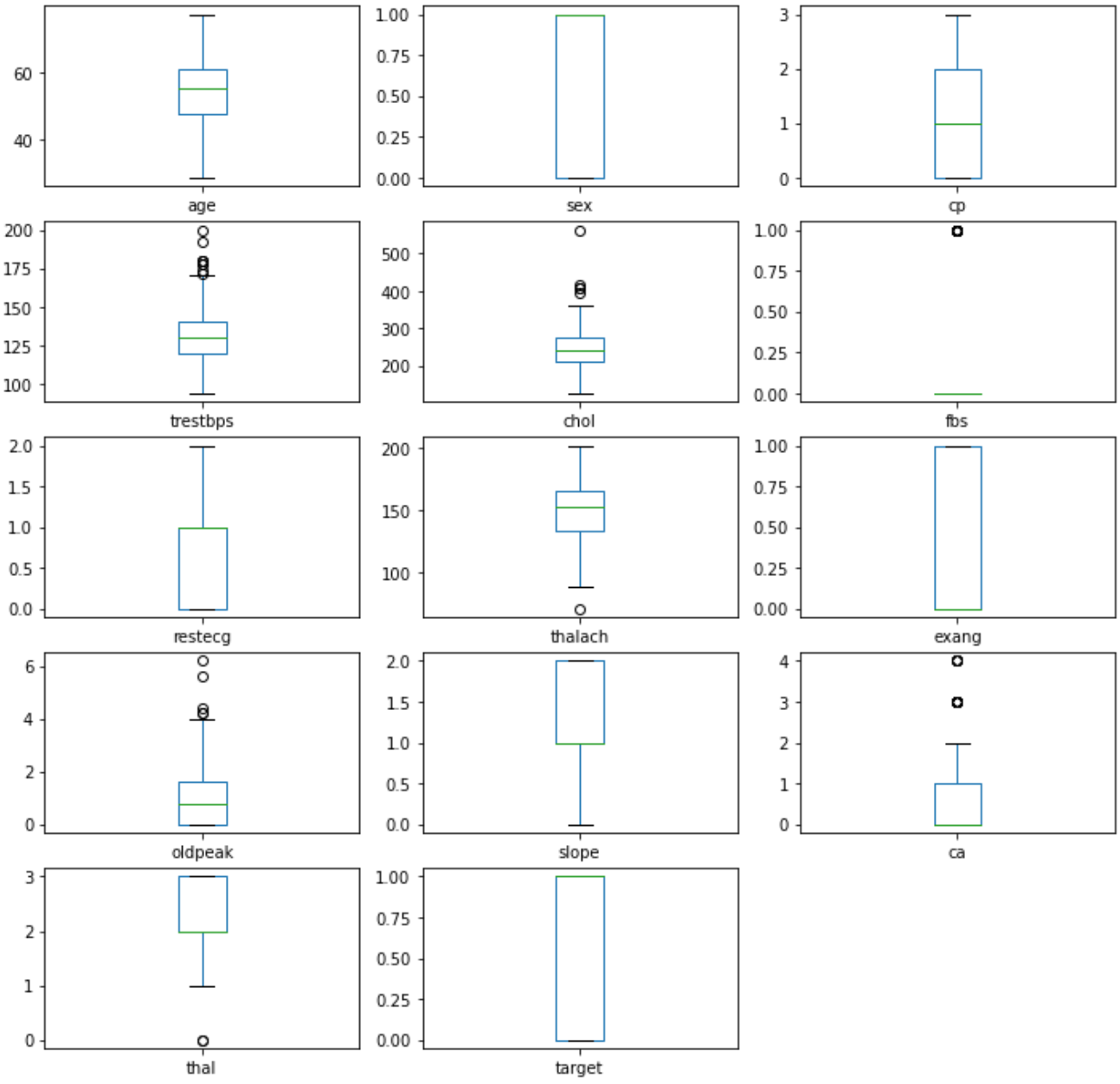
```
df['thal'].value_counts()
```

Out[24]:

```
2    166
3    117
1     18
0      2
Name: thal, dtype: int64
```

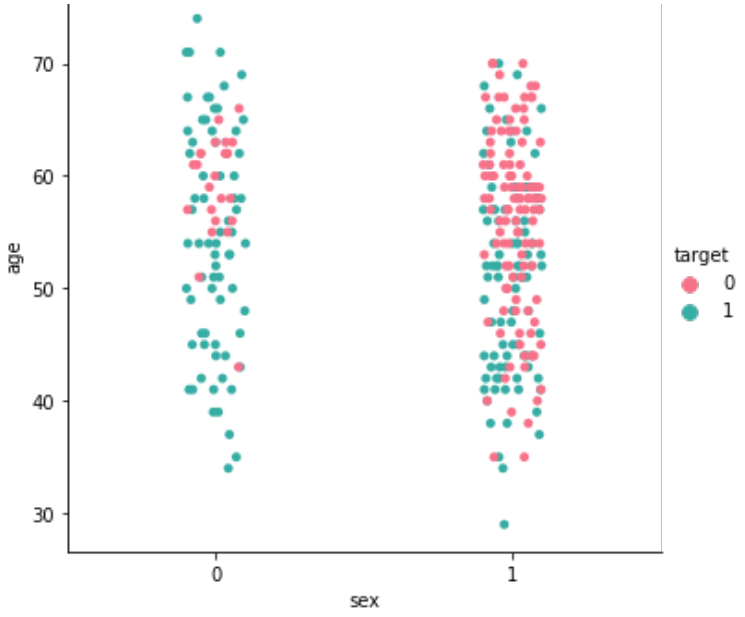
In [25]:

```
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')
```



Out[25]:

```
<seaborn.axisgrid.FacetGrid at 0x208216263a0>
```

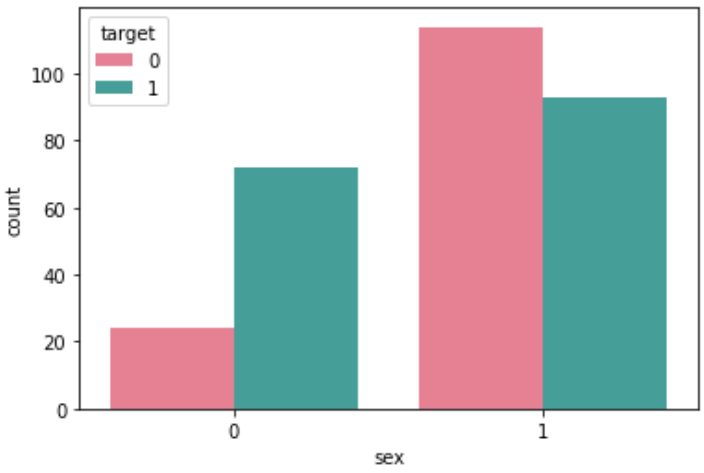


In [26]:

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

Out[26]:

```
<AxesSubplot:xlabel='sex', ylabel='count'>
```

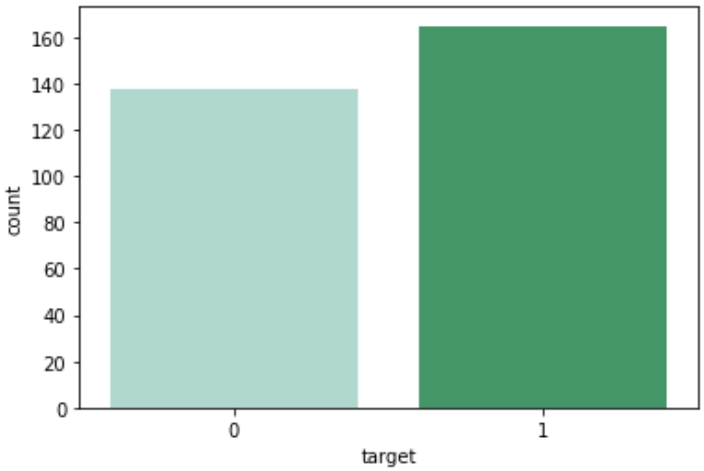


In [27]:

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

Out[27]:

```
<AxesSubplot:xlabel='target', ylabel='count'>
```



In [28]:

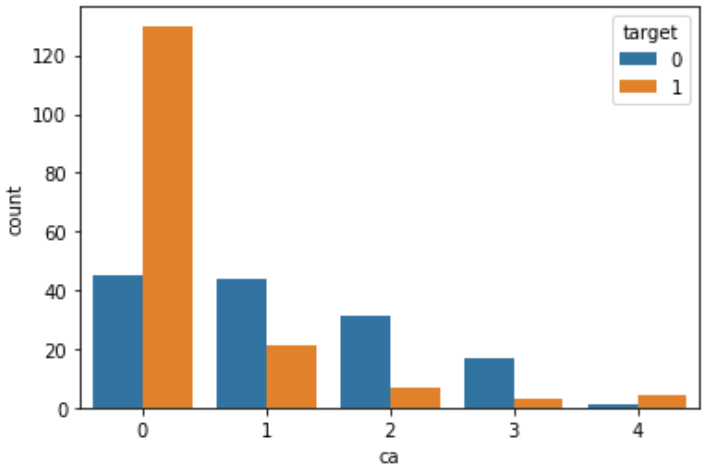
```
df = pd.read_csv(r'C:\Users\NODE\Downloads\Compressed\project\heart.csv')
```

In [29]:

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

Out[29]:

```
<AxesSubplot:xlabel='ca', ylabel='count'>
```

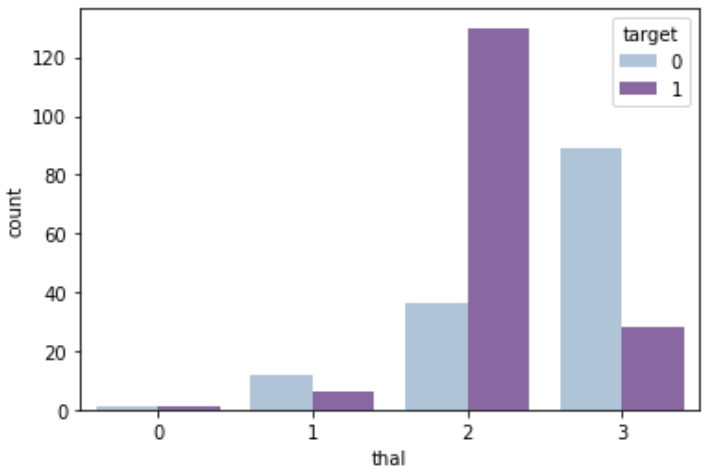


In [30]:

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

Out[30]:

```
<AxesSubplot:xlabel='thal', ylabel='count'>
```

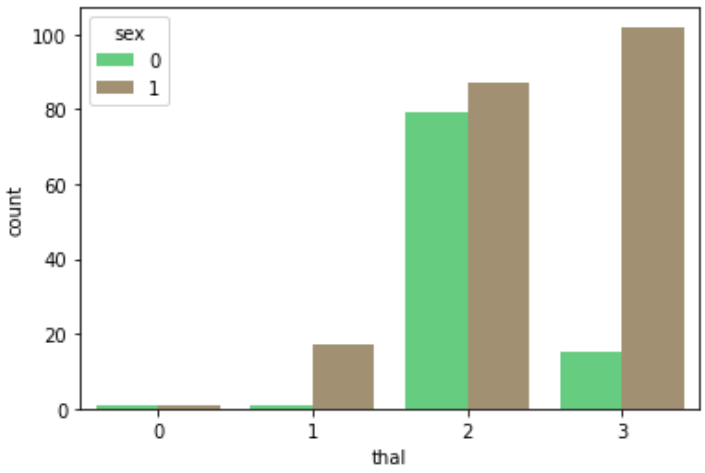


In [31]:

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

Out[31]:

```
<AxesSubplot:xlabel='thal', ylabel='count'>
```



In [32]:

```
df['cp'].value_counts()
```

Out[32]:

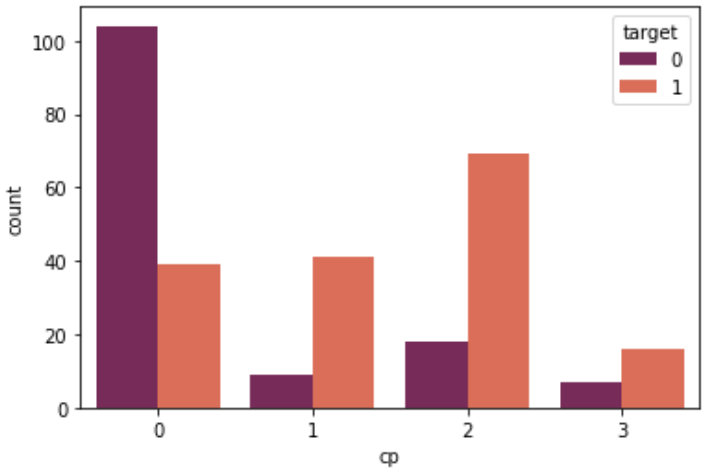
```
0    143
2     87
1     50
3     23
Name: cp, dtype: int64
```

In [33]:

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

Out[33]:

```
<AxesSubplot:xlabel='cp', ylabel='count'>
```

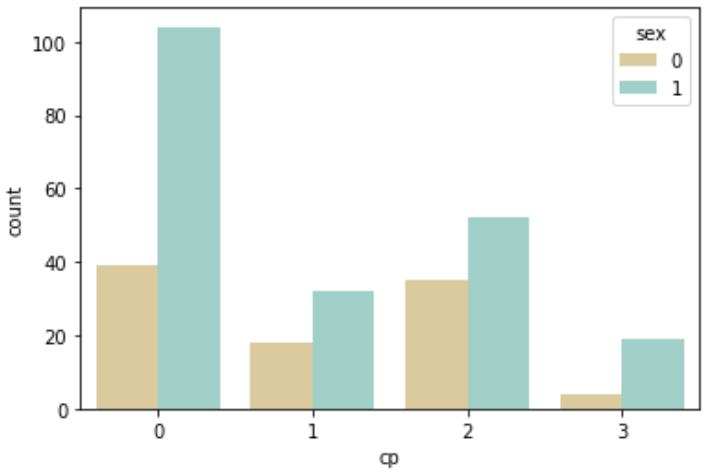


In [34]:

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

Out[34]:

```
<AxesSubplot:xlabel='cp', ylabel='count'>
```

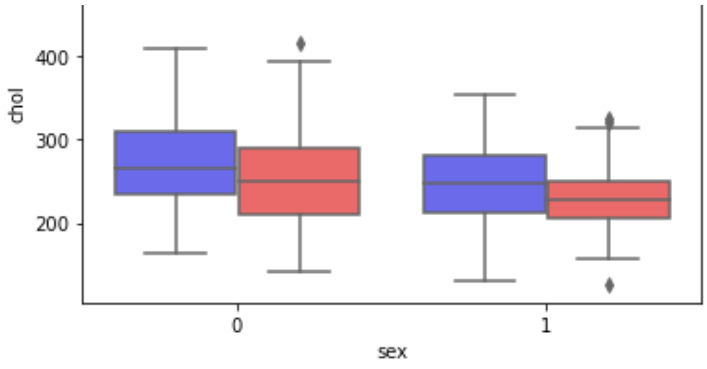


In [36]:

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

Out[36]:

```
<AxesSubplot:xlabel='sex', ylabel='chol'>
```

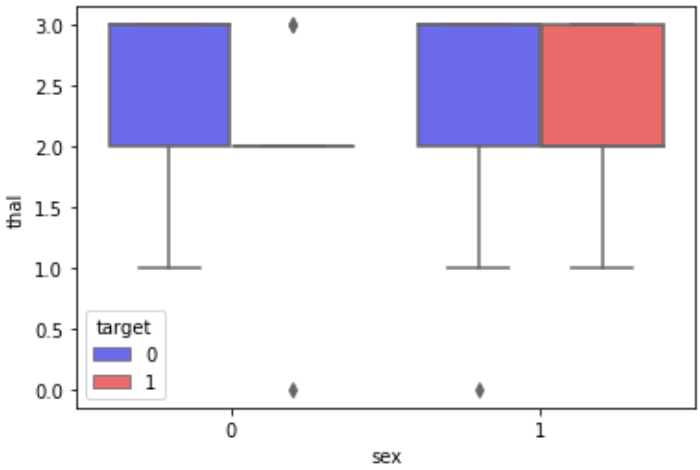


In [37]:

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

Out[37]:

```
<AxesSubplot:xlabel='sex', ylabel='thal'>
```

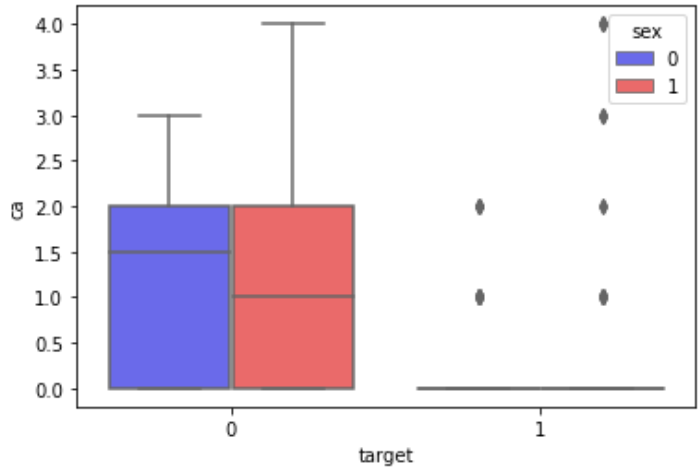


In [38]:

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

Out[38]:

```
<AxesSubplot:xlabel='target', ylabel='ca'>
```

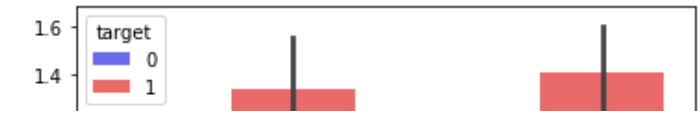


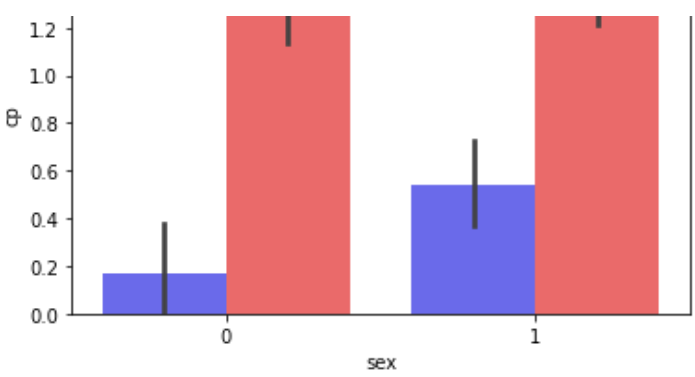
In [40]:

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

Out[40]:

```
<AxesSubplot:xlabel='sex', ylabel='cp'>
```





In [42]:

```
temp=pd.crosstab(index=df['sex'],
                 columns=[df['thal']],
                 margins=True)

temp
```

Out[42]:

thal	0	1	2	3	All
sex					
0	1	1	79	15	96
1	1	17	87	102	207
All	2	18	166	117	303

In [ ]:

```

```