

In [2]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

In [4]:

```
df=pd.read_csv('Downloads/Heart_Disease_Prediction.csv')
```

In [5]:

```
df.head()
```

Out[5]:

		Chest		FBS		EKG	Max	Exercise	ST	Slope	Number of vessels fluro
	Age	Sex	pain type	BP	Cholesterol	over 120	results	HR	angina	depression	of ST vesse
0	701	4	130	322	0	2	109	0	2.4	2	
1	670	3	115	564	0	2	160	0	1.6	2	
2	571	2	124	261	0	0	141	0	0.3	1	
3	641	4	128	263	0	0	105	1	0.2	2	
4	740	2	120	269	0	2	121	1	0.2	1	

In [6]:

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

Out[6]:

Age	0
Sex	0
Chest pain type	0
BP	0
Cholesterol	0
FBS over 120	0
EKG results	0
Max HR	0
Exercise angina	0
ST depression	0
Slope of ST	0
Number of vessels fluro	0

```
In
Thallium          0 Heart
Disease           0 dtype:
int64
[7]:
```

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

```
<class 'pandas.core.frame.DataFrame'> RangeIndex:
```

```
270 entries, 0 to 269
```

```
Data columns (total 14 columns):
```

#	Column	Non-Null Count	Dtype
0	Age	270 non-null	int64
1	Sex	270 non-null	int64
2	Chest pain type	270 non-null	int64
3	BP	270 non-null	int64
4	Cholesterol	270 non-null	int64
5	FBS over 120	270 non-null	int64
6	EKG results	270 non-null	int64
7	Max HR	270 non-null	int64
8	Exercise angina	270 non-null	int64
9	ST depression	270 non-null	float64
10	Slope of ST	270 non-null	int64
11	Number of vessels fluro	270 non-null	int64
12	Thallium	270 non-null	int64
13	Heart Disease	270 non-null	object

dtypes: float64(1), int64(12), object(1) memory usage: 29.7+ KB None

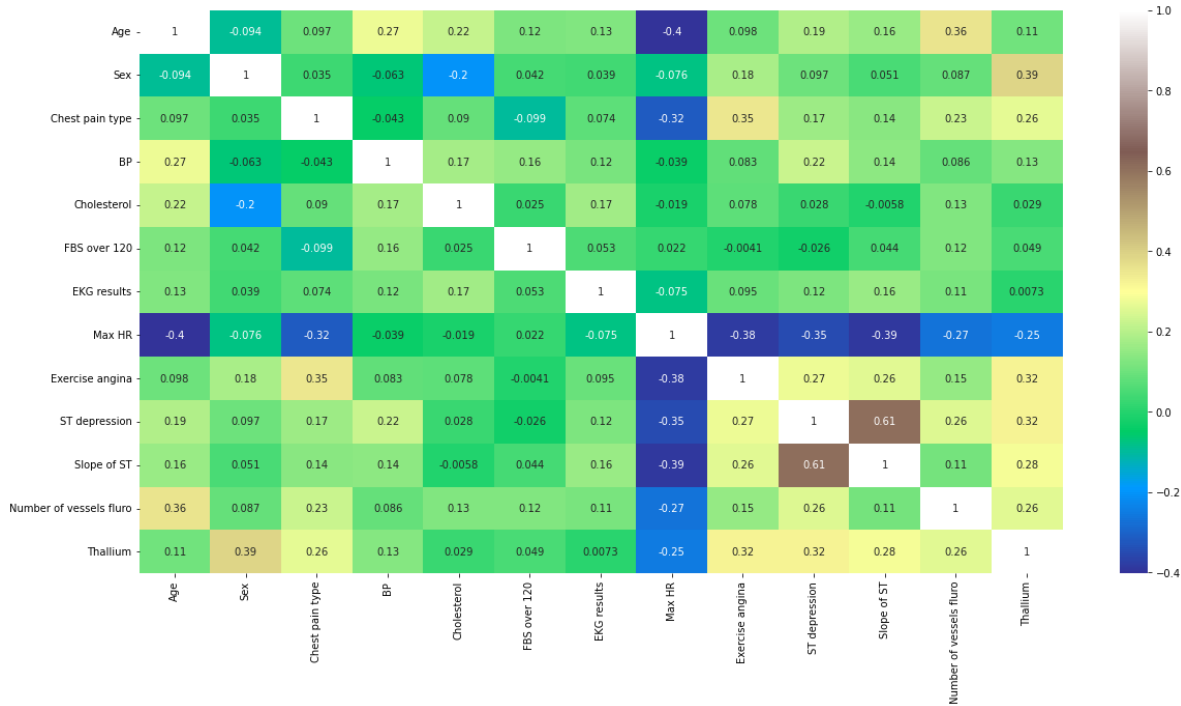
```
In [9]:
```

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

```
Out[9]:
```

```
<AxesSubplot:>
```

In



```
[10]:
sns.pairplot(data=df)
```

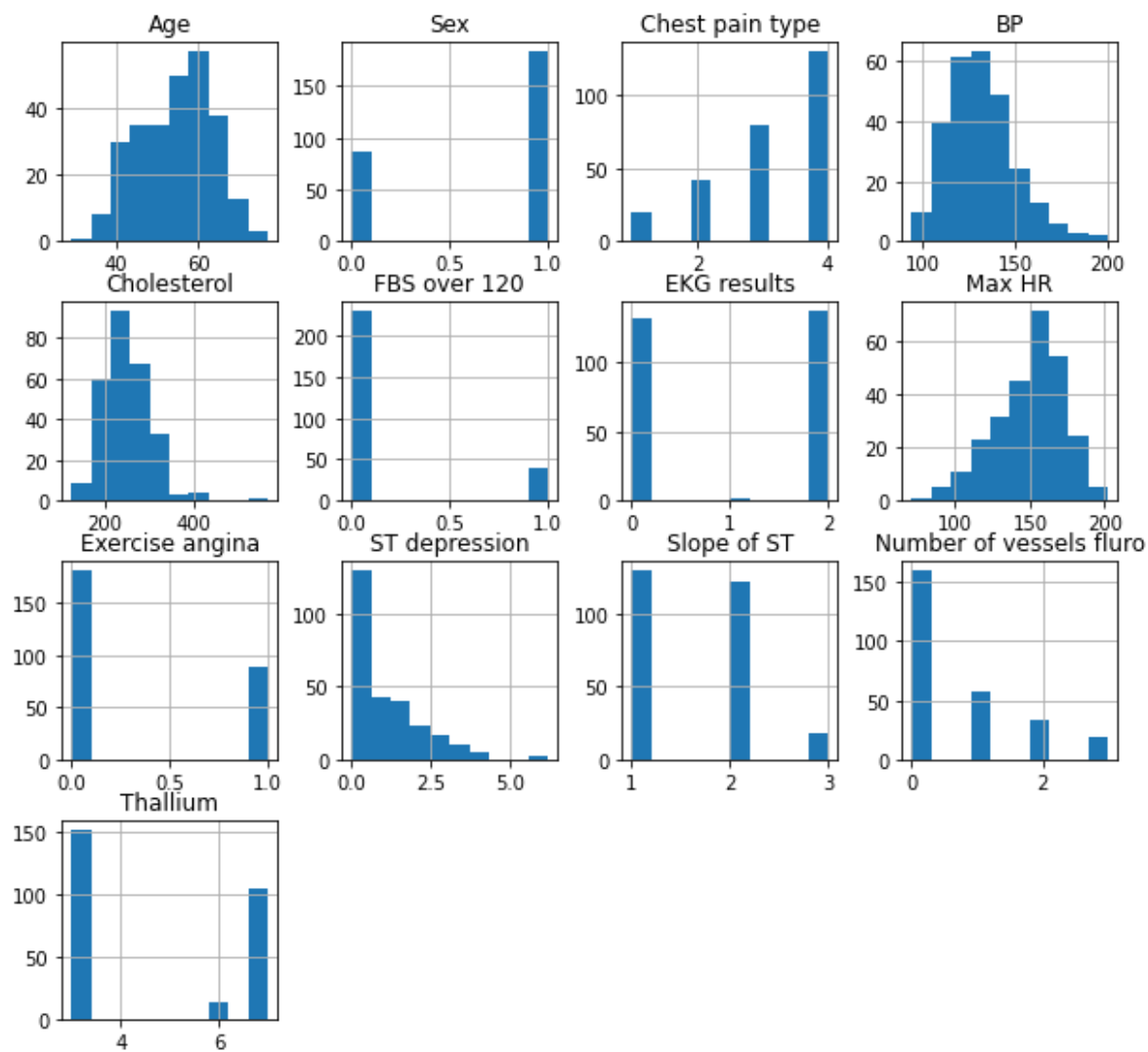
Out[10]:
<seaborn.axisgrid.PairGrid at 0x2059aec2448>

In



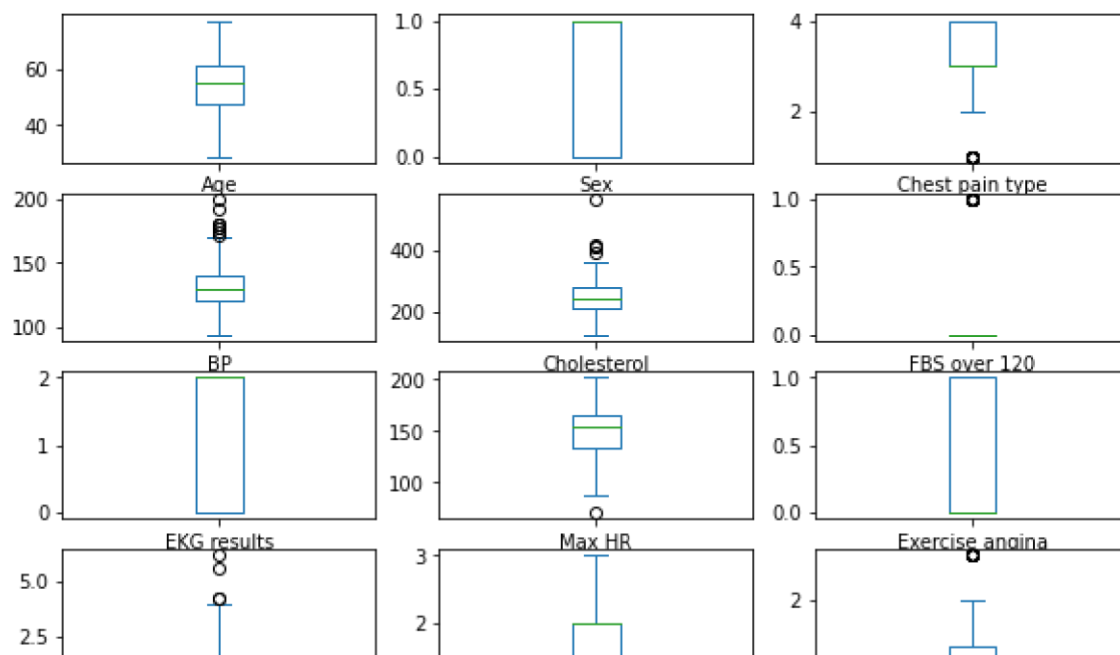
```
In [11]:
```

```
df.hist(figsize=(10,12), layout=(5,4));
```



In [13]:

```
df.plot(kind='box', subplots=True, layout=(6,3), figsize=(10,10))
plt.show()
```

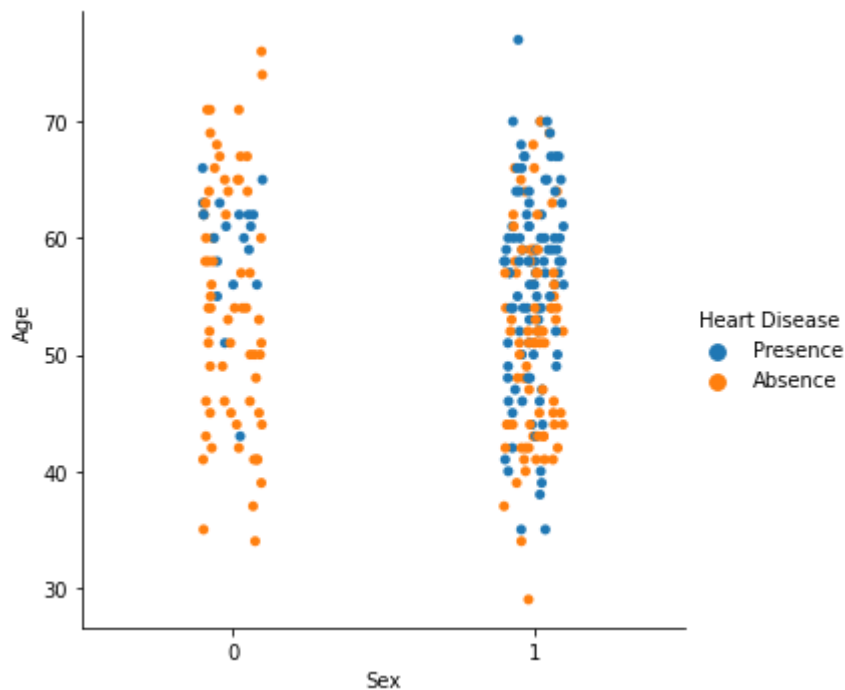


In [19]:

```
sns.catplot(data=df, x='Sex', y='Age', hue='Heart Disease', palette='tab10')
```

Out[19]:

<seaborn.axisgrid.FacetGrid at 0x205a367dcc8>

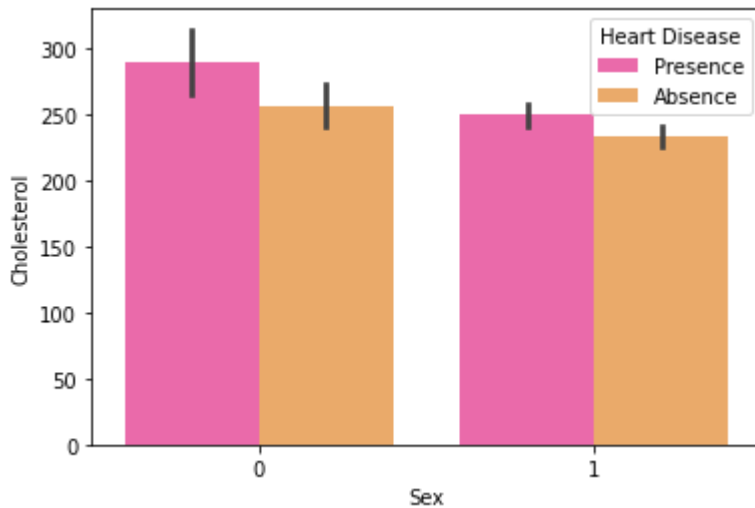


[20]:

In

```
sns.barplot(data=df, x='Sex', y='Cholesterol', hue='Heart Disease', palette='spring')
```

Out[20]: <AxesSubplot:xlabel='Sex',
ylabel='Cholesterol'>



In [21]:

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

Out[21]:

```
1    183
0     87
Name: Sex, dtype: int64
```

In [22]:

```
df['Chest pain type'].value_counts()
```

Out[22]:

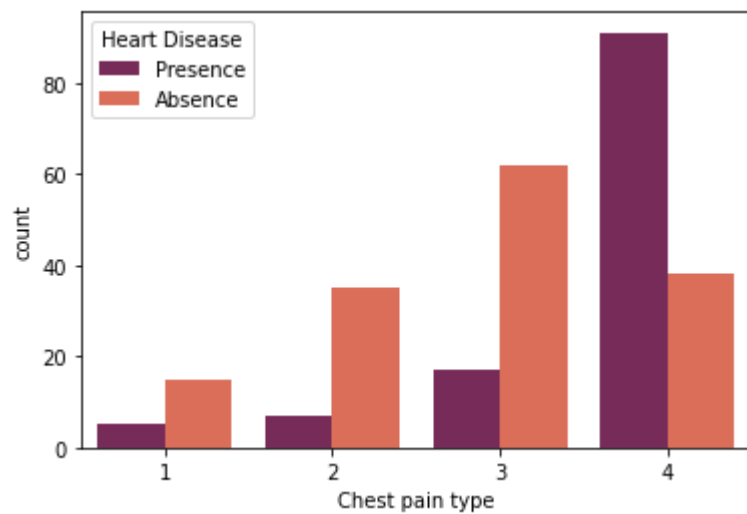
```
4    129
3     79
2     42
1     20
Name: Chest pain type, dtype: int64
```

[23]:

```
sns.countplot(x='Chest pain type', hue='Heart Disease' , data=df, palette='rocket')
```

In

```
Out[23]: <AxesSubplot:xlabel='Chest pain type',  
ylabel='count'>
```



In [24]:

```
gen = pd.crosstab(df['Sex'], df['Heart Disease'])  
print(gen)
```

```
Heart Disease  Absence  Presence  
Sex  
0              67        20  
1              83       100
```

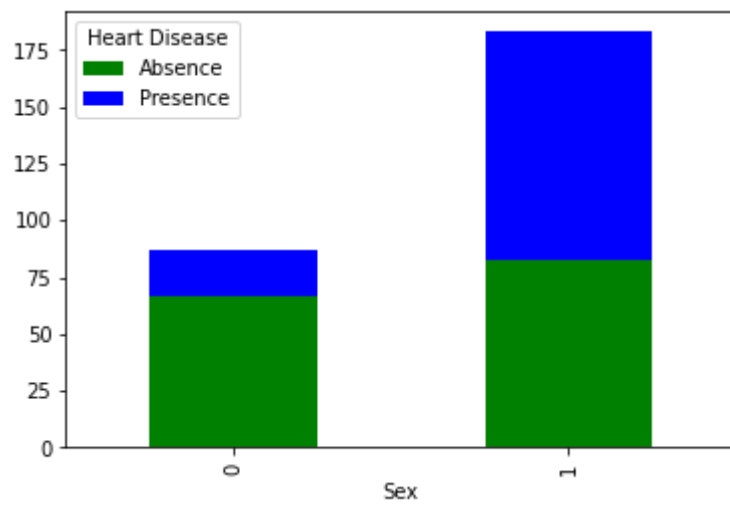
[25]:

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

Out[25]:

```
<AxesSubplot:xlabel='Sex'>
```


In



In []:

In []: