In [1]:
```
#import libraries
import pandas as pd
import numpy as np
import seaborn as sns #visualisati
import matplotlib.pyplot as plt #
%matplotlib inline
sns.set(color_codes=True)
from scipy import stats
import warnings
warnings.filterwarnings("ignore")
```

In [2]:
```
df =pd.read_csv(r"C:\Users\dell\De
```

In [3]:
```
df.head()
```

Out[3]:

	age	sex	cp	trestbps	chol	fbs	reste
0	52	1	0	125	212	0	
1	53	1	0	140	203	1	
2	70	1	0	145	174	0	
3	61	1	0	148	203	0	
4	62	0	0	138	294	1	

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFram
e'>
RangeIndex: 1025 entries, 0 to 102
4
Data columns (total 14 columns):
 #   Column    Non-Null Count  Dty
pe
---  ------    --------------  ---
--
 0   age       1025 non-null   int
64
 1   sex       1025 non-null   int
64
 2   cp        1025 non-null   int
64
 3   trestbps  1025 non-null   int
64
 4   chol      1025 non-null   int
64
 5   fbs       1025 non-null   int
64
 6   restecg   1025 non-null   int
64
 7   thalach   1025 non-null   int
64
 8   exang     1025 non-null   int
64
 9   oldpeak   1025 non-null   flo
at64
 10  slope     1025 non-null   int
64
 11  ca        1025 non-null   int
64
 12  thal      1025 non-null   int
64
 13  target    1025 non-null   int
64
dtypes: float64(1), int64(13)
memory usage: 112.2 KB
```

In [5]:
```
df.columns
```

Out[5]:
```
Index(['age', 'sex', 'cp', 'trestb
ps', 'chol', 'fbs', 'restecg', 'th
alach',
       'exang', 'oldpeak', 'slop
e', 'ca', 'thal', 'target'],
      dtype='object')
```

In [6]:
```
df.index
```

Out[6]:
```
RangeIndex(start=0, stop=1025, ste
p=1)
```

In [7]:
```
df.shape
```

Out[7]:
```
(1025, 14)
```

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]:
```
target = df.groupby('target').size
target
```

Out[9]:
```
target
0    499
1    526
dtype: int64
```

In [10]:
```
def heart_disease(row):
    if row == 0:
        return 'Absence'
    elif row == 1:
        return 'Presence'
```

In [11]:
```
df['Heart_Disease']=df['target'].a
df.head()
```

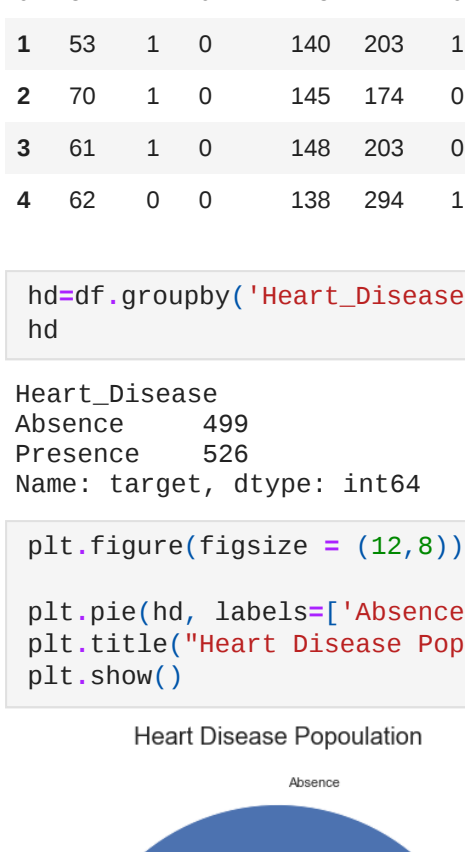
Out[11]:

	age	sex	cp	trestbps	chol	fbs	reste
0	52	1	0	125	212	0	
1	53	1	0	140	203	1	
2	70	1	0	145	174	0	
3	61	1	0	148	203	0	
4	62	0	0	138	294	1	

In [12]:
```
hd=df.groupby('Heart_Disease')['ta
hd
```

Out[12]:
```
Heart_Disease
Absence     499
Presence    526
Name: target, dtype: int64
```

In [13]:
```
plt.figure(figsize = (12,8))

plt.pie(hd, labels=['Absence', 'Pr
plt.title("Heart Disease Popoulati
plt.show()
```



In [14]:
```
Maximum_age=df['age'].max()
Maximum_age
```

Out[14]: 77

In [15]:
```
Minimum_age=df['age'].min()
Minimum_age
```

Out[15]: 29

In [16]:
```
Mean_age=df['age'].mean()
Mean_age
```

Out[16]: 54.4341463414634

In [17]:
```
Young_age=df[(df['age']>=29) & (d
Middle_age=df[(df['age']>=40) & (
Elder_age=df[(df['age']>=50) & (d
```

In [18]:
```
len('Young_age')
```

Out[18]: 9

In [19]:
```
len('Middle_age')
```

Out[19]: 10

In [20]:
```
len('Elder_age')
```

Out[20]: 9

In [21]:
```
plt.figure(figsize = (10,8))

sns.barplot(x = ['Young_age','Midd
            edgecolor = 'linen',

plt.title("Age wise analysis")
plt.xlabel('Age')
plt.ylabel('Count')

plt.show()
```

In [22]:
```
def gender(row):
    if row == 1:
        return 'Male'
    elif row == 0:
        return 'Female'
```

In [23]:
```
df['sex1']=df['sex'].apply(gender
df.head()
```

Out[23]:

	age	sex	cp	trestbps	chol	fbs	reste
0	52	1	0	125	212	0	
1	53	1	0	140	203	1	
2	70	1	0	145	174	0	
3	61	1	0	148	203	0	
4	62	0	0	138	294	1	

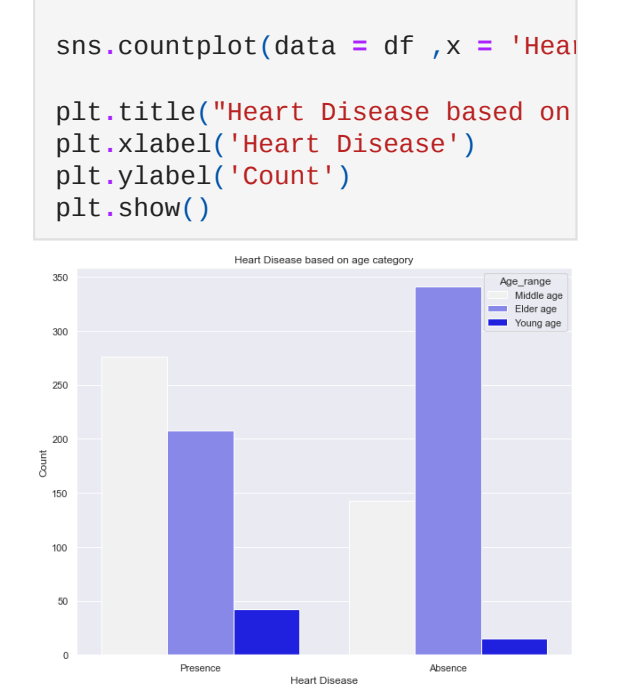
In [24]:
```
def age_range(row):
    if row>=29 and row<40:
        return 'Young age'
    elif row>=40 and row<55:
        return 'Middle age'
    else:
        return 'Elder age'
```

In [25]:
```
df['Age_range']=df['age'].apply(ag
df.head(20)
```

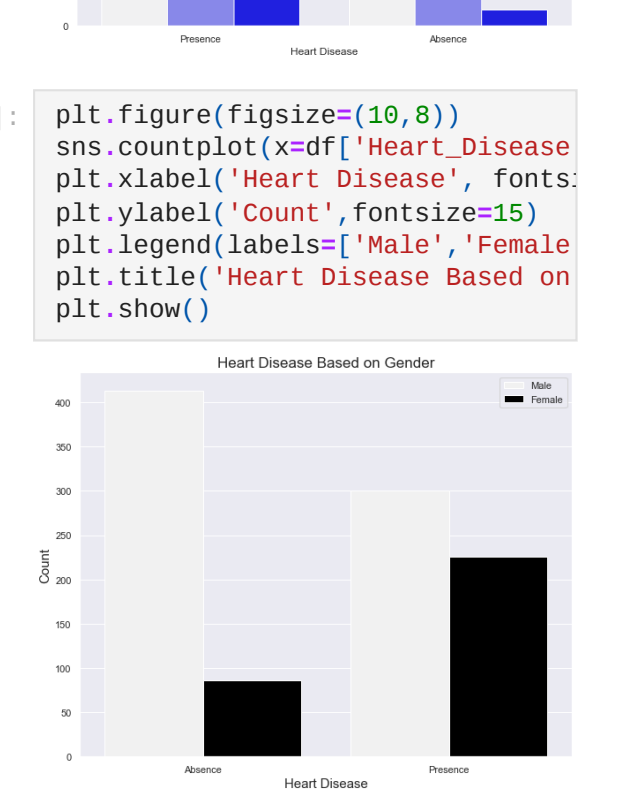
Out[25]:

	age	sex	cp	trestbps	chol	fbs	reste
0	52	1	0	125	212	0	
1	53	1	0	140	203	1	
2	70	1	0	145	174	0	
3	61	1	0	148	203	0	
4	62	0	0	138	294	1	
5	58	0	0	100	248	0	
6	58	1	0	114	318	0	
7	55	1	0	160	289	0	
8	46	1	0	120	249	0	
9	54	1	0	122	286	0	
10	71	0	0	112	149	0	
11	43	0	0	132	341	1	
12	34	0	1	118	210	0	
13	51	1	0	140	298	0	
14	52	1	0	128	204	1	
15	34	0	1	118	210	0	
16	51	0	2	140	308	0	
17	54	1	0	124	266	0	
18	50	0	1	120	244	0	
19	58	1	2	140	211	1	

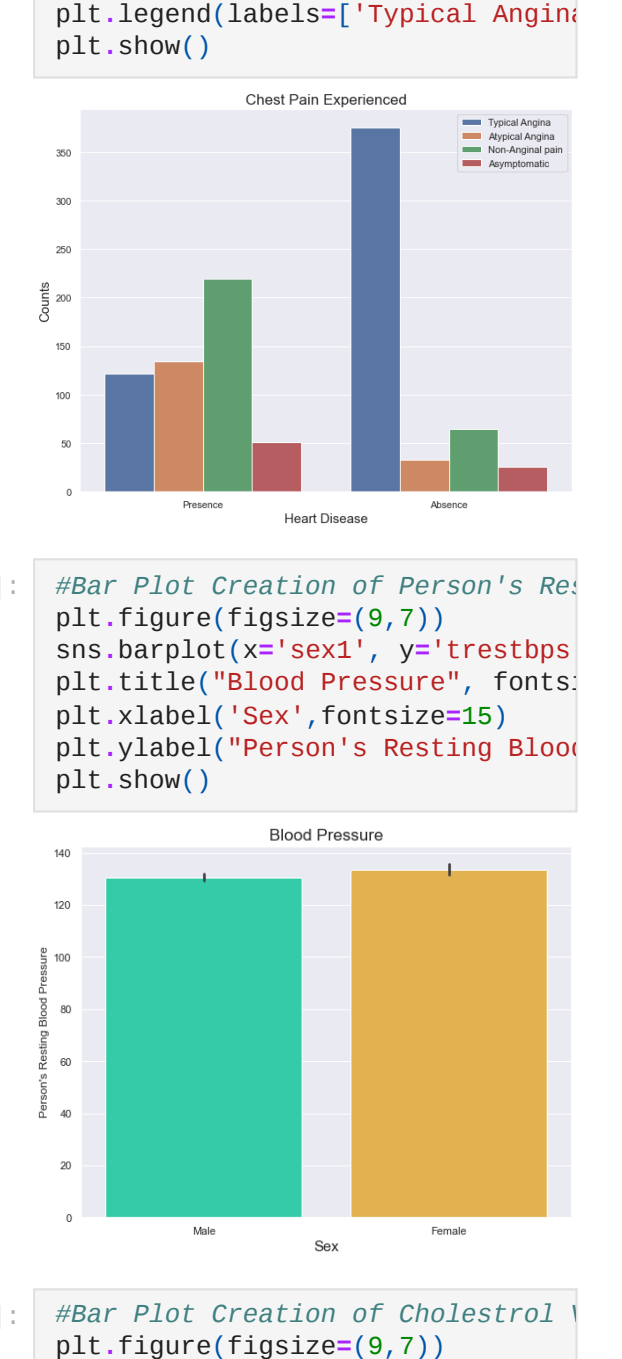
In [27]:
```
plt.figure(figsize = (10,8))

sns.countplot(data = df ,x = 'Hear

plt.title("Heart Disease based on
plt.xlabel('Heart Disease')
plt.ylabel('Count')
plt.show()
```



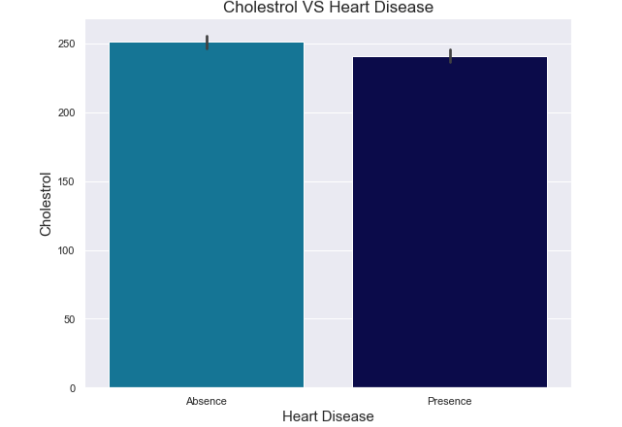
In [30]:
```
plt.figure(figsize=(10,8))
sns.countplot(x=df['Heart_Disease
plt.xlabel('Heart Disease', fontsi
plt.ylabel('Count',fontsize=15)
plt.legend(labels=['Male','Female
plt.title('Heart Disease Based on
plt.show()
```



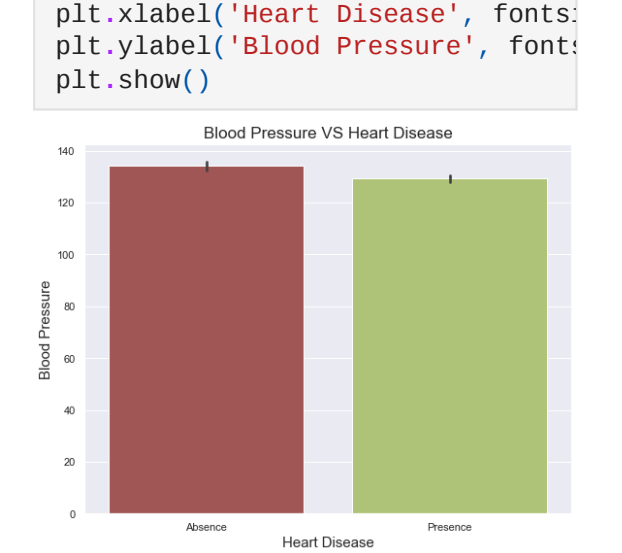
In [31]:
```
plt.figure(figsize=(10,8))
sns.countplot(x=df['Heart_Disease
plt.title('Chest Pain Experienced
plt.xlabel('Heart Disease',fontsi
plt.ylabel('Counts',fontsize=15)
plt.legend(labels=['Typical Angina
plt.show()
```



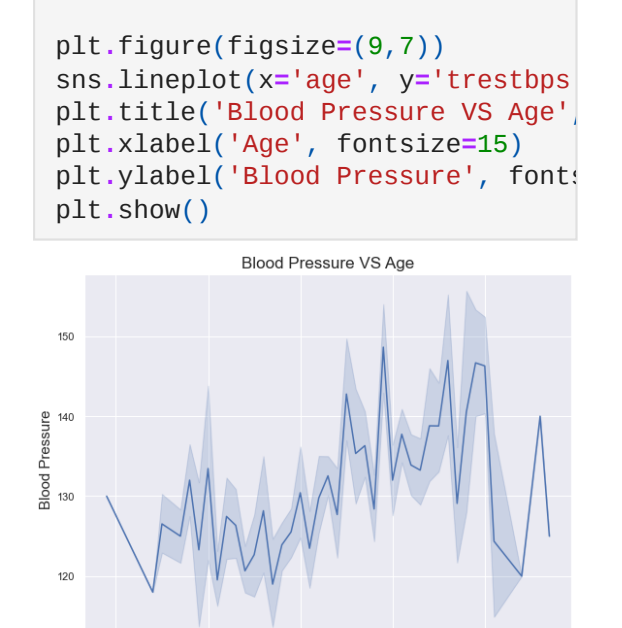
In [33]:
```
#Bar Plot Creation of Person's Res
plt.figure(figsize=(9,7))
sns.barplot(x='sex1', y='trestbps
plt.title("Blood Pressure", fontsi
plt.xlabel('Sex',fontsize=15)
plt.ylabel("Person's Resting Blood
plt.show()
```



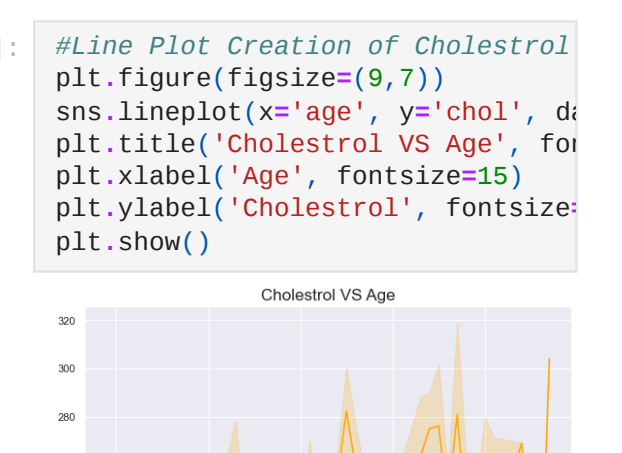
In [34]:
```
#Bar Plot Creation of Cholestrol V
plt.figure(figsize=(9,7))
sns.barplot(x='Heart_Disease', y=
plt.title('Cholestrol VS Heart Dis
plt.xlabel('Heart Disease', fontsi
plt.ylabel('Cholestrol', fontsize
plt.show()
```



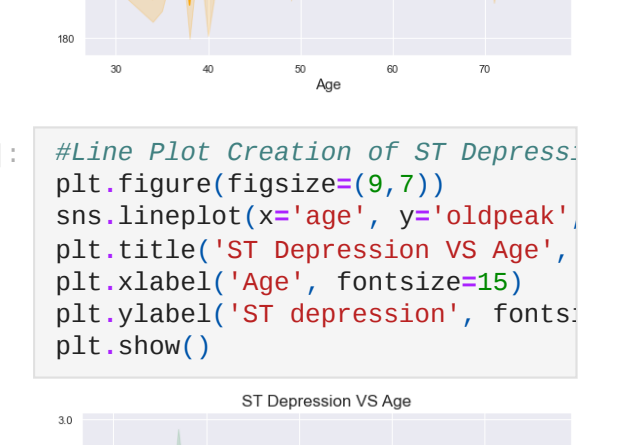
In [35]:
```
#Bar Plot Creation of Blood Pressu
plt.figure(figsize=(9,7))
sns.barplot(x='Heart_Disease', y=
plt.title('Blood Pressure VS Heart
plt.xlabel('Heart Disease', fontsi
plt.ylabel('Blood Pressure', font
plt.show()
```



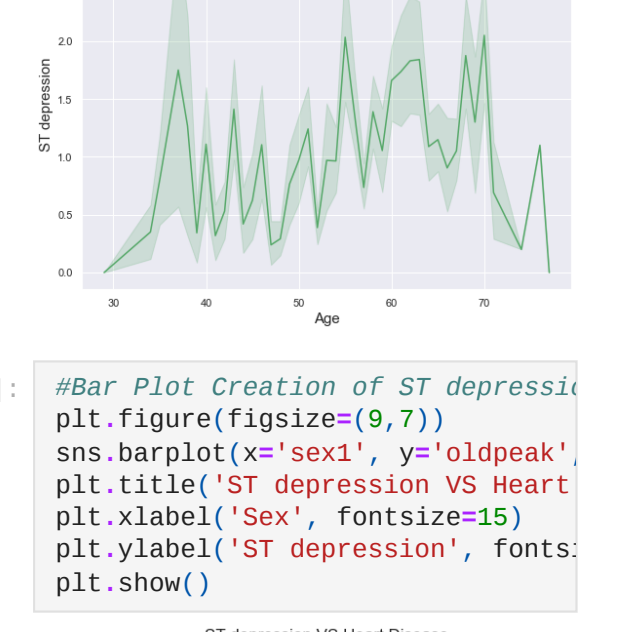
In [36]:
```
#Line Plot Creation of Blood Press

plt.figure(figsize=(9,7))
sns.lineplot(x='age', y='trestbps
plt.title('Blood Pressure VS Age',
plt.xlabel('Age', fontsize=15)
plt.ylabel('Blood Pressure', font
plt.show()
```



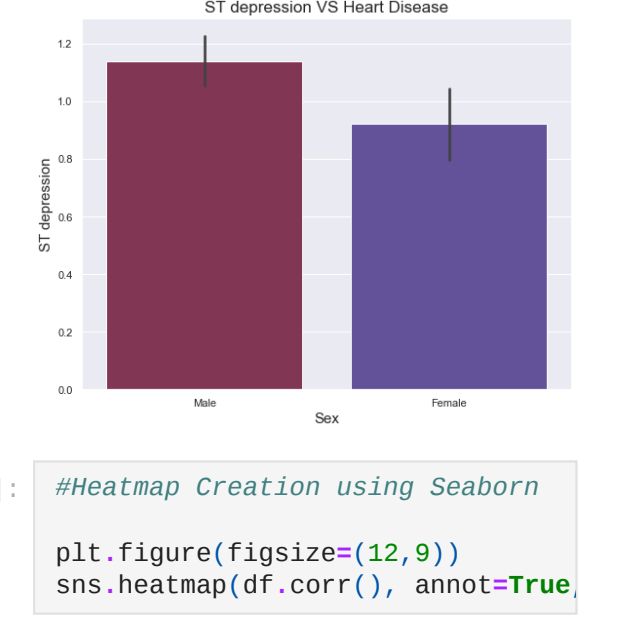
In [37]:
```
#Line Plot Creation of Cholestrol
plt.figure(figsize=(9,7))
sns.lineplot(x='age', y='chol', da
plt.title('Cholestrol VS Age', fon
plt.xlabel('Age', fontsize=15)
plt.ylabel('Cholestrol', fontsize
plt.show()
```



In [38]:
```
#Line Plot Creation of ST Depressi
plt.figure(figsize=(9,7))
sns.lineplot(x='age', y='oldpeak',
plt.title('ST Depression VS Age',
plt.xlabel('Age', fontsize=15)
plt.ylabel('ST depression', fontsi
plt.show()
```

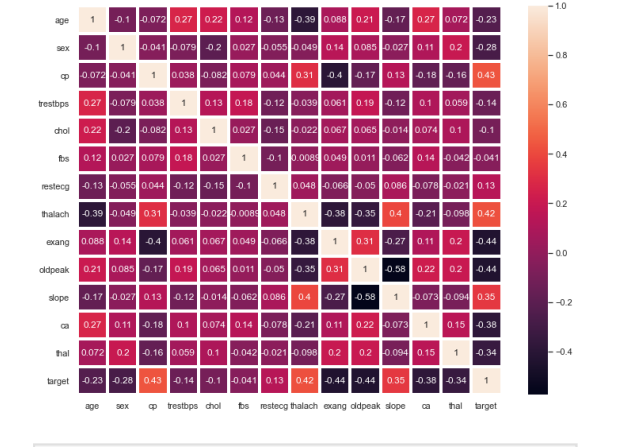


In [39]:
```
#Bar Plot Creation of ST depressio
plt.figure(figsize=(9,7))
sns.barplot(x='sex1', y='oldpeak',
plt.title('ST depression VS Heart
plt.xlabel('Sex', fontsize=15)
plt.ylabel('ST depression', fontsi
plt.show()
```



In [42]:
```
#Heatmap Creation using Seaborn

plt.figure(figsize=(12,9))
sns.heatmap(df.corr(), annot=True,
```

Out[42]: <AxesSubplot:>



In [ ]:

In [ ]:

In [ ]: