In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
df = pd.read_csv('Housing.csv')
```

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

Out[3]:

	price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioni
0	13300000	7420	4	2	3	yes	no	no	no	y
1	12250000	8960	4	4	4	yes	no	no	no	y
2	12250000	9960	3	2	2	yes	no	yes	no	
3	12215000	7500	4	2	2	yes	no	yes	no	y
4	11410000	7420	4	1	2	yes	yes	yes	no	y

In [4]:
```
df.shape
```

Out[4]:
```
(545, 13)
```

In [5]:
```
df.isnull().sum()
```

Out[5]:
```
price             0
area              0
bedrooms          0
bathrooms         0
stories           0
mainroad          0
guestroom         0
basement          0
hotwaterheating   0
airconditioning   0
parking           0
prefarea          0
furnishingstatus  0
dtype: int64
```

In [6]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 545 entries, 0 to 544
Data columns (total 13 columns):
 #   Column            Non-Null Count  Dtype 
---  ------            --------------  ----- 
 0   price             545 non-null    int64 
 1   area              545 non-null    int64 
 2   bedrooms          545 non-null    int64 
 3   bathrooms         545 non-null    int64 
 4   stories           545 non-null    int64 
 5   mainroad          545 non-null    object
 6   guestroom         545 non-null    object
 7   basement          545 non-null    object
 8   hotwaterheating   545 non-null    object
 9   airconditioning   545 non-null    object
```

```
 10  parking           545 non-null    int64
 11  prefarea          545 non-null    object
 12  furnishingstatus  545 non-null    object
dtypes: int64(6), object(7)
memory usage: 55.5+ KB
```

In [7]:
```
Cat_Att = []
Num_Att = []
```

In [8]:
```
for att in df.columns:
    if df[att].dtype == 'object':
        Cat_Att.append(att)

    else:
        Num_Att.append(att)
```

In [9]:
```
print(Cat_Att)
```

```
['mainroad', 'guestroom', 'basement', 'hotwaterheating', 'airconditioning', 'prefarea', 'furnishingstatus']
```

In [10]:
```
from sklearn.preprocessing import LabelEncoder
```

In [11]:
```
LE = LabelEncoder()
for c in Cat_Att:
    df[c] = LE.fit_transform(df[c])
```

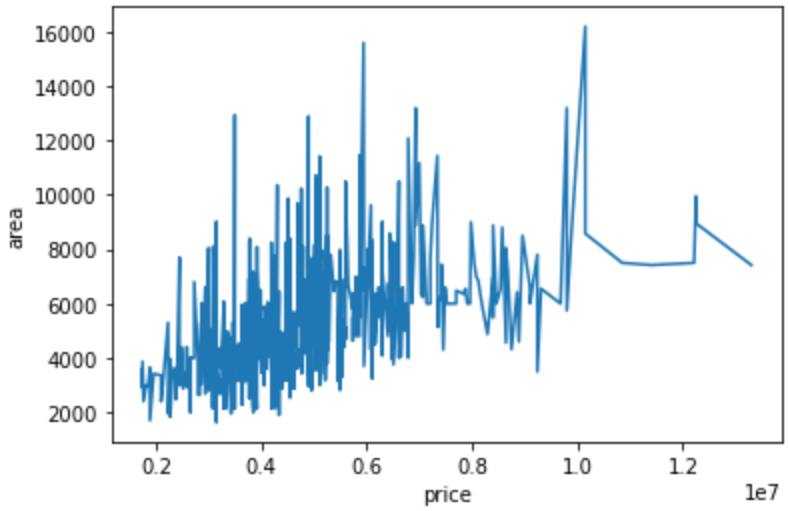
In [12]:
```
df.head()
```

Out[12]:

	price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioni
0	13300000	7420	4	2	3	1	0	0	0	
1	12250000	8960	4	4	4	1	0	0	0	
2	12250000	9960	3	2	2	1	0	1	0	
3	12215000	7500	4	2	2	1	0	1	0	
4	11410000	7420	4	1	2	1	1	1	0	

Draw a Pyplot using matplotlib

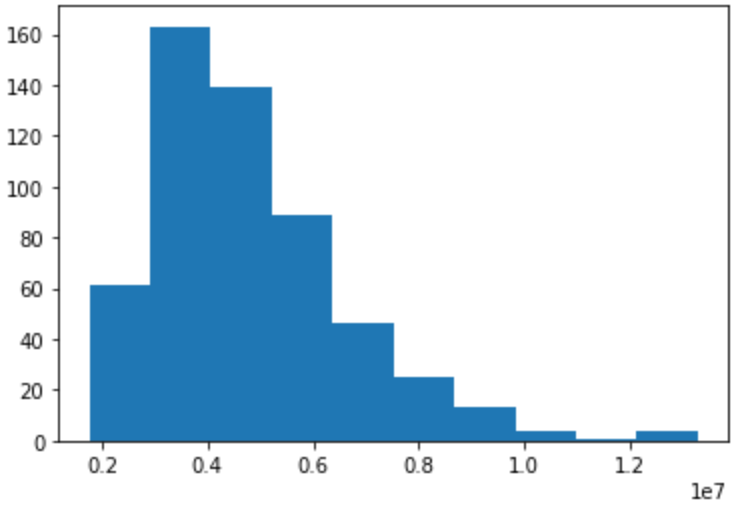
In [43]:
```
x = df['price']
y = df['area']
plt.plot(x,y)
plt.ylabel('area')
plt.xlabel('price')
#plt.xlim(0, 10150000)
plt.show()
```



Draw a histogram using matplotlib

In [46]:
```
a = df['price']
plt.hist(a)
```

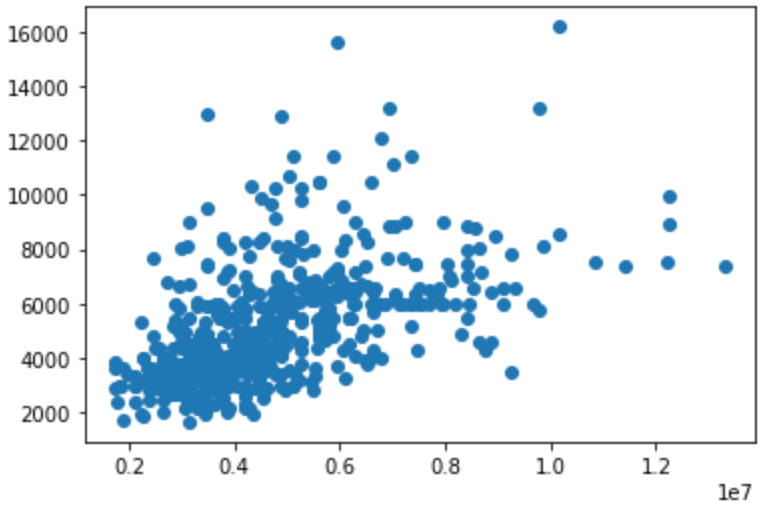
Out[46]:
```
(array([ 61., 163., 139.,  89.,  46.,  25.,  13.,   4.,   1.,   4.]),
 array([ 1750000.,  2905000.,  4060000.,  5215000.,  6370000.,  7525000.,
         8680000.,  9835000., 10990000., 12145000., 13300000.]),
 <BarContainer object of 10 artists>)
```



Draw a scatter plot using matplotlib

In [47]:
```
plt.scatter(x, y)
```

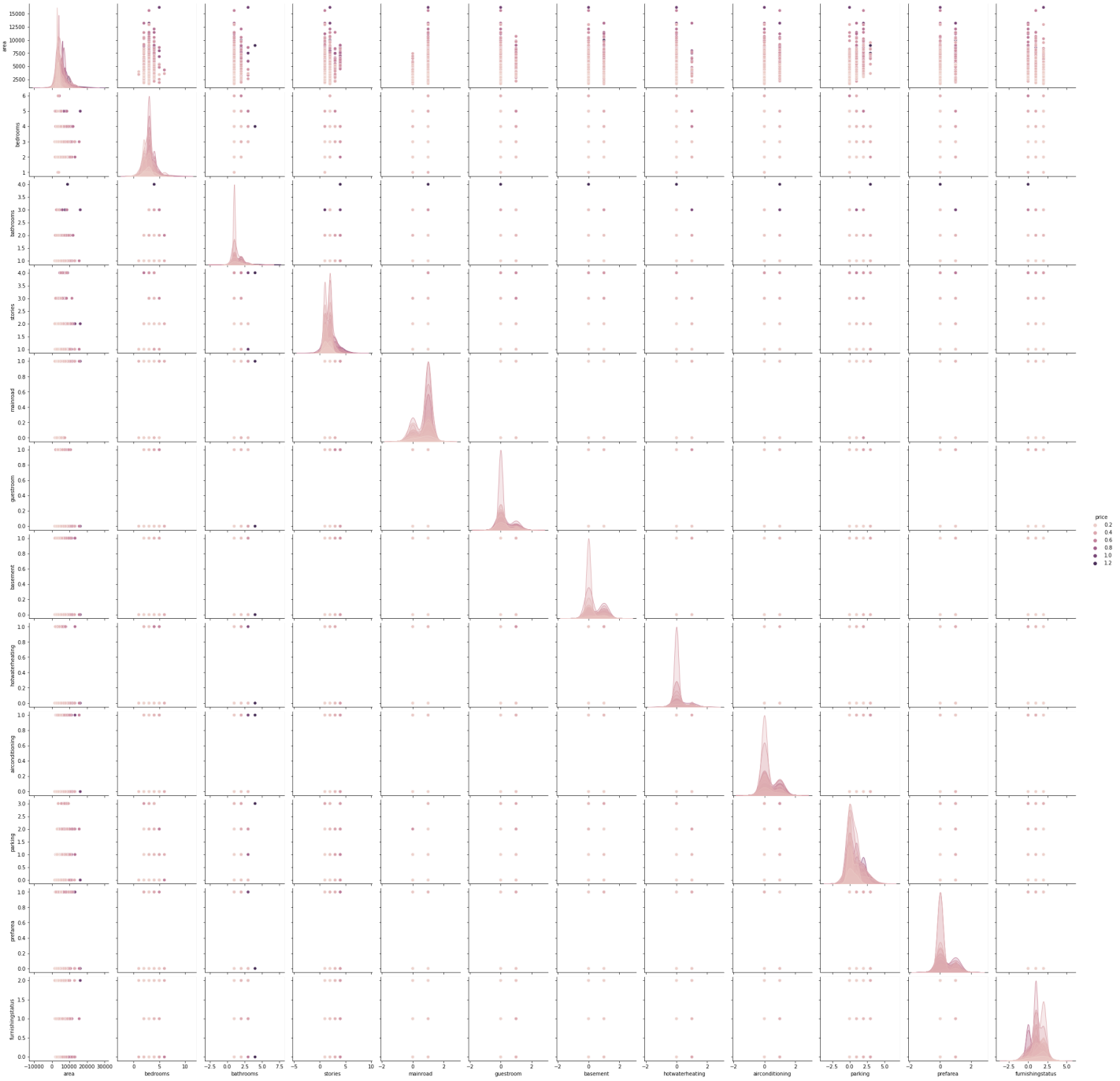
Out[47]:
```
<matplotlib.collections.PathCollection at 0x212b9f39bb0>
```



Draw a pairplot using seaborn lib

In [51]:
```
sns.pairplot(data=df, hue='price')
```

Out[51]:
```
<seaborn.axisgrid.PairGrid at 0x212b974e070>
```

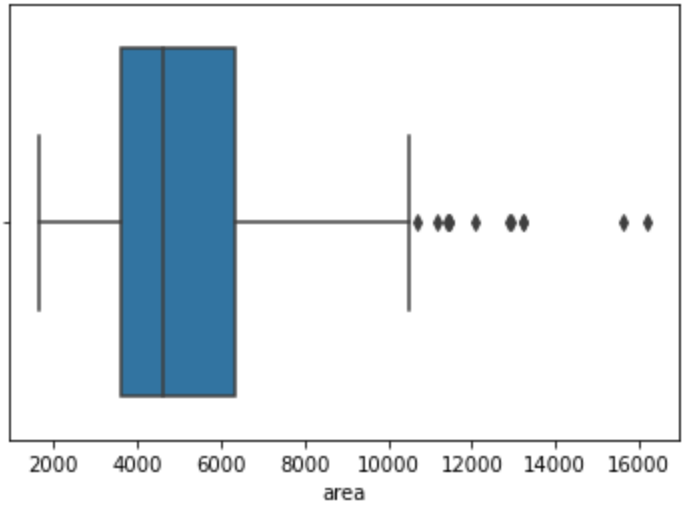


Draw a boxplot using seaborn lib

In [50]:
```
sns.boxplot(df['area'])
```

```
C:\Users\CJ\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning: Pass the
following variable as a keyword arg: x. From version 0.12, the only valid positional argum
ent will be `data`, and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```

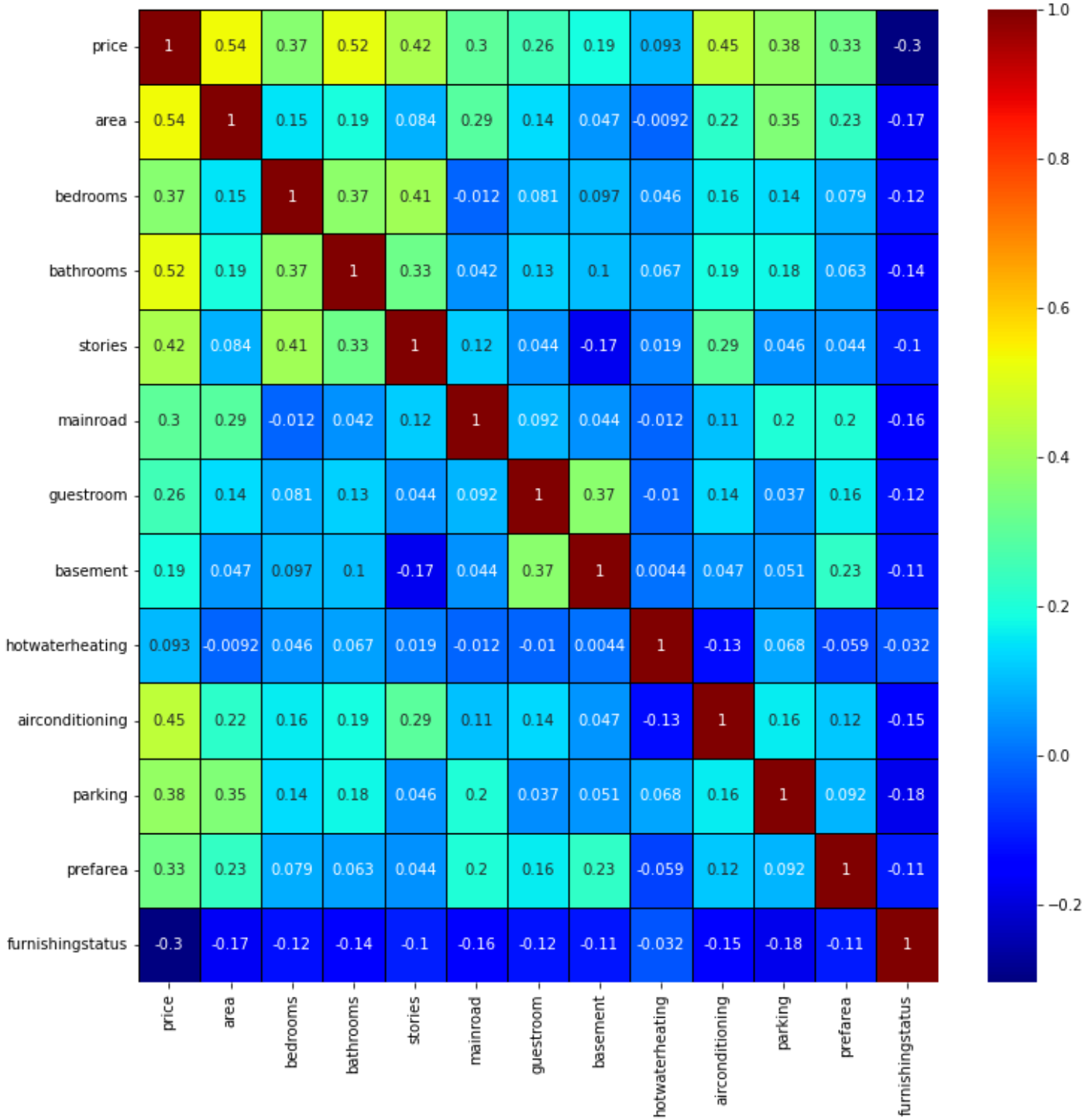
Out[50]:
```
<AxesSubplot:xlabel='area'>
```



Draw a heatmap using seaborn lib

In [52]:
```
plt.figure(figsize=(12,12))
sns.heatmap(df.corr(), annot=True, linecolor='black', linewidths=1, cmap='jet')
```

Out[52]:
```
<AxesSubplot:>
```


price 1 0.54 0.37 0.52 0.42 0.3 0.26 0.19 0.093 0.45 0.38 0.33 -0.3
area 0.54 1 0.15 0.19 0.084 0.29 0.14 0.047 -0.0092 0.22 0.35 0.23 -0.17
bedrooms 0.37 0.15 1 0.37 0.41 -0.012 0.081 0.097 0.046 0.16 0.14 0.079 -0.12
bathrooms 0.52 0.19 0.37 1 0.33 0.042 0.13 0.1 0.067 0.19 0.18 0.063 -0.14
stories 0.42 0.084 0.41 0.33 1 0.12 0.044 -0.17 0.019 0.29 0.046 0.044 -0.1
mainroad 0.3 0.29 -0.012 0.042 0.12 1 0.092 0.044 -0.012 0.11 0.2 0.2 -0.16
guestroom 0.26 0.14 0.081 0.13 0.044 0.092 1 0.37 -0.01 0.14 0.037 0.16 -0.12
basement 0.19 0.047 0.097 0.1 -0.17 0.044 0.37 1 0.0044 0.047 0.051 0.23 -0.11
hotwaterheating 0.093 -0.0092 0.046 0.067 0.019 -0.012 -0.01 0.0044 1 -0.13 0.068 -0.059 -0.032
airconditioning 0.45 0.22 0.16 0.19 0.29 0.11 0.14 0.047 -0.13 1 0.16 0.12 -0.15
parking 0.38 0.35 0.14 0.18 0.046 0.2 0.037 0.051 0.068 0.16 1 0.092 -0.18
prefarea 0.33 0.23 0.079 0.063 0.044 0.2 0.16 0.23 -0.059 0.12 0.092 1 -0.11
furnishingstatus -0.3 -0.17 -0.12 -0.14 -0.1 -0.16 -0.12 -0.11 -0.032 -0.15 -0.18 -0.11 1
price area bedrooms bathrooms stories mainroad guestroom basement hotwaterheating airconditioning parking prefarea furnishingstatus
1.0 0.8 0.6 0.4 0.2 0.0 −0.2

In [ ]: