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

```
from sklearn import datasets, linear_model
from sklearn.model_selection import train_test_split
```

```
data_url = "http://lib.stat.cmu.edu/datasets/boston"

df = pd.read_csv(data_url, sep="\s+", skiprows=22, header=None)
data = np.hstack([df.values[::2, :], df.values[1::2, :2]])
target = df.values[1::2, 2]
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1012 entries, 0 to 1011
Data columns (total 11 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   0       1012 non-null   float64
 1   1       1012 non-null   float64
 2   2       1012 non-null   float64
 3   3       506 non-null    float64
 4   4       506 non-null    float64
 5   5       506 non-null    float64
 6   6       506 non-null    float64
 7   7       506 non-null    float64
 8   8       506 non-null    float64
 9   9       506 non-null    float64
 10  10      506 non-null    float64
dtypes: float64(11)
memory usage: 87.1 KB
```

```
df
```

```
              0      1      2    3      4      5     6       7    8      9    10
0       0.00632  18.00   2.31  0.0  0.538  6.575  65.2  4.0900  1.0  296.0  15.3
1     396.90000   4.98  24.00  NaN    NaN    NaN   NaN     NaN  NaN    NaN   NaN
2       0.02731   0.00   7.07  0.0  0.469  6.421  78.9  4.9671  2.0  242.0  17.8
3     396.90000   9.14  21.60  NaN    NaN    NaN   NaN     NaN  NaN    NaN   NaN
4       0.02729   0.00   7.07  0.0  0.469  7.185  61.1  4.9671  2.0  242.0  17.8
...         ...    ...    ...  ...    ...    ...   ...     ...  ...    ...   ...
1007  396.90000   5.64  23.90  NaN    NaN    NaN   NaN     NaN  NaN    NaN   NaN
1008    0.10959   0.00  11.93  0.0  0.573  6.794  89.3  2.3889  1.0  273.0  21.0
1009  393.45000   6.48  22.00  NaN    NaN    NaN   NaN     NaN  NaN    NaN   NaN
1010    0.04741   0.00  11.93  0.0  0.573  6.030  80.8  2.5050  1.0  273.0  21.0
1011  396.90000   7.88  11.90  NaN    NaN    NaN   NaN     NaN  NaN    NaN   NaN
```

```
df.describe()
```

```
                 0            1            2           3           4           5           6           7           8           9
count  1012.000000  1012.000000  1012.000000  506.000000  506.000000  506.000000  506.000000  506.000000  506.000000  506.000000
mean    180.143778    12.008350    16.834792    0.069170    0.554695    6.284634   68.574901    3.795043    9.549407  408.237154
std     188.132839    17.250728     9.912616    0.253994    0.115878    0.702617   28.148861    2.105710    8.707259  168.537116
min       0.006320     0.000000     0.460000    0.000000    0.385000    3.561000    2.900000    1.129600    1.000000  187.000000
25%       0.257830     0.000000     8.375000    0.000000    0.449000    5.885500   45.025000    2.100175    4.000000  279.000000
50%      24.021000     7.240000    18.100000    0.000000    0.538000    6.208500   77.500000    3.207450    5.000000  330.000000
75%     391.435000    16.780000    21.890000    0.000000    0.624000    6.623500   94.075000    5.188425   24.000000  666.000000
max     396.900000   100.000000    50.000000    1.000000    0.871000    8.780000  100.000000   12.126500   24.000000  711.000000
```

```
lr = linear_model.LinearRegression()
```

```
x_train, x_test, y_train, y_test = train_test_split(data, target, test_size=0.2, random_state=42)
```

```
lr.fit(x_train, y_train)
```

```
▾ LinearRegression
LinearRegression()
```

```
y_pred = lr.predict(x_test)
```

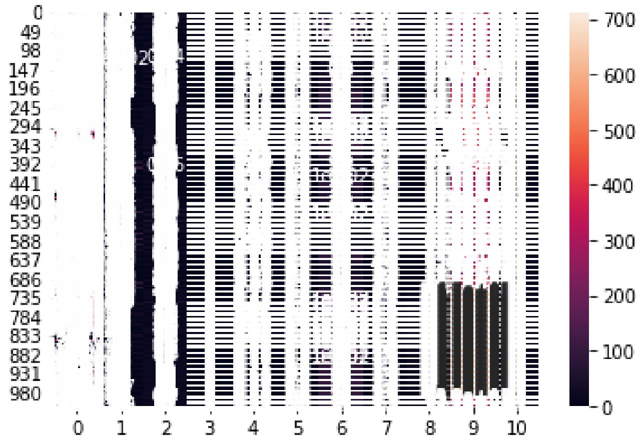
```
from sklearn.metrics import mean_squared_error
mean_squared_error(y_test, y_pred)
```

```
24.291119474973485
```

```
corr_matrix=df.round(2)
```

```
sns.heatmap(data=corr_matrix,annot=True)
```

```
<Axes: >
```



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