PROJECT : Predicting House Prices Using Machine Learning

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Loading and Pre-Processing the Dataset

ABOUT THIS PHASE :

In this phase we need to do loading and pre-processing the datasets. Here I explain about what are the process to do this phase.

Step 1:

Import the dependencies

In this step we import the library files which are required to run this program code, like modules(numpy , pandas, sklearn , matpltlib, seaborn, XGBoost).

Step 2:

Impoting the dataset

In this step I import California_housing dataset form the the sklearn module it is used to fetch the data and the data is used as the input of this project.

Step 3:

Loading the dataset into the pandas dataframe

In this step I load my data to the pandas data frame which gives the structure of our dataset

Step 4:

Checking the number of rows and column to the dataset

In this step I check the number of rows and column to the dataset and also check any missing valuesin my dataset

Step 5:

Statical measure of dataset

In this step to check some stats related to my dataset like(count, mean, minimum, maximum, standard deviation).

Step 6:

Generate heat map

In this step to generate heat map to know about my dataset clearly by using the module matplotlib.pyplot

Import the dependencies

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import
matplotlib.py
plot as plt
import
seaborn as
sns
import sklearn.datasets
from sklearn.model_selection
import train_test_splitfrom
xgboost import XGBRegressor
from sklearn import metrics
```

Impoeting the california house prise dataset

```
 from sklearn.datasets import
fetch_california_housing
house_price_dataset =
fetch_california_housing()


print(house_price_dataset)
```

{'data': array([[8.3252 , 41. , 6.98412698, ..., 2.55555556,
37.88 , -122.23],
[8.3014 , 21. , 6.23813708, ..., 2.10984183,
37.86 , -122.22],
[7.2574 , 52. , 8.28813559, ..., 2.80225989,
37.85 , -122.24],
...,
[1.7 , 17. , 5.20554273, ..., 2.3256351 ,
39.43 , -121.22],
[1.8672 , 18. , 5.32951289, ..., 2.12320917,
39.43 , -121.32],
[2.3886 , 16. , 5.25471698, ..., 2.61698113,
39.37 , -121.24]]), 'target': array([4.526, 3.585, 3.521, ..., 0.923, 0.847, 0.894]), 'frame':
None, 'target_n


```
# loading the dataset to the Pands DataFrame
house_price_dataframe = pd.DataFrame(house_price_dataset.data, columns = house_price_dataset.feature_names)
```

```
# print first 5
rows of our
DataFrame
house_price_datafra
me.head()
```

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	Longitude
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	-122.23
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	-122.22
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	-122.24
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	-122.25
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	-122.25

```
# add the target column to the DataFrame
house_price_dataframe['price'] = house_price_dataset.target
```

```
house_price_dataframe.head()
```

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	Longitude	price
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	-122.23	4.526
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	-122.22	3.585
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	-122.24	3.521
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	-122.25	3.413
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	-122.25	3.422

```
# checking the number of rows and columns
in the data frame
house_price_dataframe.shape
```

```
(20640, 9)
```

```
#check for missing values
house_price_dataframe.isnull().sum()
```

```
MedInc 0
```

```
HouseAge      0
AveRooms      0
AveBedrms     0
Population    0
AveOccup      0
Latitude      0
Longitude     0
price         0
dtype: int64
```

```
# statical
measure of the
dataset
house_price_dat
aframe.describe
()
```

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	Longitude	price
count	20640.000000	20640.000000	20640.000000	20640.000000	20640.000000	20640.000000	20640.000000	20640.000000	20640.000000
mean	3.870671	28.639486	5.429000	1.096675	1425.476744	3.070655	35.631861	-119.569704	2.068558
std	1.899822	12.585558	2.474173	0.473911	1132.462122	10.386050	2.135952	2.003532	1.153956
min	0.499900	1.000000	0.846154	0.333333	3.000000	0.692308	32.540000	-124.350000	0.149990
25%	2.563400	18.000000	4.440716	1.006079	787.000000	2.429741	33.930000	-121.800000	1.196000
50%	3.534800	29.000000	5.229129	1.048780	1166.000000	2.818116	34.260000	-118.490000	1.797000
75%	4.743250	37.000000	6.052381	1.099526	1725.000000	3.282261	37.710000	-118.010000	2.647250
max	15.000100	52.000000	141.909091	34.066667	35682.000000	1243.333333	41.950000	-114.310000	5.000010

underatanding various

feature in the dataset

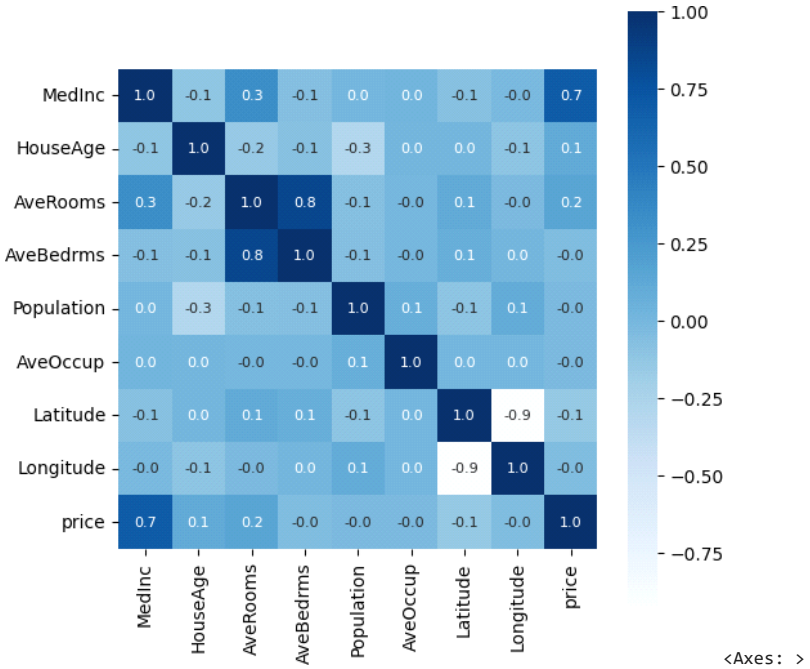
1.positive correlation

2.negative correlation

```
correlation = house_price_dataframe.corr()
```

constructing the heatmap

```
# constructing the heatmap to
understand the correlation
plt.figure(figsize=(6,6))
sns.heatmap(correlation, cbar=True, square=True, fmt='.1f', annot=True, annot_kws={'size':8}, cmap='Blues')
```



<Axes: >

splitting data and target

```
X =
house_price_dataframe.drop(['pr
ice'], axis=1)Y =
house_price_dataframe['price']
```

```
p
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i
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t
(
X
)
```

```
p
r
i
n
t
(
Y
)
```

	MedInc	HouseAge	AveRooms	AveBedrms	Population	AveOccup	Latitude	\
0	8.3252	41.0	6.984127	1.023810	322.0	2.555556	37.88	
1	8.3014	21.0	6.238137	0.971880	2401.0	2.109842	37.86	
2	7.2574	52.0	8.288136	1.073446	496.0	2.802260	37.85	
3	5.6431	52.0	5.817352	1.073059	558.0	2.547945	37.85	
4	3.8462	52.0	6.281853	1.081081	565.0	2.181467	37.85	
...	...	...	...	...	...	...	...	
20635	1.5603	25.0	5.045455	1.133333	845.0	2.560606	39.48	
20636	2.5568	18.0	6.114035	1.315789	356.0	3.122807	39.49	

20637	1.7000	17.0	5.205543	1.120092	1007.0	2.325635	39.43	
20638	1.8672	18.0	5.329513	1.171920	741.0	2.123209	39.43	
20639	2.3886	16.0	5.254717	1.162264	1387.0	2.616981	39.37	

	Longitude
0	-122.23
1	-122.22
2	-122.24
3	-122.25
4	-122.25
...	...
20635	-121.09
20636	-121.21
20637	-121.22
20638	-121.32
20639	-121.24

[20640 rows x 8 columns]

0	4.526
1	3.585
2	3.521
3	3.413
4	3.422
...	...
20635	0.781
20636	0.771
20637	0.923
20638	0.847
20639	0.894

Name: price, Length: 20640, dtype: float64