In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn import linear_model
import numpy as np
```

In [2]:
```
#data load
df = pd.read_csv('room.csv')
df
```

Out[2]:

	area	bedrom	age	price
0	129	2	10	2300
1	159	4	5	2500
2	200	3	20	3000
3	131	5	10	2300
4	300	2	15	4000
5	174	2	22	2900
6	332	3	16	2935
7	345	7	16	2879
8	417	5	20	4020
9	366	4	20	3306
10	354	10	17	2617

In [29]:
```
df['price']= df['price'].fillna(df['price'].median())
df
```

Out[29]:

	area	bedrom	age	price
0	129	2	10	2300
1	159	4	5	2500
2	200	3	20	3000
3	131	5	10	2300
4	300	2	15	4000
5	174	2	22	2900
6	332	3	16	2935
7	345	7	16	2879
8	417	5	20	4020
9	366	4	20	3306
10	354	10	17	2617
11	476	7	17	4283
12	462	8	19	3886
13	349	3	19	4223
14	438	9	18	2612
15	493	10	19	3496
16	373	8	15	2785
17	416	4	16	3498
18	305	6	20	3642
19	359	2	20	3407
20	352	7	15	2507

In [30]:
```
df['price'].median()
```

Out[30]: 3000.0

In [31]:
```
reg = linear_model.LinearRegression()
```

In [32]:
```
reg.fit(df.drop('price', axis= 'columns'),df['price'])
```

Out[32]:
```
LinearRegression
LinearRegression()
```

In [33]:
```
# reg.fit(df.drop('age', axis= 1),df['age'])
```

In [34]:
```
df.head(1)
```

Out[34]:

	area	bedrom	age	price
0	129	2	10	2300

In [35]:
```
reg.predict([[500,2,10]])
```

```
C:\Users\Administrator\AppData\Local\Programs\Python\Python311\Lib\site-packa
ges\sklearn\base.py:465: UserWarning: X does not have valid feature names, bu
t LinearRegression was fitted with feature names
  warnings.warn(
```

Out[35]:
```
array([4325.1179277])
```

In [36]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 21 entries, 0 to 20
Data columns (total 4 columns):
 #   Column  Non-Null Count  Dtype
---  ------  --------------  -----
 0   area    21 non-null     int64
 1   bedrom  21 non-null     int64
 2   age     21 non-null     int64
 3   price   21 non-null     int64
dtypes: int64(4)
memory usage: 804.0 bytes
```

In [37]:
```
df.describe()
```

Out[37]:

	area	bedrom	age	price
count	21.000000	21.000000	21.000000	21.000000
mean	330.000000	5.285714	16.619048	3195.047619
std	111.708997	2.704494	4.104585	639.497496
min	129.000000	2.000000	5.000000	2300.000000
25%	300.000000	3.000000	15.000000	2617.000000
50%	352.000000	5.000000	17.000000	3000.000000
75%	416.000000	7.000000	20.000000	3642.000000
max	493.000000	10.000000	22.000000	4283.000000

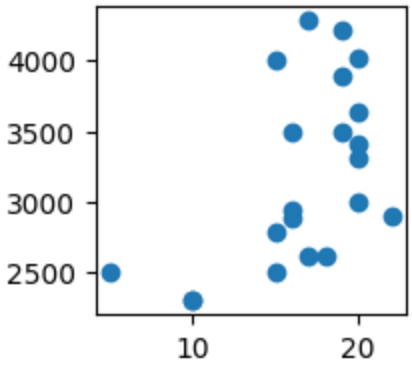
In [38]:
```
reg.fit(df[['age']], df['price'])
```

Out[38]:
```
▾ LinearRegression
LinearRegression()
```

In [39]:
```
# ntercept (c)= y when x=0
reg.intercept_
```

Out[39]:
```
1818.412238552855
```

In [40]:
```
plt.figure(figsize=(2,2))
plt.scatter(df['age'], df['price'])
plt.show()
```



In [41]:
```
# Model Building
size= df.drop('price', axis=1)
size
```

Out[41]:

	area	bedrom	age
0	129	2	10
1	159	4	5
2	200	3	20
3	131	5	10
4	300	2	15
5	174	2	22
6	332	3	16
7	345	7	16
8	417	5	20
9	366	4	20
10	354	10	17
11	476	7	17
12	462	8	19
13	349	3	19
14	438	9	18
15	493	10	19
16	373	8	15
17	416	4	16
18	305	6	20
19	359	2	20
20	352	7	15

20/10/23 JobLib

In [42]:
```
from sklearn import linear_model
import joblib
import pickle
```

In [43]:
```
reg = linear_model.LinearRegression()
```

In [44]:
```
reg.fit(df[['age']], df['price'])
```

Out[44]:
```
▾ LinearRegression
LinearRegression()
```

In [45]:
```
joblib.dump(reg, 'model_joblib')
```

Out[45]:
```
['model_joblib']
```

In [46]:
```
reg = joblib.load('model_joblib')
```

In [47]:
```
reg.predict([[500]])
```

```
C:\Users\Administrator\AppData\Local\Programs\Python\Python311\Lib\site-packa
ges\sklearn\base.py:465: UserWarning: X does not have valid feature names, bu
t LinearRegression was fitted with feature names
  warnings.warn(
```

Out[47]:
```
array([43235.80907292])
```

In [48]:
```
with open('model_pickle', 'wb')as f:
    pickle.dump(reg, f)
```

In [49]:
```
reg.coef_
```

Out[49]:
```
array([82.83479367])
```

In [50]:
```
reg.intercept_
```

Out[50]:
```
1818.412238552855
```

In [51]:
```
with open('model_pickle', 'rb')as a:
    reg = pickle.load(a)
```

In [52]:
```
reg.coef_
```

Out[52]:
```
array([82.83479367])
```

In [53]:
```
reg.intercept_
```

Out[53]:
```
1818.412238552855
```

In [54]:
```
reg.predict([[5000]])
```

```
C:\Users\Administrator\AppData\Local\Programs\Python\Python311\Lib\site-packa
ges\sklearn\base.py:465: UserWarning: X does not have valid feature names, bu
t LinearRegression was fitted with feature names
  warnings.warn(
```

Out[54]:
```
array([415992.38058225])
```

In [ ]:
```

```