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

In [2]:
```python
data = pd.read_csv("COASAMPLE.csv")
data.head()
```

Out[2]:

	Year	UNITID	INTUTIONFEE	OUTTUTIONFEE	BOOKSUPPLY	ONCAMROOM	ONCAMOTHEXP	OFFCA
0	2016	100751	10470	26950	1200.0	13050	4116	
1	2016	100858	10696	28840	1200.0	12898	5664	
2	2016	101453	9792	9792	1000.0	4140	2628	
3	2016	102298	12340	12340	1370.0	6504	2100	
4	2016	106412	6898	12988	1000.0	7372	2848	

In [3]:
```python
data.shape
```

Out[3]: (480, 15)

In [4]:
```python
data_df = pd.DataFrame(data, columns = ['Year', 'UNITID', 'INTUTIONFEE','OUTTUTIONFEE',
data_df.shape
```

Out[4]: (480, 9)

In [5]:
```python
data_x = pd.DataFrame(data_df, columns=['INTUTIONFEE']).values
data_x.shape
```

Out[5]: (480, 1)

In [6]:
```python
data_y1 = pd.DataFrame(data_df, columns=['OUTTUTIONFEE']).values
data_y2 = pd.DataFrame(data_df, columns=['ONCAMROOM']).values
data_y3 = pd.DataFrame(data_df, columns=['OFFCAMROOM']).values
#res = data_y.reshape([499, 499])
data_y1.shape
```

Out[6]: (480, 1)

In [7]:
```python
outtutionfee_model = LinearRegression().fit(data_x,data_y1)
oncampusroom_model = LinearRegression().fit(data_x,data_y2)
offcampusroom_model = LinearRegression().fit(data_x,data_y3)
```

In [8]:
```python
r_sq = outtutionfee_model.score(data_x,data_y1)
print('coefficient of determination:', r_sq)
print('intercept:', outtutionfee_model.intercept_)
print('slope:', outtutionfee_model.coef_)
```

```
coefficient of determination: 0.8037645877204754
intercept: [10528.09509374]
slope: [[0.72436645]]
```

In [9]:
```python
print("Predicted Out of Station Tution Fees")
print(outtutionfee_model.predict([[22340], [17092]]))
```

```
Predicted Out of Station Tution Fees
[[26710.44165086]
 [22908.9665062 ]]
```

In [10]:
```python
print("Predicted On campus housing")
print(oncampusroom_model.predict([[22340], [17092]]))
```

```
Predicted On campus housing
[[10557.55820359]
 [10028.05047583]]
```

In [11]:
```python
print("Predicted On campus housing")
print(offcampusroom_model.predict([[22340], [17092]]))
```

```
Predicted On campus housing
[[10077.45151252]
 [ 9777.73380568]]
```

In [ ]: