```
Chapter 3 - Regression Models

Part 1 - Simple Linear Regression
```

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

from pylab import rcParams

from sklearn.linear_model import LinearRegression
from sklearn.preprocessing import scale
```

In [2]:
```
%matplotlib inline
rcParams['figure.figsize'] = 10,8
```

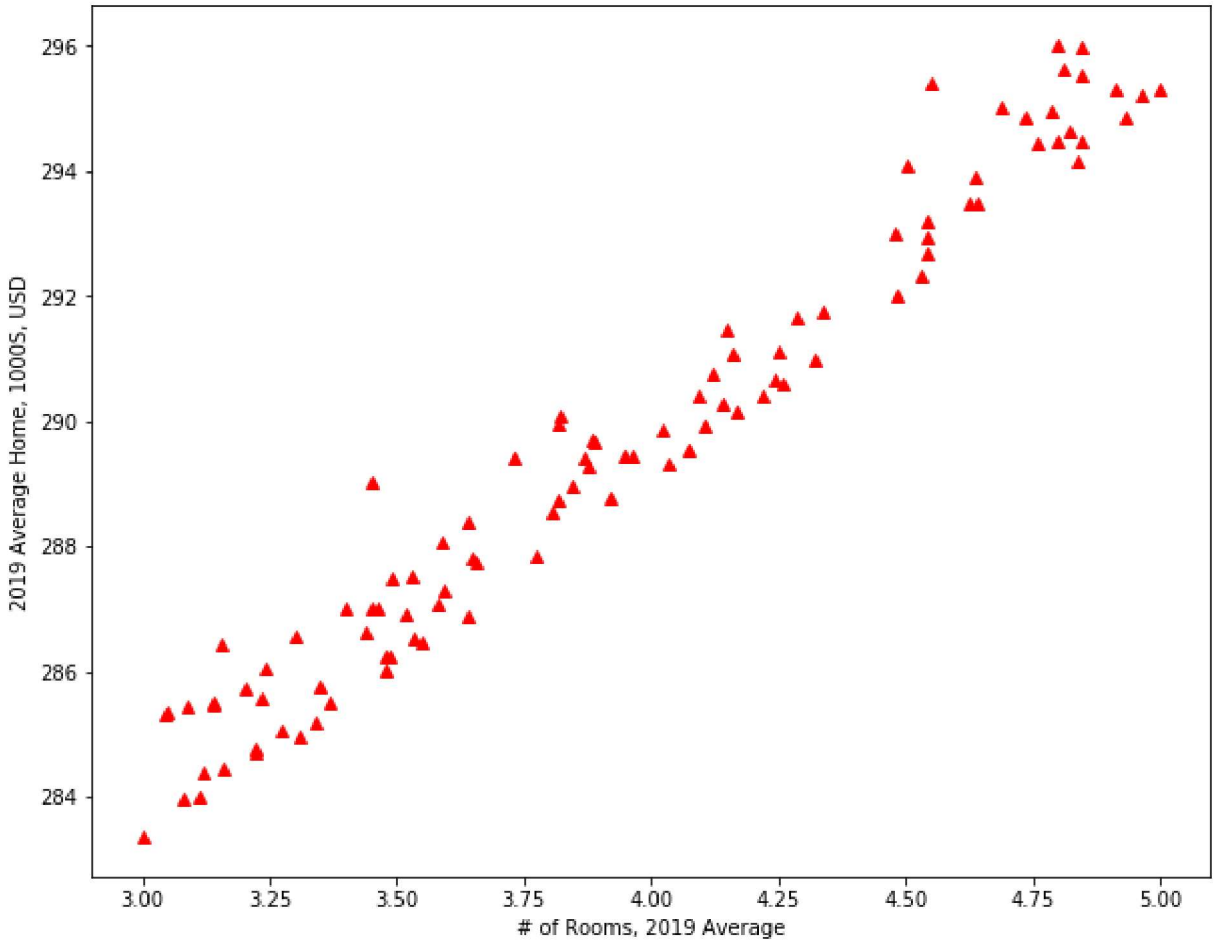
In [5]:
```
rooms = 2*np.random.rand(100,1)+3
rooms[1:10]
```

Out[5]:
```
array([[3.30978326],
       [4.28518039],
       [3.59062247],
       [4.55194329],
       [4.8389948 ],
       [4.82241802],
       [3.04526752],
       [3.58233604],
       [3.13916633]])
```

In [6]:
```
price = 265 + 6*rooms +abs(np.random.randn(100,1))
price[1:10]
```

Out[6]:
```
array([[284.9725391 ],
       [291.66975308],
       [288.05849081],
       [295.40753237],
       [294.14650311],
       [294.62212216],
       [285.30893763],
       [287.08526606],
       [285.49216888]])
```

In [7]:
```
plt.plot(rooms, price,'r^')
plt.xlabel("# of Rooms, 2019 Average")
plt.ylabel("2019 Average Home, 1000S, USD")
plt.show()
```



In [8]:
```
x = rooms
y = price

LinReg = LinearRegression()
LinReg.fit(x,y)
print(LinReg.intercept_, LinReg.coef_)
```

```
[266.35201231] [[5.8963778]]
```

```
Simple Algebra

y = mx + b
```

```
b = intercept = 265.7
Estimated Coefficients

LinReg.coef_ = [5.99] Estimated coefficients for the terms in the linear
regression problem.
```

In [10]:
```
print(LinReg.score(x,y))
```

```
0.9605873427786062
```