	Local Price	Bathrooms	Land area	Living area	garages	Rooms	Bedroom	Age
Apartment								
mean	7.332	1.285	6.1038	1.505	1.2142	6.857	3.4285	38.714
Variance	11.2075	0.2755	9.1010	0.4249	0.4183	1.55	0.8163	184.77
House								
mean	5.76074	1.0714	6.634	1.3917	1.0714	6.1428	3	34.28
Variance	0.2786	0.0806	4.335	0.0388	0.6020	0.4081	0.2857	138.775
Condo								
mean	7.4751	1.333	6.0246	1.553	1.333	6.8333	3.333	39.667
variance	1.7715	0.3055	5.3465	0.71061	0.2222	2.1388	0.5558	162.222

Atwa Boadi Asamoah.

(-)

$P(\text{Apartment}) = \frac{7}{20}$

$P(\text{House}) = \frac{7}{20}$

$P(\text{Condo}) = \frac{6}{20}$.

Using gaussian to find conditional distribution of all features given the class (Apartment).

① $P(\text{localprice} \mid \text{Apartment}) = \frac{1}{\sqrt{2\pi(\sigma^2)}} e^{\frac{-(x-u)^2}{2(\sigma^2)}}$

$= \frac{1}{\sqrt{2\pi(11.207)}} e^{-\frac{(x-7.33)^2}{2(11.207)}}$

Using the example from test data:

Local Price = 6.0931 bedrooms = 3

age = 44

bathrooms = 1.5

land area = 6.7265

Living area = 1.652

garages = 1

rooms = 6

$P(\text{local Price} \mid \text{Apartment}) = \frac{1}{\sqrt{2\pi(11.207)}} e^{\frac{-(6.0931-7.33)^2}{2(11.207)}}$

$= 0.09191$

(2) $P(\text{Bathrooms} \mid \text{Apartment}) = \frac{1}{\sqrt{2\pi(\sigma^2)}} e^{\frac{-(x-u)^2}{2(\sigma^2)}}$

$= \frac{1}{\sqrt{2\pi(0.2755)}} e^{-\frac{(1.5 - 1.2857)^2}{2(0.2755)}}$

$=$

(3) $P(\text{landarea} \mid \text{Apartment}) = \frac{1}{\sqrt{2\pi(9.1010)}} e^{-\frac{(6.7265 - 6.1038)^2}{2(9.1010)}}$

$=$

(4) $P(\text{Living area} \mid \text{Apartment}) = \frac{1}{\sqrt{2\pi(0.4249)}} e^{-\frac{(1.652 - 1.505)^2}{2(0.4249)}}$

$=$

(5) $P(\text{garages} \mid \text{apartment}) = \frac{1}{\sqrt{2\pi(0.4183)}} e^{-\frac{(1 - 1.214)^2}{2(0.4183)}}$

$=$

$$P(\text{Rooms} \mid \text{apartment}) = \frac{1}{\sqrt{2\pi(1.55)}} e^{-\frac{(6 - 6.8571)^2}{2(1.55)}}$$

$$=$$

$$P(\text{bedrooms} \mid \text{apartment}) = \frac{1}{\sqrt{2\pi(0.8163)}} e^{-\frac{(3 - 3.428)^2}{2(0.8163)}}$$

$$=$$

$$P(\text{Age} \mid \text{apartment}) = \frac{1}{\sqrt{2\pi(184.77551)}} e^{\frac{-(44 - 38.714)^2}{2(184.775)}}$$

Finding the mean and variance of:
Local Price given Apartment
This is how I calculate the mean and variance for conditional Prob.:

$$\text{mean} = \frac{4.9176 + 4.5573 + 5.0597 + 14.4598 + 5.05 + 8.2464 + 9.0384}{7}$$

$$= \underline{7.332}$$

$$\text{Variance} = \frac{(4.9176-7.332)^2 + (4.5573-7.332)^2 + (5.0597-7.332)^2 + (14.4598-7.332)^2 + (5.05-7.332)^2 + (8.2464-7.332)^2 + (9.0384-7.332)^2}{7.332-1}$$

$$= 11.2075$$