

Q5

X Age	Y Loan	Labels		Distance from (37, 142) Age = 37, Loan = 142
		HPI	BHK	
25	40	135	2	102.703
35	60	256	3	82.024
45	80	231	3	62.514
20	20	267	4	123.178
35	120	139	4	22.09
52	18	150	2	124.904
23	95	127	2	49.041
40	62	216	4	80.056
60	100	139	2	47.895
48	220	250	3	78.771
33	150	264	4	8.944

for $k=1$ Nearest neighbour of (37, 142) will be (33, 150)
which is at a distance of 8.944

Hence, for $k=1$, Predicted values of HPI = 264
Predicted values of BHK = 4.

for $k=2$, the nearest neighbour of (37, 142) will be (33, 150)
and (35, 120) at distances, 8.944 and 22.09 respectively
Corresponding (HPI, BHK) are (139, 4) and (264, 4)

Hence, for $k=2$ Predicted value of
HPI (mean for two neighbours) = $(264 + 139)/2 = 201.5$
and BHK = 4 (majority in neighbours)

for $k=3$, the nearest neighbours of (37, 142) will (33, 150),
(35, 120) and (60, 100) at distances 8.944, 22.091 and 47.895
respectively, Hence for $k=3$, predicted values for

$$\text{HPI} = (264 + 139 + 139)/3 = 180.66$$

$$\text{BHK} = 4 \text{ (majority in neighbours)}$$

(HPI, BHK) are (139, 4), (139, 2), (264, 4)