Assignment 7.1

The dataset with distances,

age	income	distance
21	60	a
20	55	b
22	60	c
21	61	d
23	65	e
21	62	f
25	65	g
30	70	h
31	68	i

We have to predict the income value of a given age 22.

Now, calculate the distances between the ages of the given dataset with 22.

$a = |22-21| = 1$

$b = |22-20| = 2$

$c = |22-22| = 0$

$d = |22-21| = 0$

$e = |22-23| = 1$

$f = |22-21| = 1$

$g = |22-25| = 3$

$h = |22-30| = 8$

$i = |22-31| = 9$

After sorting the distance in ascending order, we get,

c, d, a, e, f, b, g, h, i

As, k=3, we take 3 nearest neighbors of 22 and they are:

age	income
21	60
22	60
22	61

Now, Calculate the mean of the incomes above:

$$\text{mean} = (60+60+61)/3$$

$$= 60.33$$

This mean is the predicted income of age 22.

∴ The predicted income of 22 is 60.33 (Answer)