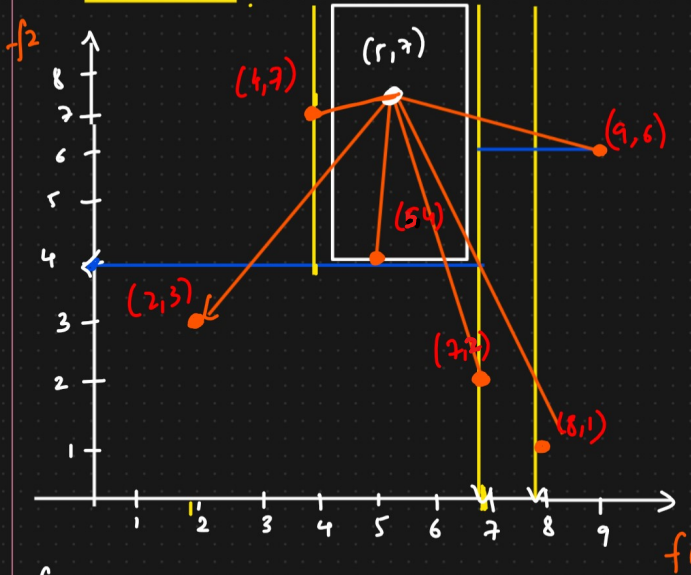


# Variants of KNN

## KD Tree



$f_1$   
2, 4, 5, 7 | 8, 9

$$\frac{5+7}{2} = \frac{12}{2} = 6.5$$

Projected on x-axis in yellow color.

$f_2$

1, 2, 3, 4 | 6, 7

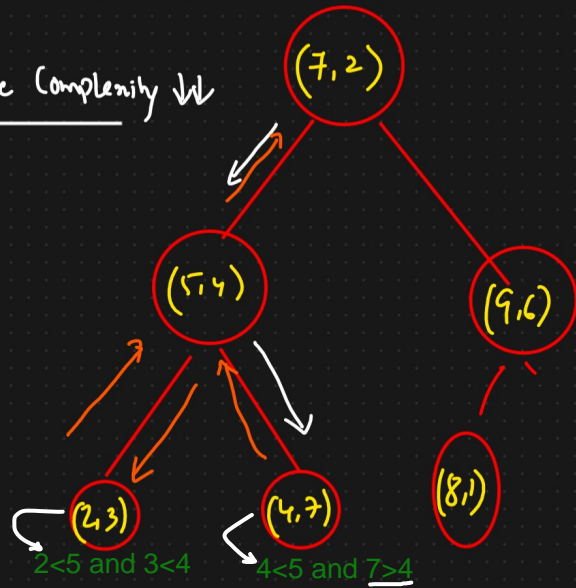
Projected on y-axis in blue color.

$f_1$	$f_2$
7	2
5	4
9	6
2	3
4	7
8	1

Median                  Median

## Binary Tree [KD Tree]

Time Complexity  $\downarrow$



Using Back Tracking to find next nearest point.

## (2) Ball Tree

Time Complexity  $\downarrow$

It groups nearest nodes together.

