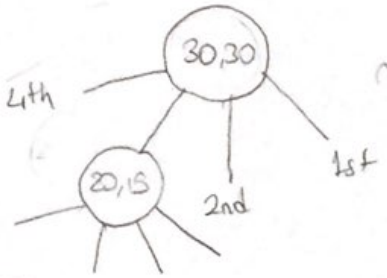
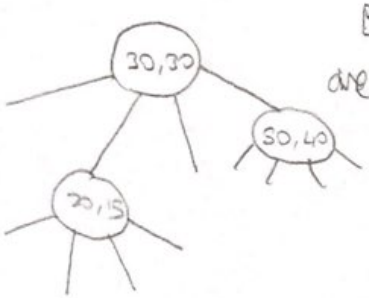
There was no node. So, 30,30 will be first node.

STEP 1



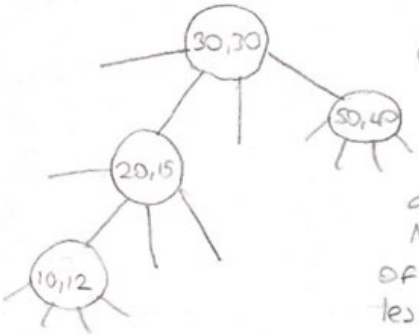
Both x and y coordinate are less than root node so, it is third quadrant

STEP 2



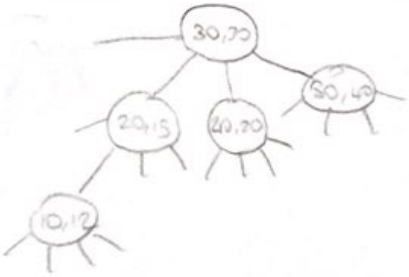
Both x and y coordinates of new node are bigger than root node, it is first quadrant.

STEP 3



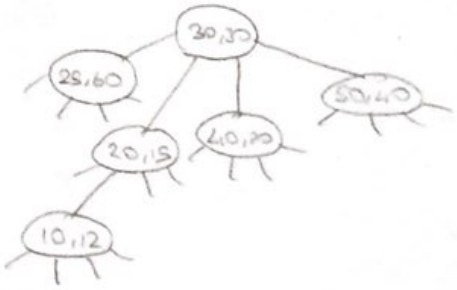
Both x and y coordinates of new node are less than root node, so it is third quadrant. But third quadrant is filled. For this reason new node should be a child of third quadrant of root node. New node must be placed as third quadrant of (20,15) node because both x and y coordinate are less than its coordinates

STEP 4



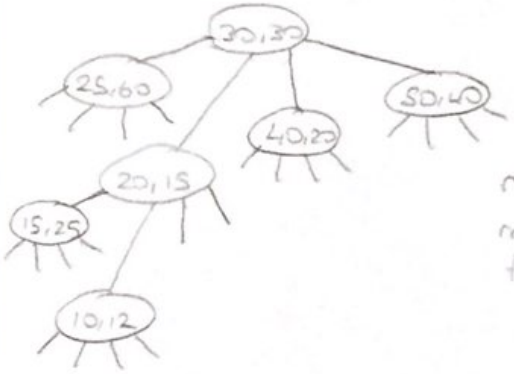
X coordinate is bigger than root node but y node is less than root node. For this reason it is second quadrant.

STEP 5



X coordinate is less than root node, y coordinate is bigger than root node. For this reason, it is fourth quadrant

STEP 6



Like step 4, it will go to third quadrant of first node, but it will continue because third quadrant is filled. X coordinate of new node is less than third quadrant of root node but y coordinate of it is bigger than third quadrant of root node.

So, it will place to fourth quadrant of third quadrant of root node.

STEP 7

Binary tree representation of this quadtree