

Locating Vertically & Horizontally Align Points in Cartesian Plane

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- Problem Statement
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Problem Statement :

Locating vertically aligned points and horizontally aligned points given the points with XY coordinates in a Cartesian space.

Algorithm For the Problem

We have used simple logic for vertical align point general form $x = K$. The x axis has the equation $y = 0$ taken as reference. And similarly for horizontal align point general form $y = k$.

Steps to Follow:

- Generated the random integer value greater than 50 for no of point.

- Run the for loop no. of points time and generated the x , y coordinate for the point.
- In the hash map for the vertical align point store the y coordinate value corresponding to the given x key.
- In the hashmap for the horizontal align point store the x coordinate value corresponding to the given y key.
- Traverse the map for x key if more than or equal to 3 y coordinates are available print the start and end point of the vertical align point.
- Traverse the map for y key if more than or equal to 3 x coordinates are available print the start and end point of the horizontal align point.

Conclusion

Thus we have successfully implement a algorithm using hashmap to store the y or x value to x or y key in order to find out the horizontal and vertical alignment of point. Time complexity for this Algorithm is $O(n \log n)$ and space complexity is $O(n)$.

References:

Map of vector

<https://www.geeksforgeeks.org/map-of-vectors-in-c-stl-with-examples/>

Vertical and horizontal align point

<https://magoosh.com/math/coordinate-geometry-vertical-and-horizontal-lines/#:~:text=Vertical%20lines%20have%20the%20general,coordinate%2C%20they%20are%20vertically%20separated.>



Thank
you