

HW4-4

a.

the closest pairs of points with a distance of 1 were clustered.

These pairs are (c,e), (d,h), and (e,f).

1st Cluster: {a}, {b}, {c,e,f}, {d,h}, {g}.

distance of 2: (a,h), (c,f).

2nd Cluster: {a,d,h},{b},{c,e,f},{g}

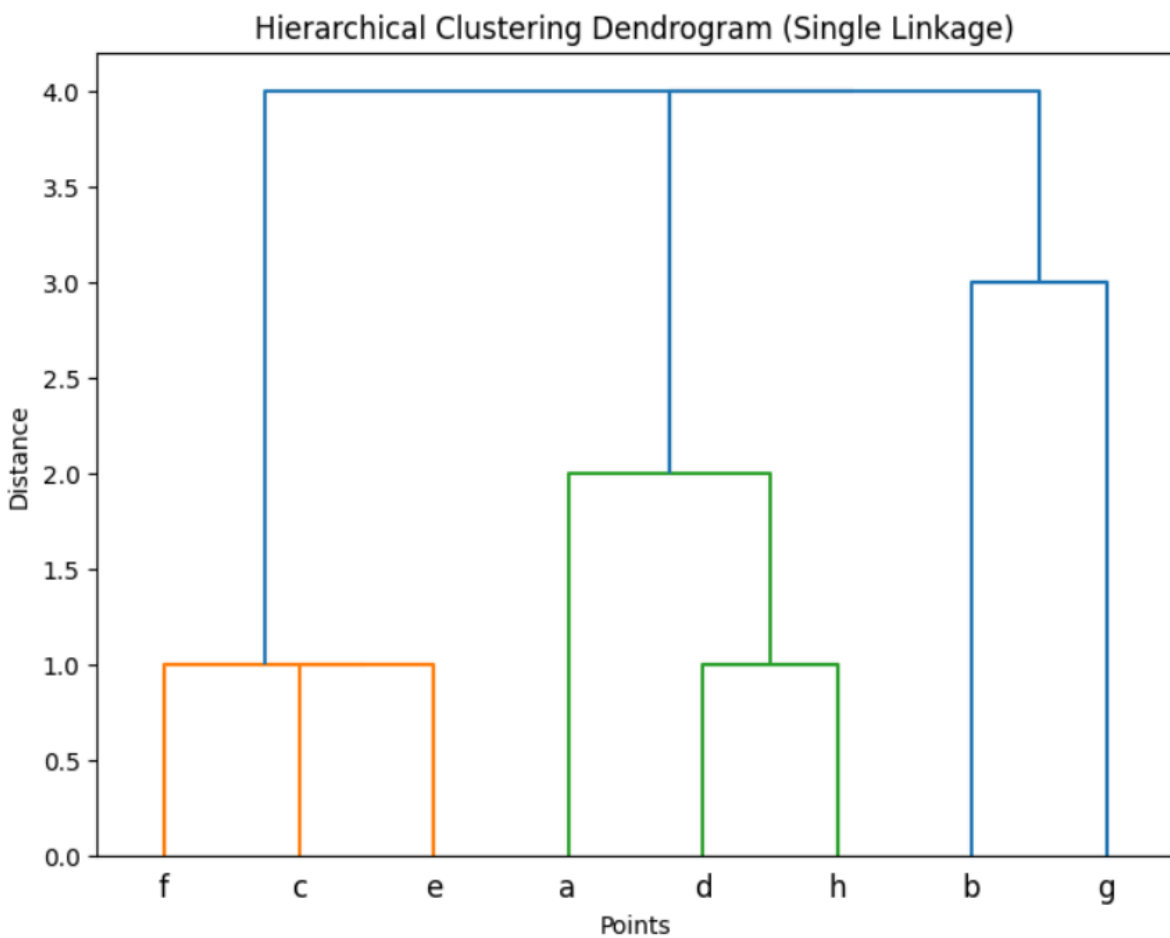
distance of 3: (b,g).

3rd Cluster: {a,d,h},{b,g},{c,e,f}

distance of 4: (a,d), (b,d), (b,f), (b,h), (d,f).

As the clustering continued, eventually all points were merged into a single cluster at a distance of 4.

4th Cluster: {a,b,c,d,e,f,g,h}.



(b)

Point a: Points b, d, and h are within the distance of 6. Therefore, point a is a core point because it has more than 2 points within ϵ , including itself.

Point b: Points a, d, e, f, g, and h are within the distance of 6. This makes point b a core point with more than the required number of neighboring points.

Point c: Points d, e, and f are within the distance of 6. Point c is thus a core point, satisfying the condition.

Point d: Points a, b, c, e, f, and h are all within the distance of 6. This abundance of neighboring points makes d a core point.

Point e: Points b, c, d, f, and h are within the distance of 6. Therefore, point e is a core point.

Point f: Points b, c, d, e, g, and h are within the distance of 6, qualifying f as a core point.

Point g: Points b and f are within the distance of 6. Point g meets the core point criteria.

Point h: Points a, b, d, e, and f are within the distance of 6. Hence, point h is also a core point.

In conclusion, based on the parameters $\epsilon = 6$ and $\text{minPts} = 2$, all the points are core points.