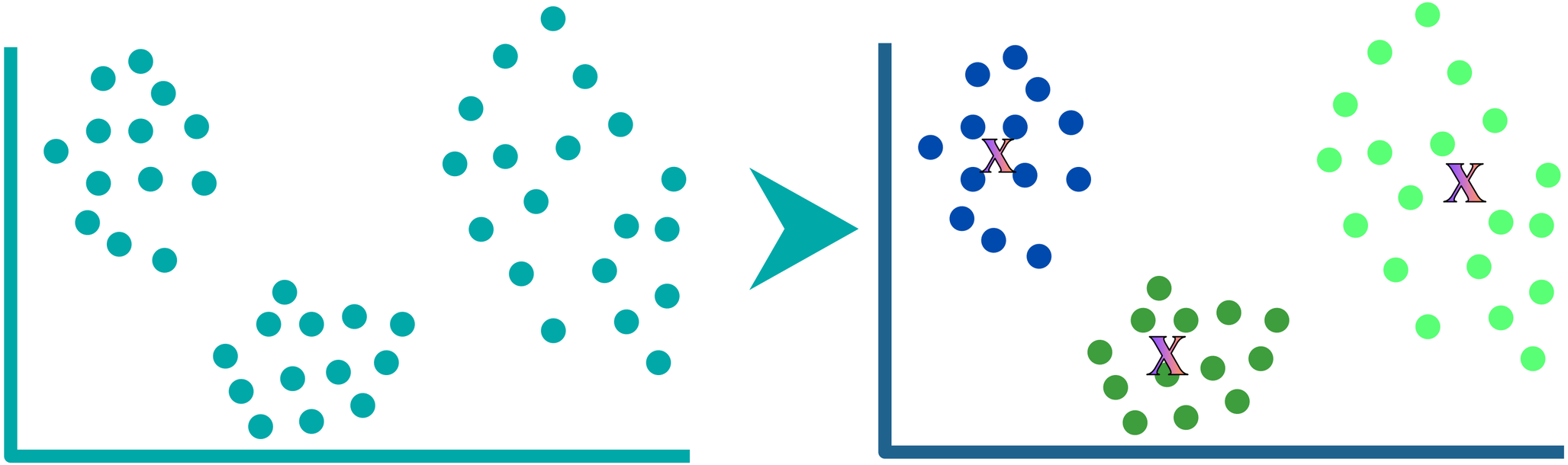
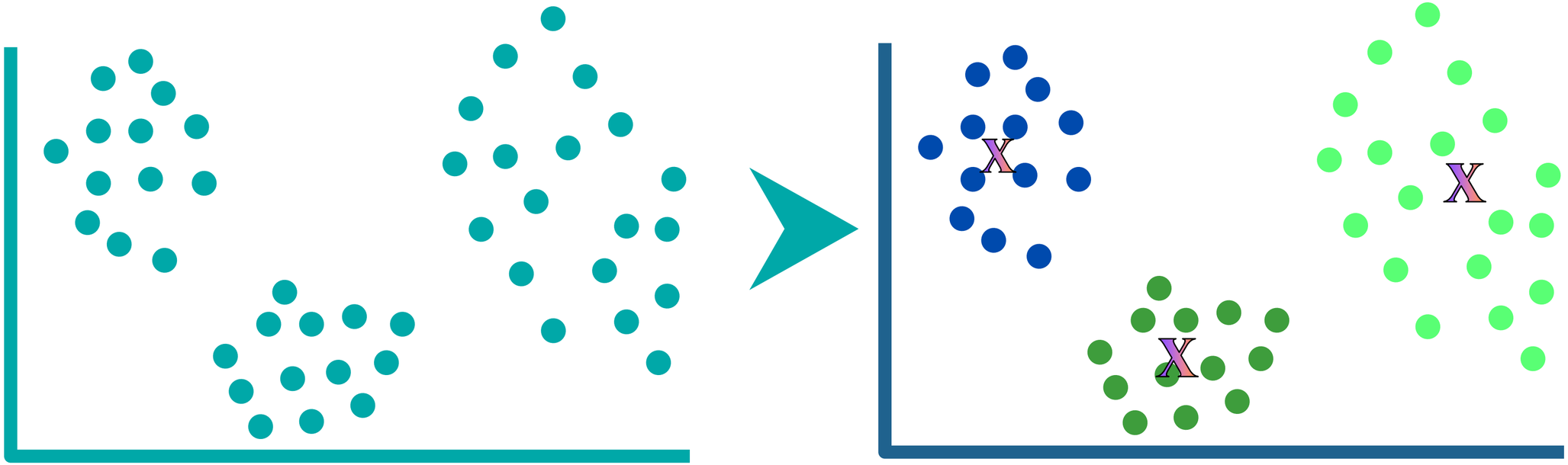
What is K-Means Clustering



How does the K-Means Clustering Work



codefinity

Initial Data set

Step 1

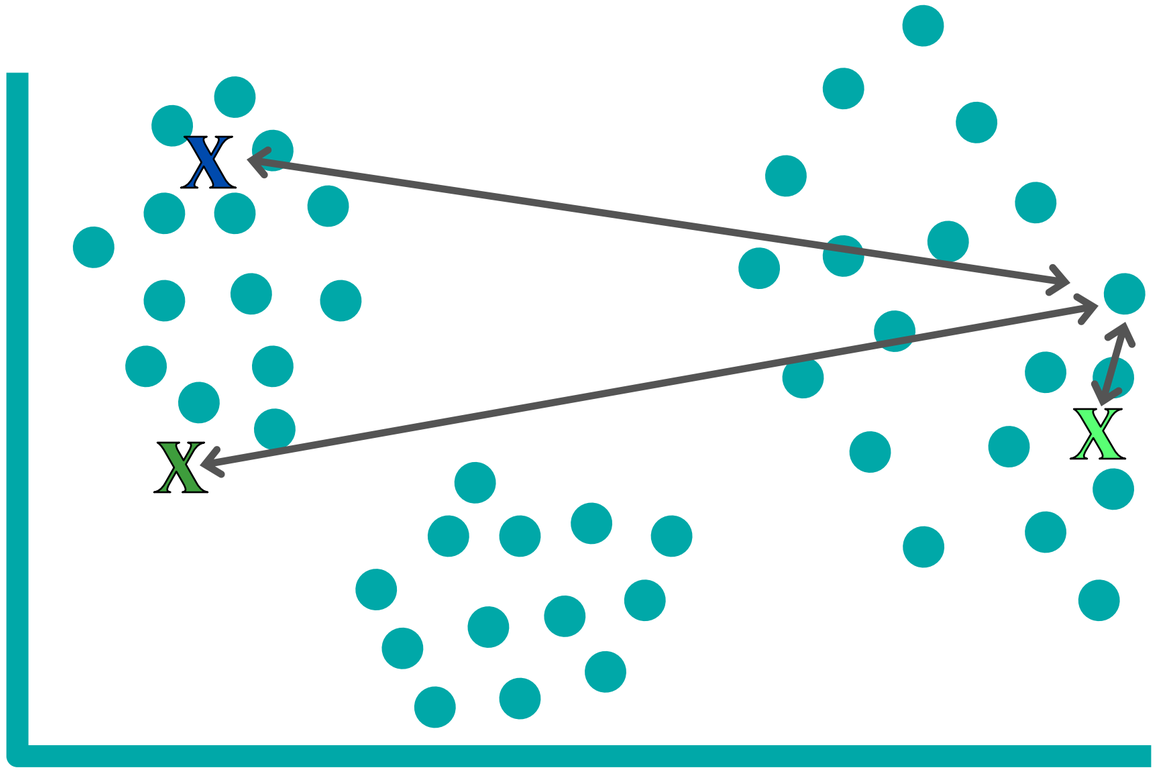
codefinity

Set Cluster Center Randomly

Step 2

codefinity

Calculate the Distance of the Points to the Clusters



Step 3

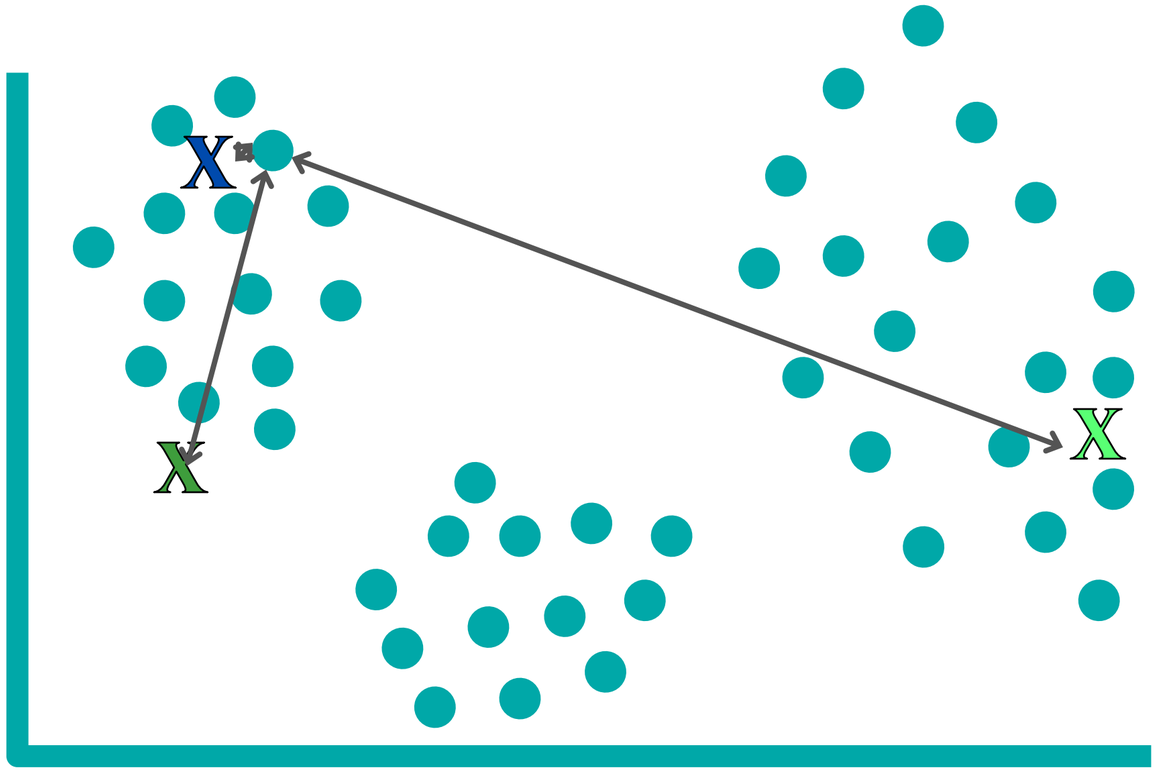
codefinity

Assign Point to the Closest Clusters

Step 3

codefinity

Assign Point to the Closest Clusters



Step 3

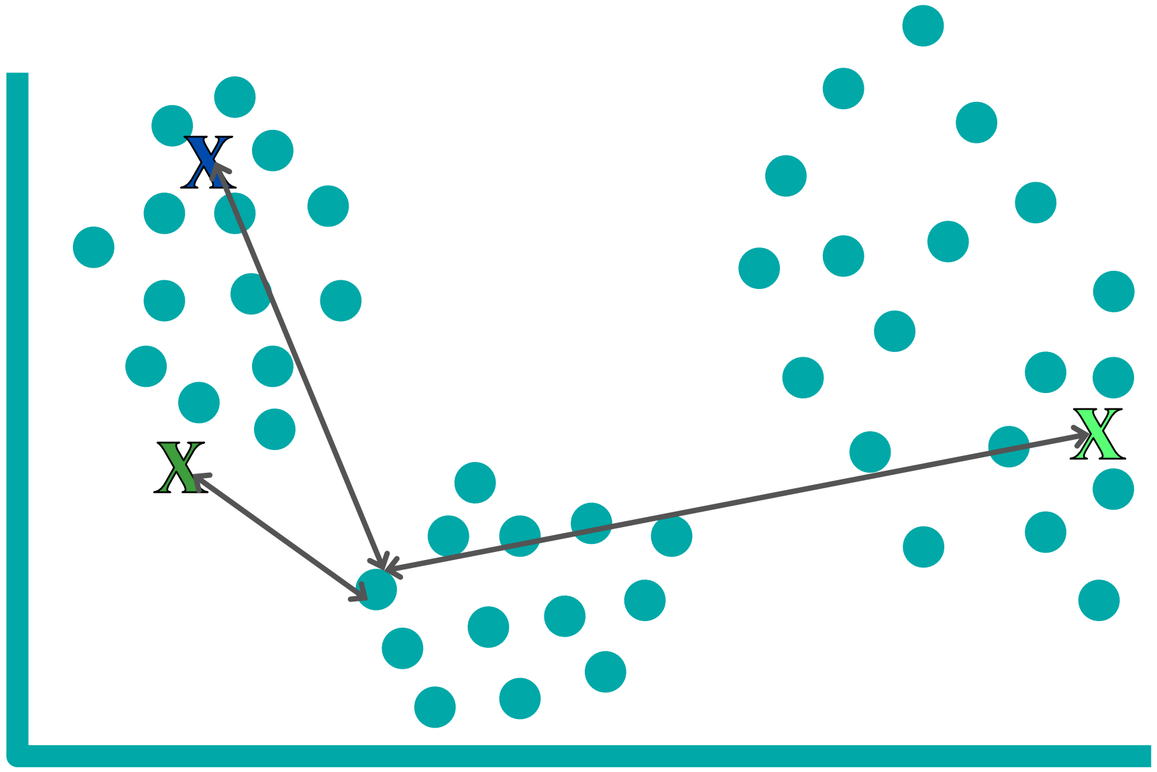
codefinity

Assign Points to Clusters

Step 3

codefinity

Assign Points to Clusters



Step 3

codefinity

Assign Points to Clusters

Step 3

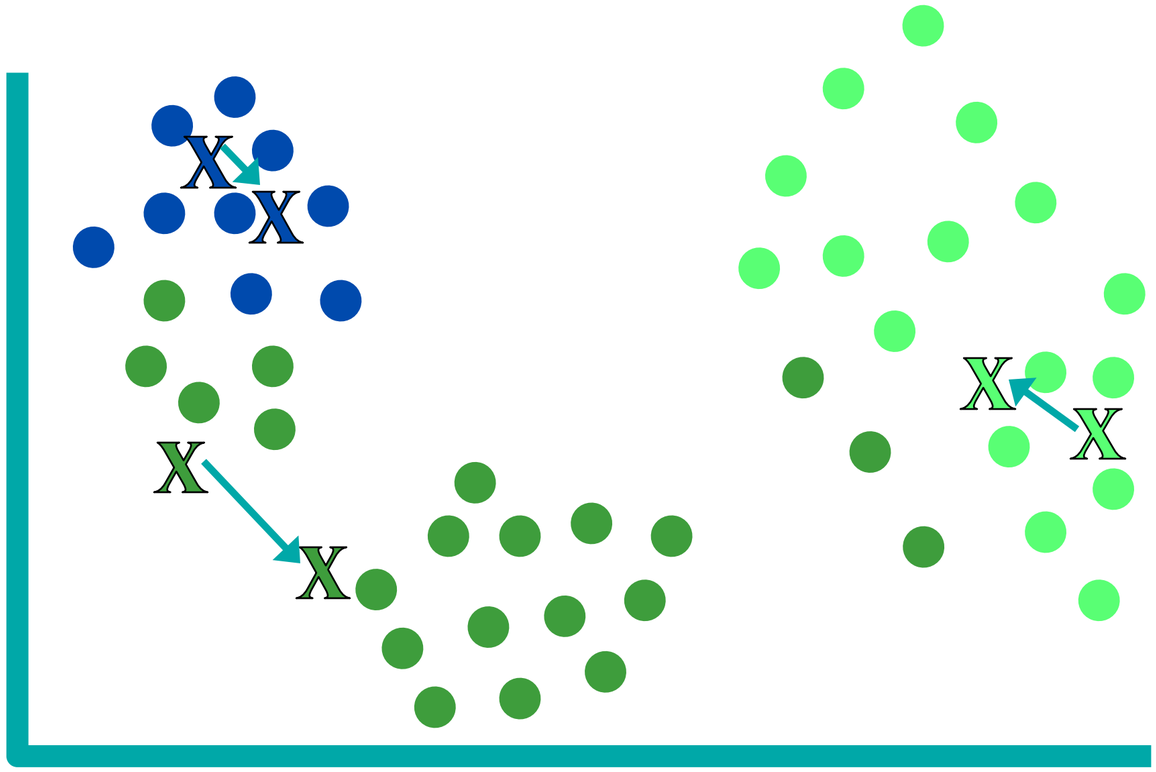
codefinity

Assign Points to Clusters

Step 4

codefinity

Calculate the Center of each Cluster



Step 5

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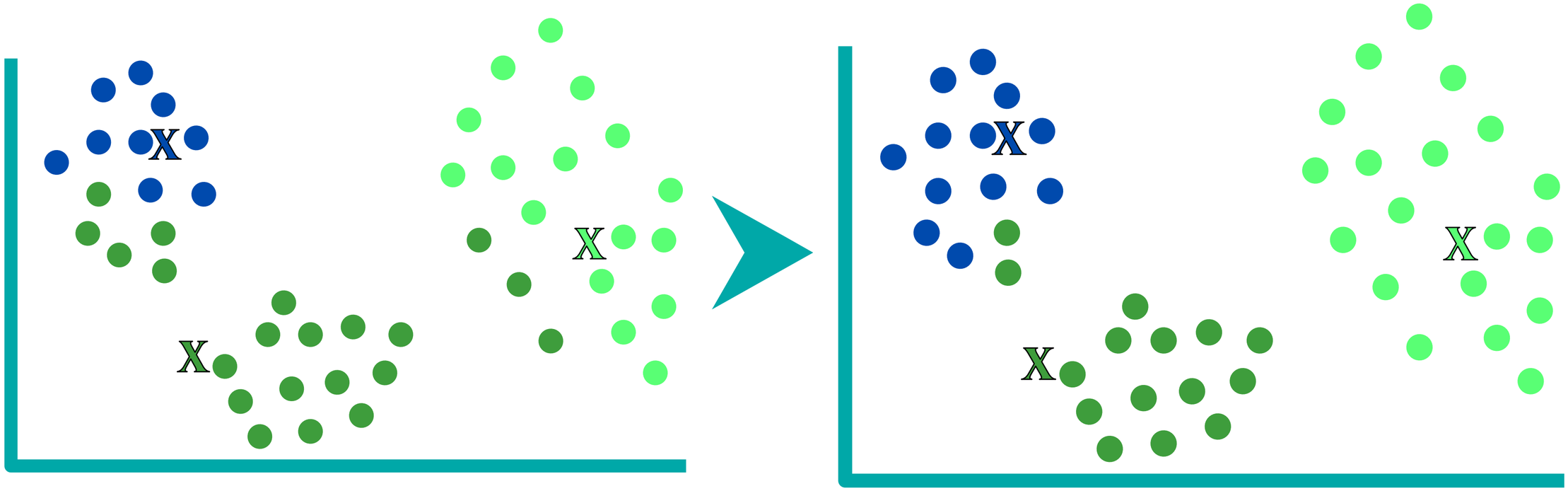
Assign Points to the new Clusters



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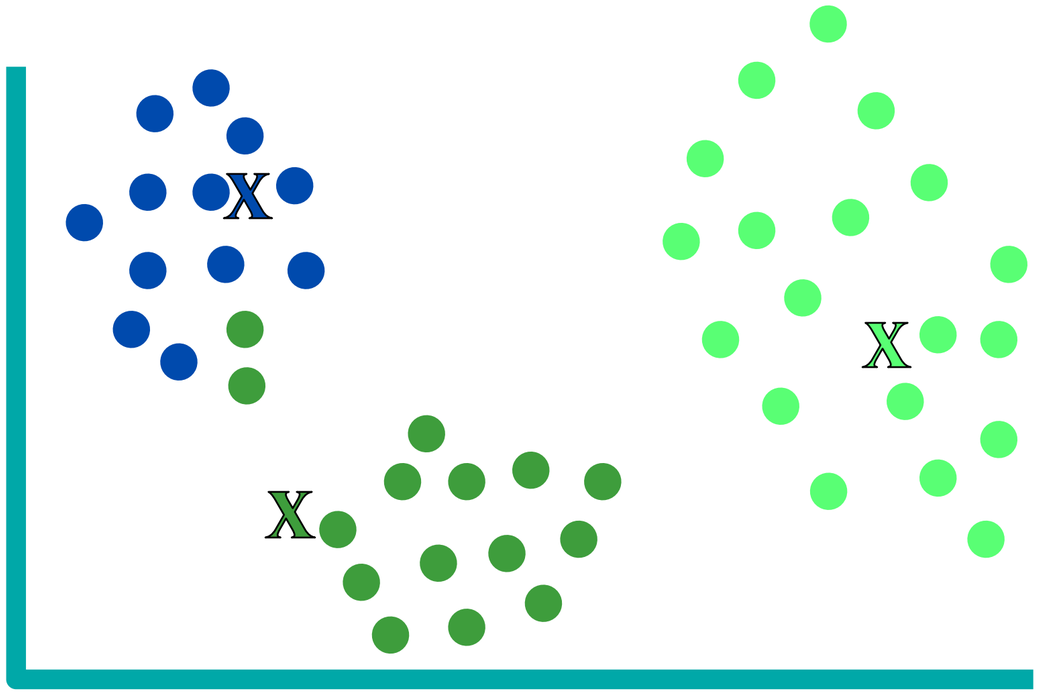
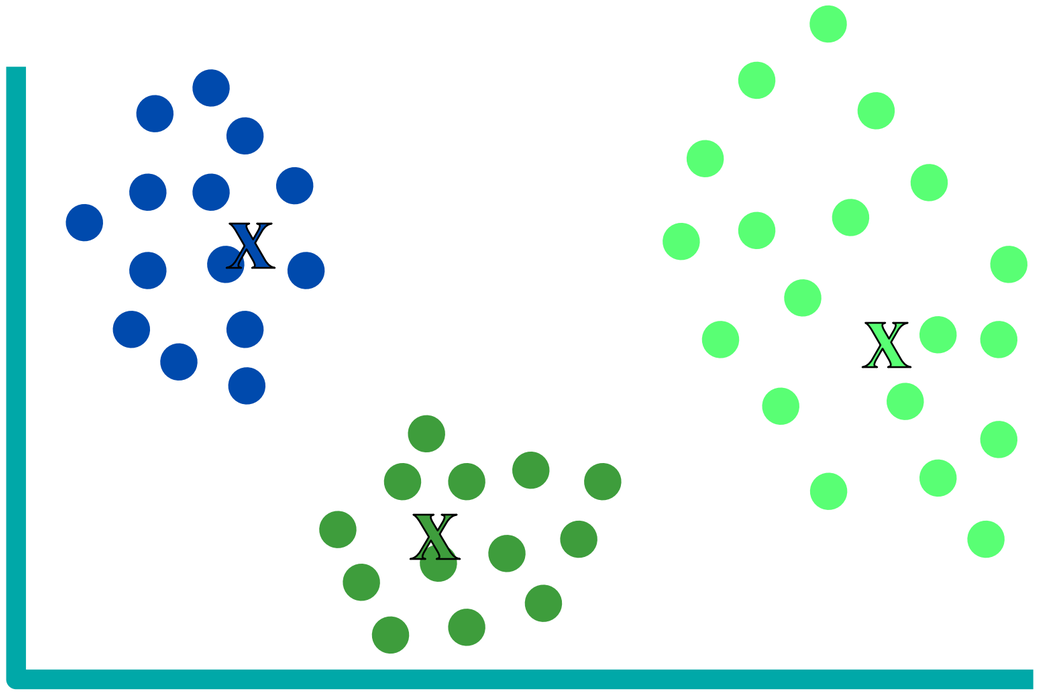
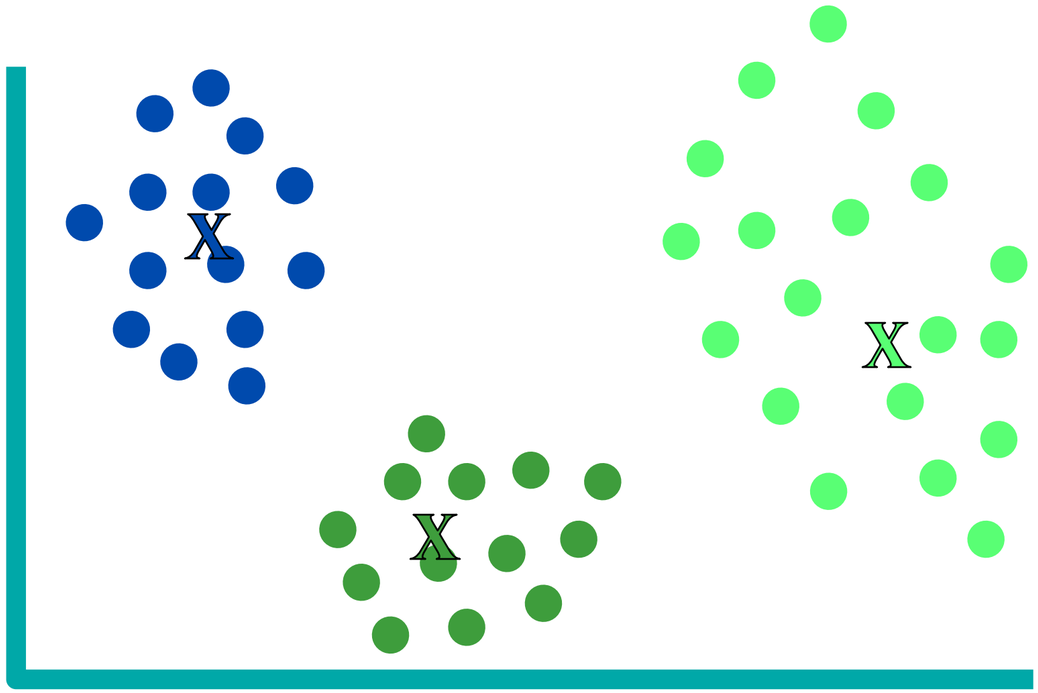
Repeat Step 4 and 5



Final Clusters



When to Stop?

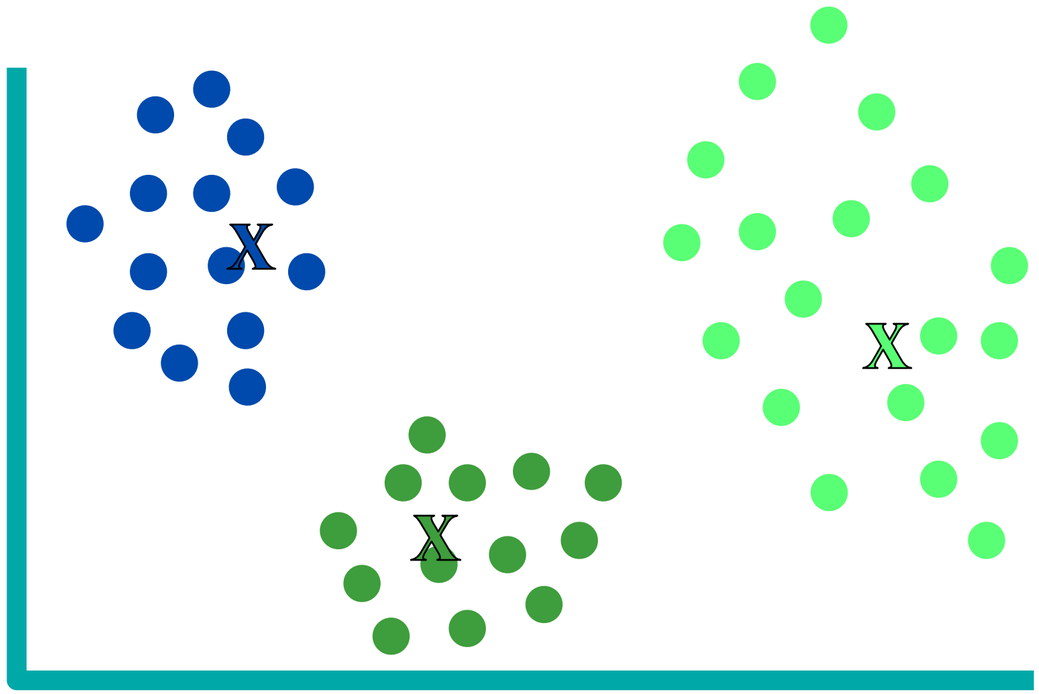


- When the change in the cluster centroids in close to zero
- After a limited number of iterations

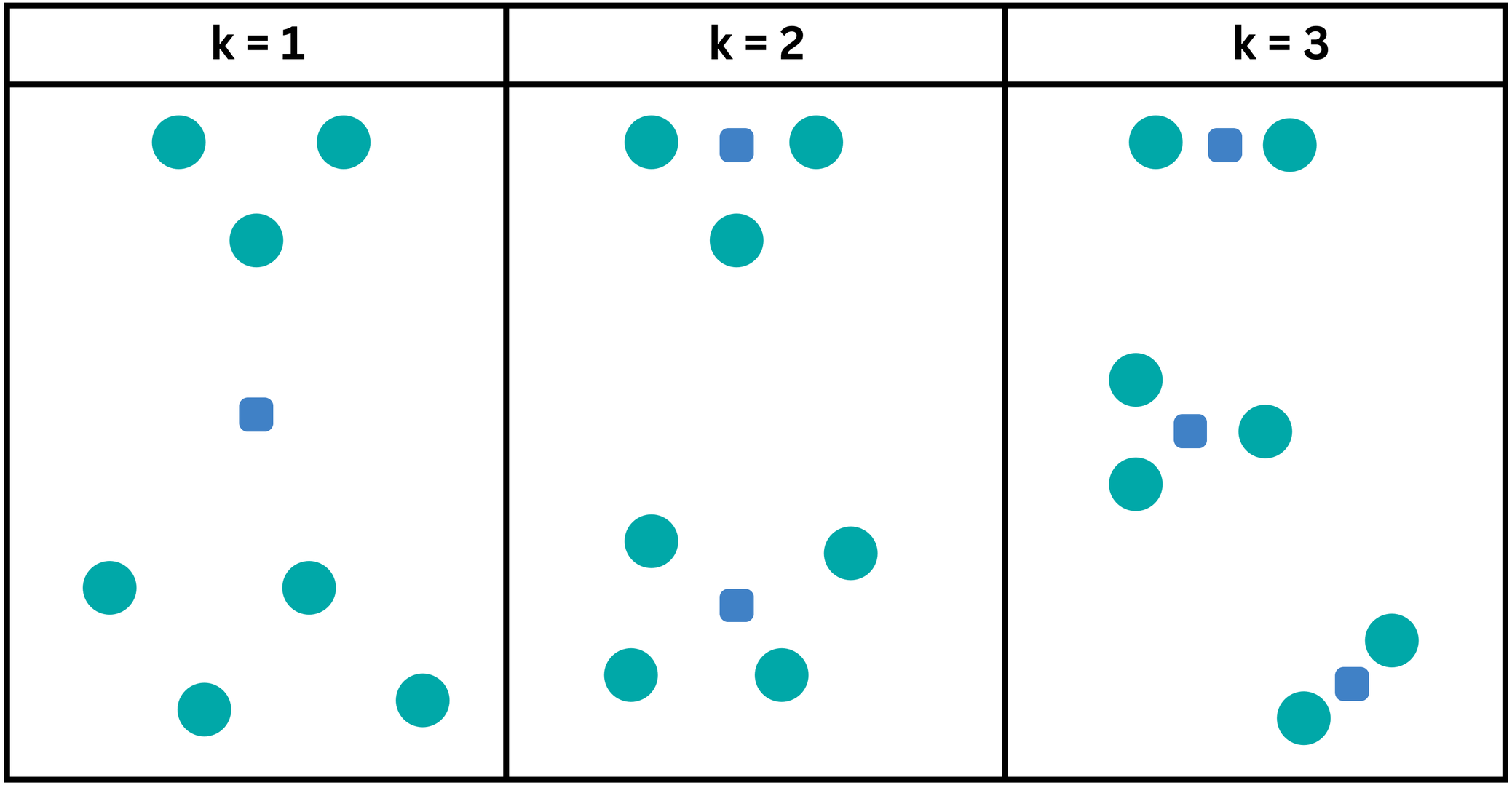
Optimal Cluster Number

2 Cluster

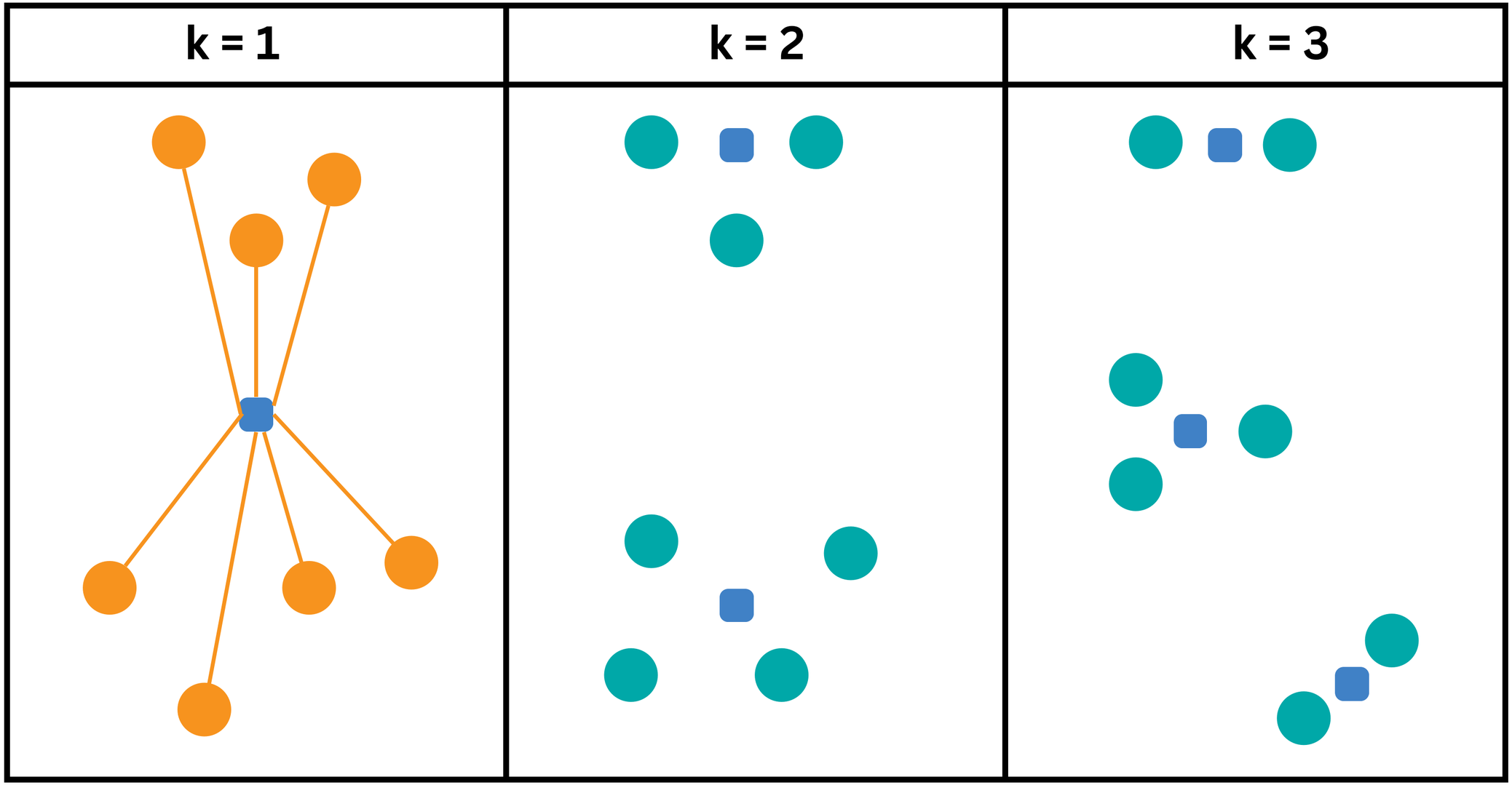
3 Cluster



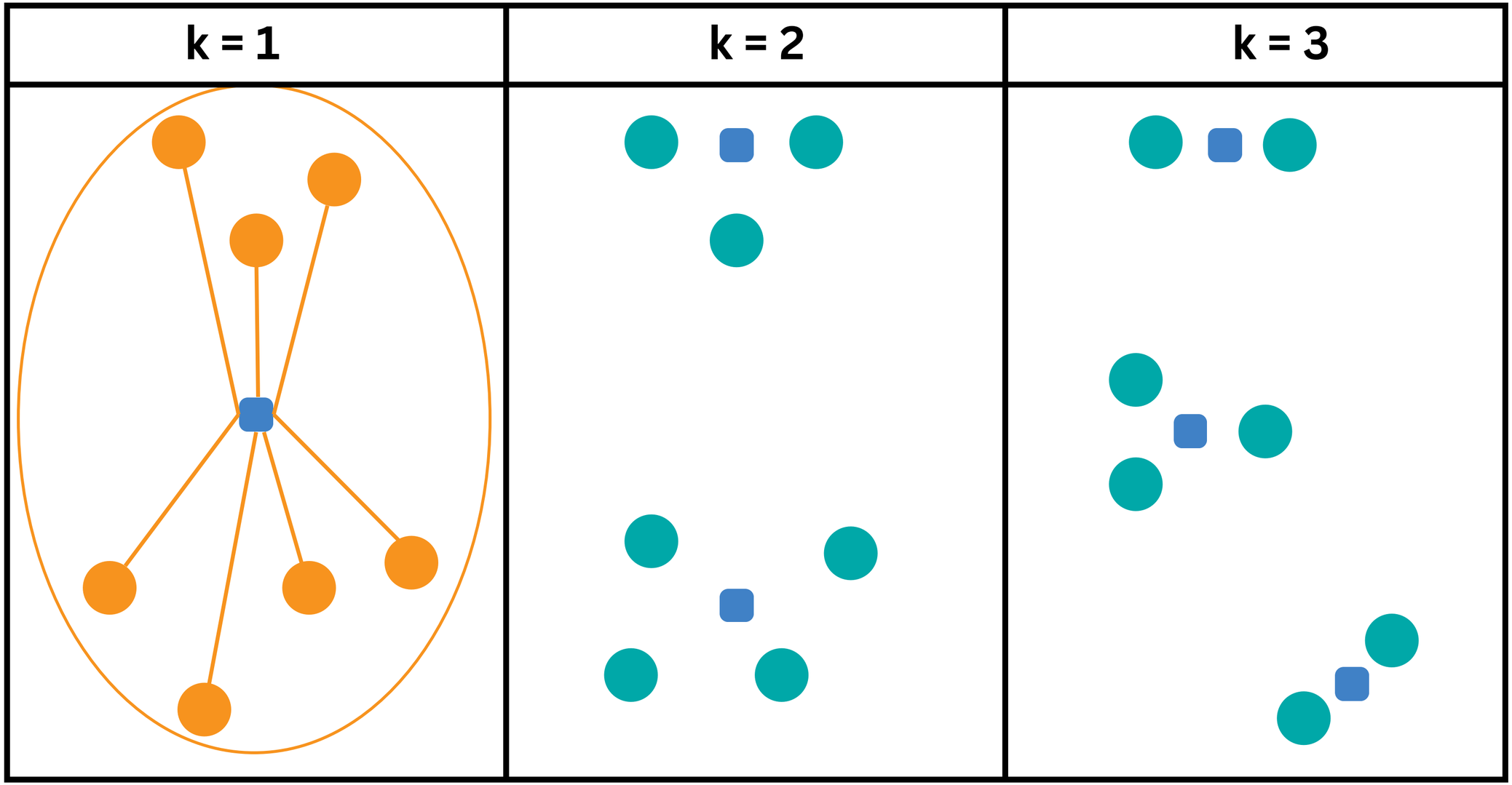
Within Sum of Squares (WSS)



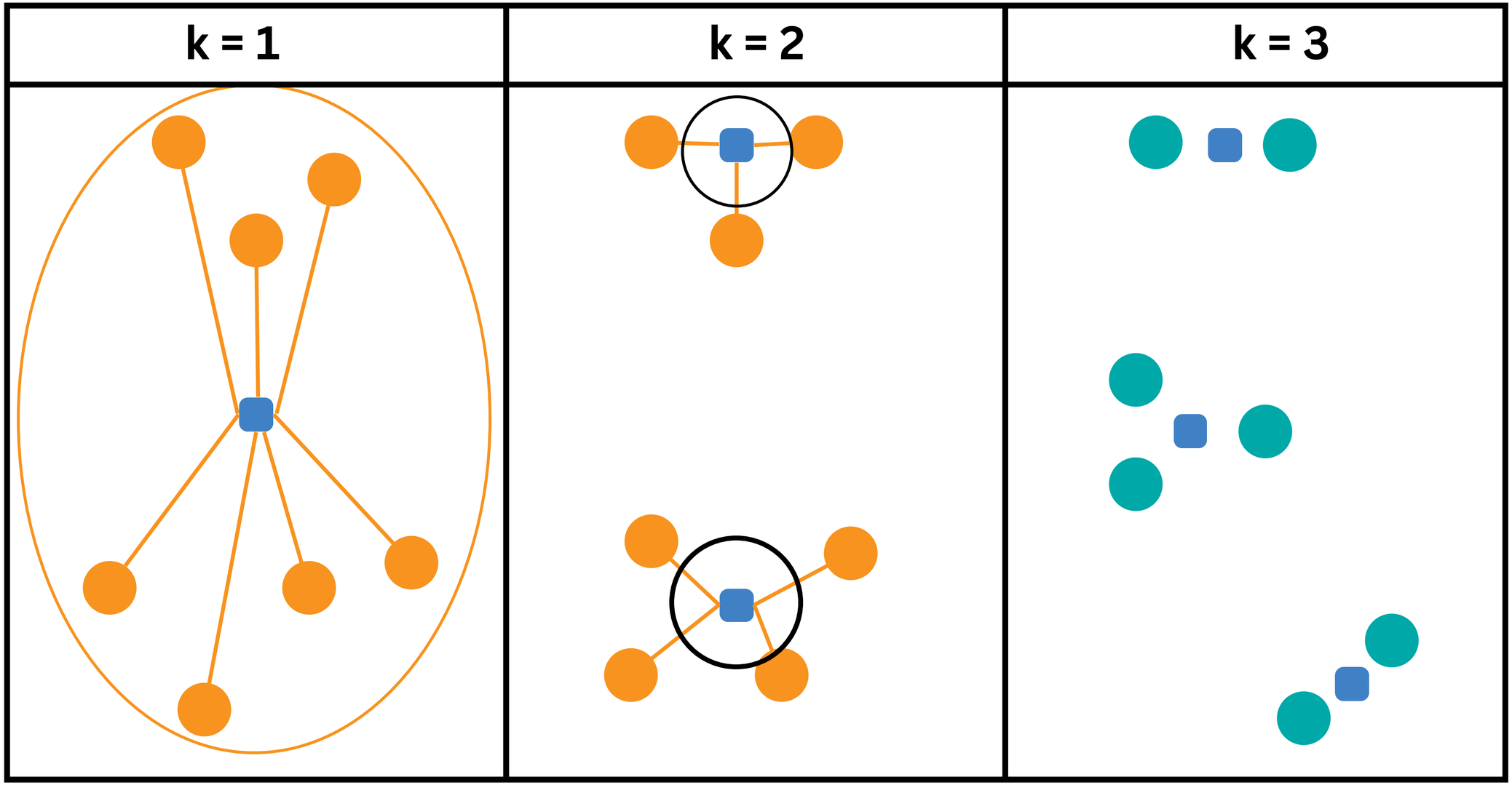
Within Sum of Squares



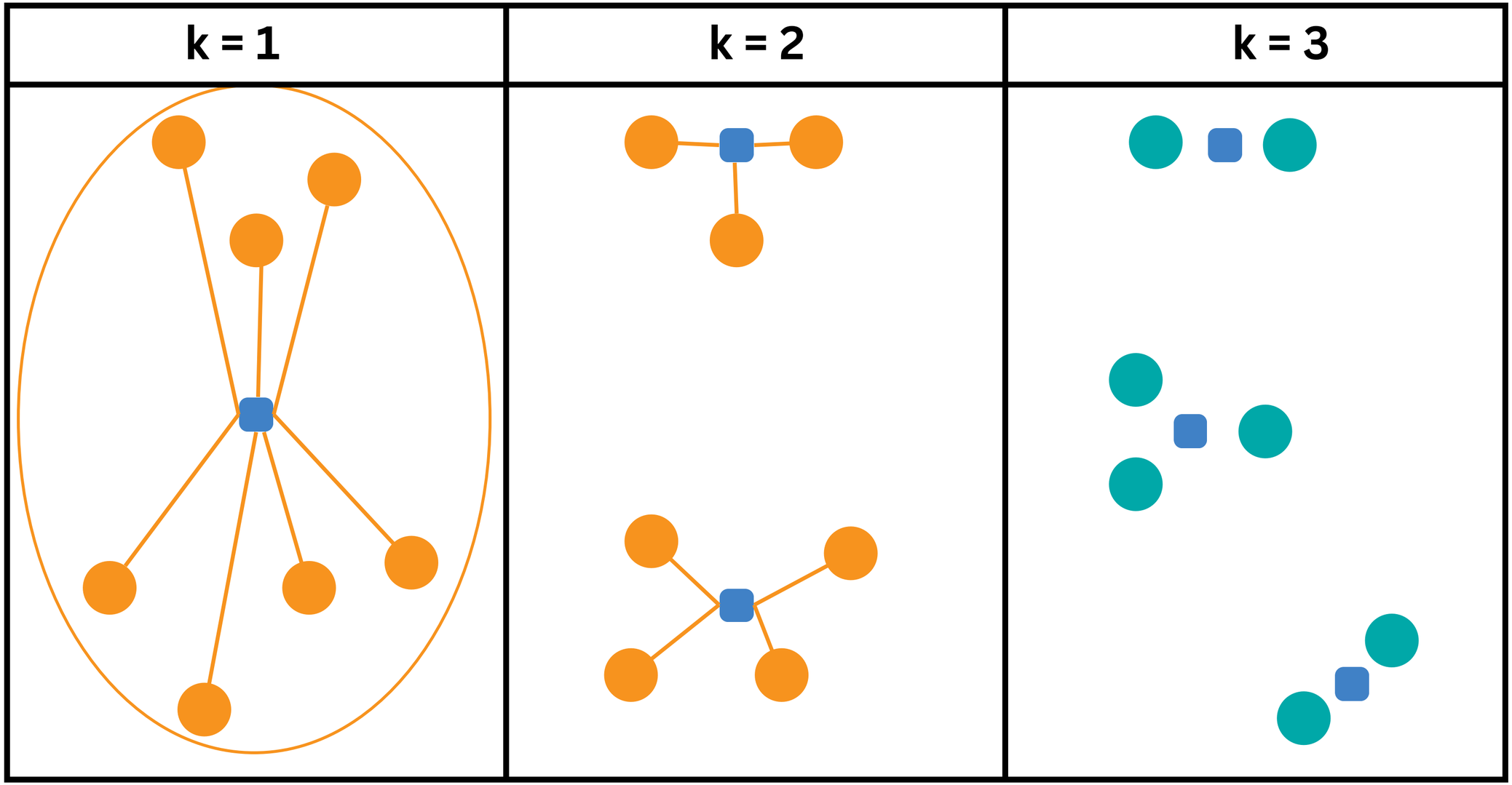
Within Sum of Squares



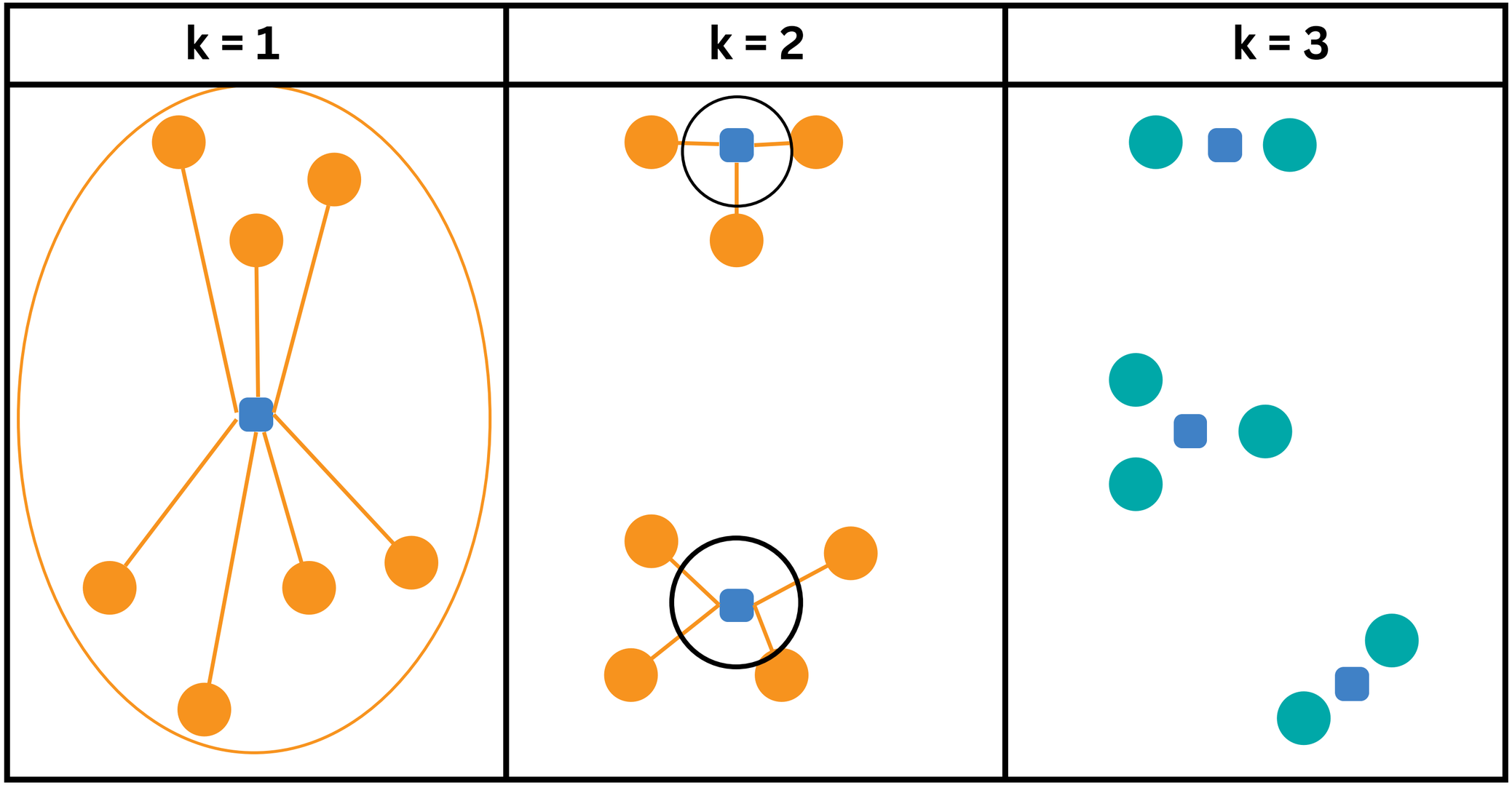
Within Sum of Squares (WSS)



Within Sum of Squares (WSS)



Within Sum of Squares (WSS)



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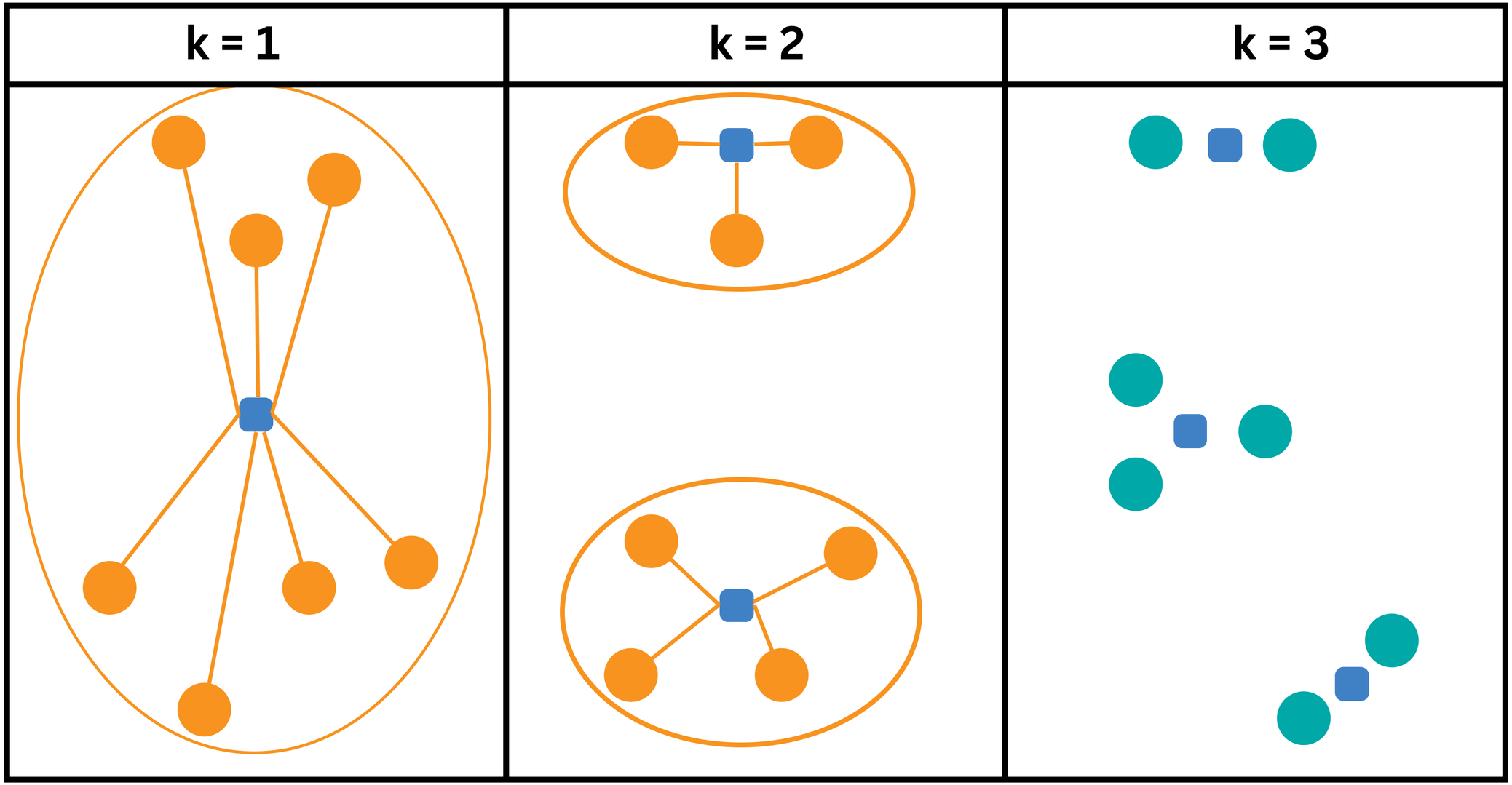
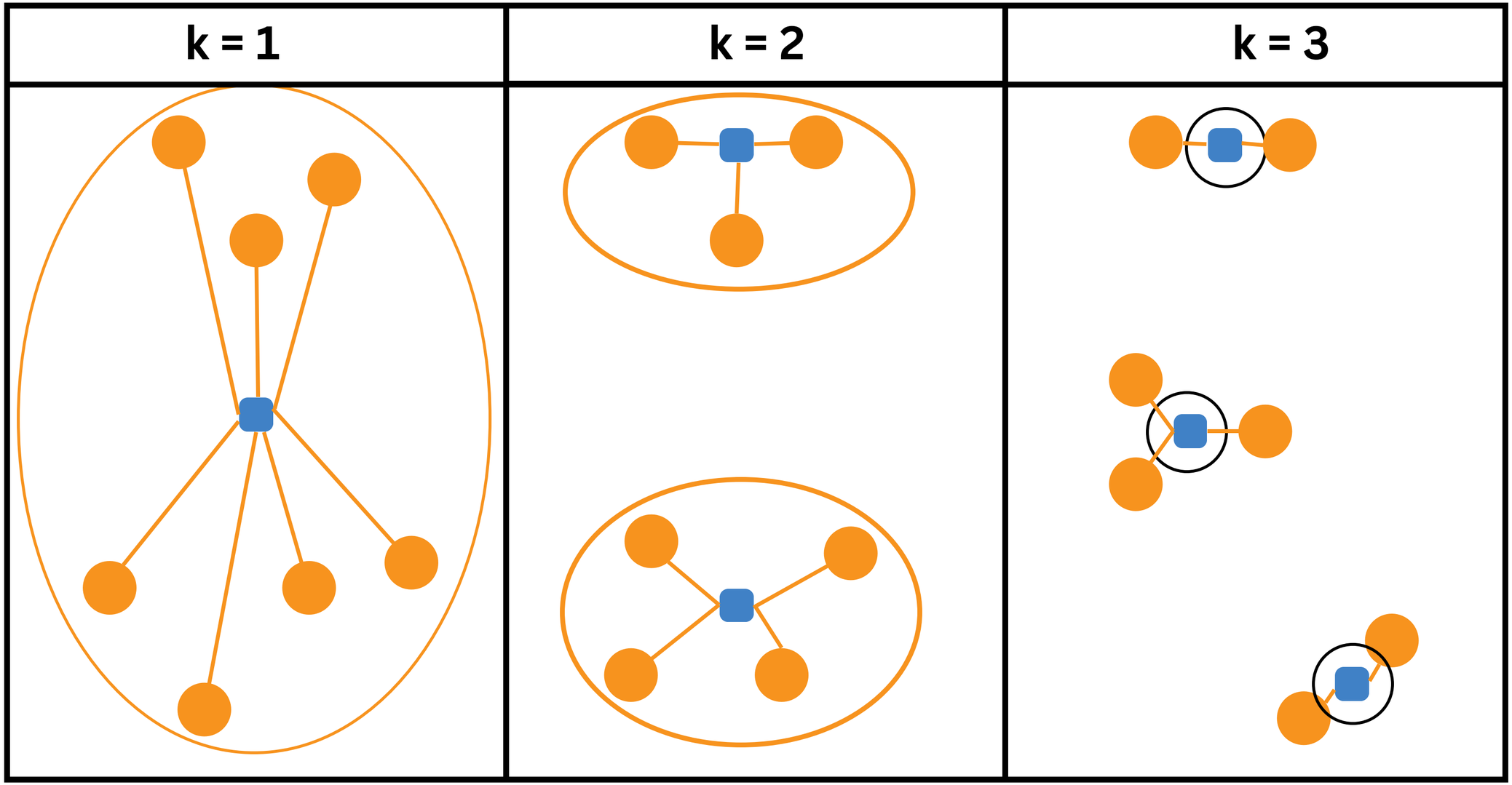
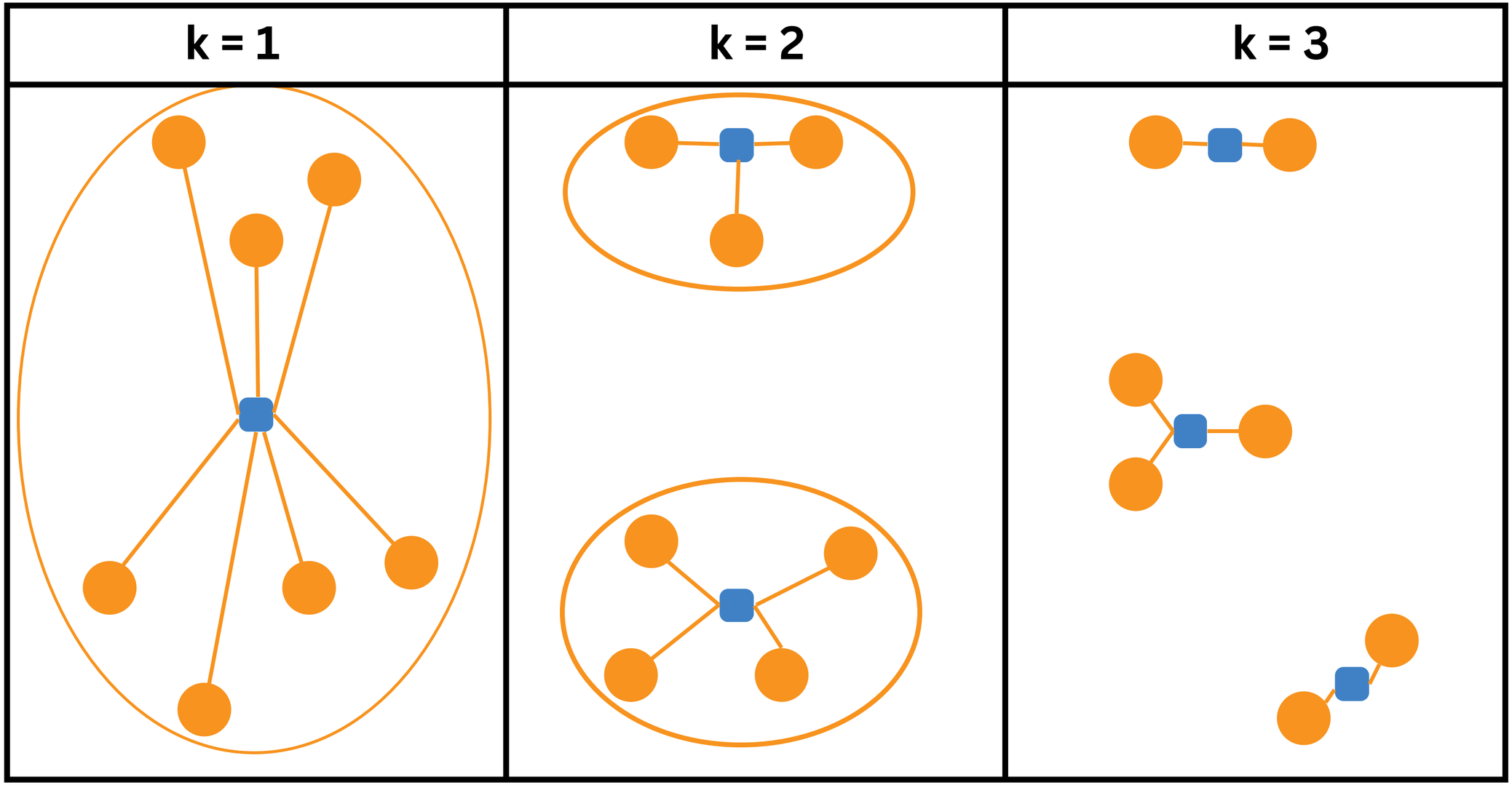
Within Sum of Squares (WSS)



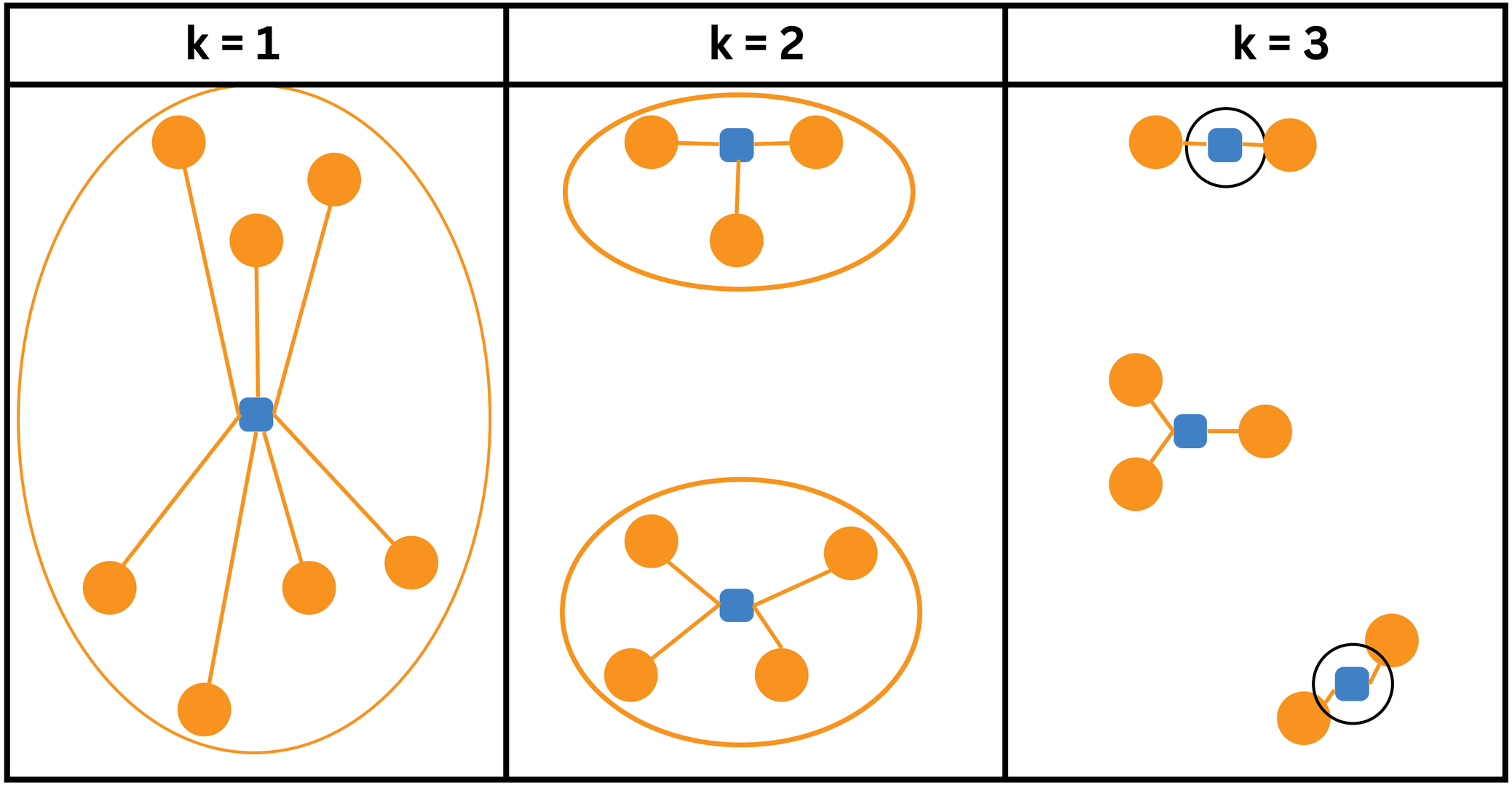
Within Sum of Squares (WSS)



Within Sum of Squares (WSS)



Within Sum of Squares (WSS)



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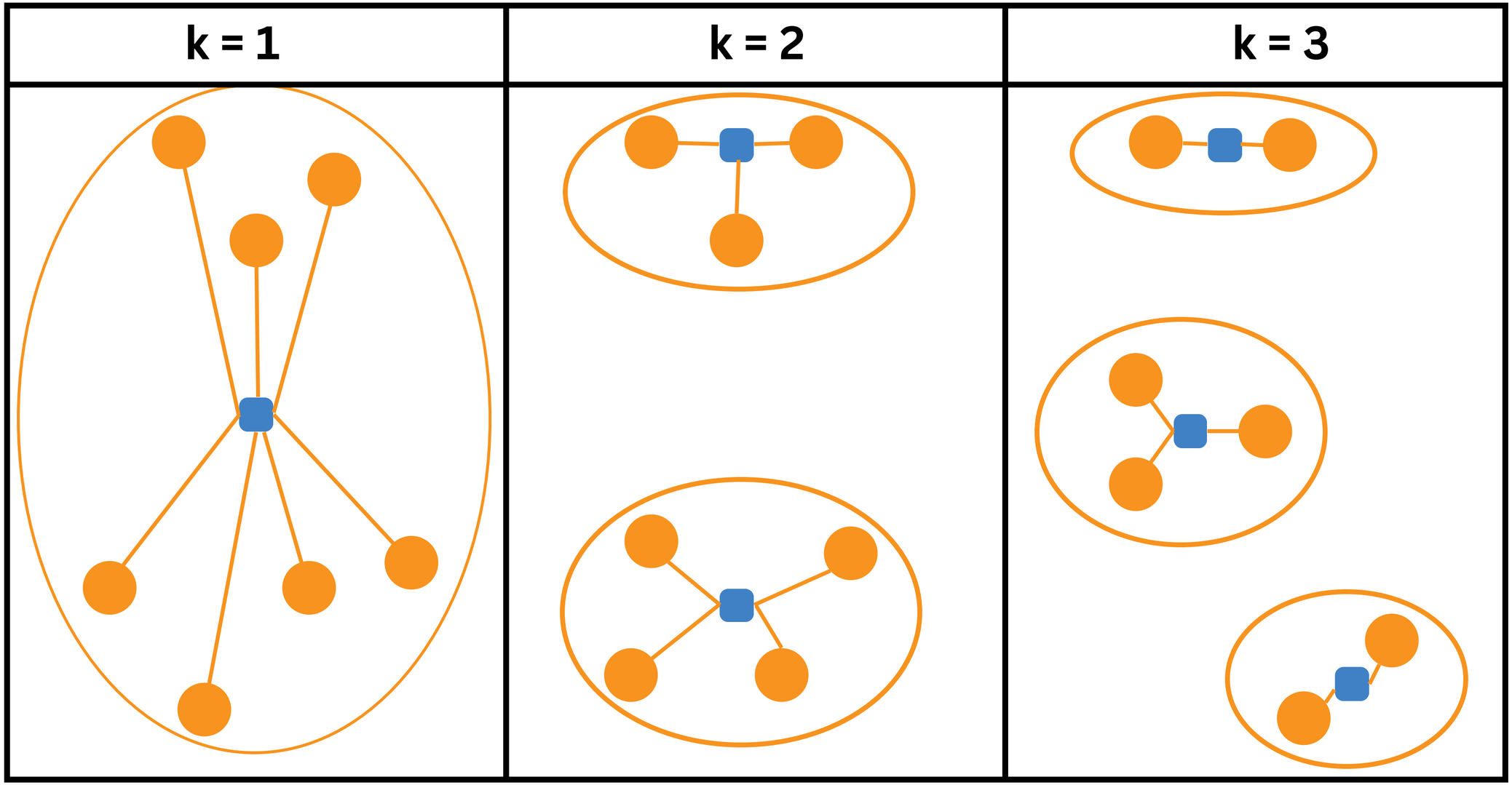
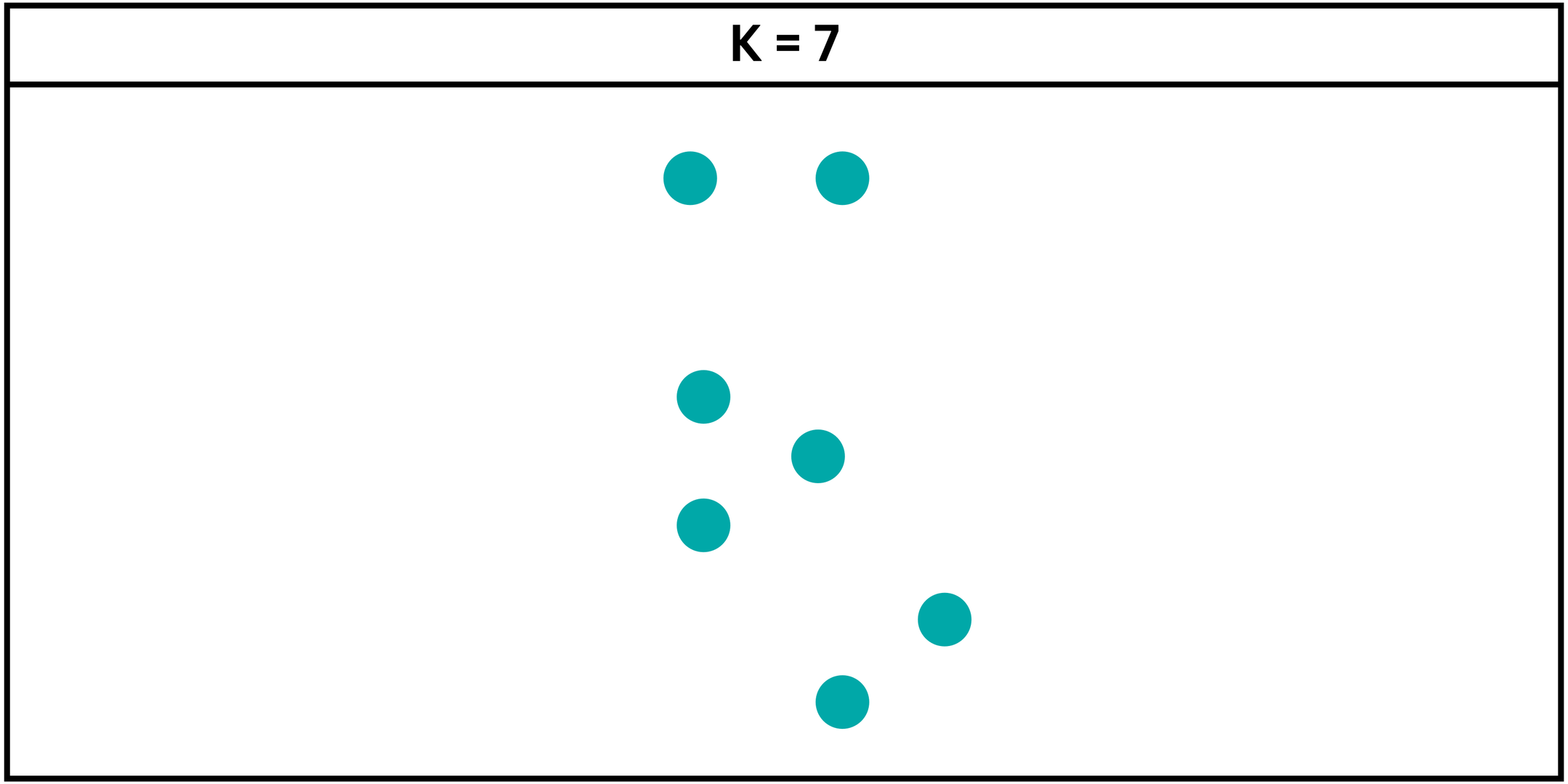
Within Sum of Squares (WSS)



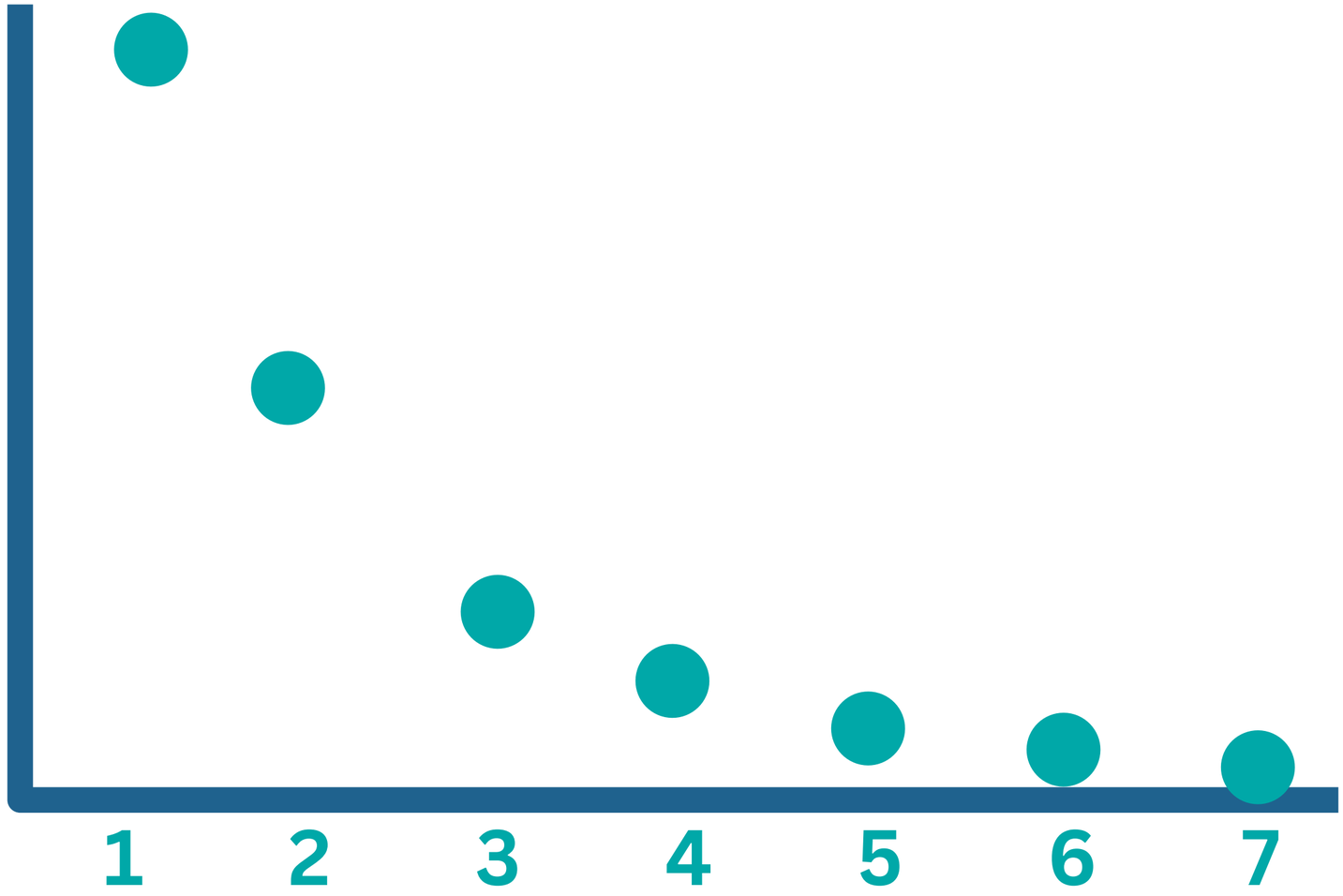
codefinity

Within Sum of Squares (WSS)



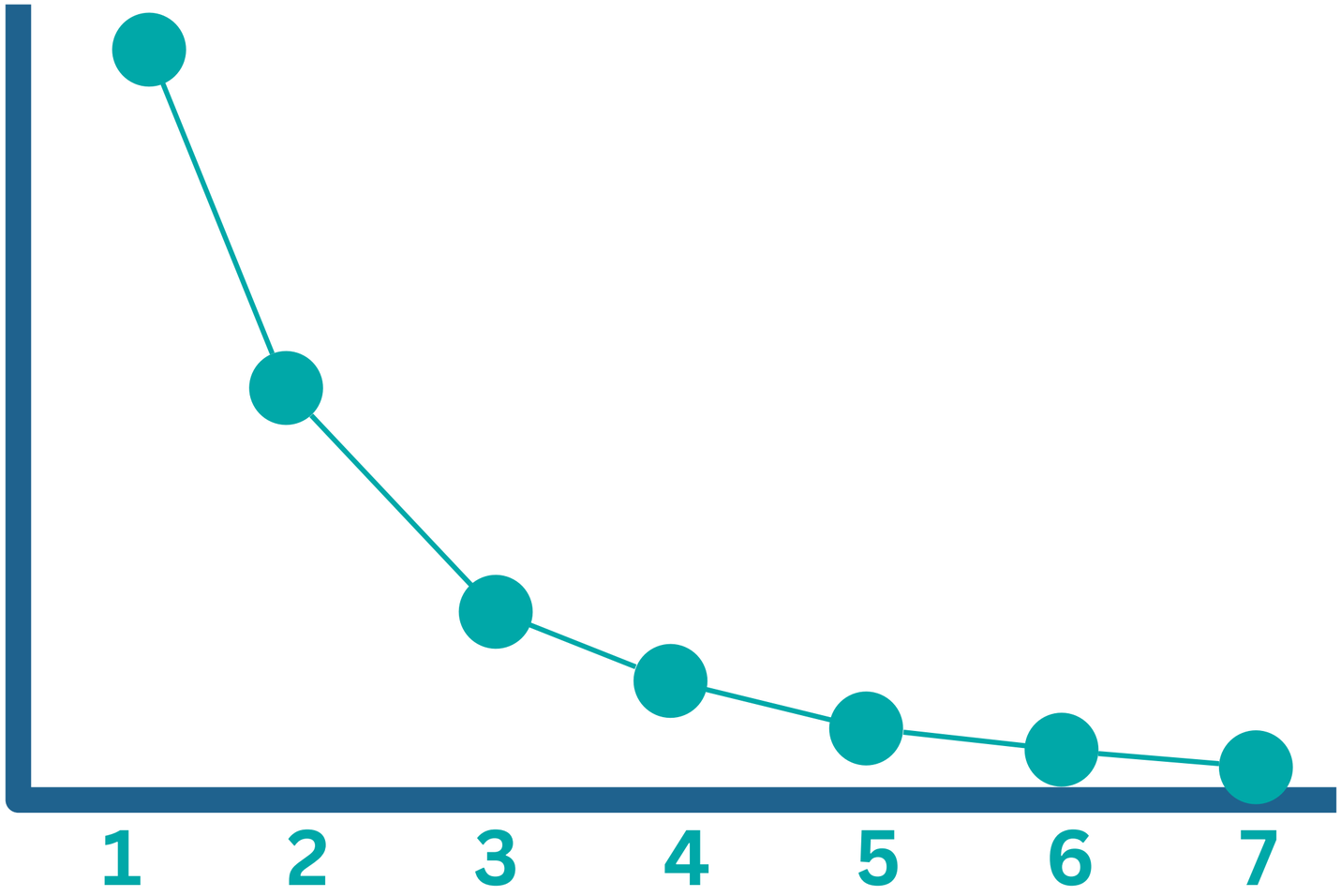
codefinity

WSS Plot



codefinity

WSS Plot



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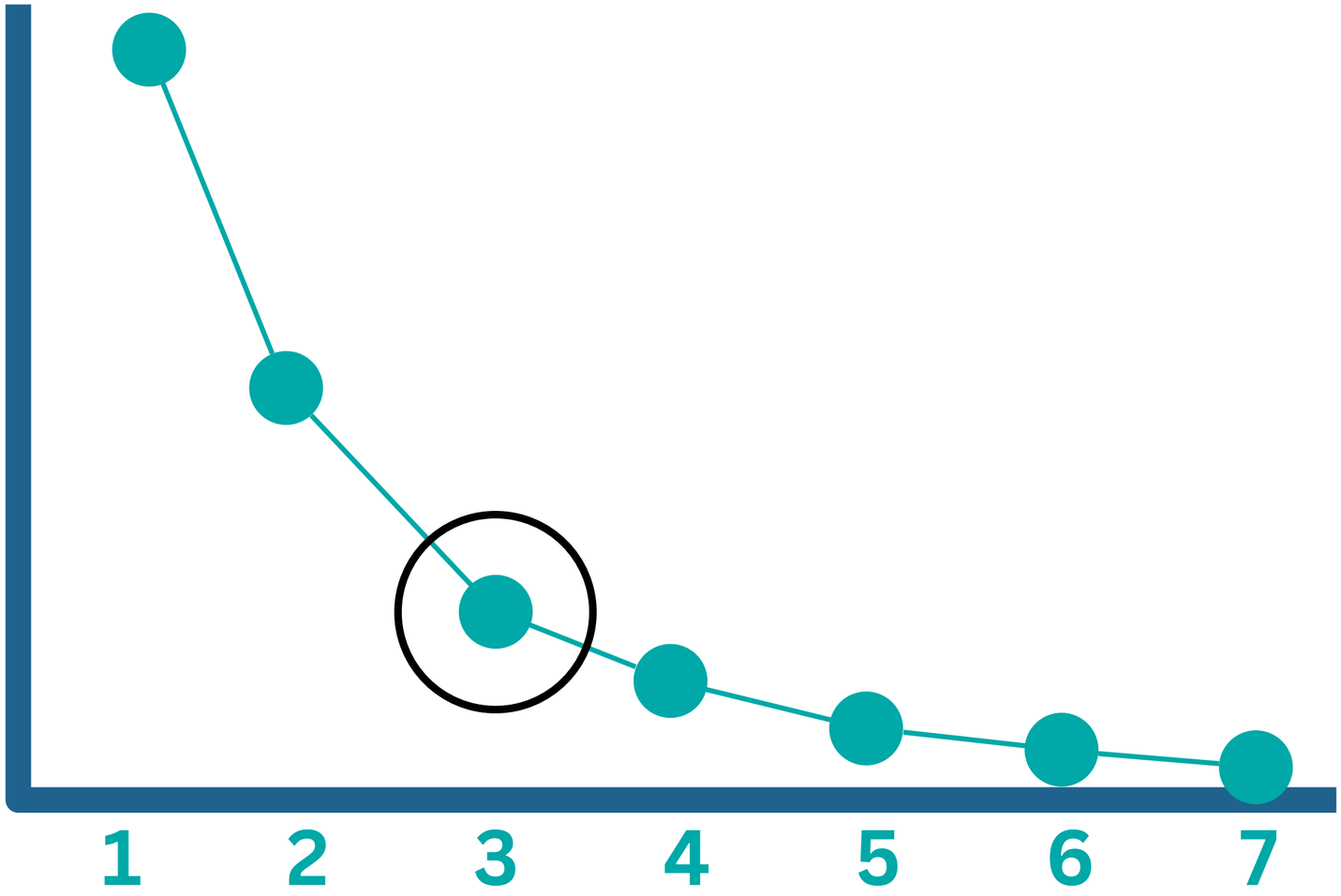
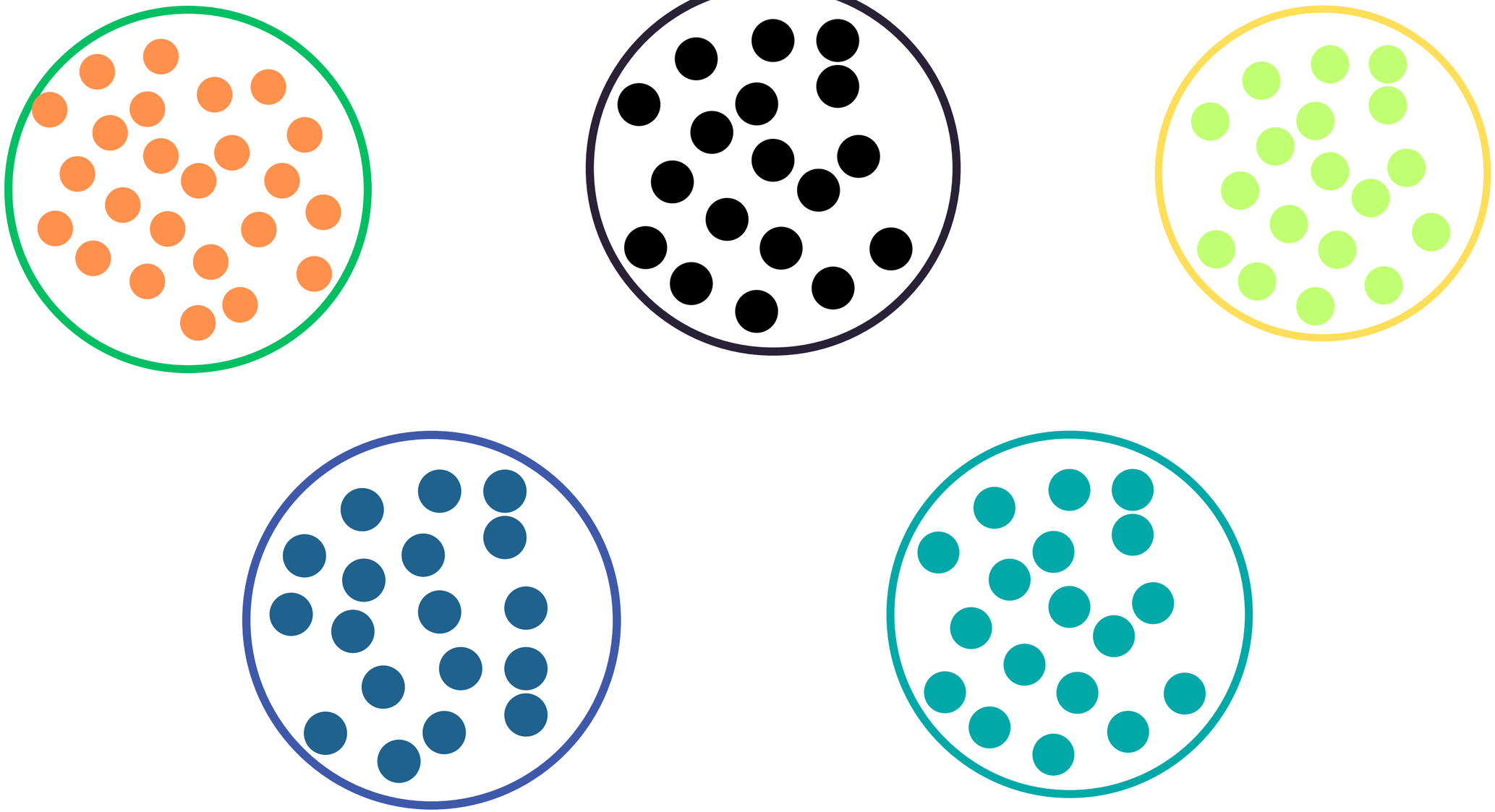
WSS Plot





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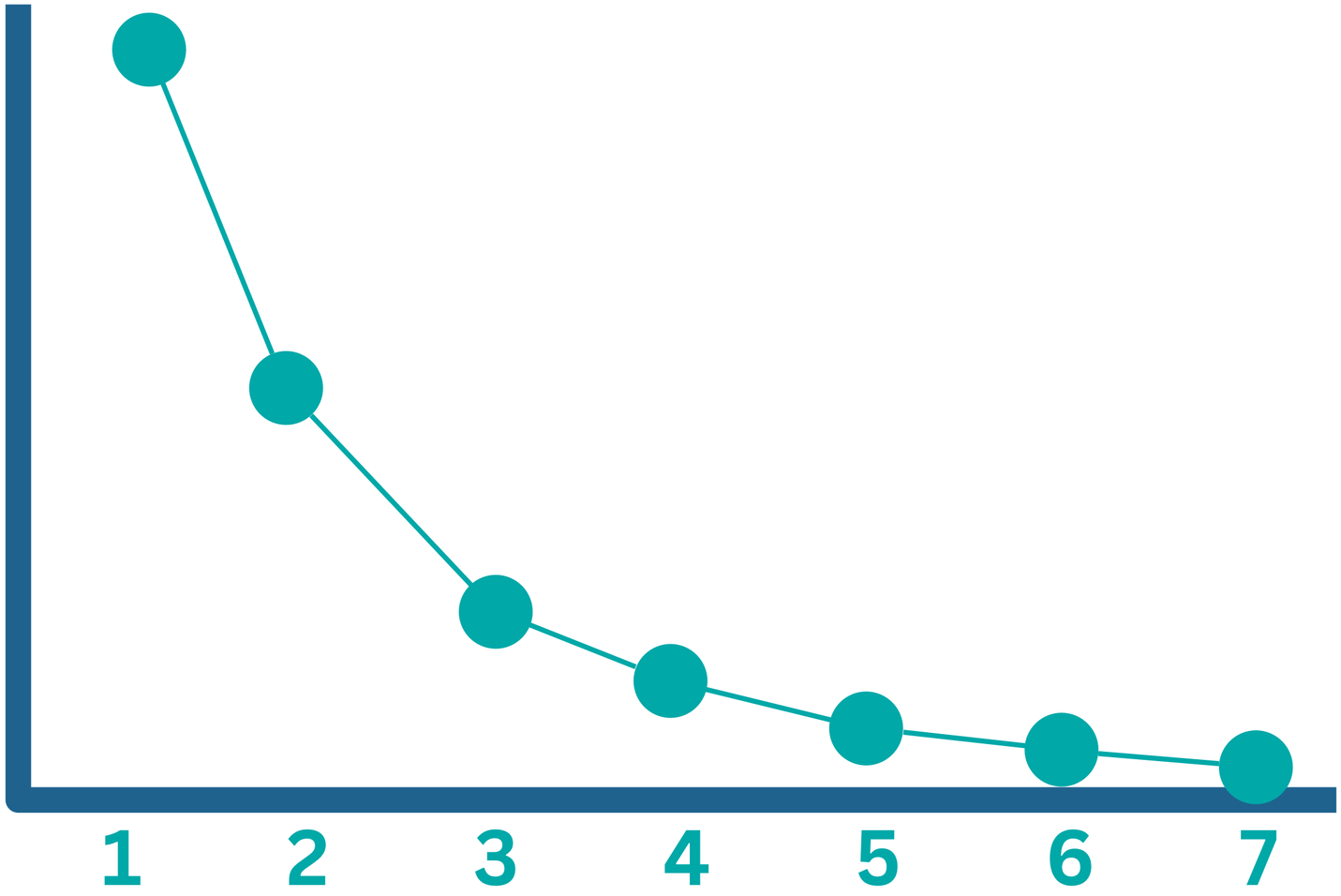
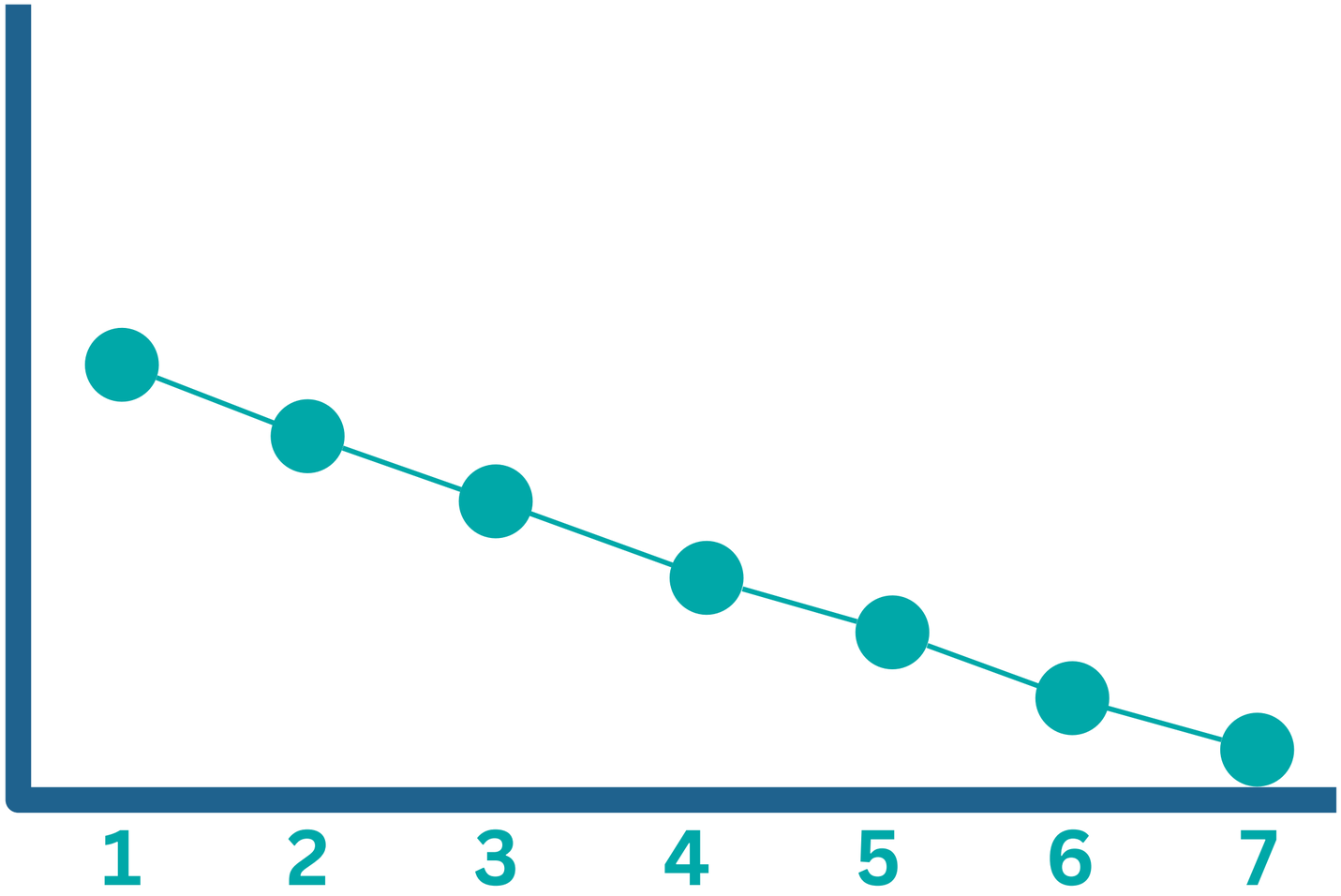
WSS Plot

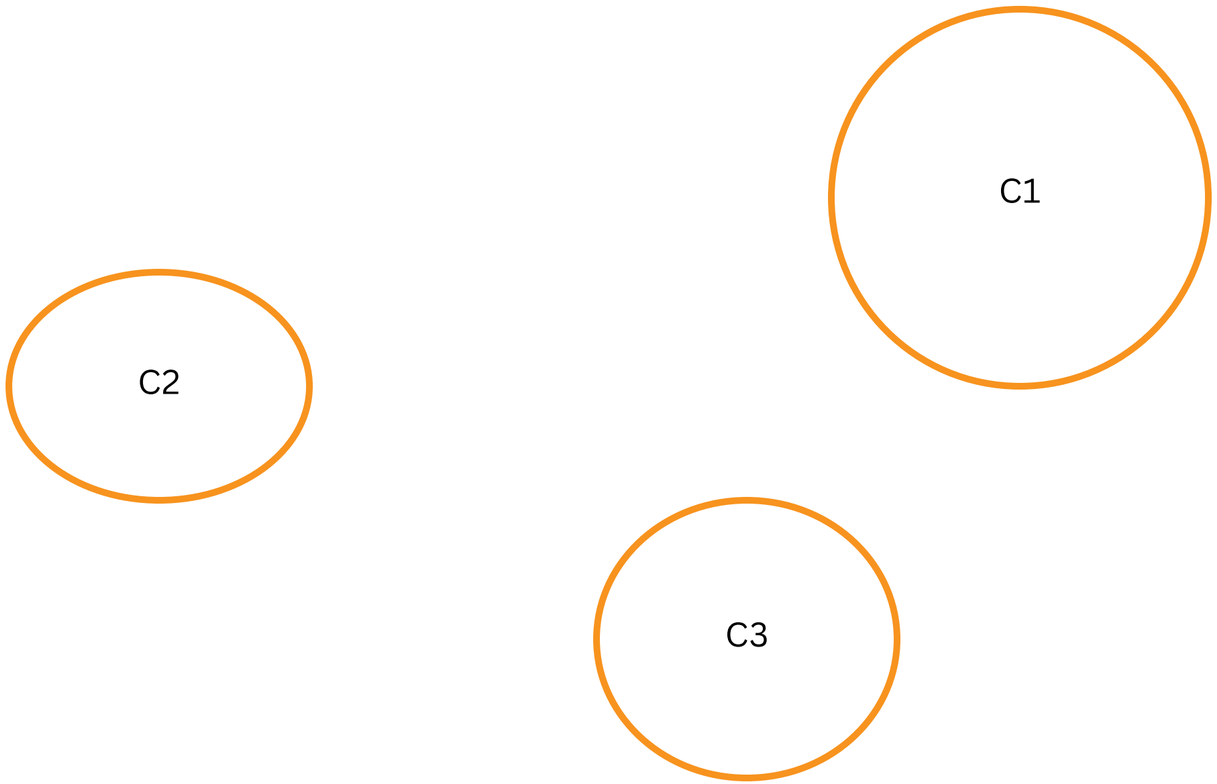


codefinity

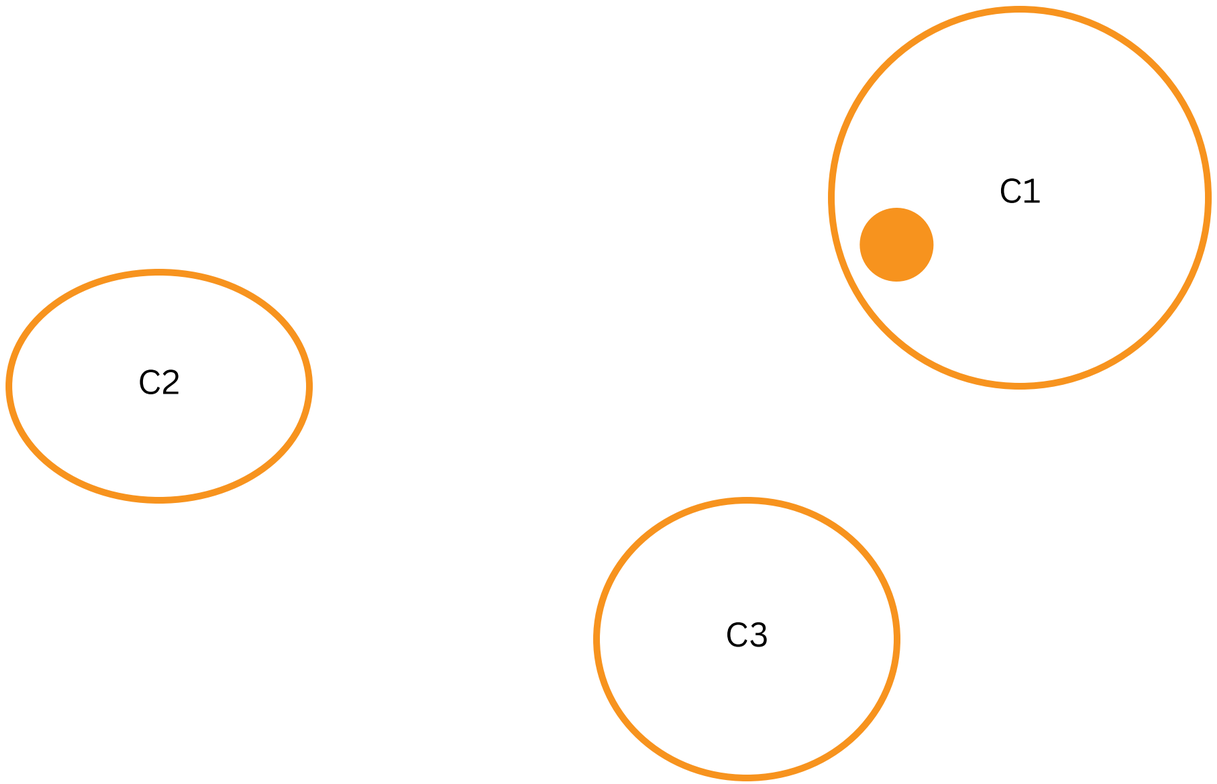
WSS Plot



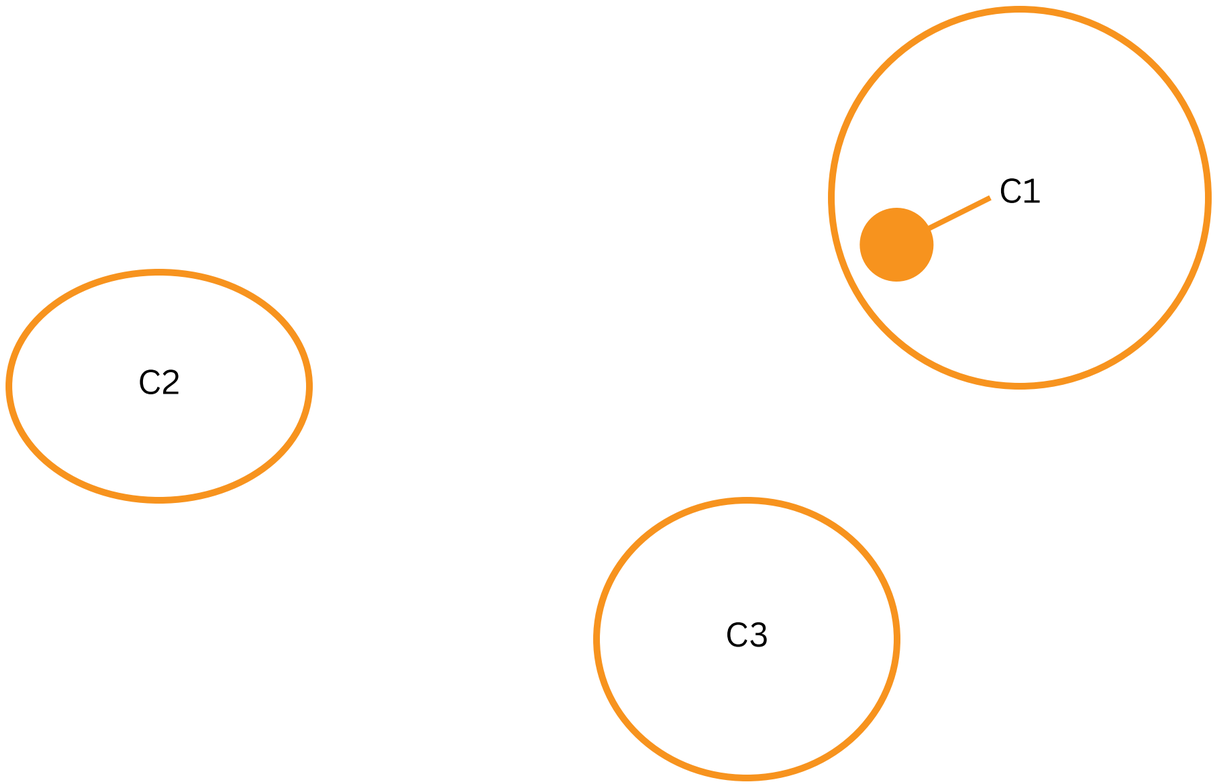
Silhouette Width



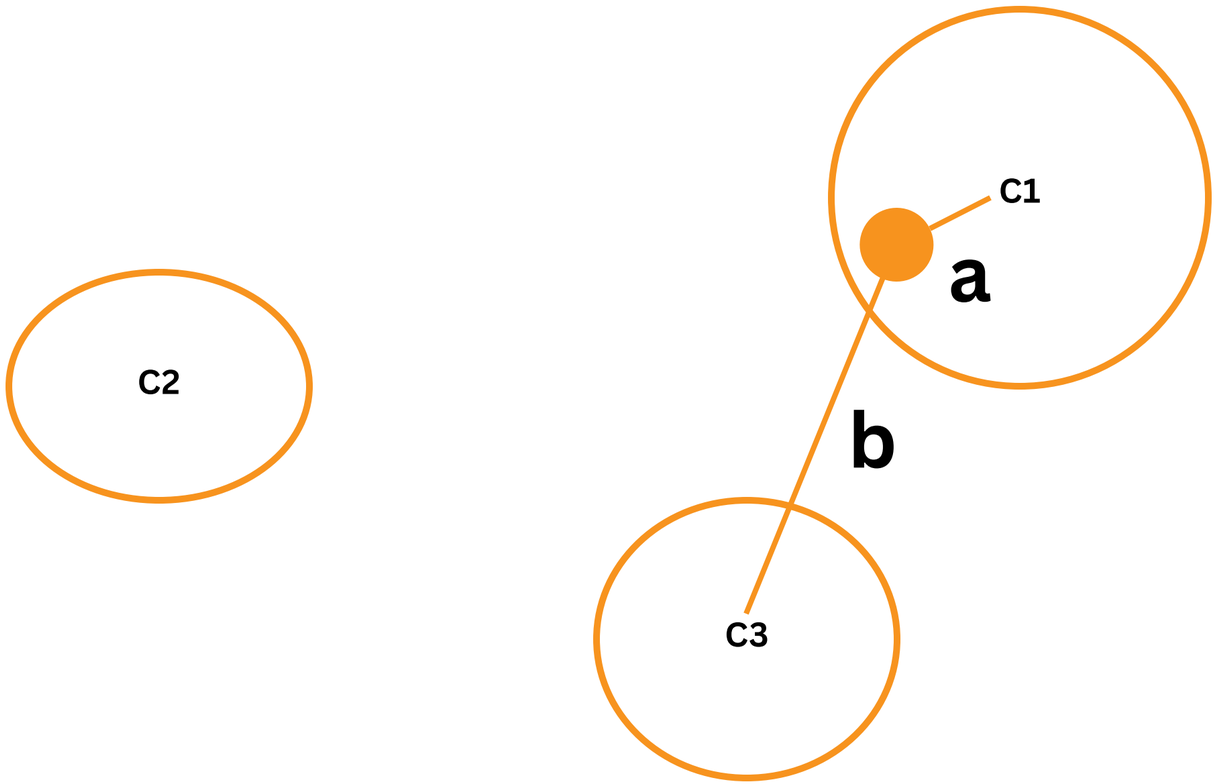
Silhouette Width



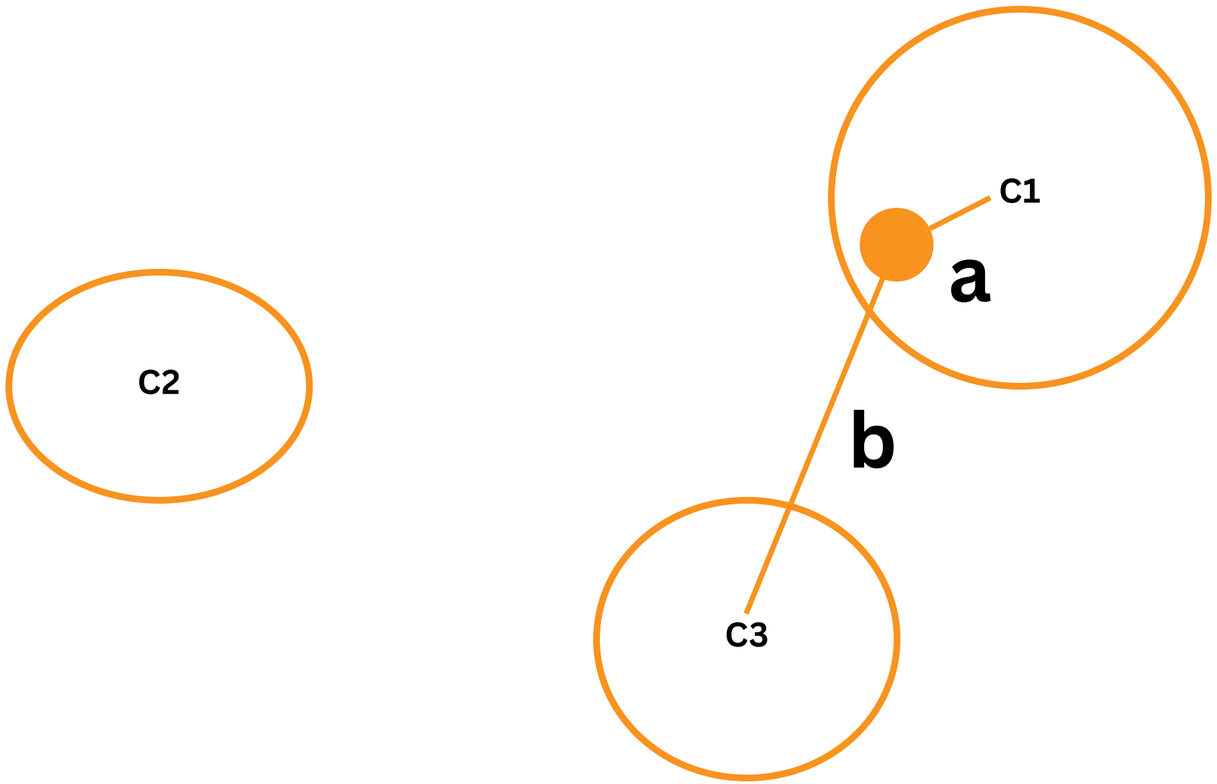
Silhouette Width



Silhouette Score



Calculating Silhouette Score



Score = b-a/max(a,b)

Range = [-1, 1]