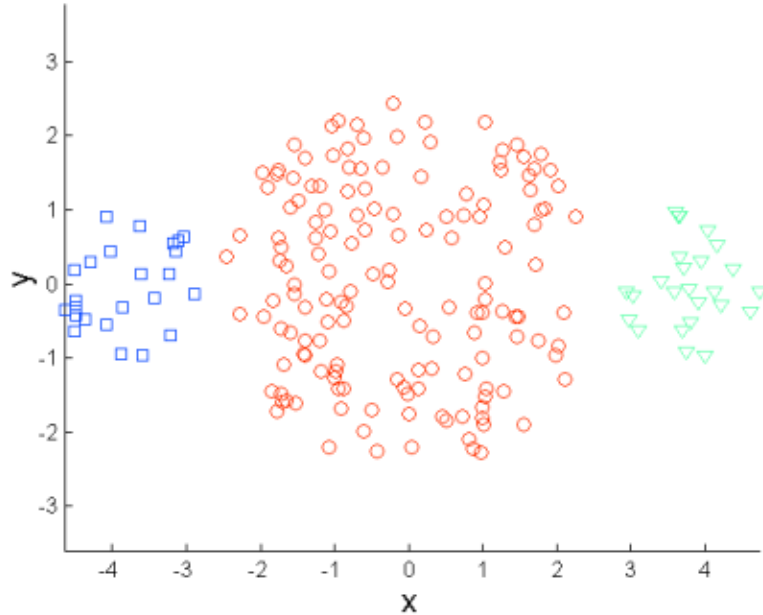


# Challenges with K-means

# Challenges with K-means

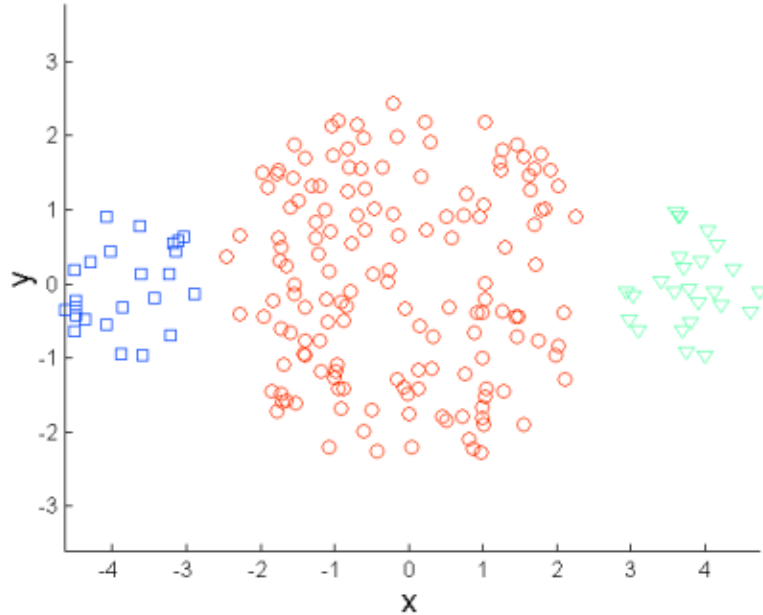
- Clusters are of different sizes

# Challenges with K-means

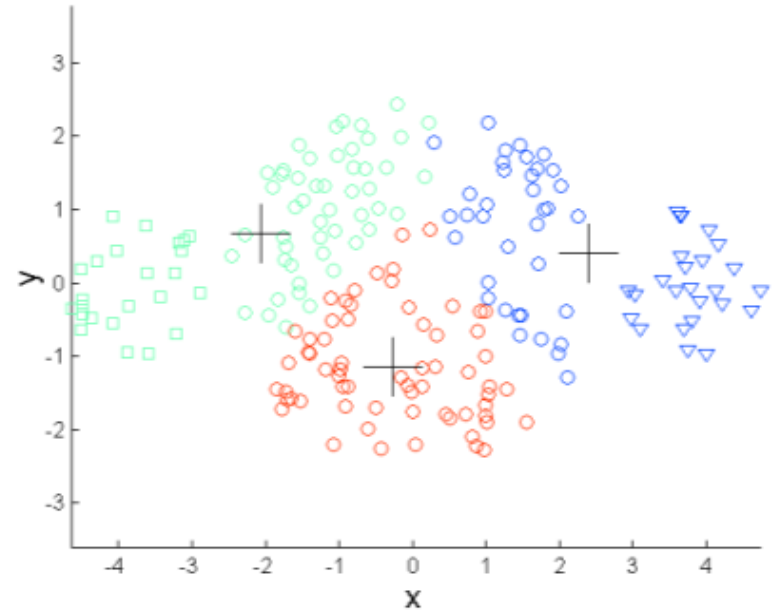


Original  
Points

# Challenges with K-means



Original  
Points

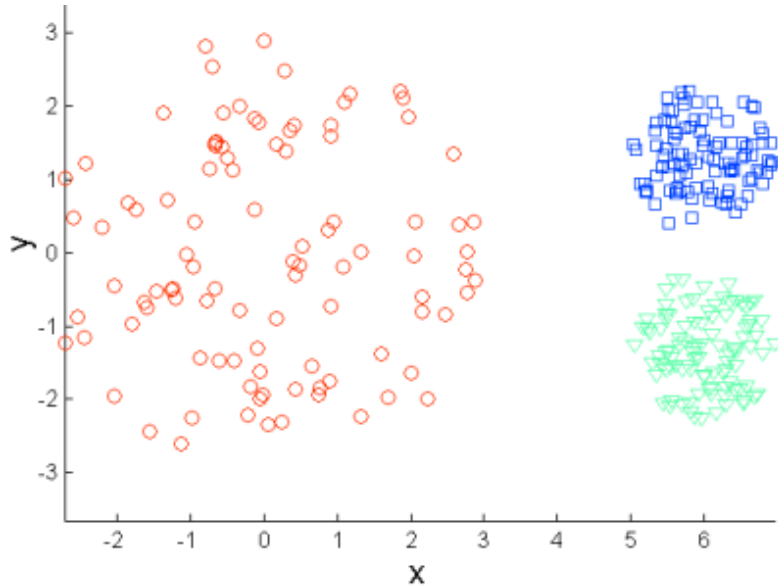


K-means ( $k =$   
3)

# Challenges with K-means

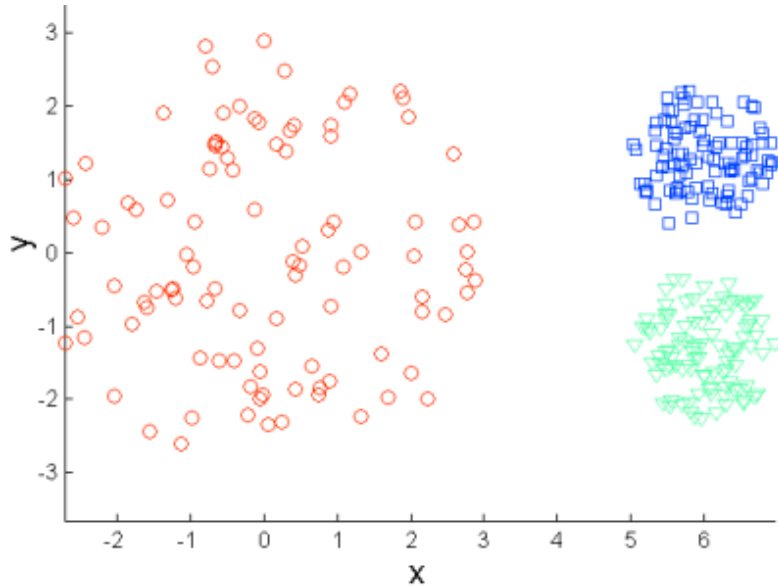
- Clusters are of different sizes
- Clusters are of different densities

# Challenges with K-means

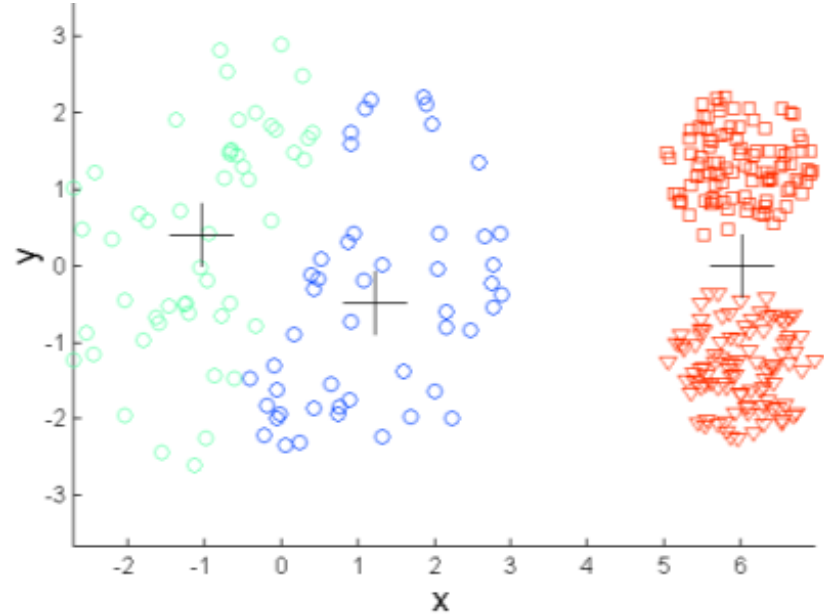


Original  
Points

# Challenges with K-means



Original  
Points



K-means ( $k = 3$ )

# Challenges with K-means

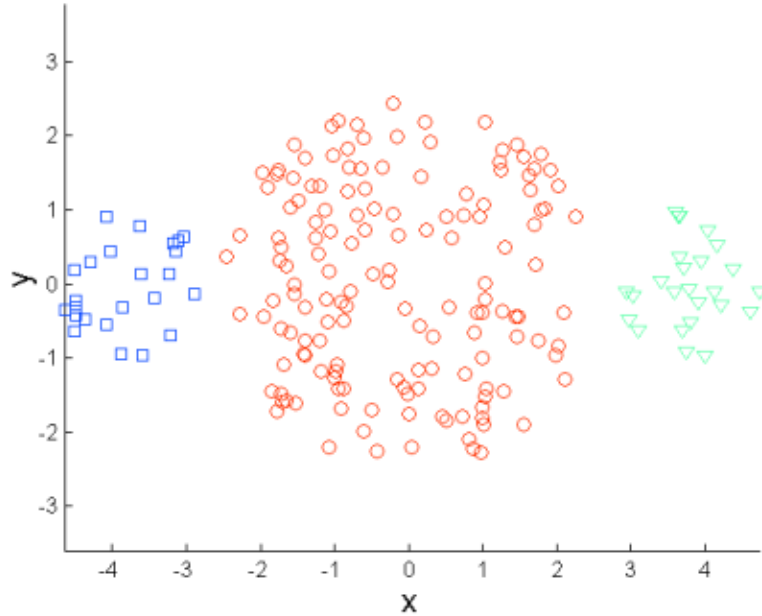
- Clusters are of different sizes
- Clusters are of different densities
- Problem with random initialization



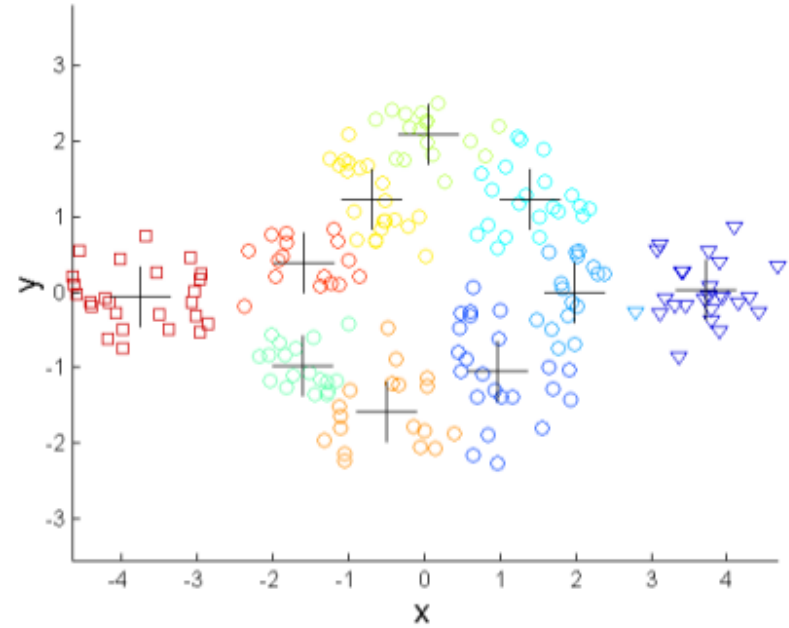
# Solution

Increase the number of clusters

# Solution

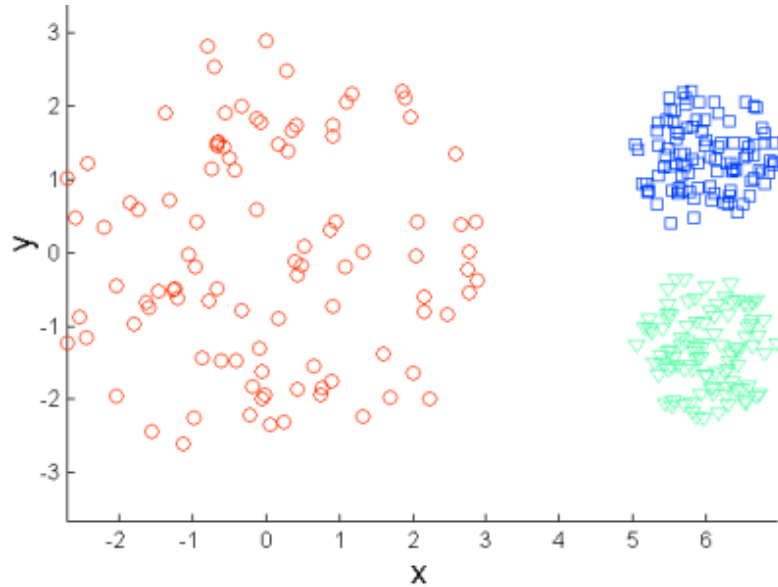


Original  
Points

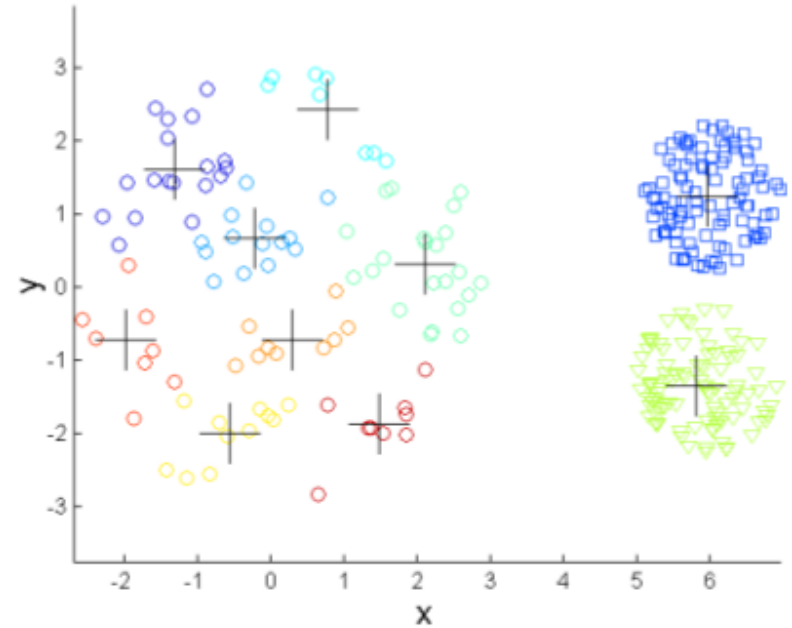


K-means ( $k = 10$ )

# Solution



Original  
Points



K-means ( $k = 10$ )

Thank  
You!