

Worksheet 6: Clustering Completed

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1 Clustering Completed

1. We can start by assuming that there exists an intra-category lower similarity weight than the maximum inter-category edge. Let the maximum inter-category edge in the final solution be e and the lower intra-category edge be e' . If e' had a lower weight than e , Then e' would have been included by the algorithm, as the algorithm processes it in decreasing order. By the time the algorithm processes e' its endpoints would have already been merged, forming an intra-category connection. Therefore, the greedy algorithm would have already created an intra-category connection at a higher similarity, contradicting the assumption that e' has a lower similarity than e .
2. We can say that since the C is already an optimal solution with inter-category edges, then it is true that the lower bound may be s_{min} where it is the minimum similarity between any two points in the dataset, and the upper bound may be s_{max} where it is the maximum similarity between any two points in the dataset.