

Homework 4

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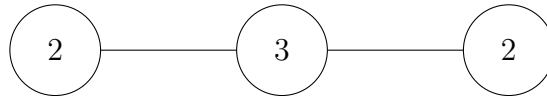
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CS331 Algorithms and Complexity

Problem Q1. Given n samples and unambiguous ImgComp, design a divide and conquer algorithm which can report whether more than 50% of samples belong to a single class. Prove correctness and runtime.

Problem Q2.

Problem Q3(a).



In this example, the middle node will be chosen and the two side nodes discarded for a total weight of 3.

If the middle node was discarded and the two side nodes chosen, the total weight would have been $4 > 3$.

Problem Q3(b).



In this example, the maximum weight independent set includes nodes v_1 and v_4 , but 1 is odd and 4 is even.

Problem Q3(a).