CS 4720/5720 Design and Analysis of Algorithms

Homework #2

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Answers to homework problems:

1. Consider the graph in Figure 3.21, in which each edge - except the edge connecting b and c - is labeled as a strong tie (S) or a weak tie (W).

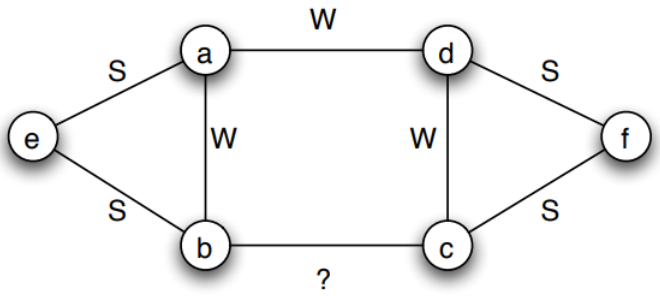

Figure 3.21:

According to the theory of strong and weak ties, with the strong triadic closure assumption, how would you expect the edge connecting b and c to be labeled? Give a brief (1-3 sentence) explanation for your answer.

2. In the social network depicted in Figure 3.22, with each edge labeled as either a strong or weak tie, which nodes satisfy the Strong Triadic Closure Property from Chapter 3, and which do not? Provide an explanation for your answer

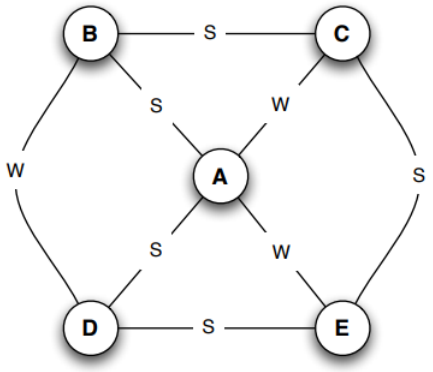

Figure 3.22:

3. In the social network depicted in Figure 3.23 with each edge labeled as either a strong or weak tie, which two nodes violate the Strong Triadic Closure Property? Provide an explanation for your answer

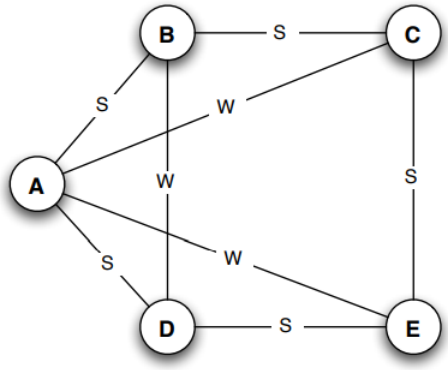

Figure 3.23: A graph with a strong/weak labeling.

4. In the social network depicted in Figure 3.24, with each edge labeled as either a strong or weak tie, which nodes satisfy the Strong Triadic Closure Property from Chapter 3, and which do not? Provide an explanation for your answer.

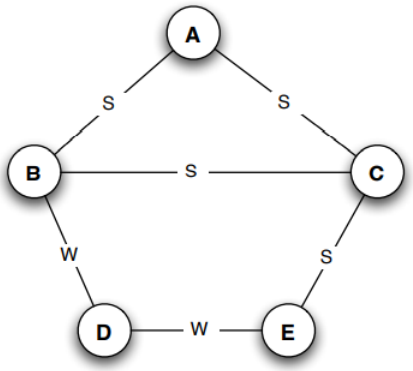

Figure 3.24: