You need to give reasoning of how you derive your answers. No mark if no reasoning is given.

Question 1

Suppose you're working with a group of researchers studying social networks, with a particular focus on the distances between people in such networks, and the broader implications for the small-world phenomenon.

The research group is currently negotiating an agreement with a large mobile phone carrier to get a snapshot of their "who-calls-whom" graph. With agreement, the carrier provides a graph in which a node represents a customer, and an edge represents two people who have called each other in the past year. (The edges will be annotated with the number of calls and the time of each call.) Recently, the carrier proposes that they will only provide edges where two people have called each other at least once a week on average in the past year. (In other words, all nodes will be presented, but there will only be edges where two people talked at least 52 times.) The carrier understands that this is not the full network, but they argue that this is a good approximation to the full network.

Given such change, which of the following statement is true?

1) This will reduce the weak tie edges in the network
2) This will NOT reduce the weak tie edges in the network
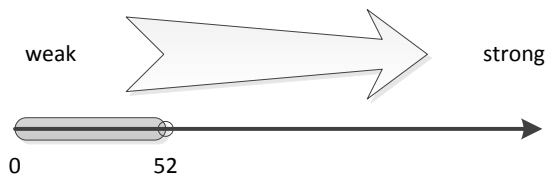
The more frequent one connect to another, the stronger tie it will be. That is to say, to get rid of connection less than 52 times, will reduce weak ties first, and may reduce some strong ties.
Suppose the threshold of weak tie and strong tie is T, if T<52, all weak ties will be erased, and some strong ties will also be erased; if T=52, all weak ties will be erased, no impact on strong ties; if T>52, some weak ties will also be erased, no impact on strong ties.
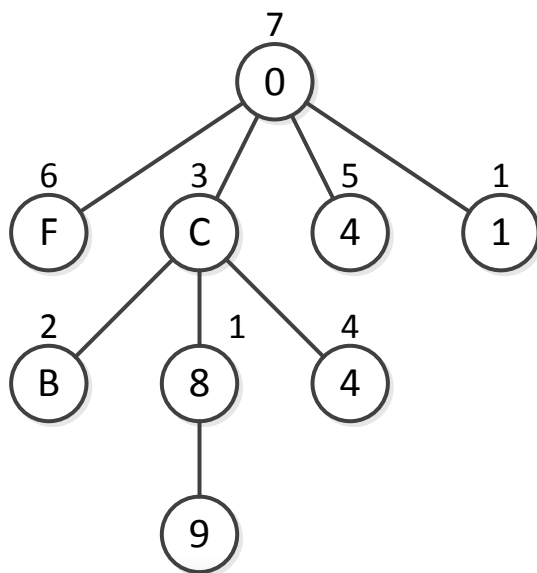1 is correct.

Question 2

Consider the following graph. The distance is defined as the relative position traversing from node to another node. For instance, the distance of node 0 and node A is 6. What is the path outputted by decentralized search between node 0 and node 9, and why?
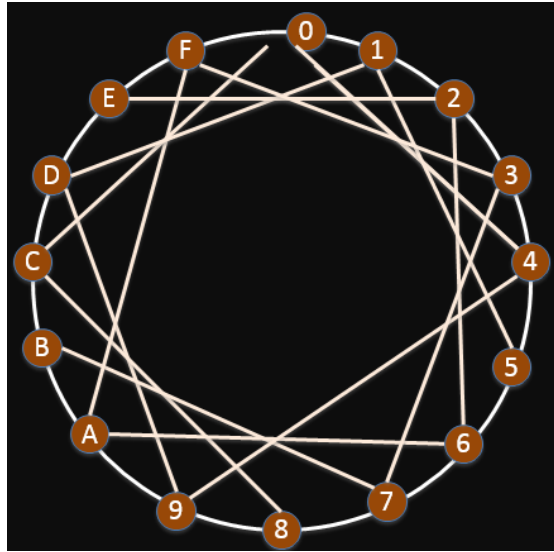
1) 0-C-8-9
2) 0-1-D-9
3) 0-C-B-A-9
4) 0-4-9

1 is correct.