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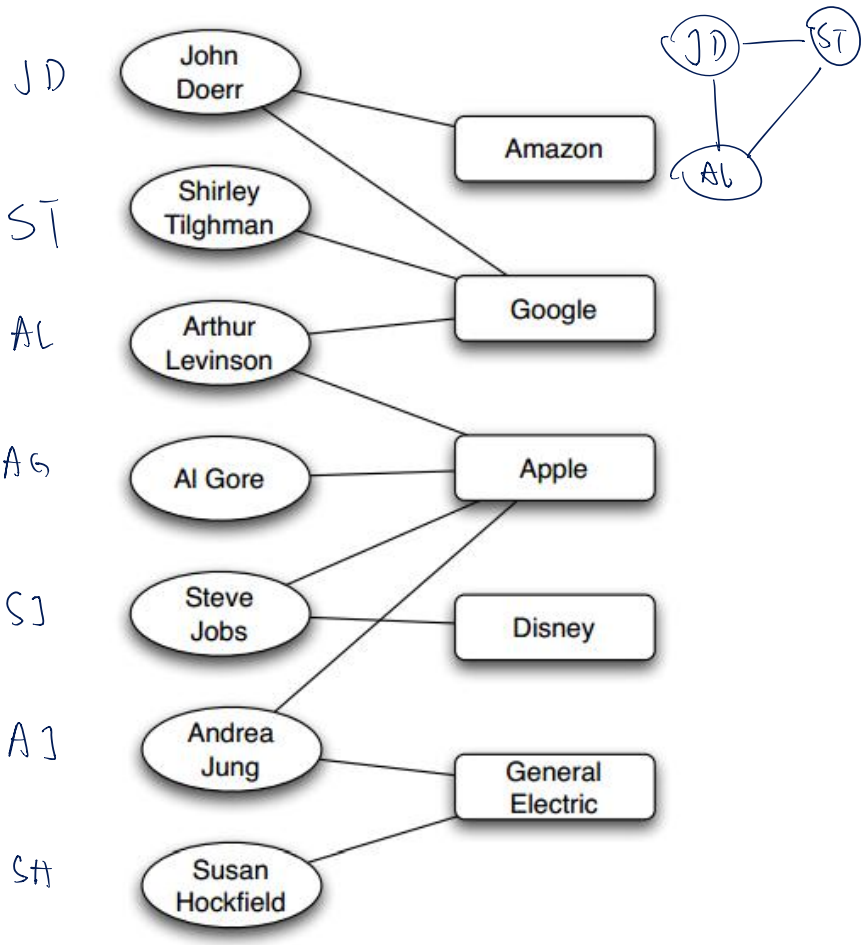
You need to give the reasoning of your answers for BOTH why you choose AND why you do not choose. Otherwise, there is no mark.

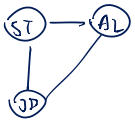
Question 1

Affiliation network is an example of bipartite graphs. An affiliation network has two categories, people and foci, where each edge connects a person to a focus that he or she participates in. Consider the following graph. On the left hand side, there are 7 nodes representing people whereas on the right hand side, there are 5 nodes representing companies (foci). If a person is on the director board of a company, there will have an edge connecting the person node and the company node.

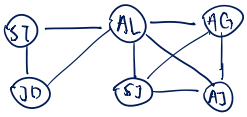


Given a bipartite affiliation graph, showing the membership of people in different social foci, researchers sometimes create a projected graph on just the people, in which we join two people when they have a focus in common. An edge will be formed between two persons to represent they participated in the same social activity. Please select which of the following graph represents such "projection" of the graph above.

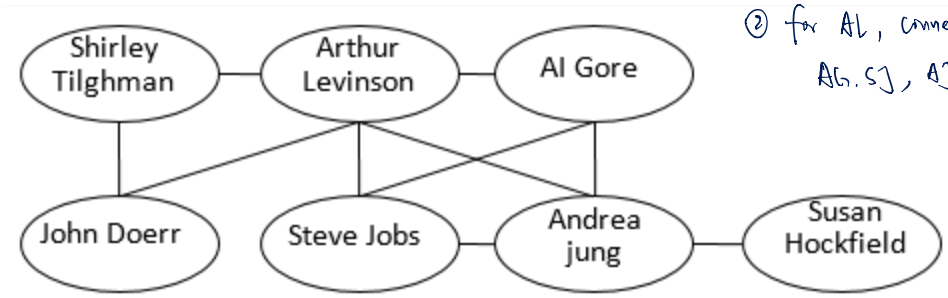
① for ST: connect with AL, JD, because of Google.



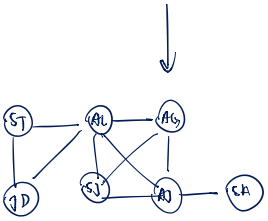
② for AL, connect with AG, SJ, AJ, Because of Apple.



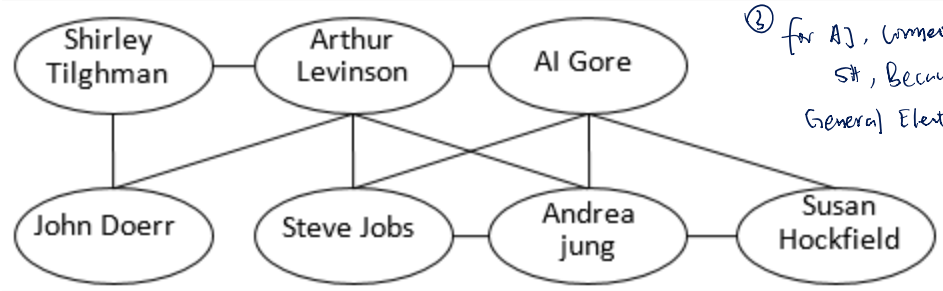
1.



③ for AJ, connect with SH, Because of General Electric

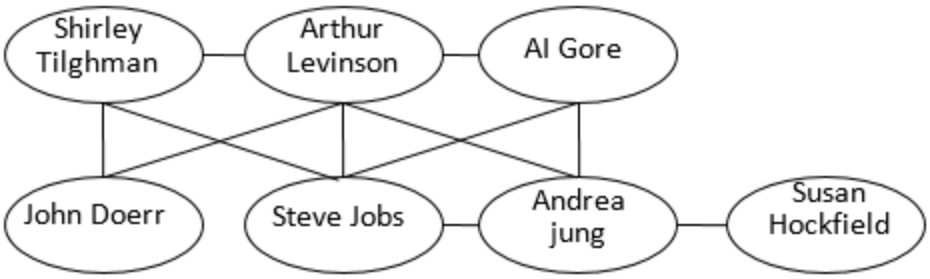


2.

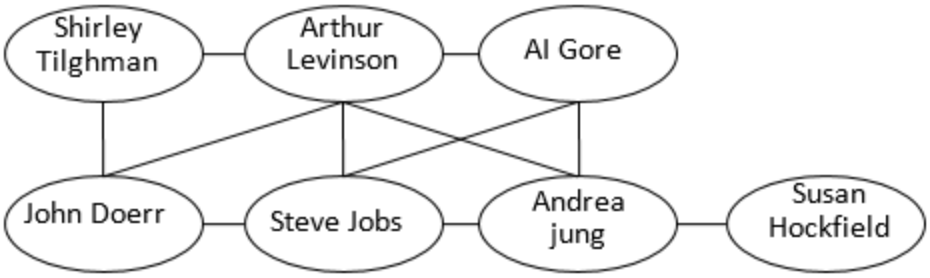


So, the answer is ①.

3.



4.



Question 2

Projected graph satisfies: an edge will be formed if and only if two individuals participate the same social activities (foci).

If the following graph is a projection of an affiliation network, what is the minimum number of social activities (foci) in that affiliation network?