

36. Four friends have been identified as suspects for an unauthorized access into a computer system. They have made statements to the investigating authorities. Alice said “Carlos did it.” John said “I did not do it.” Carlos said “Diana did it.” Diana said “Carlos lied when he said that “I did it.”

a) If the authorities also know that exactly one of the four suspects is telling the truth, who did it? Explain your reasoning.

b) If the authorities also know that exactly one is lying, who did it? Explain your reasoning

Answer:

a) John did it.

Reasoning: If Alice is telling the truth and all others are lying, then the statements of Carlos and Diana contradict with one another. So it is not possible. If John is telling the truth, then also then the statements of Carlos and Diana contradict with one another. If Carlos is telling the truth, then Diana is telling lie and the truth contradicts with the assumption. If Diana is telling the truth, then there is no contradiction and John is telling the lie “I did not do it”. So John did it.

b) Carlos did it.

Reasoning: If Alice is lying, then the statements of Carlos and Diana contradict with each other. So it is not possible. If John is lying, then also the statements of Carlos and Diana contradict with one another. If Carlos is lying is lying, then everything is consistent with our assumption. So as Alice is telling the truth this time and he said, “Carlos did it”, then Carlos did it.