

CSE-103

Student ID: 1705050

Verifying student ID: 1705080

Subject: Assignment from Book

Chapter No: 1

Section No: 2

Exercise No: 36

Problem: 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.

Solution:

a) **Answer:** John did it.

Explanation:

Since John did it,

Alice said, “Carlos did it”. So, he is lying.

John said, “I did not do it”. So, he is lying.

Carlos said, “Diana did it”. So, he is lying.

Diana said, “Carlos lied when he said that I did it”. So, she is telling the truth.

Here, exactly one is telling truth.

b) Answer: Carlos did it.

Explanation:

Since Carlos did it,

Alice said, "Carlos did it". So, he is telling the truth.

John said, "I did not do it". So, he is telling the truth.

Carlos said, "Diana did it". So, he is lying.

Diana said, "Carlos lied when he said that I did it". So, she is telling the truth.

Here, exactly one is lying.