TUTORIAL ASSIGNMENT 2

DATE: SEPTEMBER 30, 2009 AND OCTOBER 7, 2009

The following problems are adapted from "What is the Name of this Book : The riddle of Dracula and other logical puzzles."

Two banks were robbed in the space of two days. Inspector Craig and Sergeant McPherson were on the case trying to establish the guilt or innocence of three suspects Alice, Bob and Carol. The nefarious characters are the only people who could be involved in these bank robberies and at least one of them is guilty. In each case the Inspector and Sergeant establish certain facts.

For the first two problems write an argument in words to establish the guilt or innocence of Alice, Bob and Carol. Note that the clues provided may not be sufficient to determine the guilt and innocence of all of the suspects, but should be sufficient to establish the guilt of at least one person.

- (1) In the first case we find that:
 - (a) If Alice is guilty and Bob is innocent, then Carol is guilty.
 - (b) Carol never works alone.
 - (c) Alice never works with Carol.
- (2) In the second case we establish that:
 - (A) If Alice was guilty, then she had an accomplice.
 - (B) If Bob is innocent, then so is Carol.
 - (C) If exactly two are guilty then Alice is one of them.
 - (D) If Carol is innocent, then so is Bob.
- (3) In the two questions above translate each of the clues to a truth valued sentence using the connectives and, or, not and if ... then and the propositions: A representing the statement "Alice is guilty," B representing the statement "Bob is guilty" and C representing "Carol is guilty." Create a truth table establishing the truth values of the clues in terms of the truth values of A, B and C.