Assignment #1

Due: 8ᵗʰ of October, 2021

Note:

1. Late submissions receive zero credit.

2. If you write only the correct answer without steps you get very low credit.

3. Do it using paper and pen.

3. Submit in hard form if you are on campus and in Soft form using slate if you are not on campus

4. In case you want to submit in hard form, do not knock at the door. Just slide beneath the door.

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Q:-1 The problems below relate to inhabitants of an island on which there are three kinds of people: knights who always tells the lie, knaves who always speak truth, and spies (called normals by Smullyan [Sm78]) who can either lie or tell the truth. You encounter three people, A, B, and C. You know two of them are knights and one is a knave. For each of the situations mentioned below, if possible, determine whether there is a unique solution and determine who the knights and knave are. When there is no unique solution, list all possible solutions or state that there are no solutions. [Points 40]

Do a rigorous analysis as we performed in the class by taking care of all the possibilities for A, B and C. There will be a total of nine propositions that you will need to assume. Call these proporistions as p1, p2,p3, q1, q2, q3 and r1, r2, r3 where p's are the propositions corresponding to person A, q's are the propositions corresponding to person B and r's are the propsoitions corresponding to person C.

a) A says "C is the knave," B says, "A is the knight," and C says "I am the spy."

b) A says "I am the knight," B says "I am the knave," and C says "B is the knight."

c) A says "I am the knave," B says "I am the knave," and C says "I am the knave."

d) A says "I am the knight," B says "A is telling the truth," and C says "I am the spy."