CSE 103
Discrete Mathematics
Assignment

NAME: MD. MEHEDI HASAN
STUDENT ID: 201705082
VERIFYING STUDENT'S ID: 1705008
CHAPTER: 01
SECTION: 02
EXERCISE NO: 25

QUESTION:

Inhabitants of an island on which there are three kinds of people: knights who always tell the truth, knaves who always lie, 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 one of these people is a knight, one is a knave, and one is a spy. Each of the three people knows the type of person each of other two is. For each of these situations, if possible, determine whether there is a unique solution and determine who the knave, knight, and spy are. When there is no unique solution, list all possible solutions or state that there are no solutions.
A says "I am the knight," *B* says "I am the knave," and *C* says "*B* is the knight."

SOLUTION:

Neither *Knight* nor *Knave* can say he is a *Knave*. If a *Knave* says that then he is saying true again if a *Knight* says that then he is saying false. Both of these are dissimilar with their character.

So *B* must be a *Spy* and telling lie.

As *B* is a *Spy* and *C* says "*B* is the *Knight*", *C* must be a *Knave* as his statement is false.

Finally we get *A* is the *Knight* as his speech also follows.