Exercise 3: Knights and Knaves – a logic problem

This logic problem requires you to define a “knight” as someone who always tells the truth and a “knave” as someone who always lies.

a. Imagine that three inhabitants of a distant land – A, B, C – are standing together in a garden. A stranger passing by asks A, “Are you a knight or a knave?” but is unable to hear A’s mumbled reply. The stranger then asks B, “What did A say?” B replies, “A said that he is a knave.” At this point, C says “Don’t believe B, he is lying.”

The question is: what are B and C?

b. Now imagine the same initial situation as before, three people A,B,C all gathered in a garden and a stranger passing by. This time the stranger asks A “How many knights are there among you?”

Again A mumbles an answer the stranger cannot hear. So the stranger asks B, “What did A say?” B replies “A said that there is one knight among us”. Immediately, C says “Don’t believe B, he is lying”.

Now what are B and C?

c. (A bit harder problem) Suppose there are only 2 people, A and B. A says “Either I am a knave or B is a knight.” What are A and B?