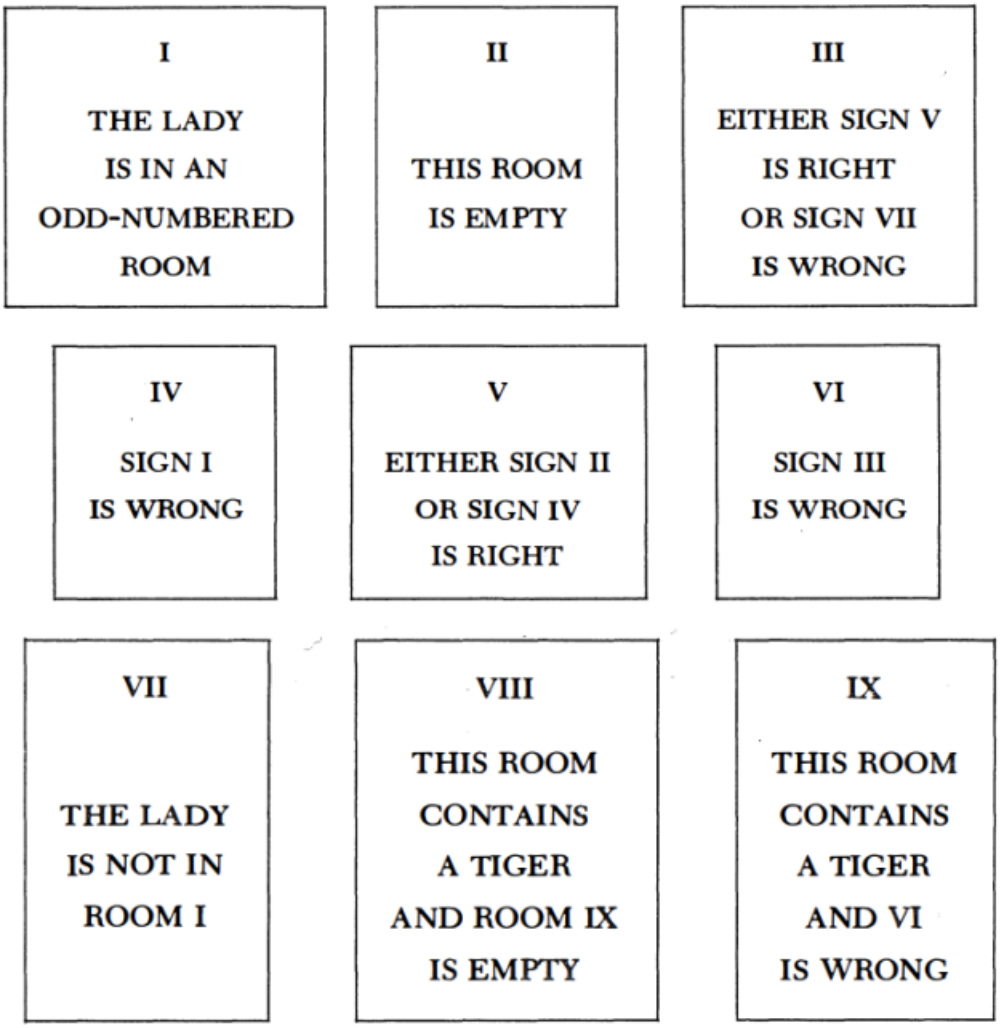
Problem Statement



One room contains a lady	(1a)
Non-lady rooms contain a tiger or are empty	(1b)
Signs on lady's room is true	(1c)
Signs on rooms with tigers are false	(1d)
Signs on empty rooms can be true or false	(1e)
We know whether Room VIII is empty	(1f)

Solution

We proceed by cases. One of several cases may be true. 1. Room VIII is empty 2. Room VIII is non-empty.

Case 1: Room VIII is empty.

Room VIII is empty	by case assumption	(2a)

Either the sign on Room VIII is true or false. We case over these possibilities.

Case 1.a: Room VIII is true.

Room VIII is empty	by case assumption	(3a)
Room VIII is true	by case assumption	(3b)
VIII contains a tiger $\wedge$ IX is empty	by definition and 3b	(3c)
		(3d)

Contradiction: VIII cannot both contain a tiger and be empty. This case cannot be possible.

Case 1.b: Room VIII is false.

Room VIII is empty	by case assumption	(4a)
Room VIII is false	by case assumption	(4b)
VIII doesn't contain a tiger $\vee$ IX is non-empty	by definition and 4b	(4c)
4b states VIII is false. If VIII has no tiger, VIII cannot be false. So for 4c to be true, IX must be non-empty	by logic	(4d)
IX is non-empty	by 4d	(4e)
		(4f)

It should be evident that enough time has passed for the lady to be eaten by a tiger. Since the lady is dead, she no longer exists. The lady is in none of the rooms. $\square$