

## IX. Who Owns the Zebra?

The real world often poses what are called *constraint satisfaction problems*, where the task is to find a feasible solution. In other words, we don't have to optimize anything, but *we have to satisfy all of the problem's constraints* instead.

One of the best-known examples of a constraint satisfaction problem is the famous "Zebra" problem. It goes like this: There are five houses, each of a different color and inhabited by men of different nationalities, with different pets, favorite drinks, and cars. Moreover,

1. The Englishman lives in the red house.
2. The Spaniard owns the dog.
3. The man in the green house drinks cocoa.
4. The Ukrainian drinks eggnog.
5. The green house is immediately to the right (your right) of the ivory house.
6. The owner of the Oldsmobile also owns snails.
7. The owner of the Ford lives in the yellow house.
8. The man in the middle house drinks milk.
9. The Norwegian lives in the first house on the left.
10. The man who owns the Chevrolet lives in the house next to the house where the man owns a fox.
11. The Ford owner's house is next to the house where the horse is kept.
12. The Mercedes-Benz owner drinks orange juice.
13. The Japanese drives a Volkswagen.
14. The Norwegian lives next to the blue house.

The question is ... who owns the zebra? Furthermore, who drinks water?