## The Puzzle

There are four houses of different colors next to each other on the same road. In each house lives a man of a different nationality. Every man has his favorite sport and favorite animal.

1. There are two houses between the person who likes bowling and the person who likes swimming.
2. There is one house between the Irish and the person who likes handball on the left, i.e., the person who likes handball is to the left of the Irish person, with one house separating them.
3. The second house is black.
4. There is one house between the person who likes horses and the red house on the right.
5. The American lives directly to the left of the person who likes turtles.
6. There are two houses between the person who likes horses and the person who likes butterflies on the right.
7. The person who likes bowling lives somewhere to the right of the person who likes tennis.
8. There is one house between the person who likes handball and the white house on the right.
9. The British lives in the first house.

Express these constraints in the Alloy language and then run the Alloy Analyzer to find an instance that satisfy the constraints.

Recap:

Colors: black, red, white, blue  
Nationalities: Irish, American, British, Canadian  
Sports: bowling, swimming, handball, tennis  
Animals: butterfly, dolphin, horse, turtle

## Important Hint

Call the ordering module to order the houses:

**open** util/ordering[House]

That results in the creation of some functions that you can use:

first returns the first house.  
If h is a house, then h.next returns the house to the right of h and h.prev returns the house to the left of h.  
You already knew all that. But what you didn’t know is this: h.nexts returns all the houses to the right of h and h.prevs returns all the houses to the left of h.