Einstein Problem

Facts:

- There are 5 houses (along the street) in 5 ***different colors***:
  blue, green, red, white and yellow.
- In each house lives a person of a ***different nationality***:
  Brit, Dane, German, Norwegian and Swede.
- These 5 owners drink a certain of ***beverage***:
  beer, coffee, milk, tea and water,
- These 5 owners smoke a certain ***brand of cigar***:
  Blue Master, Dunhill, Pall Mall, Prince and Blend,
- These 5 owners keep a certain ***pet***:
  cat, bird, dog, fish and horse.
- No owners have the same pet, smoke the same brand of cigar, or drink the same beverage.

Einstein Problem

Hints:

- 1. The Brit lives in a red house. [nation, color]
- 2. The Swede keeps dogs as pets. [nation, pet]
- 3. The Dane drinks tea. [nation, beverage]
- 4. The green house is on the left of the white house (next to it). [color, color]
- 5. The green house owner drinks coffee. [color, beverage]
- 6. The person who smokes Pall Mall rears birds. [cigar, pet]
- 7. The owner of the yellow house smokes Dunhill. [color, cigar]
- 8. The man living in the house right in the center drinks milk. [complete]
- 9. The Norwegian lives in the first house. [complete]
- 10. The man who smokes Blend lives next to the one who keeps cats. [cigar, pet]
- 11. The man who keeps horses lives next to the man who smokes Dunhill. [pet, cigar]
- 12. The owner who smokes Blue Master drinks beer. [cigar, beverage]
- 13. The German smokes Prince. [nation, cigar]
- 14. The Norwegian lives next to the blue house. [complete]
- 15. The man who smokes Blend has a neighbor who drinks water. [cigar, beverage]

Programming Assignment #1

Due: May 15, 2020 23:59

- Design and implement a backtracking algorithm that solves the Einstein Problem

- Your program should print all solutions (if any) that match the given facts and hints.

- Your program should count and print the number of nodes that have to be explored until it finds a solution.

- In your report, you need to describe how each state of the state space tree is represented and how the ‘promising’ function works.

- Can you think of a more efficient way of solving the problem? Submit a report describing your own idea.