1) True or False?

4 Crossword Puzzles

a)

The problem of fitting words into an empty crossword puzzle could be defined as a classical search problem like this:

(a) state space: a crossword grid with any number of word gaps filled

(b) initial state: completely empty crossword grid

(c) actions: choosing an item from a list of words with the right length and possibly characters on specific positions if required

(d) transition model: fill the corresponding gap with the chosen word

(e) goal state: completely filled crossword grid

A fitting search algorithm could be Stochastic Beam Search, because you may need to try to fill the grid from a previous state if no words for a given gap can be found. A heuristic function for this problem could be the number of filled in gaps of the grid.

b)

As a constraint satisfaction problem, it could look like this:

(a) variables: the chosen word for a specific gap

(b) domains: the given list of words which can be chosen. Can be restricted to the possible options of the corresponding gap

(c) constraints: each word has to be the corresponding length and for every overlap of two words, they must have the same character on the position of the overlap

(d) objective: number of satisfied constraints