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Homework #8

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1. If you query adjacent(X, Y)., it will find adjacent(a, b). adjacent(b, a). adjacent(e, f). adjacent(f, e). ~~for a constant loop (infinite)~~ 5

This will make every element adjacent to everything

We can modify the program by including a base case of adjacent(X, Y). to eliminate returning the opposite of facts and to ensure termination.

2. In the order listed, the suffix is appended before the prefix to create a sublist. This says that Xs is a sublist of AsXsBs if there exists XsBs that is a suffix of AsXsBs and a prefix of Xs. This order is preferred because the suffix of a list is larger and it is more likely Xs is a suffix than is the first element, the prefix. The alternate will not terminate. 5

3. If we change the rules order we could accidently create an infinite program that doesn't terminate. [why? 3

For example, if we did not put the base case of substitute(X, Y, [], []). first, we could end up in an infinite recursive program.

If we change the order of the goals, we can affect the flow and accuracy of the program. This is more important than rule flow. For example, if we query substitute(Y, X, LS1, LS2)., we are substituting all instances of Y in LS1 with X to make LS2. but it's likely there are no elements of Y in LS1, so everything would have to be replaced. This actually changes the type of search happening as well because it affects the search tree and will take longer.

The program should always terminate because there is a base case and heuristics are included.