Automated Reasoning

How to run the project

This is a simple java project including two different implements of reasoning algorithm –model checking and DPLL. In the zip file, there are two zip files. One is python file named problem 1-6(mc) which is using model checking. The other is named problem 1-6(dpll) based on DPLL. In every zip file, the test file is the entrance for to run the total algorithms. The kb file is the functions of model.

1. In the test file, at the beginning you will find there are several arrays. The array called a is the CNF logic sentence the problem will used. The array named b saves the sentence needed to be prove for the problem. And in the beginning you will choose what problem you want to solve, you should input two number, the first one is the order of problem. Because some problems will have several subproblems, so the second number represents subproblems' order. If there is only one main problem, you should input 1 as second number.

2. After you input the number, you will see the conclusion in the terminal. For the convenience, for every problem I just display truth or false for variables, so for problem 6 If the terminal tells you "a is truth" which equals to "a is knight", or "x is truth" means "x is good door". If I don't do that, there will be more algorithms in the file for every problem.

How to meet requirements

In the project, the goal is to prove some sentence or find what assignment the variables have. In this case, every time after you make your choice, if you choose the problem 1 to 3, the terminal will tell you if the sentence is proved. For problem 4-6, the terminal will tell you every assignment of all variables, in this case you can get solution based on these assignments. (In fact for problem 6 the result of algorithm display only x is definitely good door, so you can easily make a decision.)

Notes

If you want to know how to design the algorithm and the idea of function, you can check these in comments

I hope this doc will help you use the algorithm.