An heuristic implementation for Boolean Satisfiability Problem

Ian Gabriel, Carlos Eduardo

[1] Federal University of Rio Grande do Norte, Natal, Brazil

Abstract. *This report mainly presents an heuristic implementation of an algorithm for the satisfiability problem, together with experimental results, while also discussing the current heuristics available for this problem. It is worth mentioning that this is a graded assignment for the discipline of Algorithms Analysis and Projects of the Federal University of Rio Grande do Norte.*

1. Introduction

The boolean satisfiability problem (SAT) involves determining if a logical formula can be satisfied. Despite its straightforward definition, SAT has several practical applications across several fields. For example, SAT can be used for software and hardware verification, artificial intelligence, and bioinformatics [Marques-Silva 2008]. These diverse applications demonstrate the problem's impact across both theoretical and practical worlds.

SAT has became one of the main problems in the fields of computer science and mathematics. Not only because of its practical applications, but for its high difficulty. SAT is the first problem to be proved NP-complete [Cook 1971]. Therefore, solving SAT proves that P=NP, leading to great advance in the computer science field.

Among many algorithm to solve SAT, we highlight `DPLL`, which is a backtracking algorithm that uses an heuristic to choose the most promising branch on the search space. This way, the algorithm prunes some branches of the search tree, gaining efficiency.

For this report, we present a modification of `DPLL` called `CIDPLL`, which uses another heuristic to decide the best value to assign a variable. Since `CIDPLL` does not go through all the search space, it can provide incorrect answers. However, `CIDPLL` has a polynomial worst case complexity, having a faster runtime.

The report is structured as follows: Section 2 defines the SAT problem. Section 3 explains abut `DPLL` and our modified version `CIDPLL`. Section 4 show the implementation details of `CIDPLL`. Section 5 contains the empirical analysis results. Section 6 discuss the results. Finally, Section 7 concludes this report.

2. Boolean Satisfability Problem (SAT)

2.1. Conjuctive Normal Form (CNF)

A propositional logic formula is said to be in the Conjuctive Normal Form if it has the form:

$$P_1 \wedge P_2 \wedge \cdots \wedge P_n$$

where P_i is a disjunction of positive or negative literals. Formally, P_i is written as:

$$Q_1 \vee Q_2 \vee \cdots \vee Q_n$$

and Q_i is x or $\neg x$ for a variable x.

An example of CNF formula is: $(x \lor y \lor \neg z) \land (x \lor \neg y) \land (\neg w \lor x)$

2.2. SAT problem

The satisfiability problem is defined as follows: Given a CNF formula, return an assignment of the variables such that the formula becomes true, or answer that the formula is unsatisfiable.

More formally, the input is a string which is guaranteed to be a valid CNF formula. The output should be a function $\alpha : X \to \{0, 1\}$ such that the evaluation of the formula from this assignment is 1. Here, X is the set of variables present in the formula. If such function does not exist, answer accordingly.

3. `DPLL` algorithm

Davis–Putnam–Logemann–Loveland (`DPLL`) is a complete search algorithm for deciding the satisfiability of a CNF formula. It is essentially a backtracking algorithm, designed to work with an heuristic to choose the next variable to be assigned. For this reason, `DPLL` is considered to be a family of algorithms, since the chosen heuristic can change the algorithm's efficiency.

`DPLL` is described at Algorithm 1. Here, we define an auxiliary function `apply`, which receives a formula, a variable and a boolean. This function is responsible returning the reduced formula when the variable is assigned the respective boolean value. Some possible reduction steps the `apply` function uses are:

- $A \lor 0 = A$
- $A \lor 1 = 1$
- $A \land 0 = 0$
- $A \land 1 = A$

Moreover, we have the function `next_variable`, which is the heuristic responsible for deciding the next variable to have its value assigned. Additionally, the notation $\alpha[x \leftarrow v]$ can be read as "the same assignment as α but the variable x is assigned to value v".

Since a complete algorithm is out of scope, for this work, we present a new algorithm derived from `DPLL` called `CIDPLL` (Carlos & Ian DPLL). This algorithm uses another heuristic to decide which is the best value to assign to the next variable. It is a greedy algorithm because after deciding a variable's value, it does not go back. Besides the fact that `CIDPLL` uses an heuristic to guess the best value to assign a variable, the algorithm is very similar to `DPLL`. This can be seen at Algorithm 2

4. Implementation of `CIDPLL`

The first requirement to implement `CIDPLL` is to specify both `next_variable` and `best_value` heuristics. For the `next_variable` heuristic, we are going to use Dynamic Largest Individual Sum (`DLIS`). For the `best_value`, we are going to use our own heuristic called Most Common Literals (`MCL`).

Algorithm 1 DPLL

Input: A set of clauses Φ
Output: A solution to satisfy Φ
function DPLL(Φ, α)
    if Φ `has empty clause` **then return** `no solution`
    end if
    if Φ `has no clauses` **then return** α
    end if
    if Φ `has a clause with exactly one literal` l **then**
       if $l = \neg x$ **then return** DPLL(apply(Φ, x, 0), $\alpha[x \leftarrow 0]$)
       else
    return DPLL(apply(Φ, x, 1), $\alpha[x \leftarrow 1]$)
       end if
    end if
    var $\leftarrow$ next_variable(Φ)
    return DPLL(apply(Φ, var, 0), $\alpha[var \leftarrow 0]$) **or**
DPLL(apply(Φ, var 1), $\alpha[var \leftarrow 1]$)
end function

Algorithm 2 CIDPLL

Input: A set of clauses Φ
Output: A solution to satisfy Φ
function DPLL(Φ, α)
    if Φ `has empty clause` **then return** `no solution`
    end if
    if Φ `has no clauses` **then return** α
    end if
    if Φ `has a clause with exactly one literal` l **then**
       if $l = \neg x$ **then return** DPLL(apply(Φ, x, 0), $\alpha[x \leftarrow 0]$)
       else
    return DPLL(apply(Φ, x, 1), $\alpha[x \leftarrow 1]$)
       end if
    end if
    var $\leftarrow$ next_variable(Φ)
    value $\leftarrow$ best_value(Φ, var)
    return DPLL(apply(Φ, var, value), $\alpha[var \leftarrow value]$)
end function

4.1. DLIS

DLIS consists of selecting the variable with the most occurrences in the formula. The main goal of this heuristic is to reduce the formula as most as possible. This way, the algorithm reaches a base case faster, reducing execution time.

Our implementation of DLIS consists of iterating for all possible variables and then checking all possible clause sizes. For each clause size, iterate all clauses of that size and count the current variable occurrences. This process can be seen at Algorithm 3

Algorithm 3 DLIS

   Input: Φ a clause set
   Output: The variable with most occurrences in Φ
   function DLIS(Φ)
      best: Var
      max $\leftarrow -\infty$
      for x in Φ.Variables **do**
         count $\leftarrow 0$
         k $\leftarrow \Phi$.Biggest_Clause_Size()
         for i in $[1 \ldots k]$ **do**
            for c in Φ.Clauses_With_Size(i) **do** count $\leftarrow$ count + occurrences(c, x)
            end for
         end for
         if count $\geq$ max **then**
            best $\leftarrow x$
            max $\leftarrow$ count
         end if
      end for
       return best
   end function

Assuming that Φ is always reduced, we can infer that the size of each clause is $O(v)$. Where v is the number of variables appearing in the formula. This is true because on each clause, a variable can appear at most once, being on either a positive or negative literal. Otherwise, the formula could be further reduced. Therefore, k is $O(v)$.

Biggest_Clause_Size is $O(c)$, where c is the number of clauses in Φ, since it needs to iterate through all clauses in Φ. We use a similar argument to discuss that Clauses_With_Size is also $O(c)$. Finally, occurrences(c, x) is $O(v)$ because it is bounded on the size of the clause c. Therefore, the overall asymptotic complexity of DLIS is $O(vc + v^3 c) = O(v^3 c)$

4.2. MCL

MCL consists of determining whether a variable has a greater number of positive occurrences then negative ones, while giving more weight to occurrences that appear at the smallest clauses. The reason for this is to solve the smallest clauses first, since they have more restrictions. The main goal of this heuristic is to find the adequate value to attribute the variable chosen by DLIS. We want to assign True to variables which have a greater weighted sum of positive occurrences and False otherwise.

The pseudocode of `MCL` is seen at Algorithm 4. Each clause size is $O(v)$. Therefore, it is easy to see that the overall complexity of MCL is $O(vc)$.

Algorithm 4 MCL

    Input: Φ a clause set and a variable x
    Output: Whether we assign `True` or `False` to x.
    function MCL(Φ, x)
        sum_pos $\leftarrow 0$
        sum_neg $\leftarrow 0$
        for Clause c in Φ.Clauses **do**
            for Literal l in c **do**
                if $l = x$ **then**
                    sum_pos $\leftarrow$ sum_pos $+ \frac{1}{c.\text{Size}}$
                else if $l = \neg x$ **then**
                    sum_neg $\leftarrow$ sum_neg $+ \frac{1}{c.\text{Size}}$
                end if
            end for
        end for
        return sum_pos $\geq$ sum_neg
    end function

4.3. Total complexity analysis

`CIDPLL` will make at most v recursive calls, one for each variable. Each recursive call is bounded by the complexity of `next_variable` and `best_value` heuristics. In this case, we have `DLIS` and `MCL`, with asymptotic complexity of $O(v^3 c)$ and $O(vc)$, respectivly. Therefore, the total asymptotic complexity of our implementation of `CIDPLL` is $O(v(v^3 c + vc)) = O(v^4 c)$.

5. Experiment description and results

The experiments where run on a machine with the following specifications:

- System type: 64x
- Processor: Intel(R) Core(TM) i7-8750H CPU @2.20GHz 2.21GHz
- Memory: 16GB
- OS: Windows10, Version: 22H2
- Language: C++ version 11 compiled with g++ version 8.1.0.

For this report, we utilized the SATLIB - Benchmark Problems database of instances of the SAT problem [Hoos and Stützle 2024]. The scope was limited for 1000 samples, each one with 20 variables and 91 clauses, all satisfiable. These samples, containing boolean expressions in the conjunctive normal form, were stored in `.cnf` files.

The experiments consisted in reading the contents of each file and applying `CIDPLL` to the expressions they stored. In this, the algorithm had a success rate of 20.8%, measured by the percentage of expressions labeled as satisfiable, and a average execution time of 0.007344 seconds (with 6 decimal places of precision).

The code and the test instances are stored in the work's GitHub repository [Gabriel and Eduardo 2024].

The table with each individual result can be found below, where:

- **name**: the name of the test file;
- **is_sat_result**: the output of the algorithm (boolean);
- **is_sat**: whether the solution (string) satisfies the expression;
- **time**: the time it took for `CIDPLL` to execute in seconds.

name	is_sat_result	is_sat	time
uf20-01.cnf_results.txt	0	0	0.0069947
uf20-010.cnf_results.txt	1	1	0.0069992
uf20-0100.cnf_results.txt	0	0	0.0069984
uf20-01000.cnf_results.txt	0	0	0.0070018
uf20-0101.cnf_results.txt	0	0	0.0079979
uf20-0102.cnf_results.txt	0	0	0.0059991
uf20-0103.cnf_results.txt	1	1	0.007999
uf20-0104.cnf_results.txt	1	1	0.0079951
uf20-0105.cnf_results.txt	0	0	0.0069984
uf20-0106.cnf_results.txt	0	0	0.007999
uf20-0107.cnf_results.txt	0	0	0.0079983
uf20-0108.cnf_results.txt	0	0	0.0079995
uf20-0109.cnf_results.txt	0	0	0.0069988
uf20-011.cnf_results.txt	1	1	0.0080006
uf20-0110.cnf_results.txt	1	1	0.0079983
uf20-0111.cnf_results.txt	0	0	0.0069992
uf20-0112.cnf_results.txt	0	0	0.0089999
uf20-0113.cnf_results.txt	0	0	0.0079984
uf20-0114.cnf_results.txt	0	0	0.005968
uf20-0115.cnf_results.txt	0	0	0.0059992
uf20-0116.cnf_results.txt	0	0	0.0069986
uf20-0117.cnf_results.txt	0	0	0.0069979
uf20-0118.cnf_results.txt	0	0	0.0079975
uf20-0119.cnf_results.txt	0	0	0.0039976
uf20-012.cnf_results.txt	1	1	0.0069986
uf20-0120.cnf_results.txt	0	0	0.0049983
uf20-0121.cnf_results.txt	1	1	0.0069989
uf20-0122.cnf_results.txt	0	0	0.0069966
uf20-0123.cnf_results.txt	0	0	0.0149986
uf20-0124.cnf_results.txt	0	0	0.008001
uf20-0125.cnf_results.txt	0	0	0.0090338
uf20-0126.cnf_results.txt	0	0	0.0119908
uf20-0127.cnf_results.txt	0	0	0.0090009
uf20-0128.cnf_results.txt	0	0	0.0070001
uf20-0129.cnf_results.txt	0	0	0.01398
uf20-013.cnf_results.txt	0	0	0.0059926
uf20-0130.cnf_results.txt	0	0	0.0079991
uf20-0131.cnf_results.txt	1	1	0.0089987
uf20-0132.cnf_results.txt	0	0	0.0079968
uf20-0133.cnf_results.txt	0	0	0.0079993
uf20-0134.cnf_results.txt	1	1	0.0079999
uf20-0135.cnf_results.txt	0	0	0.0089984
uf20-0136.cnf_results.txt	0	0	0.0069991
uf20-0137.cnf_results.txt	0	0	0.0059989

name	is_sat_result	is_sat	time
uf20-0138.cnf_results.txt	0	0	0.0099991
uf20-0139.cnf_results.txt	0	0	0.008001
uf20-014.cnf_results.txt	0	0	0.0059993
uf20-0140.cnf_results.txt	0	0	0.0089985
uf20-0141.cnf_results.txt	0	0	0.0069994
uf20-0142.cnf_results.txt	1	1	0.0099942
uf20-0143.cnf_results.txt	0	0	0.005998
uf20-0144.cnf_results.txt	1	1	0.0089988
uf20-0145.cnf_results.txt	0	0	0.0069983
uf20-0146.cnf_results.txt	0	0	0.0069974
uf20-0147.cnf_results.txt	0	0	0.0059983
uf20-0148.cnf_results.txt	0	0	0.0049982
uf20-0149.cnf_results.txt	0	0	0.006998
uf20-015.cnf_results.txt	0	0	0.0069984
uf20-0150.cnf_results.txt	1	1	0.0079996
uf20-0151.cnf_results.txt	0	0	0.0070117
uf20-0152.cnf_results.txt	0	0	0.0059988
uf20-0153.cnf_results.txt	0	0	0.005998
uf20-0154.cnf_results.txt	0	0	0.0069986
uf20-0155.cnf_results.txt	1	1	0.0079988
uf20-0156.cnf_results.txt	0	0	0.0049976
uf20-0157.cnf_results.txt	0	0	0.0079982
uf20-0158.cnf_results.txt	0	0	0.0069983
uf20-0159.cnf_results.txt	0	0	0.0079984
uf20-016.cnf_results.txt	0	0	0.0079974
uf20-0160.cnf_results.txt	0	0	0.0060359
uf20-0161.cnf_results.txt	1	1	0.0070152
uf20-0162.cnf_results.txt	1	1	0.0079986
uf20-0163.cnf_results.txt	1	1	0.0079988
uf20-0164.cnf_results.txt	1	1	0.0080001
uf20-0165.cnf_results.txt	0	0	0.0080013
uf20-0166.cnf_results.txt	0	0	0.006998
uf20-0167.cnf_results.txt	0	0	0.0059982
uf20-0168.cnf_results.txt	0	0	0.007
uf20-0169.cnf_results.txt	1	1	0.008999
uf20-017.cnf_results.txt	0	0	0.0059992
uf20-0170.cnf_results.txt	1	1	0.0079963
uf20-0171.cnf_results.txt	1	1	0.0069978
uf20-0172.cnf_results.txt	0	0	0.0079991
uf20-0173.cnf_results.txt	0	0	0.0079968
uf20-0174.cnf_results.txt	1	1	0.0069994
uf20-0175.cnf_results.txt	0	0	0.0159944
uf20-0176.cnf_results.txt	0	0	0.0079926
uf20-0177.cnf_results.txt	1	1	0.0069988
uf20-0178.cnf_results.txt	1	1	0.0089995

name	is_sat_result	is_sat	time
uf20-0179.cnf_results.txt	0	0	0.0079965
uf20-018.cnf_results.txt	0	0	0.0069988
uf20-0180.cnf_results.txt	0	0	0.0059987
uf20-0181.cnf_results.txt	0	0	0.0049982
uf20-0182.cnf_results.txt	0	0	0.0049996
uf20-0183.cnf_results.txt	0	0	0.0060008
uf20-0184.cnf_results.txt	0	0	0.0079995
uf20-0185.cnf_results.txt	0	0	0.0059985
uf20-0186.cnf_results.txt	0	0	0.0079985
uf20-0187.cnf_results.txt	0	0	0.006
uf20-0188.cnf_results.txt	0	0	0.0089984
uf20-0189.cnf_results.txt	1	1	0.0089984
uf20-019.cnf_results.txt	0	0	0.0059986
uf20-0190.cnf_results.txt	0	0	0.0069989
uf20-0191.cnf_results.txt	0	0	0.0049988
uf20-0192.cnf_results.txt	0	0	0.0079988
uf20-0193.cnf_results.txt	0	0	0.0069984
uf20-0194.cnf_results.txt	0	0	0.0059972
uf20-0195.cnf_results.txt	1	1	0.0079985
uf20-0196.cnf_results.txt	0	0	0.006999
uf20-0197.cnf_results.txt	1	1	0.0079992
uf20-0198.cnf_results.txt	0	0	0.0129984
uf20-0199.cnf_results.txt	0	0	0.0069997
uf20-02.cnf_results.txt	0	0	0.0059974
uf20-020.cnf_results.txt	0	0	0.0050082
uf20-0200.cnf_results.txt	0	0	0.0069985
uf20-0201.cnf_results.txt	0	0	0.0080004
uf20-0202.cnf_results.txt	0	0	0.007997
uf20-0203.cnf_results.txt	1	1	0.008998
uf20-0204.cnf_results.txt	1	1	0.0079985
uf20-0205.cnf_results.txt	0	0	0.0089992
uf20-0206.cnf_results.txt	0	0	0.0059988
uf20-0207.cnf_results.txt	0	0	0.0079987
uf20-0208.cnf_results.txt	0	0	0.008999
uf20-0209.cnf_results.txt	0	0	0.0059991
uf20-021.cnf_results.txt	0	0	0.0059978
uf20-0210.cnf_results.txt	1	1	0.0089994
uf20-0211.cnf_results.txt	0	0	0.0079993
uf20-0212.cnf_results.txt	0	0	0.0110017
uf20-0213.cnf_results.txt	1	1	0.0059989
uf20-0214.cnf_results.txt	0	0	0.0059993
uf20-0215.cnf_results.txt	0	0	0.0079986
uf20-0216.cnf_results.txt	0	0	0.009998
uf20-0217.cnf_results.txt	1	1	0.0079983
uf20-0218.cnf_results.txt	1	1	0.0079992

name	is_sat_result	is_sat	time
uf20-0219.cnf_results.txt	0	0	0.0049986
uf20-022.cnf_results.txt	1	1	0.0079987
uf20-0220.cnf_results.txt	0	0	0.004997
uf20-0221.cnf_results.txt	0	0	0.0089987
uf20-0222.cnf_results.txt	0	0	0.0069944
uf20-0223.cnf_results.txt	1	1	0.0079985
uf20-0224.cnf_results.txt	0	0	0.0099986
uf20-0225.cnf_results.txt	0	0	0.0059983
uf20-0226.cnf_results.txt	1	1	0.0079981
uf20-0227.cnf_results.txt	0	0	0.0049987
uf20-0228.cnf_results.txt	0	0	0.0089991
uf20-0229.cnf_results.txt	1	1	0.007999
uf20-023.cnf_results.txt	0	0	0.0089979
uf20-0230.cnf_results.txt	0	0	0.0079983
uf20-0231.cnf_results.txt	0	0	0.0080005
uf20-0232.cnf_results.txt	0	0	0.0079991
uf20-0233.cnf_results.txt	0	0	0.0059986
uf20-0234.cnf_results.txt	0	0	0.0059996
uf20-0235.cnf_results.txt	1	1	0.0049992
uf20-0236.cnf_results.txt	0	0	0.006999
uf20-0237.cnf_results.txt	0	0	0.0089988
uf20-0238.cnf_results.txt	0	0	0.006999
uf20-0239.cnf_results.txt	0	0	0.0079986
uf20-024.cnf_results.txt	0	0	0.0089983
uf20-0240.cnf_results.txt	1	1	0.0079987
uf20-0241.cnf_results.txt	0	0	0.007999
uf20-0242.cnf_results.txt	0	0	0.0059985
uf20-0243.cnf_results.txt	1	1	0.0069991
uf20-0244.cnf_results.txt	0	0	0.0069995
uf20-0245.cnf_results.txt	0	0	0.0069974
uf20-0246.cnf_results.txt	0	0	0.0059975
uf20-0247.cnf_results.txt	0	0	0.0059986
uf20-0248.cnf_results.txt	0	0	0.0049982
uf20-0249.cnf_results.txt	0	0	0.0049994
uf20-025.cnf_results.txt	0	0	0.0049987
uf20-0250.cnf_results.txt	0	0	0.0069989
uf20-0251.cnf_results.txt	1	1	0.0069999
uf20-0252.cnf_results.txt	0	0	0.0059993
uf20-0253.cnf_results.txt	0	0	0.0069978
uf20-0254.cnf_results.txt	0	0	0.0059994
uf20-0255.cnf_results.txt	0	0	0.0059982
uf20-0256.cnf_results.txt	0	0	0.0079995
uf20-0257.cnf_results.txt	0	0	0.011999
uf20-0258.cnf_results.txt	0	0	0.0089831
uf20-0259.cnf_results.txt	1	1	0.0069982

name	is_sat_result	is_sat	time
uf20-026.cnf_results.txt	0	0	0.0069988
uf20-0260.cnf_results.txt	0	0	0.0069988
uf20-0261.cnf_results.txt	0	0	0.0069996
uf20-0262.cnf_results.txt	0	0	0.0079993
uf20-0263.cnf_results.txt	0	0	0.0059951
uf20-0264.cnf_results.txt	0	0	0.0079988
uf20-0265.cnf_results.txt	0	0	0.0079984
uf20-0266.cnf_results.txt	0	0	0.0069964
uf20-0267.cnf_results.txt	0	0	0.0059982
uf20-0268.cnf_results.txt	0	0	0.0119988
uf20-0269.cnf_results.txt	1	1	0.01
uf20-027.cnf_results.txt	0	0	0.0100028
uf20-0270.cnf_results.txt	0	0	0.0059989
uf20-0271.cnf_results.txt	1	1	0.0079986
uf20-0272.cnf_results.txt	0	0	0.0069987
uf20-0273.cnf_results.txt	1	1	0.0069994
uf20-0274.cnf_results.txt	1	1	0.0059991
uf20-0275.cnf_results.txt	1	1	0.007998
uf20-0276.cnf_results.txt	0	0	0.0069989
uf20-0277.cnf_results.txt	0	0	0.0039993
uf20-0278.cnf_results.txt	0	0	0.0069992
uf20-0279.cnf_results.txt	0	0	0.0049976
uf20-028.cnf_results.txt	0	0	0.0089969
uf20-0280.cnf_results.txt	0	0	0.0079903
uf20-0281.cnf_results.txt	1	1	0.0089977
uf20-0282.cnf_results.txt	0	0	0.0070273
uf20-0283.cnf_results.txt	0	0	0.0080286
uf20-0284.cnf_results.txt	0	0	0.0070361
uf20-0285.cnf_results.txt	1	1	0.0080237
uf20-0286.cnf_results.txt	0	0	0.0060445
uf20-0287.cnf_results.txt	0	0	0.0060436
uf20-0288.cnf_results.txt	0	0	0.0080348
uf20-0289.cnf_results.txt	0	0	0.0080426
uf20-029.cnf_results.txt	0	0	0.0080381
uf20-0290.cnf_results.txt	0	0	0.0049951
uf20-0291.cnf_results.txt	0	0	0.0080362
uf20-0292.cnf_results.txt	0	0	0.0059952
uf20-0293.cnf_results.txt	0	0	0.0070342
uf20-0294.cnf_results.txt	0	0	0.0080395
uf20-0295.cnf_results.txt	0	0	0.008053
uf20-0296.cnf_results.txt	0	0	0.0080388
uf20-0297.cnf_results.txt	0	0	0.008027
uf20-0298.cnf_results.txt	0	0	0.0060435
uf20-0299.cnf_results.txt	0	0	0.0090375
uf20-03.cnf_results.txt	0	0	0.0090331

name	is_sat_result	is_sat	time
uf20-030.cnf_results.txt	1	1	0.0070323
uf20-0300.cnf_results.txt	1	1	0.0080519
uf20-0301.cnf_results.txt	1	1	0.0080256
uf20-0302.cnf_results.txt	0	0	0.007024
uf20-0303.cnf_results.txt	1	1	0.0059985
uf20-0304.cnf_results.txt	1	1	0.0070257
uf20-0305.cnf_results.txt	0	0	0.0080358
uf20-0306.cnf_results.txt	0	0	0.0070374
uf20-0307.cnf_results.txt	0	0	0.0079987
uf20-0308.cnf_results.txt	0	0	0.0059987
uf20-0309.cnf_results.txt	0	0	0.0069988
uf20-031.cnf_results.txt	0	0	0.0049989
uf20-0310.cnf_results.txt	0	0	0.005999
uf20-0311.cnf_results.txt	0	0	0.0079987
uf20-0312.cnf_results.txt	0	0	0.0059993
uf20-0313.cnf_results.txt	0	0	0.0049988
uf20-0314.cnf_results.txt	0	0	0.0069984
uf20-0315.cnf_results.txt	0	0	0.0149921
uf20-0316.cnf_results.txt	0	0	0.0069971
uf20-0317.cnf_results.txt	0	0	0.0049985
uf20-0318.cnf_results.txt	1	1	0.0069966
uf20-0319.cnf_results.txt	0	0	0.0069945
uf20-032.cnf_results.txt	0	0	0.0059989
uf20-0320.cnf_results.txt	0	0	0.0049992
uf20-0321.cnf_results.txt	1	1	0.0079997
uf20-0322.cnf_results.txt	0	0	0.0059989
uf20-0323.cnf_results.txt	0	0	0.0049981
uf20-0324.cnf_results.txt	0	0	0.0059988
uf20-0325.cnf_results.txt	0	0	0.0099974
uf20-0326.cnf_results.txt	0	0	0.0059987
uf20-0327.cnf_results.txt	1	1	0.008999
uf20-0328.cnf_results.txt	0	0	0.005999
uf20-0329.cnf_results.txt	0	0	0.006998
uf20-033.cnf_results.txt	0	0	0.0079992
uf20-0330.cnf_results.txt	0	0	0.0079984
uf20-0331.cnf_results.txt	1	1	0.0079992
uf20-0332.cnf_results.txt	1	1	0.0079988
uf20-0333.cnf_results.txt	0	0	0.0069985
uf20-0334.cnf_results.txt	0	0	0.0069976
uf20-0335.cnf_results.txt	0	0	0.0089988
uf20-0336.cnf_results.txt	0	0	0.0079992
uf20-0337.cnf_results.txt	0	0	0.0079991
uf20-0338.cnf_results.txt	0	0	0.007053
uf20-0339.cnf_results.txt	0	0	0.0079992
uf20-034.cnf_results.txt	1	1	0.0090007

name	is_sat_result	is_sat	time
uf20-0340.cnf_results.txt	0	0	0.0080191
uf20-0341.cnf_results.txt	1	1	0.0070115
uf20-0342.cnf_results.txt	0	0	0.0070351
uf20-0343.cnf_results.txt	0	0	0.0070201
uf20-0344.cnf_results.txt	0	0	0.0069905
uf20-0345.cnf_results.txt	0	0	0.0079643
uf20-0346.cnf_results.txt	0	0	0.0069972
uf20-0347.cnf_results.txt	0	0	0.0080505
uf20-0348.cnf_results.txt	0	0	0.0059988
uf20-0349.cnf_results.txt	0	0	0.0079996
uf20-035.cnf_results.txt	0	0	0.0060171
uf20-0350.cnf_results.txt	0	0	0.0060108
uf20-0351.cnf_results.txt	0	0	0.0090531
uf20-0352.cnf_results.txt	0	0	0.00505
uf20-0353.cnf_results.txt	0	0	0.0059662
uf20-0354.cnf_results.txt	0	0	0.0070159
uf20-0355.cnf_results.txt	0	0	0.0069984
uf20-0356.cnf_results.txt	0	0	0.0080004
uf20-0357.cnf_results.txt	0	0	0.0070002
uf20-0358.cnf_results.txt	1	1	0.0069896
uf20-0359.cnf_results.txt	0	0	0.0079496
uf20-036.cnf_results.txt	0	0	0.0070131
uf20-0360.cnf_results.txt	1	1	0.0070052
uf20-0361.cnf_results.txt	0	0	0.007021
uf20-0362.cnf_results.txt	1	1	0.00902
uf20-0363.cnf_results.txt	0	0	0.0039987
uf20-0364.cnf_results.txt	0	0	0.0049646
uf20-0365.cnf_results.txt	1	1	0.0079983
uf20-0366.cnf_results.txt	0	0	0.0040506
uf20-0367.cnf_results.txt	0	0	0.0079766
uf20-0368.cnf_results.txt	0	0	0.007
uf20-0369.cnf_results.txt	0	0	0.0049975
uf20-037.cnf_results.txt	0	0	0.0119985
uf20-0370.cnf_results.txt	0	0	0.0049988
uf20-0371.cnf_results.txt	1	1	0.0079992
uf20-0372.cnf_results.txt	1	1	0.0100002
uf20-0373.cnf_results.txt	0	0	0.0080009
uf20-0374.cnf_results.txt	0	0	0.0099945
uf20-0375.cnf_results.txt	0	0	0.0070005
uf20-0376.cnf_results.txt	0	0	0.0050337
uf20-0377.cnf_results.txt	1	1	0.0080005
uf20-0378.cnf_results.txt	0	0	0.0059984
uf20-0379.cnf_results.txt	1	1	0.008015
uf20-038.cnf_results.txt	1	1	0.0089975
uf20-0380.cnf_results.txt	1	1	0.0079894

name	is_sat_result	is_sat	time
uf20-0381.cnf_results.txt	1	1	0.0080129
uf20-0382.cnf_results.txt	0	0	0.0050005
uf20-0383.cnf_results.txt	0	0	0.0100324
uf20-0384.cnf_results.txt	1	1	0.0090501
uf20-0385.cnf_results.txt	0	0	0.0069997
uf20-0386.cnf_results.txt	0	0	0.0079987
uf20-0387.cnf_results.txt	0	0	0.0079977
uf20-0388.cnf_results.txt	1	1	0.0089988
uf20-0389.cnf_results.txt	0	0	0.0059983
uf20-039.cnf_results.txt	0	0	0.006998
uf20-0390.cnf_results.txt	0	0	0.0069975
uf20-0391.cnf_results.txt	0	0	0.0069984
uf20-0392.cnf_results.txt	1	1	0.0059991
uf20-0393.cnf_results.txt	0	0	0.0069967
uf20-0394.cnf_results.txt	1	1	0.0079986
uf20-0395.cnf_results.txt	1	1	0.0069995
uf20-0396.cnf_results.txt	0	0	0.0069989
uf20-0397.cnf_results.txt	0	0	0.004999
uf20-0398.cnf_results.txt	0	0	0.0059978
uf20-0399.cnf_results.txt	0	0	0.0079968
uf20-04.cnf_results.txt	0	0	0.0069982
uf20-040.cnf_results.txt	0	0	0.0069816
uf20-0400.cnf_results.txt	0	0	0.0059986
uf20-0401.cnf_results.txt	1	1	0.0069981
uf20-0402.cnf_results.txt	0	0	0.0079997
uf20-0403.cnf_results.txt	1	1	0.0069997
uf20-0404.cnf_results.txt	0	0	0.0079995
uf20-0405.cnf_results.txt	1	1	0.0069987
uf20-0406.cnf_results.txt	0	0	0.0079991
uf20-0407.cnf_results.txt	0	0	0.0089989
uf20-0408.cnf_results.txt	0	0	0.0069984
uf20-0409.cnf_results.txt	1	1	0.0069981
uf20-041.cnf_results.txt	0	0	0.0070005
uf20-0410.cnf_results.txt	0	0	0.0059953
uf20-0411.cnf_results.txt	0	0	0.0079985
uf20-0412.cnf_results.txt	0	0	0.0059961
uf20-0413.cnf_results.txt	0	0	0.0079989
uf20-0414.cnf_results.txt	0	0	0.0069983
uf20-0415.cnf_results.txt	0	0	0.0079988
uf20-0416.cnf_results.txt	0	0	0.0069983
uf20-0417.cnf_results.txt	0	0	0.0069983
uf20-0418.cnf_results.txt	0	0	0.0079983
uf20-0419.cnf_results.txt	0	0	0.0079984
uf20-042.cnf_results.txt	0	0	0.0069987
uf20-0420.cnf_results.txt	0	0	0.0049982

name	is_sat_result	is_sat	time
uf20-0421.cnf_results.txt	0	0	0.0079987
uf20-0422.cnf_results.txt	1	1	0.0079995
uf20-0423.cnf_results.txt	0	0	0.0079979
uf20-0424.cnf_results.txt	0	0	0.007998
uf20-0425.cnf_results.txt	0	0	0.007999
uf20-0426.cnf_results.txt	0	0	0.0049984
uf20-0427.cnf_results.txt	0	0	0.0079988
uf20-0428.cnf_results.txt	0	0	0.0079983
uf20-0429.cnf_results.txt	1	1	0.0069995
uf20-043.cnf_results.txt	0	0	0.0059975
uf20-0430.cnf_results.txt	1	1	0.0089991
uf20-0431.cnf_results.txt	0	0	0.0059971
uf20-0432.cnf_results.txt	0	0	0.0059957
uf20-0433.cnf_results.txt	0	0	0.0079592
uf20-0434.cnf_results.txt	0	0	0.005998
uf20-0435.cnf_results.txt	0	0	0.0070307
uf20-0436.cnf_results.txt	0	0	0.0070181
uf20-0437.cnf_results.txt	0	0	0.0079981
uf20-0438.cnf_results.txt	0	0	0.0060021
uf20-0439.cnf_results.txt	1	1	0.0099944
uf20-044.cnf_results.txt	1	1	0.0099956
uf20-0440.cnf_results.txt	0	0	0.0050328
uf20-0441.cnf_results.txt	0	0	0.0079989
uf20-0442.cnf_results.txt	0	0	0.0080319
uf20-0443.cnf_results.txt	0	0	0.0080344
uf20-0444.cnf_results.txt	0	0	0.0080001
uf20-0445.cnf_results.txt	0	0	0.007002
uf20-0446.cnf_results.txt	1	1	0.0100291
uf20-0447.cnf_results.txt	0	0	0.0070154
uf20-0448.cnf_results.txt	0	0	0.0080009
uf20-0449.cnf_results.txt	0	0	0.0079986
uf20-045.cnf_results.txt	0	0	0.0080319
uf20-0450.cnf_results.txt	0	0	0.0070334
uf20-0451.cnf_results.txt	1	1	0.0099993
uf20-0452.cnf_results.txt	0	0	0.0079913
uf20-0453.cnf_results.txt	0	0	0.0059993
uf20-0454.cnf_results.txt	0	0	0.0089996
uf20-0455.cnf_results.txt	1	1	0.0070394
uf20-0456.cnf_results.txt	0	0	0.0089952
uf20-0457.cnf_results.txt	0	0	0.006987
uf20-0458.cnf_results.txt	0	0	0.0059969
uf20-0459.cnf_results.txt	0	0	0.0080021
uf20-046.cnf_results.txt	0	0	0.0070335
uf20-0460.cnf_results.txt	0	0	0.0070007
uf20-0461.cnf_results.txt	0	0	0.0069985

name	is_sat_result	is_sat	time
uf20-0462.cnf_results.txt	0	0	0.0059982
uf20-0463.cnf_results.txt	0	0	0.0069679
uf20-0464.cnf_results.txt	0	0	0.0059988
uf20-0465.cnf_results.txt	0	0	0.0100016
uf20-0466.cnf_results.txt	0	0	0.0059956
uf20-0467.cnf_results.txt	0	0	0.0079976
uf20-0468.cnf_results.txt	0	0	0.0080345
uf20-0469.cnf_results.txt	0	0	0.0079974
uf20-047.cnf_results.txt	0	0	0.0069995
uf20-0470.cnf_results.txt	1	1	0.0079999
uf20-0471.cnf_results.txt	0	0	0.0069999
uf20-0472.cnf_results.txt	0	0	0.007
uf20-0473.cnf_results.txt	0	0	0.0050271
uf20-0474.cnf_results.txt	0	0	0.0070019
uf20-0475.cnf_results.txt	0	0	0.0079998
uf20-0476.cnf_results.txt	0	0	0.0070159
uf20-0477.cnf_results.txt	0	0	0.0059869
uf20-0478.cnf_results.txt	0	0	0.0059985
uf20-0479.cnf_results.txt	0	0	0.0080004
uf20-048.cnf_results.txt	0	0	0.0069991
uf20-0480.cnf_results.txt	0	0	0.0080328
uf20-0481.cnf_results.txt	0	0	0.0079857
uf20-0482.cnf_results.txt	0	0	0.0049631
uf20-0483.cnf_results.txt	1	1	0.0080011
uf20-0484.cnf_results.txt	0	0	0.0059979
uf20-0485.cnf_results.txt	1	1	0.0090183
uf20-0486.cnf_results.txt	1	1	0.0089763
uf20-0487.cnf_results.txt	0	0	0.0079751
uf20-0488.cnf_results.txt	0	0	0.0059996
uf20-0489.cnf_results.txt	0	0	0.0080239
uf20-049.cnf_results.txt	0	0	0.0080026
uf20-0490.cnf_results.txt	0	0	0.0070166
uf20-0491.cnf_results.txt	0	0	0.0070048
uf20-0492.cnf_results.txt	1	1	0.0100182
uf20-0493.cnf_results.txt	0	0	0.0070125
uf20-0494.cnf_results.txt	0	0	0.006032
uf20-0495.cnf_results.txt	0	0	0.0080391
uf20-0496.cnf_results.txt	1	1	0.0059988
uf20-0497.cnf_results.txt	1	1	0.0080489
uf20-0498.cnf_results.txt	0	0	0.0059667
uf20-0499.cnf_results.txt	0	0	0.0039664
uf20-05.cnf_results.txt	1	1	0.0070378
uf20-050.cnf_results.txt	0	0	0.0060134
uf20-0500.cnf_results.txt	0	0	0.0089822
uf20-0501.cnf_results.txt	1	1	0.0079992

name	is_sat_result	is_sat	time
uf20-0502.cnf_results.txt	1	1	0.0060336
uf20-0503.cnf_results.txt	1	1	0.0069969
uf20-0504.cnf_results.txt	0	0	0.0080152
uf20-0505.cnf_results.txt	0	0	0.0070347
uf20-0506.cnf_results.txt	1	1	0.0059973
uf20-0507.cnf_results.txt	1	1	0.0089406
uf20-0508.cnf_results.txt	1	1	0.0089998
uf20-0509.cnf_results.txt	0	0	0.0079606
uf20-051.cnf_results.txt	0	0	0.0080265
uf20-0510.cnf_results.txt	1	1	0.0090008
uf20-0511.cnf_results.txt	0	0	0.0069918
uf20-0512.cnf_results.txt	0	0	0.0059989
uf20-0513.cnf_results.txt	0	0	0.0079837
uf20-0514.cnf_results.txt	0	0	0.0079977
uf20-0515.cnf_results.txt	0	0	0.0080173
uf20-0516.cnf_results.txt	0	0	0.0059909
uf20-0517.cnf_results.txt	0	0	0.0069634
uf20-0518.cnf_results.txt	0	0	0.0070011
uf20-0519.cnf_results.txt	0	0	0.0080347
uf20-052.cnf_results.txt	0	0	0.0059952
uf20-0520.cnf_results.txt	0	0	0.0069867
uf20-0521.cnf_results.txt	0	0	0.0059519
uf20-0522.cnf_results.txt	0	0	0.0060348
uf20-0523.cnf_results.txt	0	0	0.0079643
uf20-0524.cnf_results.txt	0	0	0.0090323
uf20-0525.cnf_results.txt	0	0	0.0069991
uf20-0526.cnf_results.txt	0	0	0.006034
uf20-0527.cnf_results.txt	0	0	0.0080091
uf20-0528.cnf_results.txt	0	0	0.0090344
uf20-0529.cnf_results.txt	0	0	0.0060472
uf20-053.cnf_results.txt	1	1	0.008019
uf20-0530.cnf_results.txt	1	1	0.0069907
uf20-0531.cnf_results.txt	1	1	0.0080021
uf20-0532.cnf_results.txt	0	0	0.0080146
uf20-0533.cnf_results.txt	0	0	0.0060195
uf20-0534.cnf_results.txt	0	0	0.009014
uf20-0535.cnf_results.txt	1	1	0.0090041
uf20-0536.cnf_results.txt	0	0	0.0080339
uf20-0537.cnf_results.txt	0	0	0.0090493
uf20-0538.cnf_results.txt	0	0	0.0080156
uf20-0539.cnf_results.txt	1	1	0.0070029
uf20-054.cnf_results.txt	0	0	0.0050015
uf20-0540.cnf_results.txt	1	1	0.0079999
uf20-0541.cnf_results.txt	0	0	0.0089976
uf20-0542.cnf_results.txt	0	0	0.006996

name	is_sat_result	is_sat	time
uf20-0543.cnf_results.txt	0	0	0.0070135
uf20-0544.cnf_results.txt	0	0	0.0079446
uf20-0545.cnf_results.txt	1	1	0.0049976
uf20-0546.cnf_results.txt	0	0	0.0070596
uf20-0547.cnf_results.txt	0	0	0.0090072
uf20-0548.cnf_results.txt	0	0	0.0070082
uf20-0549.cnf_results.txt	0	0	0.006014
uf20-055.cnf_results.txt	0	0	0.0070405
uf20-0550.cnf_results.txt	0	0	0.0080024
uf20-0551.cnf_results.txt	0	0	0.0060016
uf20-0552.cnf_results.txt	0	0	0.0079658
uf20-0553.cnf_results.txt	0	0	0.0060062
uf20-0554.cnf_results.txt	0	0	0.0040442
uf20-0555.cnf_results.txt	0	0	0.0089641
uf20-0556.cnf_results.txt	0	0	0.0060229
uf20-0557.cnf_results.txt	0	0	0.0100172
uf20-0558.cnf_results.txt	0	0	0.0110146
uf20-0559.cnf_results.txt	1	1	0.0069824
uf20-056.cnf_results.txt	1	1	0.0090486
uf20-0560.cnf_results.txt	0	0	0.0059996
uf20-0561.cnf_results.txt	0	0	0.0040339
uf20-0562.cnf_results.txt	0	0	0.0089964
uf20-0563.cnf_results.txt	1	1	0.0080354
uf20-0564.cnf_results.txt	0	0	0.0049851
uf20-0565.cnf_results.txt	1	1	0.0090142
uf20-0566.cnf_results.txt	0	0	0.0079636
uf20-0567.cnf_results.txt	0	0	0.0060343
uf20-0568.cnf_results.txt	1	1	0.0070182
uf20-0569.cnf_results.txt	1	1	0.010966
uf20-057.cnf_results.txt	0	0	0.0060375
uf20-0570.cnf_results.txt	0	0	0.007023
uf20-0571.cnf_results.txt	0	0	0.008017
uf20-0572.cnf_results.txt	0	0	0.0060223
uf20-0573.cnf_results.txt	0	0	0.0069986
uf20-0574.cnf_results.txt	0	0	0.0070362
uf20-0575.cnf_results.txt	0	0	0.0060495
uf20-0576.cnf_results.txt	1	1	0.0070342
uf20-0577.cnf_results.txt	1	1	0.0099969
uf20-0578.cnf_results.txt	0	0	0.0080305
uf20-0579.cnf_results.txt	0	0	0.0080354
uf20-058.cnf_results.txt	0	0	0.0069989
uf20-0580.cnf_results.txt	0	0	0.0050017
uf20-0581.cnf_results.txt	0	0	0.0080177
uf20-0582.cnf_results.txt	0	0	0.0060337
uf20-0583.cnf_results.txt	0	0	0.0060459

name	is_sat_result	is_sat	time
uf20-0584.cnf_results.txt	0	0	0.0070211
uf20-0585.cnf_results.txt	0	0	0.0070017
uf20-0586.cnf_results.txt	0	0	0.0060429
uf20-0587.cnf_results.txt	0	0	0.0080092
uf20-0588.cnf_results.txt	1	1	0.0069976
uf20-0589.cnf_results.txt	0	0	0.0060273
uf20-059.cnf_results.txt	0	0	0.0080366
uf20-0590.cnf_results.txt	0	0	0.0080392
uf20-0591.cnf_results.txt	0	0	0.0080483
uf20-0592.cnf_results.txt	0	0	0.0070225
uf20-0593.cnf_results.txt	0	0	0.0070395
uf20-0594.cnf_results.txt	0	0	0.006018
uf20-0595.cnf_results.txt	0	0	0.0139863
uf20-0596.cnf_results.txt	0	0	0.0070308
uf20-0597.cnf_results.txt	0	0	0.0060292
uf20-0598.cnf_results.txt	0	0	0.0060097
uf20-0599.cnf_results.txt	0	0	0.0040011
uf20-06.cnf_results.txt	0	0	0.0070524
uf20-060.cnf_results.txt	0	0	0.0060378
uf20-0600.cnf_results.txt	0	0	0.0070237
uf20-0601.cnf_results.txt	0	0	0.0060248
uf20-0602.cnf_results.txt	0	0	0.0060529
uf20-0603.cnf_results.txt	0	0	0.008036
uf20-0604.cnf_results.txt	1	1	0.0079999
uf20-0605.cnf_results.txt	1	1	0.0070354
uf20-0606.cnf_results.txt	0	0	0.0070443
uf20-0607.cnf_results.txt	0	0	0.0070282
uf20-0608.cnf_results.txt	0	0	0.0080411
uf20-0609.cnf_results.txt	0	0	0.0070331
uf20-061.cnf_results.txt	1	1	0.0070405
uf20-0610.cnf_results.txt	0	0	0.0080504
uf20-0611.cnf_results.txt	0	0	0.0050257
uf20-0612.cnf_results.txt	0	0	0.0070356
uf20-0613.cnf_results.txt	0	0	0.0070233
uf20-0614.cnf_results.txt	1	1	0.0080018
uf20-0615.cnf_results.txt	0	0	0.0070505
uf20-0616.cnf_results.txt	0	0	0.0050377
uf20-0617.cnf_results.txt	1	1	0.0070352
uf20-0618.cnf_results.txt	0	0	0.0090371
uf20-0619.cnf_results.txt	1	1	0.0080341
uf20-062.cnf_results.txt	0	0	0.009024
uf20-0620.cnf_results.txt	0	0	0.0089979
uf20-0621.cnf_results.txt	0	0	0.0060453
uf20-0622.cnf_results.txt	0	0	0.0080525
uf20-0623.cnf_results.txt	0	0	0.0080346

name	is_sat_result	is_sat	time
uf20-0624.cnf_results.txt	0	0	0.0070344
uf20-0625.cnf_results.txt	0	0	0.0090364
uf20-0626.cnf_results.txt	0	0	0.0070354
uf20-0627.cnf_results.txt	0	0	0.0060387
uf20-0628.cnf_results.txt	0	0	0.0070279
uf20-0629.cnf_results.txt	0	0	0.0070514
uf20-063.cnf_results.txt	0	0	0.0070262
uf20-0630.cnf_results.txt	0	0	0.0080379
uf20-0631.cnf_results.txt	0	0	0.0070044
uf20-0632.cnf_results.txt	0	0	0.0089687
uf20-0633.cnf_results.txt	0	0	0.0059996
uf20-0634.cnf_results.txt	1	1	0.0090073
uf20-0635.cnf_results.txt	0	0	0.0070117
uf20-0636.cnf_results.txt	0	0	0.0080308
uf20-0637.cnf_results.txt	0	0	0.0070357
uf20-0638.cnf_results.txt	0	0	0.0080145
uf20-0639.cnf_results.txt	0	0	0.0090482
uf20-064.cnf_results.txt	1	1	0.0060538
uf20-0640.cnf_results.txt	1	1	0.009038
uf20-0641.cnf_results.txt	0	0	0.0100011
uf20-0642.cnf_results.txt	1	1	0.0089585
uf20-0643.cnf_results.txt	1	1	0.0070373
uf20-0644.cnf_results.txt	0	0	0.0090086
uf20-0645.cnf_results.txt	1	1	0.0070183
uf20-0646.cnf_results.txt	0	0	0.0050361
uf20-0647.cnf_results.txt	0	0	0.0070384
uf20-0648.cnf_results.txt	1	1	0.0070389
uf20-0649.cnf_results.txt	0	0	0.0100027
uf20-065.cnf_results.txt	0	0	0.0049984
uf20-0650.cnf_results.txt	1	1	0.0070522
uf20-0651.cnf_results.txt	0	0	0.0050016
uf20-0652.cnf_results.txt	0	0	0.0060362
uf20-0653.cnf_results.txt	0	0	0.0080001
uf20-0654.cnf_results.txt	0	0	0.0060351
uf20-0655.cnf_results.txt	0	0	0.0080346
uf20-0656.cnf_results.txt	0	0	0.0090005
uf20-0657.cnf_results.txt	1	1	0.0080013
uf20-0658.cnf_results.txt	0	0	0.0080355
uf20-0659.cnf_results.txt	1	1	0.0060396
uf20-066.cnf_results.txt	0	0	0.0090417
uf20-0660.cnf_results.txt	0	0	0.0070069
uf20-0661.cnf_results.txt	0	0	0.0070366
uf20-0662.cnf_results.txt	0	0	0.008054
uf20-0663.cnf_results.txt	0	0	0.0069674
uf20-0664.cnf_results.txt	0	0	0.0059944

name	is_sat_result	is_sat	time
uf20-0665.cnf_results.txt	0	0	0.0070297
uf20-0666.cnf_results.txt	0	0	0.0050345
uf20-0667.cnf_results.txt	0	0	0.0050356
uf20-0668.cnf_results.txt	0	0	0.0059984
uf20-0669.cnf_results.txt	0	0	0.0060362
uf20-067.cnf_results.txt	0	0	0.0050296
uf20-0670.cnf_results.txt	0	0	0.0070003
uf20-0671.cnf_results.txt	0	0	0.0070272
uf20-0672.cnf_results.txt	0	0	0.0059992
uf20-0673.cnf_results.txt	0	0	0.006037
uf20-0674.cnf_results.txt	0	0	0.0070372
uf20-0675.cnf_results.txt	0	0	0.0070387
uf20-0676.cnf_results.txt	0	0	0.0080453
uf20-0677.cnf_results.txt	0	0	0.0080386
uf20-0678.cnf_results.txt	0	0	0.0090534
uf20-0679.cnf_results.txt	0	0	0.0080491
uf20-068.cnf_results.txt	0	0	0.0070414
uf20-0680.cnf_results.txt	0	0	0.0070354
uf20-0681.cnf_results.txt	1	1	0.0080426
uf20-0682.cnf_results.txt	1	1	0.007998
uf20-0683.cnf_results.txt	0	0	0.0060242
uf20-0684.cnf_results.txt	0	0	0.0070245
uf20-0685.cnf_results.txt	0	0	0.0079926
uf20-0686.cnf_results.txt	1	1	0.0130038
uf20-0687.cnf_results.txt	0	0	0.0070452
uf20-0688.cnf_results.txt	0	0	0.0080252
uf20-0689.cnf_results.txt	0	0	0.008043
uf20-069.cnf_results.txt	0	0	0.0060357
uf20-0690.cnf_results.txt	0	0	0.00604
uf20-0691.cnf_results.txt	0	0	0.0080428
uf20-0692.cnf_results.txt	0	0	0.011034
uf20-0693.cnf_results.txt	0	0	0.0070412
uf20-0694.cnf_results.txt	0	0	0.0069823
uf20-0695.cnf_results.txt	0	0	0.0070002
uf20-0696.cnf_results.txt	0	0	0.0080159
uf20-0697.cnf_results.txt	1	1	0.005989
uf20-0698.cnf_results.txt	0	0	0.0070264
uf20-0699.cnf_results.txt	1	1	0.0090337
uf20-07.cnf_results.txt	0	0	0.008035
uf20-070.cnf_results.txt	0	0	0.0070349
uf20-0700.cnf_results.txt	0	0	0.0070262
uf20-0701.cnf_results.txt	0	0	0.007037
uf20-0702.cnf_results.txt	1	1	0.0060233
uf20-0703.cnf_results.txt	1	1	0.0080469
uf20-0704.cnf_results.txt	0	0	0.0070261

name	is_sat_result	is_sat	time
uf20-0705.cnf_results.txt	0	0	0.0090523
uf20-0706.cnf_results.txt	0	0	0.0070392
uf20-0707.cnf_results.txt	0	0	0.0080409
uf20-0708.cnf_results.txt	0	0	0.0050317
uf20-0709.cnf_results.txt	1	1	0.0050246
uf20-071.cnf_results.txt	0	0	0.0060354
uf20-0710.cnf_results.txt	0	0	0.0059991
uf20-0711.cnf_results.txt	0	0	0.0060275
uf20-0712.cnf_results.txt	0	0	0.0060526
uf20-0713.cnf_results.txt	0	0	0.0070284
uf20-0714.cnf_results.txt	1	1	0.0070403
uf20-0715.cnf_results.txt	0	0	0.0080272
uf20-0716.cnf_results.txt	0	0	0.0080444
uf20-0717.cnf_results.txt	0	0	0.0080247
uf20-0718.cnf_results.txt	0	0	0.0090255
uf20-0719.cnf_results.txt	0	0	0.0050432
uf20-072.cnf_results.txt	0	0	0.0080273
uf20-0720.cnf_results.txt	0	0	0.0070358
uf20-0721.cnf_results.txt	1	1	0.0060092
uf20-0722.cnf_results.txt	1	1	0.0070375
uf20-0723.cnf_results.txt	0	0	0.0060351
uf20-0724.cnf_results.txt	0	0	0.0069982
uf20-0725.cnf_results.txt	0	0	0.0069984
uf20-0726.cnf_results.txt	0	0	0.006998
uf20-0727.cnf_results.txt	0	0	0.0079985
uf20-0728.cnf_results.txt	0	0	0.0059963
uf20-0729.cnf_results.txt	0	0	0.006999
uf20-073.cnf_results.txt	0	0	0.005999
uf20-0730.cnf_results.txt	1	1	0.0079991
uf20-0731.cnf_results.txt	0	0	0.0059989
uf20-0732.cnf_results.txt	0	0	0.0059989
uf20-0733.cnf_results.txt	1	1	0.0079988
uf20-0734.cnf_results.txt	0	0	0.0079829
uf20-0735.cnf_results.txt	0	0	0.0069978
uf20-0736.cnf_results.txt	0	0	0.006998
uf20-0737.cnf_results.txt	0	0	0.0079984
uf20-0738.cnf_results.txt	0	0	0.0079982
uf20-0739.cnf_results.txt	1	1	0.0079989
uf20-074.cnf_results.txt	0	0	0.0059987
uf20-0740.cnf_results.txt	0	0	0.0069966
uf20-0741.cnf_results.txt	0	0	0.0099986
uf20-0742.cnf_results.txt	1	1	0.0059985
uf20-0743.cnf_results.txt	0	0	0.0079985
uf20-0744.cnf_results.txt	0	0	0.0069989
uf20-0745.cnf_results.txt	0	0	0.0079985

name	is_sat_result	is_sat	time
uf20-0746.cnf_results.txt	1	1	0.0069983
uf20-0747.cnf_results.txt	0	0	0.0079995
uf20-0748.cnf_results.txt	1	1	0.0089987
uf20-0749.cnf_results.txt	1	1	0.007999
uf20-075.cnf_results.txt	0	0	0.0079988
uf20-0750.cnf_results.txt	0	0	0.0049991
uf20-0751.cnf_results.txt	0	0	0.0079948
uf20-0752.cnf_results.txt	0	0	0.0079992
uf20-0753.cnf_results.txt	0	0	0.0069933
uf20-0754.cnf_results.txt	0	0	0.0069984
uf20-0755.cnf_results.txt	0	0	0.0099982
uf20-0756.cnf_results.txt	1	1	0.0079992
uf20-0757.cnf_results.txt	0	0	0.0069973
uf20-0758.cnf_results.txt	0	0	0.0069978
uf20-0759.cnf_results.txt	0	0	0.0070008
uf20-076.cnf_results.txt	0	0	0.0079993
uf20-0760.cnf_results.txt	1	1	0.0079991
uf20-0761.cnf_results.txt	0	0	0.0089979
uf20-0762.cnf_results.txt	0	0	0.0059987
uf20-0763.cnf_results.txt	0	0	0.0079988
uf20-0764.cnf_results.txt	0	0	0.0079974
uf20-0765.cnf_results.txt	0	0	0.006999
uf20-0766.cnf_results.txt	1	1	0.007999
uf20-0767.cnf_results.txt	0	0	0.0069961
uf20-0768.cnf_results.txt	1	1	0.0089996
uf20-0769.cnf_results.txt	0	0	0.0059994
uf20-077.cnf_results.txt	1	1	0.0099986
uf20-0770.cnf_results.txt	1	1	0.0090005
uf20-0771.cnf_results.txt	0	0	0.0070744
uf20-0772.cnf_results.txt	1	1	0.0089981
uf20-0773.cnf_results.txt	1	1	0.0079993
uf20-0774.cnf_results.txt	0	0	0.0089985
uf20-0775.cnf_results.txt	0	0	0.0079988
uf20-0776.cnf_results.txt	0	0	0.006999
uf20-0777.cnf_results.txt	0	0	0.0049996
uf20-0778.cnf_results.txt	0	0	0.0079985
uf20-0779.cnf_results.txt	0	0	0.0089983
uf20-078.cnf_results.txt	0	0	0.0049995
uf20-0780.cnf_results.txt	0	0	0.0089984
uf20-0781.cnf_results.txt	1	1	0.0069965
uf20-0782.cnf_results.txt	0	0	0.0069997
uf20-0783.cnf_results.txt	0	0	0.0089987
uf20-0784.cnf_results.txt	0	0	0.0079984
uf20-0785.cnf_results.txt	0	0	0.0079986
uf20-0786.cnf_results.txt	0	0	0.0069989

name	is_sat_result	is_sat	time
uf20-0787.cnf_results.txt	0	0	0.0079986
uf20-0788.cnf_results.txt	0	0	0.0069989
uf20-0789.cnf_results.txt	0	0	0.0069988
uf20-079.cnf_results.txt	1	1	0.0079988
uf20-0790.cnf_results.txt	0	0	0.0069984
uf20-0791.cnf_results.txt	0	0	0.0079962
uf20-0792.cnf_results.txt	0	0	0.0059984
uf20-0793.cnf_results.txt	0	0	0.0069988
uf20-0794.cnf_results.txt	0	0	0.0059983
uf20-0795.cnf_results.txt	1	1	0.0070009
uf20-0796.cnf_results.txt	0	0	0.0059992
uf20-0797.cnf_results.txt	0	0	0.0069988
uf20-0798.cnf_results.txt	1	1	0.0070478
uf20-0799.cnf_results.txt	0	0	0.0079537
uf20-08.cnf_results.txt	0	0	0.0080086
uf20-080.cnf_results.txt	1	1	0.0080248
uf20-0800.cnf_results.txt	0	0	0.007997
uf20-0801.cnf_results.txt	0	0	0.0060545
uf20-0802.cnf_results.txt	1	1	0.0079995
uf20-0803.cnf_results.txt	1	1	0.0070376
uf20-0804.cnf_results.txt	1	1	0.006015
uf20-0805.cnf_results.txt	1	1	0.0070075
uf20-0806.cnf_results.txt	0	0	0.0079874
uf20-0807.cnf_results.txt	0	0	0.0069988
uf20-0808.cnf_results.txt	0	0	0.0049664
uf20-0809.cnf_results.txt	0	0	0.0069973
uf20-081.cnf_results.txt	0	0	0.0079782
uf20-0810.cnf_results.txt	0	0	0.0069858
uf20-0811.cnf_results.txt	0	0	0.0079986
uf20-0812.cnf_results.txt	0	0	0.0069979
uf20-0813.cnf_results.txt	0	0	0.0080165
uf20-0814.cnf_results.txt	1	1	0.008984
uf20-0815.cnf_results.txt	0	0	0.0059589
uf20-0816.cnf_results.txt	0	0	0.0050383
uf20-0817.cnf_results.txt	0	0	0.0090316
uf20-0818.cnf_results.txt	0	0	0.0079908
uf20-0819.cnf_results.txt	1	1	0.0069944
uf20-082.cnf_results.txt	0	0	0.0080182
uf20-0820.cnf_results.txt	0	0	0.0080015
uf20-0821.cnf_results.txt	0	0	0.0060001
uf20-0822.cnf_results.txt	0	0	0.0050168
uf20-0823.cnf_results.txt	0	0	0.0090097
uf20-0824.cnf_results.txt	1	1	0.0099983
uf20-0825.cnf_results.txt	0	0	0.0060538
uf20-0826.cnf_results.txt	1	1	0.0080005

name	is_sat_result	is_sat	time
uf20-0827.cnf_results.txt	0	0	0.007021
uf20-0828.cnf_results.txt	1	1	0.0090143
uf20-0829.cnf_results.txt	0	0	0.0049953
uf20-083.cnf_results.txt	0	0	0.0049954
uf20-0830.cnf_results.txt	0	0	0.0070003
uf20-0831.cnf_results.txt	0	0	0.009
uf20-0832.cnf_results.txt	0	0	0.0089984
uf20-0833.cnf_results.txt	0	0	0.009016
uf20-0834.cnf_results.txt	0	0	0.0070349
uf20-0835.cnf_results.txt	0	0	0.0079988
uf20-0836.cnf_results.txt	0	0	0.00697
uf20-0837.cnf_results.txt	0	0	0.0059973
uf20-0838.cnf_results.txt	1	1	0.0079963
uf20-0839.cnf_results.txt	0	0	0.0079836
uf20-084.cnf_results.txt	0	0	0.0099979
uf20-0840.cnf_results.txt	0	0	0.0069975
uf20-0841.cnf_results.txt	0	0	0.007006
uf20-0842.cnf_results.txt	0	0	0.0069995
uf20-0843.cnf_results.txt	0	0	0.0079669
uf20-0844.cnf_results.txt	1	1	0.0070239
uf20-0845.cnf_results.txt	0	0	0.00705
uf20-0846.cnf_results.txt	0	0	0.0080317
uf20-0847.cnf_results.txt	0	0	0.0079983
uf20-0848.cnf_results.txt	0	0	0.0069963
uf20-0849.cnf_results.txt	0	0	0.0070313
uf20-085.cnf_results.txt	0	0	0.0080336
uf20-0850.cnf_results.txt	0	0	0.0089919
uf20-0851.cnf_results.txt	0	0	0.0069992
uf20-0852.cnf_results.txt	0	0	0.0050144
uf20-0853.cnf_results.txt	0	0	0.0070162
uf20-0854.cnf_results.txt	0	0	0.0070003
uf20-0855.cnf_results.txt	0	0	0.0070036
uf20-0856.cnf_results.txt	0	0	0.0075105
uf20-0857.cnf_results.txt	0	0	0.0040073
uf20-0858.cnf_results.txt	0	0	0.0080079
uf20-0859.cnf_results.txt	1	1	0.0069611
uf20-086.cnf_results.txt	1	1	0.0089834
uf20-0860.cnf_results.txt	0	0	0.0080804
uf20-0861.cnf_results.txt	0	0	0.0079666
uf20-0862.cnf_results.txt	0	0	0.0069707
uf20-0863.cnf_results.txt	0	0	0.0069981
uf20-0864.cnf_results.txt	0	0	0.0060035
uf20-0865.cnf_results.txt	0	0	0.006999
uf20-0866.cnf_results.txt	0	0	0.0060146
uf20-0867.cnf_results.txt	0	0	0.0049947

name	is_sat_result	is_sat	time
uf20-0868.cnf_results.txt	1	1	0.0080061
uf20-0869.cnf_results.txt	1	1	0.0079983
uf20-087.cnf_results.txt	0	0	0.0070159
uf20-0870.cnf_results.txt	0	0	0.0050321
uf20-0871.cnf_results.txt	1	1	0.006052
uf20-0872.cnf_results.txt	1	1	0.0070081
uf20-0873.cnf_results.txt	0	0	0.0070107
uf20-0874.cnf_results.txt	0	0	0.0079814
uf20-0875.cnf_results.txt	0	0	0.0070243
uf20-0876.cnf_results.txt	0	0	0.0080345
uf20-0877.cnf_results.txt	0	0	0.0069649
uf20-0878.cnf_results.txt	0	0	0.0089699
uf20-0879.cnf_results.txt	0	0	0.0060356
uf20-088.cnf_results.txt	1	1	0.0099939
uf20-0880.cnf_results.txt	0	0	0.0050253
uf20-0881.cnf_results.txt	0	0	0.0069909
uf20-0882.cnf_results.txt	0	0	0.0065433
uf20-0883.cnf_results.txt	0	0	0.0079747
uf20-0884.cnf_results.txt	0	0	0.004995
uf20-0885.cnf_results.txt	0	0	0.0071371
uf20-0886.cnf_results.txt	1	1	0.0080044
uf20-0887.cnf_results.txt	0	0	0.0069994
uf20-0888.cnf_results.txt	0	0	0.0090003
uf20-0889.cnf_results.txt	0	0	0.0059986
uf20-089.cnf_results.txt	0	0	0.0060105
uf20-0890.cnf_results.txt	0	0	0.0070036
uf20-0891.cnf_results.txt	0	0	0.0070671
uf20-0892.cnf_results.txt	0	0	0.0069977
uf20-0893.cnf_results.txt	0	0	0.0060347
uf20-0894.cnf_results.txt	0	0	0.0069972
uf20-0895.cnf_results.txt	1	1	0.0090186
uf20-0896.cnf_results.txt	0	0	0.0061106
uf20-0897.cnf_results.txt	1	1	0.0089947
uf20-0898.cnf_results.txt	1	1	0.0080072
uf20-0899.cnf_results.txt	0	0	0.0070121
uf20-09.cnf_results.txt	0	0	0.0069904
uf20-090.cnf_results.txt	0	0	0.0079933
uf20-0900.cnf_results.txt	0	0	0.007019
uf20-0901.cnf_results.txt	0	0	0.0060048
uf20-0902.cnf_results.txt	0	0	0.0089941
uf20-0903.cnf_results.txt	0	0	0.0060011
uf20-0904.cnf_results.txt	0	0	0.0060547
uf20-0905.cnf_results.txt	0	0	0.007001
uf20-0906.cnf_results.txt	0	0	0.0080039
uf20-0907.cnf_results.txt	0	0	0.0079993

name	is_sat_result	is_sat	time
uf20-0908.cnf_results.txt	0	0	0.0050451
uf20-0909.cnf_results.txt	1	1	0.0090028
uf20-091.cnf_results.txt	0	0	0.0079703
uf20-0910.cnf_results.txt	0	0	0.0090512
uf20-0911.cnf_results.txt	0	0	0.0079995
uf20-0912.cnf_results.txt	0	0	0.0060027
uf20-0913.cnf_results.txt	0	0	0.0069927
uf20-0914.cnf_results.txt	0	0	0.0090106
uf20-0915.cnf_results.txt	0	0	0.0080107
uf20-0916.cnf_results.txt	1	1	0.0080099
uf20-0917.cnf_results.txt	1	1	0.0069679
uf20-0918.cnf_results.txt	0	0	0.0060174
uf20-0919.cnf_results.txt	0	0	0.0059991
uf20-092.cnf_results.txt	0	0	0.0070031
uf20-0920.cnf_results.txt	1	1	0.0069824
uf20-0921.cnf_results.txt	0	0	0.0080118
uf20-0922.cnf_results.txt	0	0	0.0079985
uf20-0923.cnf_results.txt	0	0	0.0070017
uf20-0924.cnf_results.txt	0	0	0.0060009
uf20-0925.cnf_results.txt	0	0	0.0089993
uf20-0926.cnf_results.txt	0	0	0.0070387
uf20-0927.cnf_results.txt	0	0	0.0070018
uf20-0928.cnf_results.txt	0	0	0.005039
uf20-0929.cnf_results.txt	0	0	0.0080145
uf20-093.cnf_results.txt	0	0	0.0060068
uf20-0930.cnf_results.txt	0	0	0.0070007
uf20-0931.cnf_results.txt	0	0	0.0059989
uf20-0932.cnf_results.txt	1	1	0.0090087
uf20-0933.cnf_results.txt	0	0	0.0050249
uf20-0934.cnf_results.txt	0	0	0.0050264
uf20-0935.cnf_results.txt	0	0	0.0060249
uf20-0936.cnf_results.txt	0	0	0.0079768
uf20-0937.cnf_results.txt	0	0	0.0070383
uf20-0938.cnf_results.txt	0	0	0.0070054
uf20-0939.cnf_results.txt	1	1	0.0080498
uf20-094.cnf_results.txt	0	0	0.0070106
uf20-0940.cnf_results.txt	0	0	0.0100022
uf20-0941.cnf_results.txt	1	1	0.0090007
uf20-0942.cnf_results.txt	1	1	0.0070257
uf20-0943.cnf_results.txt	0	0	0.0060244
uf20-0944.cnf_results.txt	0	0	0.008035
uf20-0945.cnf_results.txt	0	0	0.0069985
uf20-0946.cnf_results.txt	0	0	0.0069947
uf20-0947.cnf_results.txt	1	1	0.0089965
uf20-0948.cnf_results.txt	0	0	0.0049992

name	is_sat_result	is_sat	time
uf20-0949.cnf_results.txt	0	0	0.0060105
uf20-095.cnf_results.txt	0	0	0.0059978
uf20-0950.cnf_results.txt	0	0	0.0040026
uf20-0951.cnf_results.txt	1	1	0.0080362
uf20-0952.cnf_results.txt	0	0	0.0080354
uf20-0953.cnf_results.txt	0	0	0.0090005
uf20-0954.cnf_results.txt	0	0	0.0059993
uf20-0955.cnf_results.txt	0	0	0.0079981
uf20-0956.cnf_results.txt	0	0	0.0049891
uf20-0957.cnf_results.txt	0	0	0.0090001
uf20-0958.cnf_results.txt	0	0	0.0059987
uf20-0959.cnf_results.txt	0	0	0.0050003
uf20-096.cnf_results.txt	0	0	0.0070347
uf20-0960.cnf_results.txt	0	0	0.0060259
uf20-0961.cnf_results.txt	1	1	0.0100379
uf20-0962.cnf_results.txt	0	0	0.0079996
uf20-0963.cnf_results.txt	0	0	0.0070006
uf20-0964.cnf_results.txt	1	1	0.01
uf20-0965.cnf_results.txt	1	1	0.009
uf20-0966.cnf_results.txt	0	0	0.0070001
uf20-0967.cnf_results.txt	1	1	0.0059931
uf20-0968.cnf_results.txt	0	0	0.0059995
uf20-0969.cnf_results.txt	1	1	0.0089977
uf20-097.cnf_results.txt	0	0	0.0079986
uf20-0970.cnf_results.txt	0	0	0.0059922
uf20-0971.cnf_results.txt	0	0	0.0070359
uf20-0972.cnf_results.txt	0	0	0.0060353
uf20-0973.cnf_results.txt	0	0	0.0079964
uf20-0974.cnf_results.txt	0	0	0.0060251
uf20-0975.cnf_results.txt	0	0	0.006999
uf20-0976.cnf_results.txt	0	0	0.005999
uf20-0977.cnf_results.txt	0	0	0.0080016
uf20-0978.cnf_results.txt	0	0	0.0079989
uf20-0979.cnf_results.txt	0	0	0.0070269
uf20-098.cnf_results.txt	0	0	0.0070313
uf20-0980.cnf_results.txt	1	1	0.0080345
uf20-0981.cnf_results.txt	0	0	0.0080343
uf20-0982.cnf_results.txt	0	0	0.0090276
uf20-0983.cnf_results.txt	0	0	0.0060286
uf20-0984.cnf_results.txt	0	0	0.0060407
uf20-0985.cnf_results.txt	0	0	0.0070513
uf20-0986.cnf_results.txt	0	0	0.0070359
uf20-0987.cnf_results.txt	1	1	0.0080275
uf20-0988.cnf_results.txt	0	0	0.0090526
uf20-0989.cnf_results.txt	0	0	0.0080264

name	is_sat_result	is_sat	time
uf20-099.cnf_results.txt	0	0	0.0060042
uf20-0990.cnf_results.txt	0	0	0.0070428
uf20-0991.cnf_results.txt	0	0	0.0080345
uf20-0992.cnf_results.txt	0	0	0.0080489
uf20-0993.cnf_results.txt	0	0	0.008037
uf20-0994.cnf_results.txt	1	1	0.0090378
uf20-0995.cnf_results.txt	0	0	0.0080369
uf20-0996.cnf_results.txt	1	1	0.0090341
uf20-0997.cnf_results.txt	0	0	0.007035
uf20-0998.cnf_results.txt	0	0	0.0080361
uf20-0999.cnf_results.txt	1	1	0.0090281

6. Result discussion

The algorithm performed quite well with respect to the running time, but poorly in result correctness, considering that the test cases utilized were rather simple.

We speculate this lack of accuracy is due to the nature of the algorithm's approach at searching the space of all solutions. The algorithm cannot ensure that the choice it makes will yield to a solution. Additionally, the absence of a solution in the branch the algorithm traverses does not imply the absence of a global solution. Although the algorithm takes an educated guess on which value a variable must have, it doesn't guarantee a correct solution. Therefore, this can possibly doom the algorithm's chance at finding a satisfiable solution in its first choices.

7. Conclusion

In this work, we presented a heuristic for solving the SAT problem. The heuristic is an adaptation of `DPLL`, aiming to improve the asymptotic complexity of the algorithm. The algorithm had a low success rate at finding a solution, but had a high performance in time. Therefore, the heuristic can be useful in contexts where a fast answer is needed with low requirements for accuracy.

For our future works, we plan to implement an exact algorithm and a meta heuristic for the SAT problem, as a continuation of the assignments proposed by the Algorithms Analysis and Projects discipline.

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