Problem

Let CNF_{H1} = { $\langle \phi \rangle$ | ? is a satisfiable cnf-formula where each clause contains any number of positive literals and at most one negated literal. Furthermore, each negated literal has at most one occurrence in ?}. Show that CNF_{H1} is NL- complete.

Step-by-step solution

Step 1 of 3

Consider the $\mathrm{CNF_{H1}}$, which is defined as:

$\mathrm{CNF_{H1}}$ = {<∅>| ∅ is a satisfiable cnf-formula where each clause contain nay number of positive literals and at most one negative literals}

Now, it is known that $CNF_{H1} \in NL$. It can be proved by using the following approach: Situation is quite clear as all user needs to find the d**ependability** of $\mathrm{CNF_{H1}}$ on P and NL.

Comment

Step 2 of 3

Dependability can be viewed as:

1. Consider that $\mathrm{CNF_2} \in NL$

Consider first situation of ϕ and consider it belongs to some x and if there is any $\neg x$ then reject.

Consider one more situation of ϕ that will be belonging to some other variable let's say y and here situation will rejected if there is any $\neg y$ otherwise accepted.

• Two situations are discussed here remove those situation from ϕ and relate those two situations, let's say M and N, to ϕ and call the result.

This way it is proved that $\mathbf{CNF_2} \in NL$.

Comment

Step 3 of 3

2. Consider another situation $\mathrm{CNF_3} \in NL$

Consider first situation of ϕ and consider it belongs to some p and if there is any $\neg p$ then reject.

Consider one more situation of ϕ that will be belonging to some other variable, let's say q and r here situation will rejected if there is any $\neg q$ otherwise accepted.

• Two situations are discussed here remove those situation from ϕ and relate those two situations, let's say A and B, to ϕ and call the result.

This way it is proved that $\mathbf{CNF_3} \in NL$.

Similarly**, this situation will be held true for $\mathbf{CNF_{H1}}$.** In other words**, it can be said that"** $CNF_{H1} \in NL$ **" or** $\mathbf{CNF_{H1}}$ is $NL-complete$**.**

Comment