CS161 - Quiz 4

Started: Feb 24 at 6:41pm

Quiz Instructions

Question 1

1 pts

Given two arbitrary propositional sentences α and β, if α does not entail β, you can prove it using resolution.

- ◯ True
- ◯ False

Question 2

1 pts

Which of the following are Horn clasuse? Choose ALL that apply.

- ☐ $A \wedge B \wedge D \implies C$
- ☐ $A \vee B \vee \neg C \vee D$
- ☐ $A \wedge B \wedge D \implies \neg C$
- ☐ $A \wedge \neg B \wedge \neg D \implies \neg C$
- ☐ $\neg A \vee \neg B \vee \neg C$

Question 3

1 pts

For this question, you will need to convert a propositional sentence to Conjunction Normal Form (CNF).

Please fill in the blanks with symbols like "A" or "~A".

How to represent a CNF:

- For each blank below, you fill in either a positive literal like "A" or a negative literal like "~A". Negation is represented by "~".
- It is possible that more blanks are provided than needed. If that's the case, fill in the blanks with "None".
- **Important:** Please follow **the alphabetical order** to sort **clauses** and **literals within a clause**.

Example:

Given the sentence $(\neg B \vee C) \wedge (\neg B \vee A) \wedge (C \wedge B \wedge F)$

your result should look like this:

(A ∨ ~B ∨ None ∨ None)

∧ (~B ∨ C ∨ None ∨ None)

∧ (B ∨ C ∨ F ∨ None)

∧ (None ∨ None ∨ None ∨ None)

- Note that here BC is considered ahead of BCF alphabetically, so the clause (~B ∨ C) will be before (B ∨ C ∨ F).
- If we have clauses (A ∨ B) and (A ∨ C), (A ∨ B) will be before (A ∨ C) because AB is alphabetically ahead of AC.

Convert the following sentence to CNF:

$A \Leftrightarrow (B \Rightarrow C)$

Result:

( ) ∨ ( ) ∨ ( ) ∨ ( )

∧( ) ∨ ( ) ∨ ( ) ∨ ( )

∧( ) ∨ ( ) ∨ ( ) ∨ ( )

∧( ) ∨ ( ) ∨ ( ) ∨ ( )

Question 4 1 pts

$\alpha \models \beta$ if and only if $\alpha \models \beta$ is satisfiable.

- ◯ True
- ◯ False

Not saved Submit Quiz