



Week 6

8 試題

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1 °

In cryptography, testing whether a number is prime is an important issue.

(a) Fermat test uses Fermat's little theorem: $a^{p-1} \equiv 1 \pmod{p}$, for all $0 < a < p$, which is true for any prime p . However, there exist some numbers called Carmichael numbers, which pass the Fermat test, but not primes. Here is an inference: "Every number passed Fermat test is a prime." What can we say about this inference?

- ☐ Soundness: No; Completeness: No
- ☐ Soundness: No; Completeness: Yes
- ☐ Soundness: Yes; Completeness: Yes
- ☐ Soundness: Yes; Completeness: No

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(b) Corresponding to the above question,

Miller-Rabin's test is another prime test technique. Every number that is not a prime fails Miller-Rabin's test; however, If a number passes Miller-Rabin's test, it may or may not be a prime. Here is an inference: "The number does not pass Miller-Rabin's test is not a prime."

What can we say about this inference?

- ☐ Soundness: No; Completeness: Yes
- ☐ Soundness: No; Completeness: No

- ☐ Soundness: Yes; Completeness: No
- ☐ Soundness: Yes; Completeness: Yes
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3 °

Which of the follows is wrong?

- ☐ $((p \Rightarrow q) \vee r) \models (p \Rightarrow q)$
- ☐ $p = \text{true} \models p \vee q$
- ☐ $p \wedge q \models p \vee q$
- ☐ $\text{False} \models \text{True}$
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4 °

Which of the follows is true about backward chaining?

- ☐ Soundness: Yes; Completeness: No
- ☐ Soundness: No; Completeness: No
- ☐ Soundness: No; Completeness: Yes
- ☐ Soundness: Yes; Completeness: Yes
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Which of the following statements is true?

- ☐ Backward chaining needs not to check repeated nodes, and thus usually has a better performance than the forward chaining.
- ☐ Resolution is sound but not complete.
- ☐ Every sentence can be converted to the conjunctive normal form.

- ☐ Backward chaining can only apply to horn clauses, while forward chaining can only apply to definite clauses.
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6 °

Which of the follows is false?

- ☐ Proposition can vary over time
- ☐ $\alpha \models \beta$ iff $M(\alpha) \subseteq M(\beta)$
- ☐ $m \in M(\alpha)$ implies m is a model of α
- ☐ Atomic propositions are minimum propositions
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7 °

In the forward chaining after running few iterations, if the agenda is empty, but some sentences' counts are non-zero, what does that mean?

- ☐ The order of taking out symbols from the agenda is wrong.
- ☐ The forward chaining is not complete; try the backward chaining.
- ☐ These sentences can not be inferred from the current KB.
- ☐ The KB is wrong.
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8 °

In the backward chaining, if no more new symbols can be set to fact, but there is still some symbols with unknown value, what does that mean?

- ☐ The order of checking unknown symbols is wrong.
- ☐ The backward chaining is not complete; try the forward chaining.

- ☐ These sentences can not be inferred from the current KB
- ☐ The KB is wrong.



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8 試題 未回答

提交測試

