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CS433 Q 1: Consider four nodes t1 , t2 , t3 , t4 in an EUF constraints. There may be other nodes in the constraints. After running congruence-closure, which of the following are impossible states of RightEquiv, LeftEquiv, and BothEquiv?

- [ ] RightEquiv = {{t4}, {t1 , t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4}, {t2}, {t1}, {t3}, ..}
- [ ] RightEquiv = {{t4 , t1}, {t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4 , t2}, {t1 , t3}, ..}
- [ ] RightEquiv = {{t4 , t2}, {t1 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4}, {t2}, {t1}, {t3}, ..}
- [ ] RightEquiv = {{t4 , t1 , t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4 , t1}, {t2 , t3}, ..}

Answer

Note: please be careful before submitting the answer. You will not be able to change the answers.

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You have answered the following:

✘ RightEquiv = {{t4}, {t1 , t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4}, {t2}, {t1}, {t3}, ..} (You are incorrect)
✘ RightEquiv = {{t4 , t1}, {t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4 , t2}, {t1 , t3}, ..} (You are incorrect)
✔ RightEquiv = {{t4 , t2}, {t1 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4}, {t2}, {t1}, {t3}, ..} (You are correct)
✔ RightEquiv = {{t4 , t1 , t2 , t3}, ..}, LeftEquiv = {{t4 , t2}, {t1 , t3}, ..}, BothEquiv = {{t4 , t1}, {t2 , t3}, ..} (You are correct)

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CS433 Q 2: Which of the following are true sentences debugging Z3?

- [ ] Tactics layer in Z3 is for management of solving heuristics
- [ ] Z3 is written in Java
- [ ] Breakpoints breaks the code and we need to rewrite the code
- [ ] git is a code management system

Answer

Note: please be careful before submitting the answer. You will not be able to change the answers.

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CS433 Q 2: Which of the following are true sentences debugging Z3?

You have answered the following:

✔ Tactics layer in Z3 is for management of solving heuristics (You are correct)
✘ Z3 is written in Java (You are correct)
✘ Breakpoints breaks the code and we need to rewrite the code (You are correct)
✔ git is a code management system (You are correct)

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CS433 Q 3: Which of cone(s) cover the whole 2-D vector space?

- [ ] {(−1, −1), (1, 0), (0, 1)}
- [ ] {(2, −1), (−1, 0), (2, 1), (0, 1)}
- [ ] {(2, −1), (1, −1), (2, 1), (0, 1)}
- [ ] {(1, 1), (−1, 0), (1, 0), (0, 1)}

Answer

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CS433 Q 3: Which of cone(s) cover the whole 2-D vector space?

You have answered the following:

✘ {(−1, −1), (1, 0), (0, 1)} (You are incorrect)
✔ {(2, −1), (−1, 0), (2, 1), (0, 1)} (You are correct)
✘ {(2, −1), (1, −1), (2, 1), (0, 1)} (You are correct)
✘ {(1, 1), (−1, 0), (1, 0), (0, 1)} (You are correct)

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CS433 Q 4: Which of the following are true about unsatisfiability certificate in linear arithmetic?

- [ ] [1 1 0] is a certificate of unsatisfiability of $2x + y \leq 0 \wedge -x + y \leq 0 \wedge x - 2y \leq -1$
- [ ] [1 3 3] is a certificate of unsatisfiability of $2x + y \leq 1 \wedge -x + y \leq 0 \wedge -y \leq -1$
- [ ] [1 0 0] is a certificate of unsatisfiability of $0 \leq -1 \wedge -x + y \leq 0 \wedge -y \leq -1$
- [ ] [1 1 1] is a certificate of unsatisfiability of $2x + y \leq 0 \wedge -x + y \leq 0 \wedge x - 2y \leq -1$

Answer

Note: please be careful before submitting the answer. You will not be able to change the answers.

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You have answered the following:

✘ [1 1 0] is a certificate of unsatisfiability of $2x + y \leq 0 \wedge -x + y \leq 0 \wedge x - 2y \leq -1$ (You are correct)
✘ [1 3 3] is a certificate of unsatisfiability of $2x + y \leq 1 \wedge -x + y \leq 0 \wedge -y \leq -1$ (You are correct)
✔ [1 0 0] is a certificate of unsatisfiability of $0 \leq -1 \wedge -x + y \leq 0 \wedge -y \leq -1$ (You are correct)
✔ [1 1 1] is a certificate of unsatisfiability of $2x + y \leq 0 \wedge -x + y \leq 0 \wedge x - 2y \leq -1$ (You are correct)

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