

Solution 6

November 18, 2019



Problem 1

Triggers are also called patterns. Describe how to use trigger matching to solve this problem. You need to select the trigger, generate instances and give the result. You don't need to draw the E-graph.

$$(\forall x)(f(g(x)) = x) \wedge g(a) = c \wedge g(b) = c \wedge a \neq b$$

Solution.

Trigger is $g(x)$. Instances are $f(g(a)) = a$ and $f(g(b)) = b$. The formula is unsatisfiable.

Problem 2

Determine if the following Hoare triples are valid.

1. $\{a = 1\} a := a + 1 \{a = 2\}$
2. $\{a = 1\} a := a + 1 \{a = 3\}$
3. $\{a - b > 3\} a := a - b \{a > 2\}$

4. $\{a = 1\} \text{ while}(1) \text{ skip } \{a = 3\}$

5. $\{a \leq 10\} \text{ while}(a! = 10) a := a + 1 \{a = 10\}$

Solution.

1. valid

2. unvalid

3. valid

4. valid

5. valid