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Homework 9

1. sister(Sister, Sib) ←
    parent(Parent, Sister), parent(Parent, Sib),
    female(Sister), Sister ≠ Sib.

  niece(Niece, Person) ←
    sibling(Person, Parent),
    parent(Parent, Niece),
    female(Niece).

  sibling(Sib1, Sib2) ←
    male(Parent1), female(Parent2),
    parent(Parent1, Sib1), parent(Parent2, Sib1),
    parent(Parent1, Sib2), parent(Parent2, Sib2),
    Sib1 ≠ Sib2.

2. left_of(butterfly, fish).
  left_of(hourglass, butterfly).
  left_of(pencil, hourglass).
  above(camera, butterfly).
  above(bicycle, pencil).

  right_of(Object1, Object2) ← left_of(Object2, Object1).
  below(Object1, Object2) ← above(Object2, Object1).

3. left_recursion(Object1, Object2) ←
    left_of(Object1, Object2).
  left_recursion(Object1, Object2) ←
    left_of(Object1, ObjectX),
    left_recursion(ObjectX, Object2).

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above_recursion (Object1, Object2) ←
    above (Object1, Object2).
above_recursion (Object1, Object2) ←
    above (Object1, Object X),
    above_recursion (Object X, Object2).
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same_level (Object1, Object2) ←
    left_recursion (Object1, Object2).
same_level (Object1, Object2) ←
    left_recursion (Object2, Object1).
higher (Object1, Object2) ←
    ! same_level (Object1, Object2).
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4.
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above (Block1, Block2) ←
    on (Block1, Block2).
above (Block1, Block2) ←
    on (Block1, Block X), above (Block X, Block2).
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