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/*
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 * CMPT 333N HW3 - Basic Constructs
 * I included a visual aid in the repository for reference.
 */

// Facts:

 sister(lucy,greg).          /* Fact  1 */
 sister(lucy,joey).          /* Fact  2 */
 sister(pamela,samson).      /* Fact  3 */
brother(joey,lucy).          /* Fact  4 */
brother(joey,greg).          /* Fact  5 */
brother(greg,joey).          /* Fact  6 */
brother(greg,lucy).        /* Fact  7 */
brother(samson,pamela).      /* Fact  8 */
married(charlotte,greg).    /* Fact  9 */
married(lucy,samson).        /* Fact 10 */
married(pamela,bradley).    /* Fact 11 */


// Rules:

married(X,Y)          ←  married(Y,X)                        /*
Rule 0  Reinforce Marriage logic  */
brother_in_law(X,Y). ←  married(Y,Z), brother(X,Z).        /* Rule
1 */
brother_in_law(X,S). ←  married(X,Y),  sister(Y,S).        /* Rule
2 */
brother_in_law(X,R). ←  brother(X,Y), married(Y,Z),  sister(R,Z).  /*
Rule 3 */
brother_in_law(X,R). ←  brother(X,Y), married(Y,Z), brother(R,Z).  /*
Rule 4 */
 sister_in_law(X,Y). ←  married(Y,Z),  sister(X,Z).        /* Rule
5 */
 sister_in_law(X,S). ←  married(X,Y), brother(Y,S).        /* Rule
6 */
 sister_in_law(X,R). ←   sister(X,Y), married(Y,Z),  sister(R,Z).  /*
Rule 7 */
 sister_in_law(X,R). ←   sister(X,Y), married(Y,Z), brother(R,Z).  /*
Rule 8 */


// Queries:

brother(greg,joey)?        /* Query 1 */
      // yes

sister(charlotte,pamela)?  /* Query 2 */
      // no

married(joey,Y)?        /* Query 3 */
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        // no

sister_in_law(charlotte,lucy)?   /* Query 4 */
      // yes

brother_in_law(greg,bradley)?    /* Query 5 */
      // no
```