We have covered the terms Reflexive, Symmetric, Antisymmetric, and Transitive in class. This miniproject deals with those terms in a concrete example, as well as the terms Irreflexive and Asymmetric, which are described just prior to exercises 9 and 16 in your book.

(a) List the sixteen different relations on the set $\{a, b\}$.

(b) Which of the sixteen relations that you listed above are

    (i) reflexive?

   (ii) irreflexive?

  (iii) symmetric?

  (iv) antisymmetric?

   (v) asymmetric?

  (vi) transitive?

Note: If you label the relations in part (a), then you can refer to those labels in part (b), rather than writing out the relations again.

SHOW ALL WORK FOR CREDIT