Antisymmetric Relations

- A binary relation R on a set X is **antisymmetric** if there is no pair of distinct elements of X each of which is related by R to the other.
- More formally, R is antisymmetric precisely if for all a and b in X : if $R(a, b)$ and $R(b, a)$, $thena = b$,
- Intuitively, an antisymmetric relation has no symmetric pairs. Consider the relation:

  $$R = (0, 0), (0, 1), (1, 0),$$

  this relation is symmetric.

  In the example stated, the pair (1,0) and (0,1) are symmetric, so this violates the antisymmetric condition. An example of a relation that is antisymmetric is $R = \{(0, 0), (0, 1)\}$.