Notes 6

inverse a binary relation—change the direction of the arrows
n-ary relation—defined by a set of *n*-tuples
    application: relational databases

a relation on a set X is a binary relation from X to X.
    we focus on this type of relations in the rest of Chapter 8.
    the arrow diagram can be modified to a *directed graph*

reflective, symmetric, transitive
    definitions, how to see in directed graphs, how to prove (for relations on infinite sets.).

transitive closure of **R**—minimal "superset" of **R** that is transitive

(equivalence) relation induced by a partition
equivalence relation
    reflective and symmetric and transitive
    equivalence classes
partition induced by an equivalence relation

congruence modulo *n*
modular arithmetic

antisymmetry
partial order relation
    reflective and antisymmetric and transitive

comparable and noncomparable (incomparable)
total order relation
    partial order relation and any two elements are comparable
topological sorting for a partial order relation
    a total order relation that is *compatible* with the original partial order relation
    a particular partial order relation may have multiple different topological sorting results