CS135 Section 9.5

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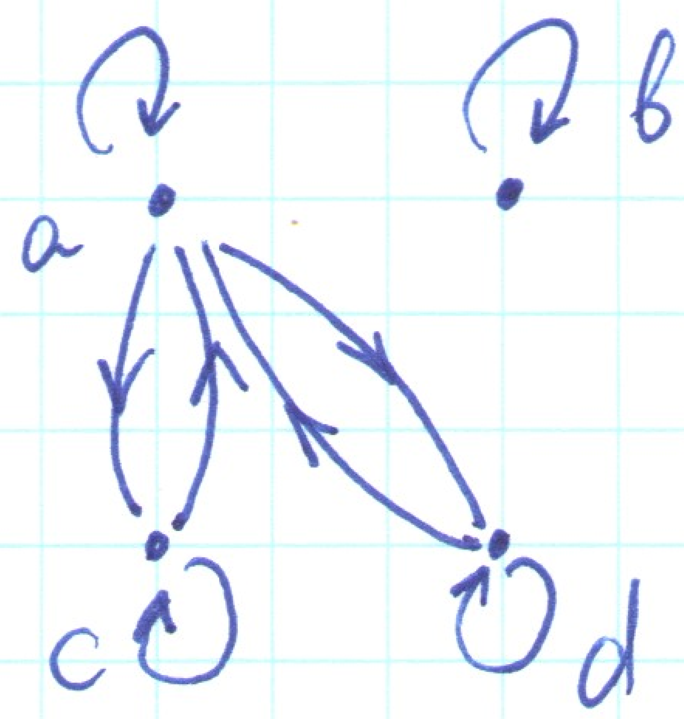
- reflexive
- symmetric



not an equivalence relation because (c,a) and (a,d) are present, but (c,d) is not, i.e. it is not transitive

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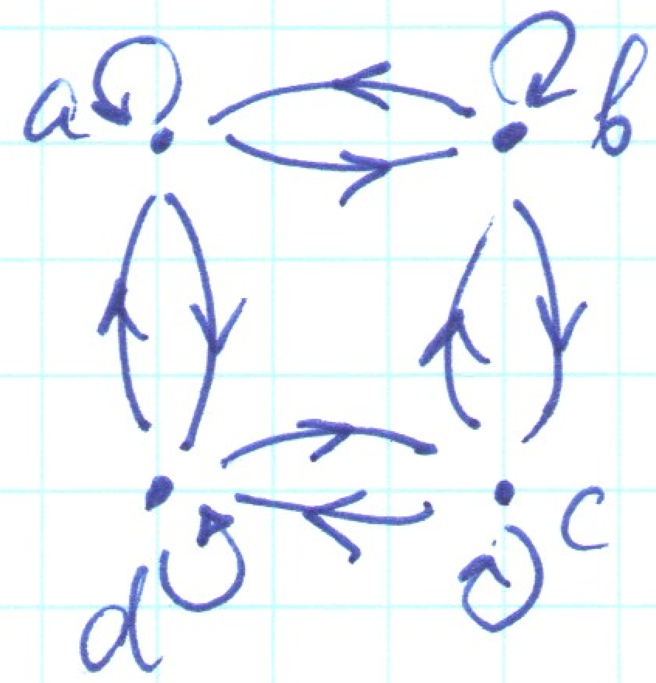
- symmetric



not an equivalence relation because (a,b) and (b,c) are present, but (a,c) is not, i.e. it is not transitive

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$S = \{1,2,3,4,5,6\}$

a) $\underset{S_1}{\{1,2\}}, \underset{S_2}{\{2,3,4\}}, \underset{S_3}{\{4,5,6\}}$ — not a partition, because $S_1 \cap S_2 = 2$, should be $\emptyset$

b) $\underset{S_1}{\{1\}}, \underset{S_2}{\{2,3,6\}}, \underset{S_3}{\{4\}} \{5\}$ — it is a partition, because $S_1 \cup S_2 \cup S_3 = S$, and

$S_1 \neq \emptyset \quad S_2 \neq \emptyset \quad S_3 \neq \emptyset$ $\quad S_1 \cap S_2 = \emptyset,\ S_2 \cap S_3 = \emptyset,\ S_1 \cap S_3 = \emptyset,$

c) $\underset{S_1}{\{2,4,6\}}, \underset{S_2}{\{1,3,5\}}$ — it is a partition, because $S_1 \cup S_2 = S$, and $S_1 \cap S_2 = \emptyset$, and $S_1 \neq \emptyset$, $S_2 \neq \emptyset$

d) $\underset{S_1}{\{1,4,5\}}, \underset{S_2}{\{2,6\}}$ — it is not a partition, because $S_1 \cup S_2 \neq S$