DISCRETE MATHEMATICS - 411 ASSIGNMENT NO.6

EXERCISE 9.1

Exercise 37 deals with these relations on the set of real numbers:
$R3 = \{(a, b) \in \mathbf{R}2 \mid a < b\}$, the "less than" relation,
$R4 = \{(a, b) \in \mathbf{R}2 \mid a \leq b\}$, the "less than or equal to" relation,
$R6 = \{(a, b) \in \mathbf{R}2 \mid a \neq b\}$, the "unequal to" relation.

37. Find
f) $R3 \circ R6$.

g) $R4 \circ R6$.

h) $R6 \circ R6$.

56. Let R be the relation on the set {1, 2, 3, 4, 5} containing the ordered pairs $(1, 1)$, $(1, 2)$, $(1, 3)$, $(2, 3)$, $(2, 4)$, $(3, 1)$,$(3, 4)$, $(3, 5)$, $(4, 2)$, $(4, 5)$, $(5, 1)$, $(5, 2)$, and $(5, 4)$.
Find
b) $R3$. **c)** $R4$. **d)** $R5$.

EXERCISE 9.2

1. List the triples in the relation $\{(a, b, c) \mid a, b$, and c are integers with $0 < a < b < c < 5\}$.

TABLE 8 ON NEXT PAGE

3. List the 5-tuples in the relation in Table 8.

7. The 3-tuples in a 3-ary relation represent the following attributes of a student database: student ID number, name, phone number.
a) Is student ID number likely to be a primary key?
b) Is name likely to be a primary key?
c) Is phone number likely to be a primary key?

11. What do you obtain when you apply the selection operator sC, where C is the condition Destination= Detroit, to the database in Table 8?
17. Display the table produced by applying the projection $P1,4$ to Table 8.

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TABLE 8 Flights.

Airline	*Flight_number*	*Gate*	*Destination*	*Departure_time*
Nadir	122	34	Detroit	08:10
Acme	221	22	Denver	08:17
Acme	122	33	Anchorage	08:22
Acme	323	34	Honolulu	08:30
Nadir	199	13	Detroit	08:47
Acme	222	22	Denver	09:10
Nadir	322	34	Detroit	09:44