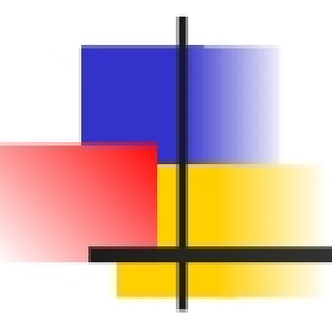
Boyce-Codd Normal Form

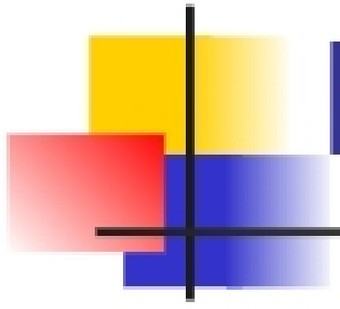


CIS 4301

Lecture Notes

Lecture 10 - 2/14/2006

Decomposition of Relations



GOAL:

"Decompose" relations into smaller, better ones as above. Do it automatically with a formal framework based on FD's (and later MVD's)

Definition:

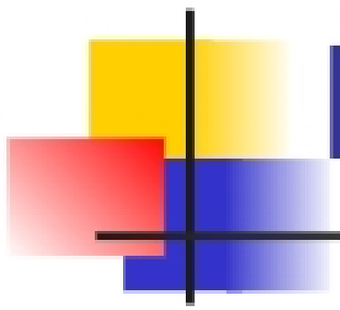
Given Relation R (A_1, ..., A_n), we may decompose R into two relations S (B_1, ..., B_m) and T (C_1, ..., C_k) such that,

(1) Tuples in S are *restricted* to {B_1, ..., B_m}

(2) Tuples in T are *restricted* to {C_1, ..., C_k}

(3) Reassembling S and T would produce R

$\{A_1, \ldots, A_n\} = \{B_1, \ldots, B_m\} \cup \{C_1, \ldots, C_k\}$



Notes

- The restriction in (1) and (2) is called "projection" and duplicate tuples are eliminated.
- The reassembling in (3) is called "join" and is a cross-product if R1 and R2 do not share attributes.
- R is never actually created, it's just a step in the design process