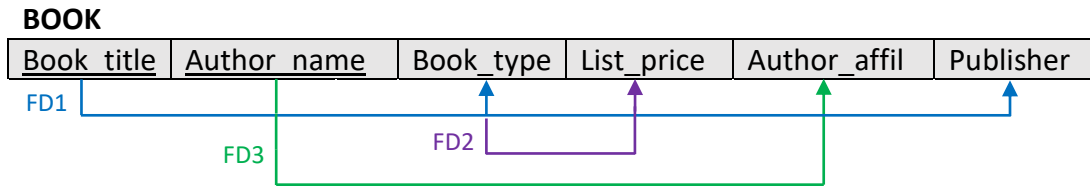**CSC430/530 – Database Management Systems**
Assignment #4 – Functional Dependencies & Normalization

Note: PK defines every other attribute.

1. Consider following relation for published books:

BOOK

Book_title	Author_name	Book_type	List_price	Author_affil	Publisher

FD1
FD2
FD3

- *Author_affil* refers to the affiliation of the author.
- Primary key is {*Book_title, Author_name*}.
- Functional dependencies are:
  FD1: *Book_title -> Publisher, Book_type*
  FD2: *Book_type -> List_price*
  FD3: *Author_name -> Author_affil*

a. What normal form this relation in (1NF, 2NF, 3NF)? Justify your answer by describing violations of normal forms (if any).
b. Describe steps to normalize this relation up to 3NF. For full points, show all decomposed relations.

2. Define which of the provided functional dependencies may hold for the given relation. If the dependency does not hold, explain why by specifying tuples that cause the violation.

	Instructor	Course	Text	Quarter
1	Smith	Data Structures	Bartam	Spring
2	Hall	Systems Programming	White	Winter
3	Brown	Programming Languages	Williams	Summer
4	Smith	Data Structures	Bartam	Winter
5	Ross	Data Mining	Williams	Summer
6	Hall	Systems Programming	White	Spring
7	Johnson	Databases	Elmasri	Fall

A. Text -> Course

B. Text -> Instructor

C. Instructor -> Course

D. Course -> Text

E. Course -> Quarter