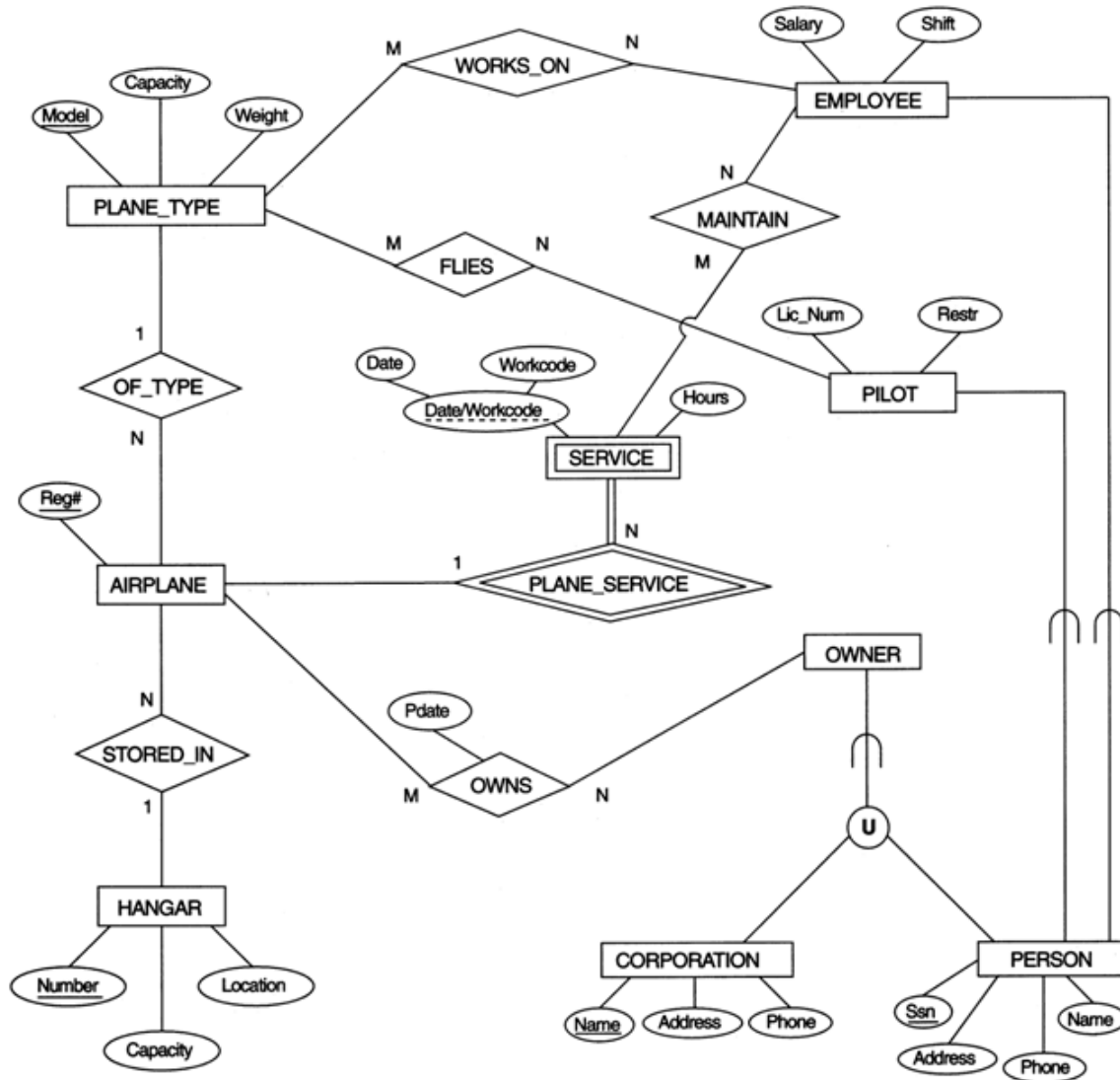


Assignment-4

1. **Design** a relational database for the following Airport E-R diagram and **write** an SQL script (airport.sql) with all constraints similar to [companyscript.sql](#). [25]



2. Consider the universal table $T = \{A, B, C, D, E, F, G, H, I, J\}$ with the following set of functional dependencies:

$\{A, B\} \rightarrow \{C\}$
 $\{B, D\} \rightarrow \{E, F\}$
 $\{A, D\} \rightarrow \{G, H\}$
 $\{A\} \rightarrow \{I\}$
 $\{H\} \rightarrow \{J\}$

What is the primary key for T? [5]

Decompose T into 2NF tables. [10]

Decompose T into 3NF tables. [10]

3. Consider the following table:

CAR_SALE(Car#, DateSold, Salesperson#, CommissionPercent, DiscountAmt)

Assume that a car may be sold by multiple salespersons,
and hence $\{Car\#, Salesperson\# \}$ is the primary key.

Additional functional dependencies are

$\{DateSold\} \rightarrow \{DiscountAmt\}$
 $\{Salesperson\# \} \rightarrow \{CommissionPercent\}$

a) Based on the primary key, is this table in 1NF, 2NF, or 3NF? Why? [10]

b) How would you successively normalize it completely? [15]

4. Consider the following table for published books:

BOOK(BookTitle, AuthorName, BookType, ListPrice, AuthorAffil, Publisher)

AuthorAffil refers to the affiliation of author. Suppose the following functional dependencies exist:

$\{BookTitle\} \rightarrow \{Publisher, BookType\}$
 $\{BookType\} \rightarrow \{ListPrice\}$
 $\{AuthorName\} \rightarrow \{AuthorAffil\}$

a) What normal form is the table in? Explain your answer. [10]

b) Apply normalization until you cannot decompose the tables further. State the reasons behind each decomposition. [15]

Submission:

Store the answer for all questions in a file asg4.doc
Convert the Word file into a pdf file
and upload the pdf file through Canvas
along with the following declaration.

=====
Name: _____

Panther-ID: x x x - _____ (Last 4 digits)

Course: COP 4710












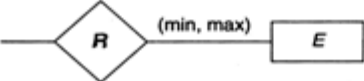
Assignment#: 4

Due: Thu, Oct 1, 2020

I hereby certify that this work is my own and none of
it is the work of any other person.

Signature: _____
=====

Notation for the ER diagram

Symbol	Meaning
	ENTITY
	WEAK ENTITY
	RELATIONSHIP
	IDENTIFYING RELATIONSHIP
	ATTRIBUTE
	KEY ATTRIBUTE
	MULTIVALUED ATTRIBUTE
	COMPOSITE ATTRIBUTE
	DERIVED ATTRIBUTE
	TOTAL PARTICIPATION OF E_2 IN R
	CARDINALITY RATIO 1: N FOR $E_1:E_2$ IN R
	STRUCTURAL CONSTRAINT (min, max) ON PARTICIPATION OF E IN R