60-615 - Advanced Database Topics
Assignment 1 – Due January 30

Assignments should be submitted using Blackboard. Your answers should be typed, NOT handwritten. Always use a professional tool to create your diagrams e.g. Visio. Save the file as PDF before you upload it on BlackBoard.

1. **Create the basic ERD (Both the Chen and Crow's Foot) for the database shown in Fig-1 (1 point).**

Fig-1

Table name: STUDENT

Database name: Ch03_CollegeQue

STU_CODE	PROF_CODE
100278	
128569	2
512272	4
531235	2
531268	
553427	1

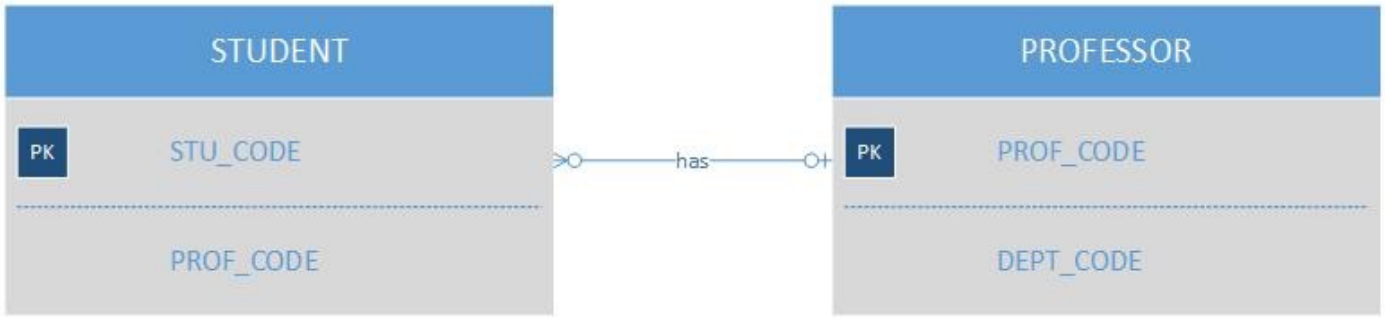
Table name: PROFESSOR

PROF_CODE	DEPT_CODE
1	2
2	6
3	6
4	4

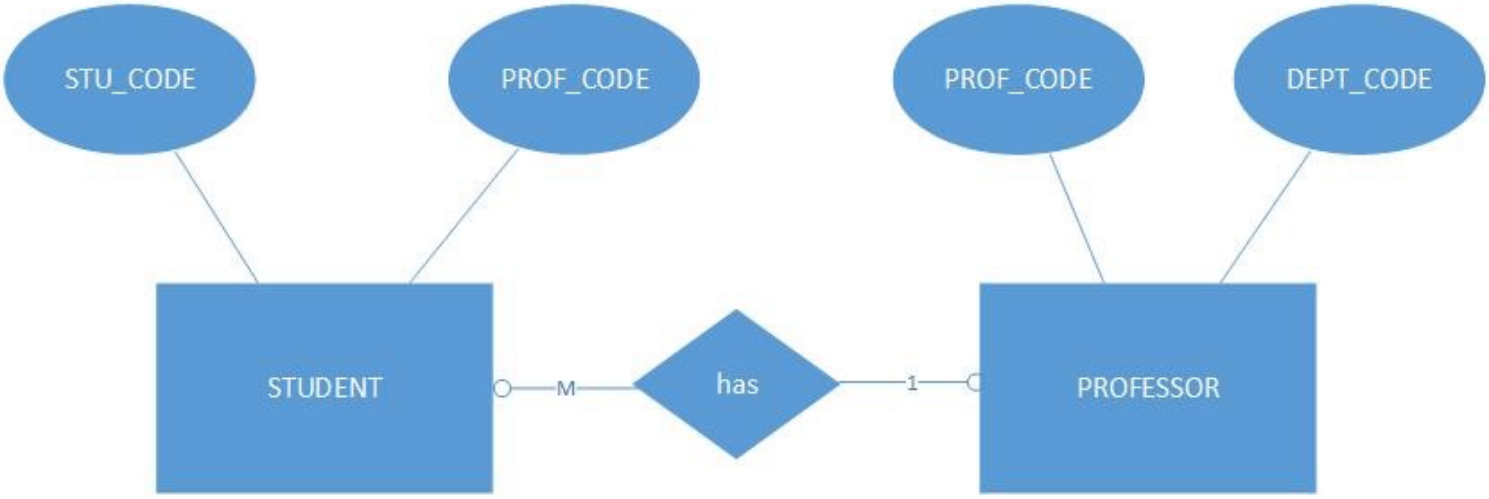
ANSWER:

Ch03_CollegeQue

Crow’s Foot Notation



Chen’s Notation



2. **Use Fig-2 to (1.5 points):**
   a. **Create the table that results from applying a UNION relational operator to the tables shown**

BOOTH_PRODUCT	BOOTH_PRICE
Chips	1.5
Cola	1.25
Energy Drink	2
Chips	1.25
Chocolate Bar	1

   b. **Create the table that results from applying an INTERSECT relational operator to the tables shown**

BOOTH_PRODUCT	BOOTH_PRICE
Energy Drink	2

   c. **Create the table that results from MACHINE DIFFERENCE BOOTH**

MACHINE_PRODUCT	MACHINE_PRICE
Chips	1.25
Chocolate Bar	1

Fig-2

Database name: Ch03_VendingCo

Table name: BOOTH

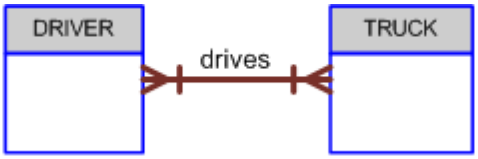
BOOTH_PRODUCT	BOOTH_PRICE
Chips	1.5
Cola	1.25
Energy Drink	2

Table name: MACHINE

MACHINE_PRODUCT	MACHINE_PRICE
Chips	1.25
Chocolate Bar	1
Energy Drink	2

3. **Suppose that you have the ERM shown in Fig-3. How would you convert this model into an ERM that displays only 1:M relationships? (Make sure that you draw the revised ERM.) (1 point):**

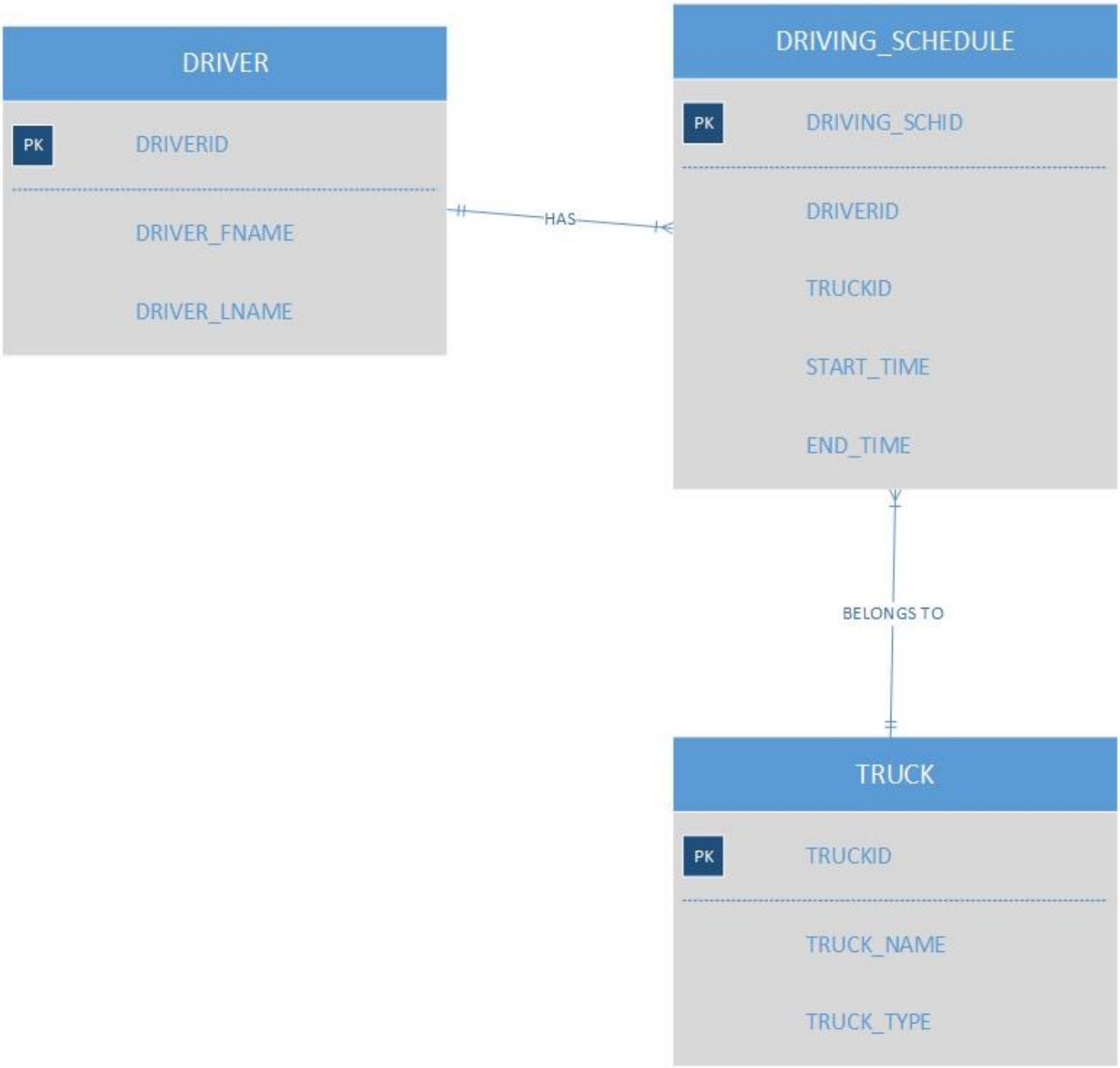
Fig-3



During some time interval, a DRIVER can drive many TRUCKs and any TRUCK can be driven by many DRIVERs

One to M revised ERM

Crow’s Foot Notation



4. **Use the database composed of the two tables shown in Fig-4 to answer the following questions (1.5 points):**

Fig-4 – Theater Database Tables

Table name: DIRECTOR

Database name: Ch03_Theater

DIR_NUM	DIR_LNAME	DIR_DOB
100	Broadway	12-Jan-65
101	Hollywoody	18-Nov-53
102	Goofy	21-Jun-62

Table name: PLAY

PLAY_CODE	PLAY_NAME	DIR_NUM
1001	Cat On a Cold, Bare Roof	102
1002	Hold the Mayo, Pass the Bread	101
1003	I Never Promised You Coffee	102
1004	Silly Putty Goes To Washington	100
1005	See No Sound, Hear No Sight	101
1006	Starstruck in Biloxi	102
1007	Stranger In Parrot Ice	101

a. Identify the primary keys.

As for the table DIRECTOR, its primary key is DIR_NUM.
Then, PLAY_CODE is the primary key of table of PLAY.

b. Identify the foreign keys.

There is no foreign keys in table of DIRECTOR.
The attribute DIR_NUM in table of PLAY is the foreign key.

c. Create the ERM.

ANSWER:

Ch03_Theater

Crow’s Foot Notation