ASSIGNMENT # 1
ACADEMIC YEAR 2019-2020/EVEN SEMESTER (201902)

SUBJECT	: DATABASE SYSTEM
LECTURER	: R. B. WAHYU
STUDY PROGRAM	: INFORMATION TECHNOLOGY
DUE DATE	: FEBRURY 23, 2020

Students are to use proper English and required to write neatly and clearly.

Questions:

1. Describe in your own words the meaning of the following terms and please provide several examples in illustrating the meaning of the terms of data, information, database, and database management system! (15 Marks)

2. Describe in your own words the following terms: (15 Marks)
    a. data modeling and why data models are important;
    b. the basic data-modeling building blocks;
    c. What business rules are and how they influence database design;
    d. How the major data models evolved;
    e. About emerging alternative data models and the need they fulfill.

3. The following table represents a LECTURER relation data. (25 Marks)

ATTRIBUTE NAME	SAMPLE VALUE	SAMPLE VALUE	SAMPLE VALUE	SAMPLE VALUE
EMP_NUM	123	104	118	
PROF_RANK	Professor	Asst. Professor	Assoc. Professor	Assoc. Professor
EMP_NAME	Ghee	Rankin	Ortega	Smith
DEPT_CODE	CIS	CHEM	CIS	ENG
DEPT_NAME	Computer Info. Systems	Chemistry	Computer Info. Systems	English
PROF_OFFICE	KDD-567	BLF-119	KDD-562	PRT-345
ADVISEE	1215, 2312, 3233, 2218, 2098	3102, 2782, 3311, 2008, 2876, 2222, 3745, 1783, 2378	2134, 2789, 3456, 2002, 2046, 2018, 2764	2873, 2765, 2238, 2901, 2308
COMMITTEE_CODE	PROMO, TRAF, APPL, DEV	DEV	SPR, TRAF	PROMO, SPR, DEV
JOURNAL_CODE	JMIS, QED, JMGT		JCIS, JMGT	

    a. Please propose new tables for the for the LECTURE database. For each table, identify the primary key and the foreign key(s). If a table does not have a foreign key, just write None; Note: You might have to create **additional** attributes to define the proper PKs and FKs. Make sure that all of your attributes conform to the naming conventions

b. Create a Crow's Foot ERD for the database;
c. Show that all tables conform too 3NF;
d. For each table, write down the data based on your new design!

4. All of you must be familiar with university activities and environment. So please design database for a **LIBRARY** university system that at leat has 4 entities involved and for the 4 entities please do the following: (25 Marks)
   a. For each table, identify the primary key and the foreign key(s). If a table does not have a foreign key, just write None;
   b. Create a Crow's Foot ERD for the database;
   c. Show that all tables conform to 3NF;
   d. For each table, write down at least 10 (ten) tuples data!

5. The following picture shows a possible schema of an LECTURER database. Please describe several defeciencies that you think in the table and propose your solution! (Marks 20)

ID	*name*	*dept_name*	*salary*	*course_id*	*sec_id*	*semester*	*year*
10101	Srinivasan	Comp. Sci.	65000	CS-101	1	Fall	2009
10101	Srinivasan	Comp. Sci.	65000	CS-315	1	Spring	2010
10101	Srinivasan	Comp. Sci.	65000	CS-347	1	Fall	2009
12121	Wu	Finance	90000	FIN-201	1	Spring	2010
15151	Mozart	Music	40000	MU-199	1	Spring	2010
22222	Einstein	Physics	95000	PHY-101	1	Fall	2009
32343	El Said	History	60000	HIS-351	1	Spring	2010
33456	Gold	Physics	87000	*null*	*null*	*null*	*null*
45565	Katz	Comp. Sci.	75000	CS-101	1	Spring	2010
45565	Katz	Comp. Sci.	75000	CS-319	1	Spring	2010
58583	Califieri	History	62000	*null*	*null*	*null*	*null*
76543	Singh	Finance	80000	*null*	*null*	*null*	*null*
76766	Crick	Biology	72000	BIO-101	1	Summer	2009
76766	Crick	Biology	72000	BIO-301	1	Summer	2010
83821	Brandt	Comp. Sci.	92000	CS-190	1	Spring	2009
83821	Brandt	Comp. Sci.	92000	CS-190	2	Spring	2009
83821	Brandt	Comp. Sci.	92000	CS-319	2	Spring	2010
98345	Kim	Elec. Eng.	80000	EE-181	1	Spring	2009

   a. Please propose new tables for the for the LECTURE database. For each table, identify the primary key and the foreign key(s). If a table does not have a foreign key, just write None; Note: You might have to create **additional** attributes to define the proper PKs and FKs. Make sure that all of your attributes conform to the naming conventions
   b. Create a Crow's Foot ERD for the database;
   c. Show that all tables conform too 3NF;
   d. For each table, write down the data based on your new design!

Good luck