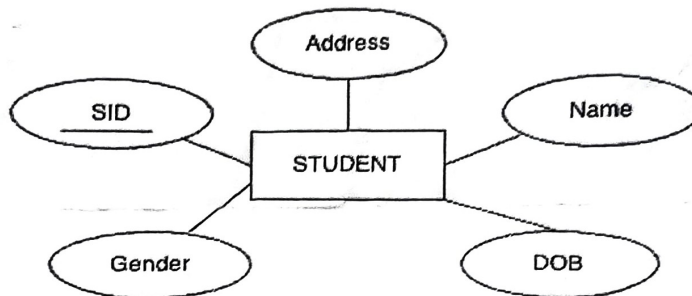# CS4.301: Data and Applications (Monsoon 2022)
Quiz - 2

Time: 45 minutes

Maximum Marks: 22

1. List down 3 differences between Primary and Foreign keys. (3)

2. Define and give an example of an Artificial key. (2)

3. Using the entity type described below, answer the following questions.

   a. Which of the following can be a superkey of the entity type depicted above?
      i. {DOB, Address}
      ii. {SID}
      iii. {Name, Address, SID}
      iv. {DOB, Gender}
   b. Calculate the number of superkeys possible and list down atleast 8 of them.

   (2+4)

4. A relation can have one or more attributes that take distinct values. Any of these attributes can be used to uniquely identify the tuples in the relation. Such attributes are called _____ key.
   (a) Primary
   (b) Candidate
   (c) Composite
   (d) Foreign

   (1)

5. Consider the following relations for a database that keeps track of student enrollment in courses and the books adopted for each course. Specify the foreign keys for this schema, stating any assumptions you make.

STUDENT(Ssn, Name, Major, Bdate)
COURSE(Course#, Cname, Dept)
ENROLL(Ssn, Course#, Quarter, Grade)
BOOK_ADOPTION(Course#, Quarter, Book_isbn)
TEXT(Book_isbn, Book_title, Publisher, Author)

(4)

6. For a given relational database schema, the referential integrity constraints and its initial state is given below. Discuss all integrity constraints (if any) that will be violated by the following operations.

users				orders			books		
user_id	email	name		order_no	user_id	product_sku	product_sku	title	price
10	sadio@example.com	Sadio		93	11	123	123	Aurora	15
11	mo@example.com	Mohamed		94	11	789	456	Blind Lake	10
12	rinsola@example.com	Rinsola		95	13	789	789	Invisible Plan	25
13	amalie@example.com	Amalie		96	10	101	101	The Sparrow	15

a. INSERT <97, 14, 456> INTO orders
b. INSERT <412, 10, 101> INTO orders
c. DELETE tuple from books WHERE product_sku = 456
d. DELETE tuple from books WHERE product_sku = 101
e. MODIFY the product_sku attribute of the orders tuple with order_no = 96 to 456
f. MODIFY the user_id attribute of the orders tuple with order_no = 94 to 14

(6)