

Quiz1(Solution)

Database Systems CE 373/ CS 355 (L2)

Fall 2023

Student Name: _____

Student ID: _____

Question 1

(2 points)

Identify whether the following statements are true or false:

- a. Under the DBMS-based approach, application programs are independent of any future changes in the file format used for data storage. (True)
- b. If K is a superkey for a relation schema, any subset of K is also a superkey. (False)

Question 2

(2 points)

A university employs the following format for Student ID: AA-YYYY-NUM
where

AA is an abbreviation of the student's major

YYYY is the year student enters the university.

NUM is a number in the range: 101-999

However, NUM is not unique across majors. For example, two students in CS and EE can have the student IDs: CS-2023-205 and EE-2023-205.

Consider the following relation schema:

student (student-id, major, year-of-entry, date-of-birth)

What is the primary key of this relation?

{student-id}

Question 3

(4 points)

Consider the following database schema:

Item (ItemName, VendorName, Price)

Customer (CustomerCode, CustomerName, Address)

Vendor (VendorName, ContactPerson, Address)

Order (OrderNo, CustomerCode, ItemName, VendorName, OrderDate)

Identify whether the following statements are true/false:

- a. {OrderNo} is a candidate key. (True)
- b. {OrderNo, CustomerCode} is a superkey. (True)
- c. {OrderNo, CustomerCode} is a candidate key. (False)
- d. {ItemName} is a candidate key. (False)

Question 4

(2 points)

Consider the following database schema:

department (dept-name, program-director, number-of-students)

instructor (ID, name, dept-name)

{dept-name} is a foreign key from relation *instructor* to relation *department*.

Consider the following database instance:

- Identify all the tuples that violate either primary key or foreign key constraints by circling them.
- For each violation, identify the type of violation (primary key constraint / foreign key constraint).
- Write down the total number of violations of each type.

dept-name	program-director	number-of-students
SDP	DrAbdulSamad	125
CS	DrAbdulSamad	50
EE	DrAamirHasan	50
PHYSICS	DrAnzarKhaliq	50

ID	name	dept-name
108	DrAnzarKhaliq	EE
503	DrAamirHasan	EE
102	DrAbdulSamad	CS
121	DrAbdulSamad	CS

There are no primary key and foreign key violations.