2 Normalisation (Tutorial 5)

Started: 12 Oct at 20:58

Quiz instructions

Purpose

Implementing databases in a DBMS requires for the logical design to be translated into a physical design with entities, attributes and relationships.

This is an individual assessment worth 10% of your final mark.

Unit learning outcomes

1. Apply a design thinking approach to understand and solve a stakeholder problem.

3. Apply ethical, professonal and technical considerations in the development of the project (data management) solution.

5. Identify project-related skills requirements, locate suitable resources and acquire the appropriate skills mostly independently.

Graduate Attributes

- Communication 1 - Verbal communication
- Digital literacies 1 – Information literacy
- Digital Literacies 2 – Technical literacy

Submission Requirements

These activities should be completed as **part of tutorial 5**. You are **required to come to the tutorial to answer potential questions** about it. The tutor **may not mark it** in your absence. The submission is due after the tutorial of week 6, to give you extra time to complete the activities if needed.

Question 1 3 pts

This example describes a list of zoo animals and their current accommodation.

name	species	gender	enclosure	enclosureType	enclDesc	staffID	staffName
Jeeby	Chimpanzee	M	1	1	Outside tall	129	Judy
Marge	Rhino	F	2	2	Outside wide	129	Judy
Selma	Giraffe	F	3	1	Outside tall	129	Judy
Toby	Monitor	M	5	3	Terrarium	253	Tom

The columns explained:

- name: Name of the animal
- species: Species of the animal
- gender: Male / female
- enclosure: Number of the enclosure the animal is kept in
- enclosureType: Number of the type of enclosure that helps decide which animal it suits
- enclDesc: Enclosure description. Explains the number of the type of enclosure - each number has one description.
- staffID: Number of the staff who is responsible for the animal
- staffName: Name of the staff who is responsible for the animal

Rules

- Each enclosure can only be of one type.
- Two or more animals can share an enclosure if there is space and the animals get along.
- staffID is a unique identifier of a person.
- One staff is responsible for each animal.

Determine if this table is in first, second or third normal form. Give reasons.

Edit View Insert Format Tools Table

12pt Paragraph

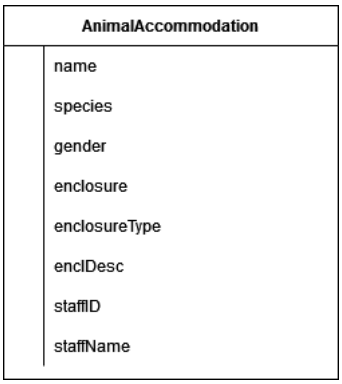
The table is in second and third normal form. It in the second normal form because enclDesc column is functiionally dependent on the enclosureType which is part of the primary key. Moreover, it also is in third normal form because it also satisfies the second normal form and the staffName colmun is functionally dependent on the staffID which is part of the primary key.

p 64 words

Question 2

5 pts

In its original form, the table can be represented in ER notation as follows:



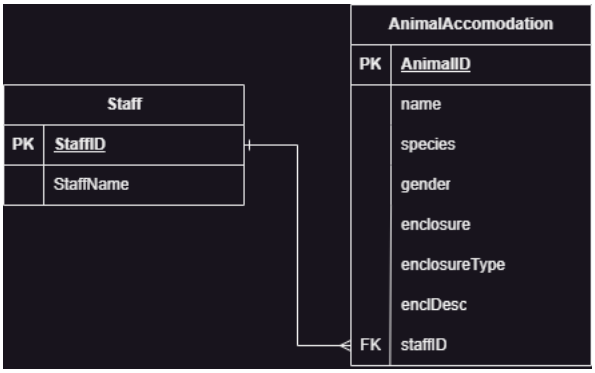
Determine the primary keys and create a diagram that is in second, but not third normal form. Upload the diagram.

Edit View Insert Format Tools Table

12pt Paragraph

Primary Keys: StaffID (Staff table), AnimalID (AnimalAccomodation)

Note: PK = Primary Key, FK = Foreign Key



p 16 words

Question 3

2 pts

Adam Wilbert provides the following solution to a many-to-many relationship problem in his video **Create junction tables** (https://www.linkedin.com/learning/learning-relational-databases-2/create-junction-tables) :

Students

StudentID(PK)	FirstName	LastName	...
700	Cassidy	Lamb	...
701	Sylvester	Gardner	...
702	Shellie	Hobbs	...

1..1 — 0..N

StudentsCourses

StudentID (PK +)	CourseID (PK+)	FinalGrade	...
701	CHEM101	A	...
701	PHYS101	B	...
702	PHYS101	A	...

0..N — 1..1

Courses

CourseID (PK)	CourseName	InstructorID	...
CHEM101	Chemistry	54	...
PHYS101	Physics	13	...
STAT200	Statistics	95	...

Can this data model record repeating enrolments of the same student in the same course? Assume a student fails a course and has to repeat it. Do you have to change anything about this model to enable recording multiple enrolments in the same course by the same student?

Describe your changes or upload the table(s) affected.

Edit View Insert Format Tools Table

12pt Paragraph

This model don't need to get any changes such as adding more table. This model can record repeating enrollments of the same student in the same course because it has a composite primary key of StudentID and CourseID. This mean that each row in the table represents a unique enrollment of a student in a course, so if a student enrolls in the same course multiple times, there will be a seperate row in the table for each enrollment. The FinalGrade column in the StudentsCourses table can be used to track the student's grade for each enrollment. If a student retakes a course, their new grade will stored in the FinalGrade column for the corresponding row in the StudentCourses table. Example of how StudentCourses table can be used to record repeating enrollments of the same student in the same course after the student has failed once.

StudentID	CourseID	FinalGrade	Date	---
103809048	COS20031	F	12/10/2022	---
103809048	COS20031	A	25/04/2023	---

The first row in the table shoes that the student with the ID 103809048 enrolled in the course COS20031 and received a fail grade F then the next row shows that the same student has enrolled this course again and gain A grade and it also can use to track other information about the enrollments such as the date time and attendance record.

p

2

221 words

Saved at 22:37 Submit quiz