IS-201 A19, general information

Course code: IS-201
Course name: Data Modelling and Database Systems

Date: 04.12.19
Duration: 4 hours

Resources allowed: Dictionary

Notes: Attempt all the questions.

The professors sometimes ask for exam answers to be used for teaching purposes, but in order for this to take place, the university needs your consent.
Do you grant the University of Agder permision such permission?
Select one alternative

- Yes
- No

1 IS-201 A19, problem 1 (20%)

Basic database concepts

a) What is cardinality in data modeling? Explain with examples. (5 marks)
b) What is unary relations in ER model? Illustrate your answer with an example. (5 marks)
c) When is a database in third normal form? Illustrate your answer with an example. (5 marks)
d) What are the types of attributes in ER model? Illustrate your answer with an example. (5 marks)

Fill in your answer here

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Words: 0

2 IS-201 A19, problem 2 (20%)

E-R modellering

Read the task carefully. Then draw an E-R diagram for the following case.

The library provides books to borrowers. Each book is described by title, edition, and year of publication, and is uniquely identified using the ISBN. Each borrower is described by his or her name and address and is uniquely identified using a borrower number. The library provides one or more copies of each book and each copy is uniquely identified using a copy number, status indicating if the book is available for loan, and the allowable loan period for a given copy. A borrower may loan one or many books, and the date each book is loaned out and is returned is recorded. Loan number uniquely identifies each book loan. (20 marks)

Fill in your answer here

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Words: 0

3 IS-201 A19, problem 3 (20%)

Normalization

1. Describe why the following table is not in 3NF. (5 marks)
2. Convert the following table into 3NF. (15 marks)

leaseNo	bannerID	placeNo	fName	lName	startDate	finishDate	flatNo	flatAddress
10003	B017706	78	Jane	Watt	01/09/2011	30/06/2011	F56	34 high street, paisley
10259	B017706	88	Jane	Watt	01/09/2011	30/06/2012	F78	111 storrie road, paisley
10364	B013399	89	Tome	Janes	01/09/2011	30/06/2012	F78	111 storrie road, paisley
10566	B012124	102	Karen	Black	01/09/2011	30/06/2012	F79	120 lady lane, paisley
11067	B034511	88	Steven	Smith	01/09/2011	30/06/2013	F78	111 storrie road, paisley
11169	B013399	78	Tom	Jones	01/09/2012	30/06/2013	F56	34 high street, paisley

Fill in your answer here

Format

Words: 0

4 IS-201 A19, problem 4 (40%)

SQL construction

Consider the following relations:
Student(***Snum*****,** Sname, Major, Year, Age)
Class(***Cname*****,** CTime, Room, *fID*)
Enrolled(*Snum*, *Cname*)
Faculty(***fID***, Fname, Deptid)

Type the following queries in SQL:

1. Create tables. (15 marks)
2. Find the names of all Juniors (Year = 'First') who are enrolled in a class. (5 marks)
3. Find the names of all classes that meet in room R128. (5 marks)
4. Print the Year and the average age of students for that Year, for each Year (First, Second, Third). (5 marks)
5. Find the names of students who are not enrolled in any class. (5 marks)
6. Create a view to display Snum, Cname, and Fname. (5 marks)

Fill in your answer here

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