

OLLSCOIL NA hÉIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY

Semester II Examinations 2002 - 2003

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2BI1: Second Year Industrial Engineering & Information Systems

2BJ1: Second Year Management Engineering with Language

IE213: Database Applications

Examiners:

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Prof. J. Sheil

Mr. G. Lupton

Answer **three** questions.

Time allowed: **Two** hours

No. Pages: Cover + 3

Department: Industrial Eng

Q1

(a) In terms of relational database systems, define the following

- relational database
- key points in database design
- primary key
- record
- table

(5 marks)

(b) Explain referential integrity. What are the three rules of referential integrity. (5 marks)

(c) List three advantages of using databases vs. spreadsheets. Give a brief description of each advantage. (3 marks)

(d) In terms of Entity-Relationship model define

- what a relation is
- the degrees of cardinality (give an example in each case)

(4 marks)

Q2

(a) In the context of relational database modeling why use normalization (outline what normalization does). (2marks)

(b) What are the rules for 1st, 2nd and 3rd normal forms. (5 marks)

(c) What is functional dependency (1 marks)

(d) Normalize the file below to third normal form. (9 marks)

Unnormalised database

Branch	Institution	Course No	Year Number	No. Students	UG/PG
Engineering	University A	1257	1	200	UG
			2	200	UG
			3	400	PG
Science	University B	7689	1	800	UG
			2	900	UG
			3	700	PG

Q 3

- (a) What does an Entity-Relationship model define. (2 marks)
- (b) List possible issues with many-to-many relationships. How can you solve these issues, give an example. (5 marks)
- (c) Case study below. List entities. Draw ER diagram. (10 marks)

A hospital is divided into several units. Each unit has one consultant in charge. Consultants have teams made up of doctors. Doctors report to one consultant. Depending on the status of a patient they can be seen by consultants from different units, but stay in the unit they initially were admitted to. Nurses do not report to Consultants but are part of their specific unit. Finance and Human Resource personnel are independent of units and work for the hospital.

Q4

- (a) Describe the following Microsoft Access objects and their uses

- table
- modules
- form
- report
- macro

(10 marks)

- (b) Outline the steps involved in setting up a Microsoft Access table. (4 marks)

- (c) What are field properties in a Microsoft Access table. (3 marks)

Q5

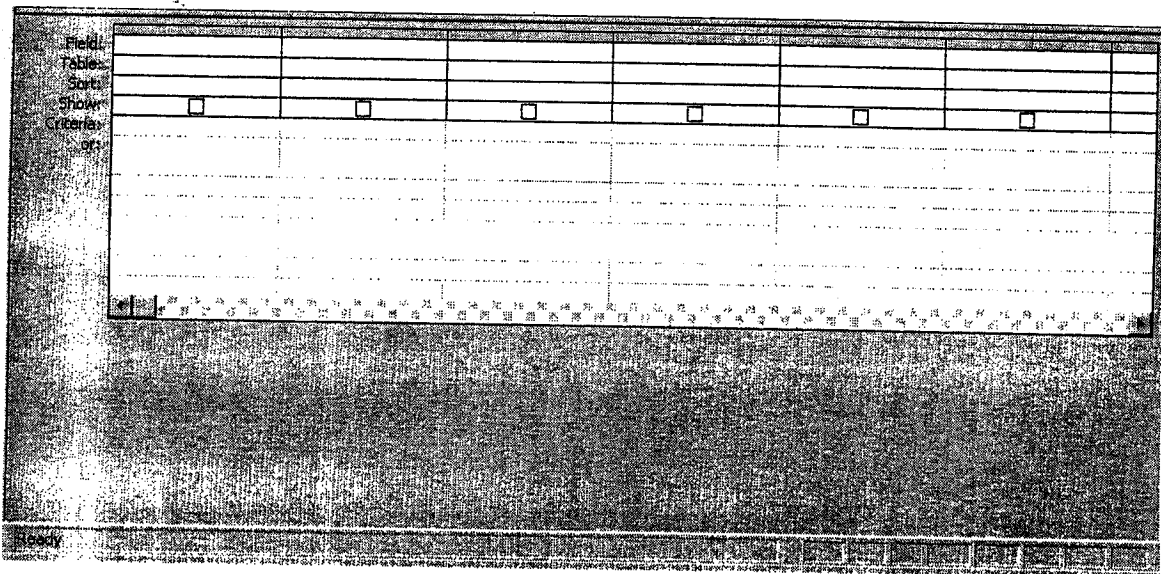
(a) What are the advantages of setting up relationships between tables in Microsoft Access. Outline steps involved in setting up table relationships and the criteria required. (5 marks)

(b) List the 5 main functions of the query object. (5 marks)

(c) Refer to the blank query window below. Outline what the following components represent.

- field
- table
- sort
- show
- criteria

(5 marks)



(d) What is a parameter query

(2 marks)