

SOUTH EASTERN UNIVERSITY OF SRI LANKA

FOURTH YEAR EXAMINATION IN BACHELOR OF BUSINESS ADMINISTRATION &
COMMERCE – 2006/2007

SEMESTER – I, DECEMBER 2007

MIS 4113 – ADVANCED RELATIONAL DATA BASE MANAGEMENT
SYSTEMAnswer **all** questions.

Time: 03 h ours

01.

Table 1

Customer ID	Name	Street Address	City	Zip Code	Phone	e-mail
112304	John Brown	123 Straight Lane	Paradise	MI	49555	johnb@heaven.net
134056	Tim Smith	321 Curved Ave	Hollywood	MD	10255	tims@eastnet.net
234902	Sue Jones	213 Hill Road	Knoxville	TN	23555	suej@nicenet.net
092387	George Abernathy	555 North Road	Smalltown	FL	67555	georgea@mynet.net
187462	Tom Jenkins	666 South Lane	Cold	MN	55555	tomj@networks.com
108976	Kim Adams	456 Peachtree Lane	Atlanta	GA	54555	kima@bestnet.net
059385	Chris Christopher	859 East Road	Nicetown	MS	45555	chrisc@bignet.com
140763	Jim Thompson	307 West Ave	Bigcity	ND	65555	jimt@fastnet.net

Table 2

Employee ID	Project ID	Hours _ Worked
01	01	200
01	02	120
02	01	50
02	03	120
03	03	100
03	04	200

Table 3

Order ID	Customer ID	Sub total	Tax	Total
190389575	234902	16.16	0.82	16.98
109748230	187462	2.37	0.12	2.49
208949023	059385	104.23	5.22	109.45
103792034	187462	40.00	2.00	42.00
123048938	134056	10.00	0.50	10.50

- i) Explain the meaning of DB, DBMS and RDBMS.
- ii) Explain the following key constrains.
 - Primary Key
 - Foreign Key
 - Unique Key
 - Composite Key
- iii) Using the above tables, give examples (column names) for each constrains (mention above).
- iv) What is Normalization?
- v) Write a SQL statement to display all orders for customer id = '059385'

(20 marks)

02. i) Explain the following terms briefly:
- Entity
 - Attribute
 - Relationship
 - One-to-many relationship
 - Many-to-many relationship
- ii) Consider the following information about a university database.
- Professors have an SSN, a name, an age, a rank and a research specialty.
 - Projects have a project number, a sponsor name (e.g., NSF), a starting date, and ending date and a budget.
 - Graduate students have an SSN, a name, an age and a degree program (e.g., M.S. or Ph.D.)

- Each project is managed by one professor (known as the project's principal investigator)
- Each project is worked on by one or more professor (known as the project's co- investigator)
- Professors can manage and or work on multiple projects.
- Each project is worked on by one or more graduate students (known as the project's research assistants)
- When graduate students work on a project, a professor must supervise their work on the project. Graduate students can work on multiple projects, in which case they will have a (potentially different) supervisor for each one.
- Departments have a department number, a department name, and a main office.
- Departments have a professor (known as the chairman) who runs the department.
- Professors work in one or more departments, and for each department that they work in , a time percentage is associated with their job.
- Graduate students have one major department in which they are working on their degree.
- Each graduate students has another, more senior graduate student (known as a student advisor) who advises him or her on what courses to take.

Design and draw an ER diagram that captures the information about the university. Use only the basic ER model here; that is entities, relationships, and attributes. Be sure to indicate any key constraints.

(20 marks)

03. Emp (*emp_id*: **integer**, *emp_name*: **string**, *age*: **integer**, *salary*: **real**)

Works(*emp_id*: **integer**, *dept_id*: **integer**, *pct_time*: **integer**)

Dept(*dept_id*: **integer**, *dept_name*: **string**, *budget*: **real**, *manager_id*: **integer**)

- Give an example of a foreign key constraint that involves the dept relation. What are the options for enforcing this constraint when a user attempts to delete a Dept tuple?
- Define the Dept relation in SQL so that every department is guaranteed to have a manager.

- iii) Write an SQL statement to add “John Doe” as an employee with emp_id = 101, age = 32 and salary = 15,000
- iv) Write an SQL statement to give every employee a 10 percent raise.
- v) Write an SQL statement to delete the “Toy” Department. Given the referential integrity constraints you chose for this schema, explain what happens when this statement is executed.

(20 marks)

- 04.
- i) What are the differences among batches, stored procedures, and triggers?
 - ii) Describe the purpose and reasons for using stored procedures.
 - iii) Define what a view is and describe the functionalities that views support.
 - iv) Explain the following terms briefly:
 - Authentication
 - Authorization

(20 marks)

- 05.
- i) Identify the characteristics of a transaction
 - ii) Define the various types of transactions
 - iii) Use Transact – SQL to start and stop a transaction
 - iv) What are the guidelines should follow to code efficient transactions

(20 marks)

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