

SOUTH EASTERN UNIVERSITY OF SRI LANKA

THIRD YEAR EXAMINATION IN BACHELOR OF BUSINESS ADMINISTRATION AND
COMMERCE-2009/2010

SEMESTER - 11, FEBRUARY -2012

MIS 3206 - DATABASE DESIGN AND DEVELOPMENT

Answer all questions

Time: 3 Hours

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1.

i) What do you mean by a database? Why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system?

(9 Marks)

ii) Explain the difference between Internal, External and Conceptual schemas. How are these different schema layers related to the concept of logical and physical data independence?

(8 Marks)

iii) Describe the following terms briefly

- a) A data model
- b) Relational data model
- c) Semantic data model

(3 Marks)

(Total 20 Marks)

2.

i) Explain the following terms briefly: Attribute, Relationship Set, Weak Entity Set and Overlap Constraint.

(2 Marks)

ii) Draw an ER diagram that captures the following information and create a Database.

- In Royal Educational Institute, there are several departments and students belong to one of them. Each department has a unique department number, a name, a location, phone number and is headed by a professor.
- Professors have a unique employee Id, name, phone number. We like to keep track of the following details regarding students: name, unique roll number, sex, phone number, date of birth, age and one or more email addresses.
- Students have a local address consisting of the hostel name and the room number. They also have home address consisting of house number, street, city and PIN. It is assumed that all students reside in the hostels.
- A course taught in a semester of the year is called a section. There can be several sections of the same course in a semester; these are identified by the section number. Each section is taught by a different professor.
- Students enroll for several sections in a semester. Each course has a name, number of credits and the department that offers it.

(11 Marks)

iii) What is Database Normalization? Explain and perform 1NF, 2NF, 3NF for the following ORDER table.

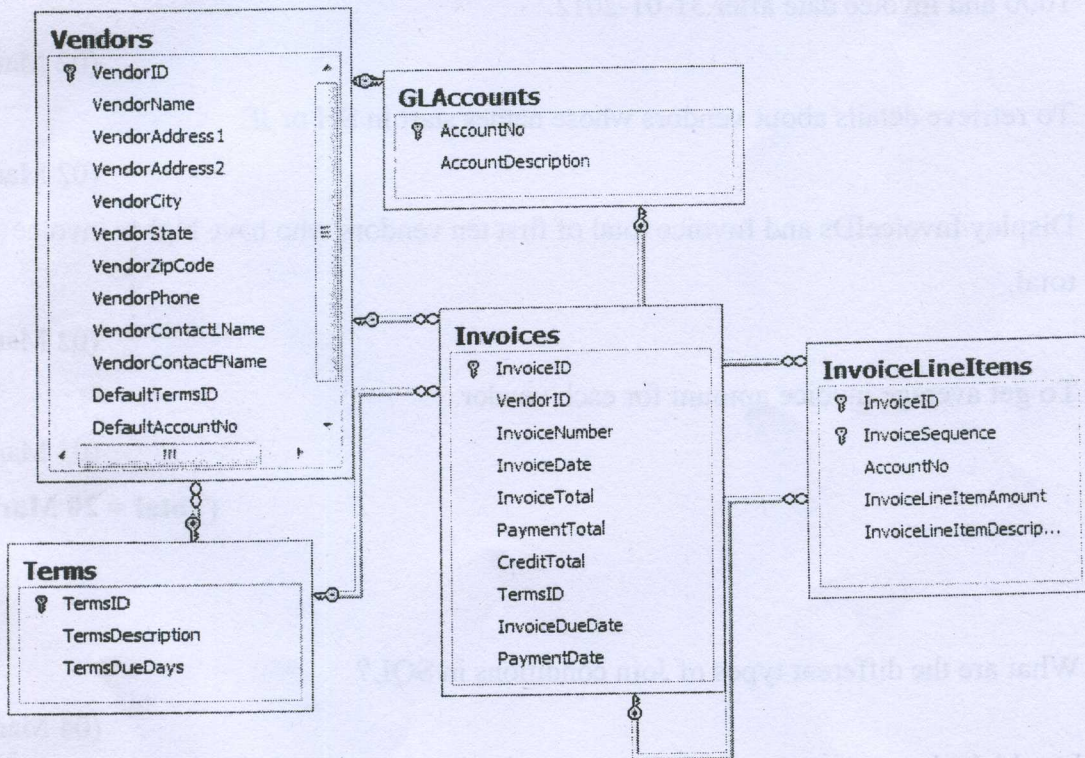
Order _id	Orde_ date	Cust _id	Cust _nam e	Cust_ addr	Cust_ city	Item_ id	Item_ desc	Item _qty	Item_ price	Total- Price
115	7/1/201 2	055	John	47, Ma in Street	Glasgo w	584	Blue Freen	04	15	60
115	7/1/201 2	055	John	47, Ma in Street	Glasgo w	147	Red Freen	125	10	1250
115	7/1/201 2	055	John	47, Ma in Street	Glasgo w	521	Yello w Freen	500	12	6000
116	8/1/201 2	048	Reel	85, Ma in Street	Washin gton	478	Red Freen	450	10	4500

116	8/1/2012	048	Reel	85, Main Street	Washington	125	Green Freen	600	11	6600
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(7 Marks)

(Total 20 Marks)

03. Use the database diagram for Accounts Payable database given below to answer the questions from 03 through 05



Write SQL statements for the followings.

- a. To get detail about InvoiceID, AccountNo and Invoice line item description. (02 Marks)
- b. To get details about the invoices of which the InvoiceID 72. (02 Marks)

- c. To get details from Invoices table sorted by InvoiceTotal decending order. (02 Marks)
- d. Compute the age of an invoice and display the Invoice date, today's date and Age.
Hint: Age can be calculated by using days different between Invoice date and today's date (03 Marks)
- e. Display all the names and vendor state of vendors who are not from VendorState of CA, NV, OR. (02 Marks)
- f. To execute all invoice details from invoice table which have Invoice Total more than 1000 and Invoice date after 31-01-2012. (02 Marks)
- g. To retrieve details about vendors whose names start in SH or JE (02 Marks)
- h. Display InvoiceIDs and Invoice total of first ten vendors who have higher invoice total. (02 Marks)
- i. To get average invoice amount for each vendor. (03 Marks)
- (Total = 20 Marks)**

04.

- a. What are the different types of Join conditions in SQL? (04 Marks)
- b. In which clauses you can use sub query, write down a query for each clause. (06 Marks)
- c. Briefly explain the EXISTS and NOT NULL (03 Marks)
- d. Write down the sub query that equals to following query.

```
SELECT InvoiceNumber, InvoiceDate, InvoiceTotal
FROM Invoices JOIN Vendors
```

ON Invoices.VendorID = Vendors.VendorID
WHERE VendorState = 'CA'

(04 Marks)

e. Write down the SQL statement to create an Invoices table.

(03 Marks)

(Total = 20 Marks)

05.

Briefly explain the followings.

- i) Conceptual schema
- ii) Data independence
- iii) With rollup and with ties
- iv) Is null
- v) Data Types
- vi) WHERE InvoiceTotal > ALL
- vii) WHERE InvoiceTotal < ANY
- viii) Cross Join

(Total = 20 Marks)