FINAL
Examination Paper
(COVER PAGE)

Session : August 2015
Programme : Diploma In Information And Communication Technology (DICTN)
Course : ICT1104: Database Management
Date of Examination : December 7, 2015
Time : 5.00pm – 7.00pm Reading Time : Nil
Duration : 2 Hours

Special Instructions :
Answer any FOUR (4) questions.

Materials permitted : Nil
Materials provided : Nil

Examiner(s) : Mr. Koo Lee Chun, and Mr. Tang Yang Tze
Moderator : Ms. Noor Hasrina

This paper consists of 5 printed pages, including the cover page
This paper consists of SIX (6) questions. Answer any FOUR (4) questions in the answer booklet provided. All questions carry equal marks.

**Question 1**

(a) Define data, information and database.  

   (6 marks)

(b) Explain what is meant by DBMS and give THREE (3) examples of commercial DBMS.  

   (5 marks)

(c) Briefly describe any THREE (3) people/personnel involving in database environment.  

   (6 marks)

(d) Briefly explain FOUR (4) advantages of database system compare to file-based system.  

   (8 marks)

**Question 2**

(a) List and explain THREE (3) basic types of relationships in database model. Support your answer with suitable examples.  

   (6 marks)

(b) Define derived attributes and briefly explain ONE (1) advantage and ONE (1) disadvantage of no storing derived attributes physically.  

   (5 marks)
(c) Based on the following scenario, create an Entity-Relationship Diagram (ERD).

When a new student is registered, a new ID will be generated and student data (name, IC, address, contact, status) will be recorded. A student can take one or more courses in a semester. A student can retake a course in another semester. The course information includes course code, title, description, credit, category, and status. After registration is completed, the student has to make full payment for the semester. The payment details (payment no, date, amount, payment type, amount, student ID, semester) will be recorded. Upon the completion of a semester, the student will get a result (grade) for every course.

(14 marks)

Question 3

(a) Define the following terms in relation to database concepts:
(i) Primary Key
(ii) Foreign Key
(iii) Candidate Key

(6 marks)

(b) Update anomalies are potential problems in relations without normalization that contain redundant data. Briefly explain THREE (3) categories of update anomalies.

(6 marks)

(c) Given the below relation:

ORDER(order#, customer#, name, address, orderdate{product#, description, quantity, unitprice})

Normalize the relation to 3NF. Show your working steps clearly (including functional dependencies and explanation).

(13 marks)
Question 4

(a) Explain the use of the following field properties in Microsoft Access. For each, give a suitable example.

(i) Default Value
(ii) Validation Rule
(iii) Input Mask

(9 marks)

(b) Based on table given, answer question 4 (b) (i) – (ii)

<table>
<thead>
<tr>
<th>Date</th>
<th>Name of Client</th>
<th>Product</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-12-08</td>
<td>Peter</td>
<td>Bike</td>
<td>2</td>
<td>$324.32</td>
</tr>
<tr>
<td>2005-12-09</td>
<td>John</td>
<td>Ski</td>
<td>4</td>
<td>$234.90</td>
</tr>
<tr>
<td>2005-12-10</td>
<td>Mark</td>
<td>Boat</td>
<td>65</td>
<td>$456.98</td>
</tr>
<tr>
<td>2005-12-11</td>
<td>Louis</td>
<td>Ski</td>
<td>34</td>
<td>$34.98</td>
</tr>
<tr>
<td>2005-12-12</td>
<td>Mary</td>
<td>Boat</td>
<td>23</td>
<td>$234.00</td>
</tr>
<tr>
<td>2005-12-13</td>
<td>Peter</td>
<td>Bike</td>
<td>43</td>
<td>$375.45</td>
</tr>
<tr>
<td>2005-12-14</td>
<td>Louis</td>
<td>Bike</td>
<td>23</td>
<td>$375.45</td>
</tr>
</tbody>
</table>

(i) What is the total number of tuples?
(ii) List all the attributes and state the most suitable data type for each of them.

(6 marks)

(c) List FIVE (5) types of useful form controls. Briefly explain their usage.

(10 marks)

Question 5

(a) Briefly explain TWO (2) types of relational integrity in a relational database.

(5 marks)

(b) Identify FOUR (4) basic objects of Microsoft Access. Describe their purposes.

(12 marks)

(c) Database objects should be named with a consistent naming convention. Provide FOUR (4) restriction when naming a database object.

(8 marks)
Question 6

Consider the following relations:

- Video (videoID, movieID)
- Movie (movieID, name, filmType, dateRelease, rating)
- Loan (loanID, videoID, borrowerID, dateBorrowed, dateDue, charges)
- Borrowers (borrowerID, name, address, contactNo)

(a) Define the following request in design grid form (Query Design View)

(i) List all the movie information with rating more than 5 and sort the result based on movie name in descending order.

(ii) Create a parameter query to update the loan charges with 8% increased based on the loan id entered.

(iii) Create an parameter query to delete a borrower record from the Borrowers table based on the borrower ID entered.

(b) Write an SQL statement for the following:

(i) Display all loan information with due date in the month of Jan 2015

(ii) Insert a movie information for movie id 123

(iii) Update the movie name to “Beauty and the Beast” for movie id 456

~THE END~

ICT1104(F) August 2015