ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Computer Science)

Course: Database Applications (3579)

Level: Postgraduate   Semester: Spring, 2014
Total Marks: 100   Pass Marks: 40

ASSIGNMENT No. 1
(Units 1-4)

Note: All questions are compulsory. Each question carries equal marks.

Q.1 a) What is meant by data and information? Define and explain briefly databases and types of databases.

     b) What are the major benefits of the database approach?

Q.2 a) What are the main components of the database environment?

     b) Contrast the following terms:
         a. Entity; Relationship
         b. Candidate key; Primary key
         c. Entity type; Entity instance
         d. Generalization; Categorization
         e. Subtype; Supertype
         f. Degree; Cardinality

Q.3 a) The entity type Game has the following attributes: Home team, Visiting team, Date, Score and Attendance. Suggest a primary key, assuming that each team may play more than one home game with each other team, but never more than one on a given date.

     b) Draw an E-R diagram for the following situation:
     A company has a number of employees. The attributes of 'Employee' include Name, Address, Phone no., and date of Birth. The company has also several projects. Attributes of 'Project include Code, Description and Start date. Each employee may be assigned to one or more projects, or may not be assigned to a project. A project must have at least one employee assigned and may have several employees assigned.

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Q.4 Figure shows a class list for AIOU. Convert this user view to a set of 3NF relations. Assume the following:

a. A course has a unique title.
b. A student has a unique major.
c. An instructor has a unique location.

Allama Iqbal Open University			
Class List			
Spring 2011			
Course Code: 3400			
Course Title: .... Fundamentals of Computer			
Instructor Name: .... Imran Khalil			
Instructor Location: ...... R 106			
Student ID.	**Student Name**	**Major**	**Grade**
26212	Kashir	DB	A
23727	Asif	DB	C
27294	Hassan	SE	A
27368	Uzair	SE	B
…	…	…	…

Q.5 a) What do you mean by referential integrity? Give the basic rules for insertion and deletion that assure referential integrity.

b) What are important factors in selecting a file organization? Give a brief discussion on important file organizations.

ASSIGNMENT No. 2
(Units 5-8)

Total Marks: 100   **Pass Marks: 40**

Note: All questions are compulsory. Each question carries equal marks.

Questions 1 and 2 refer to the following tables.

Student (<u>Student ID</u>., <u>Student Name</u>, Major) <u>Course Code</u>, Course Title, Instructor Code.

Student ID	Student Name	Major
25316	Ali	CS
27264	Bilal	TE
28729	Ahmed	CS

Course Code	Course Title	Instructor Code
3408	Data Structure	152
920	Electronics	134
3579	Database Application	127

Registration (<u>Student ID</u>., <u>Course Code</u>, Grade)

Student ID	Course Code	Grade
25316	3408	A
27264	920	C
28729	3579	A
25316	3579	B
28729	3408	C
27264	3408	B

Instructor (<u>Instructor Code</u>, Instructor Name, instructor Location)

Instructor Code	Instructor Name	Instructor Location
127	Ahsan Iqbal	R 103
152	Waseem Sheikh	R 204
134	Nauman Hameed	R 301

Q.1 Write SQL retrieval commands for each of the following queries:
  a) Display the names of students who have Major 'TE'.
  b) Display the total number of students who got Grade 'B'.
  c) Display the Student ID., and Course Code of students who got Grade A.

Q.2 Write SQL commands for the following queries:
  a) Display the Instructor Location for instructor 'Ahsan Iqbal'.
  b) Display the 'Course Title" for the course having 3408 as 'Course Code'.
  c) Display the 'Course Title' and 'Course Code' of the course instructed by 'Waseem Sheikh'.

Q.3 a) Define physical database design. Name is main components. What are its major objectives?

b) Define logical database model. What are its types? What are the main steps in logical database design?

Q.4 a) What do you mean by items? Give list of form item types and their description.

b) What are the three primary components of a form?

Q.5 a) What do you mean by a form object type? Give list of different object types and their description.

b) Write down steps to create a simple form application to maintain information on students.

3579 (Old 3426) Data Base Applications

Recommended Books:
1) **Modern Database Management System, By Jeffery A. Hoffer**
2) **Oracle Developer/2000 by Michael Stowe**

Course Outlines:

Unit 1: **Database Foundation**
   a) Introduction, Data and Information, Components, Advantages
   b) Data Association, Entities, Keys and its Types, Attributes
   c) Data Associations, Data Structure Diagram

Unit 2: **E-R Model and Data Models**
   a) Basic Constructs (Symbols), Degree of Relationships, Cardinality, Gerund
   b) Modeling Time Dependent Data, Super Types, subtypes
   c) Hierarchical, Network, Relational, Comparison of all Data Models.
   d) Relation, Characteristics of Relation, Converting E-R Model Into Relation

Unit 3: **Normalization (1NF, 2NF, 3NF)**

Unit 4: **Data Base Design (Conceptual Design, Physical Design)**

Unit 5: **SQL**
   a) Introduction, Creating, Altering & Deleting Table
   b) Inserting, Updating & Deleting Rows, Querying The Tables
   c) SQL Functions
      1. Arithmetic, Group (Avg, Count, Max, Min, Sum)

2.   Date, Special Functions (In, Between, Like, Null)
d)   Managing Multiple Tables

Unit 6:   Introduction to Forms
a)   Form components, form Module, Blocks, Items, Objects, Object navigator
b)   Properties Window, Layout Editor

Unit 7:   Basic Form Design
a)   Using Wizard for Form Design, Customizing a Form
b)   Defining items
1.   Buttons, Check Boxes, Display Items, List Items, Radio Groups, Text items
c)   Creating LOV, Creating Master Detail Form

Unit 8:   Introduction to Report
a)   Report Design Considerations
b)   Report Objects
c)   Basic Report Design

Unit 9:   Case Study
Data Base Case Study (Mini Project)