

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

**WARNING**

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENT(S) BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

**Course: Databases-I (3410)**  
**Level: BS (CS)**

**Semester: Autumn, 2012**  
**Total Marks: 100**  
**Pass Marks: 50**

**ASSIGNMENT-1**

**Units: (1 – 4)**

*Note: All questions are compulsory and carry equal marks.*

- Q. 1 a) What is meant by databases? Define and explain briefly different types of databases.
- b) What are the main components of the database environment?
- Q. 2 Contrast the following terms:
- a) Entity; Relationship
  - b) Degree; Cardinality
  - c) Generalization; Categorization
  - d) Primary key; Foreign key
  - e) Subtype; Supertype
- 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.

- Q. 4 Figure shows a class list for AIOU. Convert this user view to a set of 3NF relations. Assume the following:
- An instructor has a unique location.
  - A student has a unique major.
  - A course has a unique title.

Allama Iqbal Open University Class List Autumn 2011			
<b>Course Code:</b> 3408			
<b>Course Title:</b> Data Structures			
<b>Instructor Name:</b> Asif Raza			
<b>Instructor Location:</b> R204			
Student ID.	Student Name	Major	Grade
25219	Ali	SE	A
23727	Faizan	DB	B
27264	Ahsan	SE	A
27368	Omer	DB	C
...	...	...	...

- Q. 5
- What do you mean by referential integrity? Give the basic rules for insertion and deletion that assure referential integrity.
  - What are important factors in selecting a file organization? Give a brief discussion on important file organizations.

## ASSIGNMENT-2

Units: (5 – 8)

**Total Marks: 100**

**Pass Marks: 50**

*Note: All questions are compulsory and carry equal marks.*

- Q. 1
- Define logical database model. What are its types? What are the main steps in logical database design?
  - Define physical database design. Name its main components. What are its major objectives?

Q. 2 Question refers to the following tables.

Student (Student ID., Student Name, Major)

<u>Student ID.</u>	<u>Student Name</u>	<u>Major</u>
25316	Ali	CS
27264	Bilal	TE
28729	Ahmad	CS

Course (Course Code, Course Title, Instructor Code)

<u>Course Code</u>	<u>Course Title</u>	<u>Instructor Code</u>
3408	Data Structure	I52
920	Electronics	I34
3579	Database Applications	I27

Registration (Student ID., Course Code, Grade)

<u>Student ID.</u>	<u>Course Code</u>	<u>Grade</u>
28716	3408	A
27264	920	C
28725	3579	A
25386	3579	B
23729	3408	C
29261	3408	B

Instructor (Instructor Code, Instructor Name, Instructor Location)

<u>Instructor code</u>	<u>Instructor Name</u>	<u>Instructor Location</u>
I27	Ahsan Iqbal	R103
I52	Waseem Sheikh	R204
I34	Nauman Hameed	R301

Write SQL retrieval commands for each of the following queries:

- Display the names of students who have Major 'CS'.
- Display the Student ID., and Course Code of students who got Grade C.
- Display the total number of students who got Grade 'A'.
- Display the 'Course Title' and 'Course Code' of the course instructed by 'Ahsan Iqbal'.
- Display the Instructor Location for instructor 'Waseem Sheikh'.

- Q. 3
- What do you mean by items? Give list of form item types and their description.
  - What do you mean by a form object type? Give list of different object types and their description.

- Q. 4
- Write down steps to create a simple form application to maintain information of employees of a company.
  - Explain briefly the four basic components of a report?

- Q. 5
- What do you mean by a report object navigator and object type? Give list of different report object types and their description.
  - Write down steps to create a tabular report to list information about employees of a company.

## **3410 Database-I**

**Credit Hours: 4 (3+1)**

### ***Recommended Book:***

*Modern Data Base Management by Jeffery A. Hoffer and Oracle Developer/2000*

### **Course Outlines:**

#### **Unit No. 1 Database Foundation**

Introduction, Data and Information, Components, Advantages, Data Association, Entities, Keys and Its Types, Attributes, Data Associations, Data Structure Diagram

#### **Unit No. 2 E-R Model**

Basic Constructs (Symbols), Degree of Relationships, Cardinality, Grund, Modeling time Dependent Data, Super Types, Subtypes

#### **Unit No. 3 Data Models**

Hierarchical, Network, Relational, Comparison of All Data Models, Relation, Characteristics of Relation, Converting E-R Model into Relation

#### **Unit No. 4 Normalization**

1NF, 2NF, 3NF

#### **Unit No. 5 Data Base Design**

Conceptual Design, Physical Design

#### **Unit No. 6 SQL Introduction**

Introduction, Creating, Altering & Deleting Table, Inserting, Updating, & Deleting Rows, Querying The Tables, SQL Functions (Arithmetic, Group (Avg, Count, Max, Min, Sum), Date, Special functions (In, Between, Like, Null)), Managing Multiple Tables

#### **Unit No.7 Introduction to Forms**

Form Components, Form Module, Blocks, Items, Objects, Object Navigator, Properties Window, Layout Editor

#### **Unit No. 8 Basic Form Design**

Using Wizard for Form Design, Customizing a Form, Defining Items (Buttons, Check Boxes, Display Items, List Items, Radio Groups, Text Items), Creating LOV, Creating Master Detail Form

#### **Unit No. 9 Introduction to Report**

Report Design Considerations, Report Objects, Basic Report Design