**Module 05 - Analyze data Interchange**



**Course Outcome**

At the end of this course, students will:

* Understand basic database concepts, including the structure an operation of the relational and non-relational data model, design principles, E-R diagrams, E-R modeling, data warehousing, client/server, and internet database environments
* Apply the concept of a database transaction and related database facilities, including concurrency control, journaling, backup and recovery, and data object locking and protocols.
* Analyze advanced database topics such as distributed database systems, data modeling techniques and the data warehouse.
* Evaluate administration and security issues, and three enterprise database management systems widely used by organizations.
* Create a database management and security plan for a database project.

**Core Concepts**

* Explain the SQL Functions and String Functions
* The Systems Development Life Cycle
* Planning, Analysis and Implementation
* Testing and Evaluation
* Data Analysis and Requirements
* Entity Relationship Modeling and Normalization

**Activities**

* The Muddiest Point
* Concept Test
* Discussion Board
* Hands-On Practice
* Programming Exercise
* Knowledge Check

## Required Reading

Negi, M. (2019). Fundamental of Database Management System. BPB Publications. (ISBN: 9789388176620)

* Chapter 6: SQL Operators

**Additional**

Manning, A. (2015). Databases for small business: essentials of database management, data analysis, and staff training for entrepreneurs and professionals. Apress. (ISBN: 9781484202784)

Coronel, C., & Morris, S. (2019). Database Systems: Design, Implementation, & Management. Cengage Learning. (ISBN: 9780357687536)

Silberschatz, A., Korth, H. F., & Sudarshan, S. (2019). Database System Concepts (7th Ed.). McGraw-Hill. (ISBN: 9780078022159)

# MP05: The Muddiest Point

## Q1:

 After reading the required reading, select only one key topic that you could not clearly understand or found confusing. If you understood everything and nothing needs further clarification, find one topic/concept that you found interesting. Briefly describe the muddiest point or the most interesting point. Your instructor will visit the collected topics and explain the muddiest topic(s) in class.

## Q2:

 What would be the source of database failure if the system detects deadlocks and aborts one of the transactions?

1. Software
2. Hardware
3. External factors
4. Transactions

# KC05: Knowledge Check

# ****Q1:****

Coding, testing, and debugging is belonging to what phases of SDLC?

1. Analysis
2. Maintenance
3. Implementation
4. Planning

# ****Q2:****

 Which of the following allows the assignment of access rights to specific authorized users?

1. Audit trails
2. Physical Security
3. Password security
4. Access rights

# ****Q3****

Which of the following does NOT belong to SDLC's Analysis Phase?

1. Detailed system specification
2. Logical System design
3. Existing system evaluation
4. User requirements

# ****Q4:****

Which of the following does NOT belong to Conceptual Design Stage?

1. Validate logical model integrity constraints
2. Entity Relationship modeling and normalization
3. Data analysis and requirements
4. Distributed database design

# ****Q5:****

What is NOT needed when defining a table's column?

|  |
| --- |
| The column's nullability |
| The column's alias |

# DB05: Discussion Board

#### Part 1 (Due Wednesday)

What is an entity cluster, and what advantages are derived from its use?

Please share your idea with the group with a minimum of 250 words.

#### Part 2 (Due Sunday)

To extend the discussion, first review the posts of your classmates. Then choose at least two of your classmates' posts and respond with thoughtful and substantive contributions. Answer any questions from your instructor.

# CT05: Concept Test

**Part 1 (Due Wednesday)**

Which of the following is true about the Log File? Justify your answer

a) It contains records rejected by SQL\*Loader

b) It contains filtered out records those did not match any record selection criteria specified in the control file

c) It contains a complete snapshot of the load process including details of any error(s) occurred during the load

d) It contains the data to be loaded

**Part 2 (Due Sunday)**  
Respond to **one** of your classmates by critiquing his or her choice and justification. You are not allowed to select the same classmate if you chose the peer last week. You can convince your peer with your answer if the peer's answer is different from yours. If both have the same answer, you can discuss your justification with your peer to reinforce your answer.

**How a Discussion Forum works:**  To post on the Discussion Forum, click the name of the forum then click on  **Create Thread**. Type a subject "CT05- Your first name and last name" and a message. Then  **Submit** your post.

**IS 456 IT Database Systems Management**

**Programming Exercise 4**

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## Task 1:

1. Create two tables name **contacts** and **groups** (each 5 columns), with contact\_id and group\_id columns as a **primary** and **foreign key** column.
2. Create a column named phone numbers and email addresses, and names

## Task 2:

1. INSERT values of 5 names, (with email addresses and phone numbers) into **contacts** table
2. Explicitly name columns
3. Then query the table again to make sure the INSERT was successful

## Task 3:

-- Update existing rows in contacts table, with new values:

*Johnson for contact\_id = 2*

## Task 4:

1. **Delete** rows in groups table where the **group\_ID** is **2**

2. **Truncate** the table

3. **Drop** the table

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# Hands-On Practice 05

SECTION 01: Aggregate Data

Database: world.db

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## -- Query #1

SELECT COUNT(\*)

FROM Country;

## -- Query #2

SELECT

Region,

COUNT(\*)

FROM Country

GROUP BY Region;

## -- Query #3

SELECT

Region,

COUNT(\*) AS Count

FROM Country

GROUP BY Region

ORDER BY Count DESC, Region;

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----album.db----

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## -- Query #4

SELECT

a.title AS Album,

COUNT(t.track\_number) as Tracks

FROM track AS t

JOIN album AS a

ON a.id = t.album\_id

GROUP BY a.id

ORDER BY Tracks DESC, Album;

## -- Query #5

SELECT

a.title AS Album,

COUNT(t.track\_number) AS Tracks

FROM track AS t

JOIN album AS a

ON a.id = t.album\_id

GROUP BY a.id

HAVING Tracks >= 10

ORDER BY Tracks DESC, Album;

## -- Query #6

SELECT a.title AS Album, COUNT(t.track\_number) as Tracks

FROM track AS t

JOIN album AS a

ON a.id = t.album\_id

WHERE a.artist = 'The Beatles'

GROUP BY a.id

HAVING Tracks >= 10

ORDER BY Tracks DESC, Album;

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SECTION 02: Aggregate functions

Database: world.db

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## -- Query #7

SELECT COUNT(\*) FROM Country;

## -- Query #8

SELECT COUNT(Population) FROM Country;

## -- Query #9

SELECT AVG(Population) FROM Country;

## -- Query #10

SELECT Region, AVG(Population) FROM Country GROUP BY Region;

## -- Query #11

SELECT Region, MIN(Population), MAX(Population) FROM Country GROUP BY Region;

## -- Query #12

SELECT Region, SUM(Population) FROM Country GROUP BY Region;

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SECTION 03: DISTINCT Aggregates

Database: world.db

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## -- Query #13

SELECT COUNT(HeadOfState) FROM Country;

## -- Query #14

SELECT HeadOfState FROM Country ORDER BY HeadOfState;

## -- Query #15

SELECT COUNT(DISTINCT HeadOfState) FROM Country;

--\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*--

Provide at least 3 screenshots as part of HOP submission.

Write a 150-word summary to explain your understandings and findings from this lab assignment.