



COURSE - 2 Database Management System and SQL

Unit 1- 4 – Database, Data Model, and SQL DDL

Instructions:

- Throughout the course, we will use the following two data themes:
 - Sales Data
 - Financial data
- In a data model, use visual diagrams to represent tables, columns, data types, and their relationships.
- The naming conventions and standards should be followed for all tables.
- Use visual representations (e.g., PPT or Visio) to develop a conceptual and logical data model.
- To develop/implement the physical data model, you must create an SQL file with all the tables, columns, data types, and appropriate constraints.
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Exercise:

1. **Written Assignment** - What is the difference between a database and a schema?
2. **Written Assignment** - What different constraints can we apply to a table? Explain each one with some real-world scenarios.
3. **Lab Exercise**- Prepare a conceptual, logical, and physical sales and financial data model.

Sales Data Model

- Unit Price
- Unit of Measure
- Currency
- Location
- Customer
- Product
- Product Group
- Loyalty Program
- Discounts
- Promotion
- Sales Period
- Sales



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Finance Data Model

- Country
 - Company
 - Local Currency
 - Reporting Currency
 - Posting Period
 - Exchange Rate
 - Fiscal Year
 - Cost Centre
 - GL Account
 - GL Account Group
 - GL Posting
4. **Lab Exercise**- Add comments to the tables and disable constraints by altering the tables.
 5. **Lab Exercise**- The customer table should be modified to add a column to store customer feedback and sentiment.

After session #2, practice the following lab.

6. **Lab Exercise**- Partition the Sales table as follows.
 - HASH partitioning.
 - KEY partitioning
 - COLUMNS partitioning
 - sub partitioning.
 - use ROW_NUMBER with a partition.
 - perform table partitioning by date.
7. **Lab Exercise**- Display the table and partition information using the provided command.



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Appendix:

During session #2, we will review your physical data model in the system.

Sales Tables:

The screenshot displays the MySQL Workbench interface. On the left, the 'Navigator' pane shows the 'ivadsai_financial' schema with a list of tables including 'dsai_m_currency', 'dsai_m_customer', 'dsai_m_discount', 'dsai_m_location', 'dsai_m_inventory_program', 'dsai_m_product', 'dsai_m_product_group', 'dsai_m_promotion', 'dsai_m_sales_period', 'dsai_m_unit_price', and 'dsai_m_sales'. A red box highlights this list. The main editor shows a SQL script with the following content:

```
1 use ivadsai;
2 -- Drop table if exist for testing
3
4 drop table if exists DSAI_D_Country, DSAI_D_Customer, DSAI_D_Product, DSAI_D_User, DSAI_D_User_Copy1, DSAI_D_User_Copy2;
5 drop table if exists DSAI_D_Currency_Copy1, DSAI_D_Currency_Duplicate1;
6
7 --
8 * CREATE TABLE "DSAI_D_Country" (
9   "Country_Code" VARCHAR(3),
10  "Country_Name" VARCHAR(22)
11 );
12
13
14 -- Example 2
15 -- Create Table 2 : Primary key and Default Value
16 * CREATE TABLE "DSAI_D_Customer" (
17   "Customer_ID" VARCHAR(3) PRIMARY KEY,
18   "Customer_Name" VARCHAR(22) DEFAULT '' NOT NULL,
19   "Created_User" VARCHAR(9) DEFAULT '' NOT NULL,
20   "Created_DT" DATETIME DEFAULT '2000-00-00 00:00:00' NOT NULL
21 );
```

The 'Output' pane at the bottom shows the execution results of the SQL script, including the creation of the 'DSAI_D_Country' and 'DSAI_D_Customer' tables, and the insertion of data into the 'DSAI_T_GL_Posting' table. The output table has columns: #, Time, Action, Message, and Duration / Fetch.

#	Time	Action	Message	Duration / Fetch
134	21:34:15	CREATE TABLE 'DSAI_T_GL_Posting' ('GL_Account_Number' varchar(6) DEFAULT NULL, 'C...	0 row(s) affected, 1 warning(s): 3719 utf8 is currently an alias for the character set UTF8MB3, but w...	0.000 sec
135	21:34:15	INSERT INTO 'DSAI_T_GL_Posting' ('GL_Account_Number', 'Country_Code', 'Company_Code', ...	240 row(s) affected, Records: 240 Duplicates: 0 Warnings: 0	0.015 sec
136	21:34:15	COMMIT	0 row(s) affected	0.000 sec
137	21:34:15	SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT	0 row(s) affected	0.000 sec
138	21:34:15	SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS	0 row(s) affected	0.000 sec
139	21:34:15	SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION	0 row(s) affected	0.000 sec



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Finance Tables:

The screenshot displays the MySQL Workbench interface. On the left, the 'Navigator' pane shows the 'ivadsai_finance' schema with a list of tables including 'dsai_m_account_group', 'dsai_m_company', 'dsai_m_cost_center', 'dsai_m_country', 'dsai_m_exchange_rate', 'dsai_m_fiscal_year', 'dsai_m_gl_account', 'dsai_m_local_currency', 'dsai_m_posting_period', 'dsai_m_posting_currency', and 'dsai_t_gl_posting'. The 'Tables' folder is expanded, and the 'ivadsai_finance' schema is selected. A red box highlights the 'Tables' folder and the 'ivadsai_finance' schema. The main editor shows a SQL query with the following content:

```
1 use ivadsai;
2 -- Drop table if exist for testing
3
4 drop table if exists DSAI_D_Country, DSAI_D_Customer, DSAI_D_Product, DSAI_D_User, DSAI_D_User_Copy1, DSAI_D_User_Copy2;
5 drop table if exists DSAI_D_Currency_Copy1, DSAI_D_Currency_Duplicate1;
6
7 --
8 CREATE TABLE "DSAI_D_Country" (
9   "Country_Code" VARCHAR(3),
10  "Country_Name" VARCHAR(22)
11 );
12
13
14 -- Example 2
15 -- Create Table 2 : Primary key and Default Value
16 CREATE TABLE "DSAI_D_Customer" (
17   "Customer_ID" VARCHAR(1) PRIMARY KEY,
18   "Customer_Name" VARCHAR(22) DEFAULT '' NOT NULL,
19   "Created_User" VARCHAR(9) DEFAULT '' NOT NULL,
20   "Created_DT" DATETIME DEFAULT '2020-01-01 00:00:00' NOT NULL
21 );
```

The 'Output' pane at the bottom shows the execution results of the SQL statements. The first statement (CREATE TABLE 'DSAI_T_GL_Posting') resulted in a warning: '3719 utf8 is currently an alias for the character set UTF8MB3, but will be deprecated in a future release. Use UTF8MB4 instead.' The second statement (INSERT INTO 'DSAI_T_GL_Posting') affected 240 rows. The third statement (COMMIT) affected 0 rows. The fourth statement (SET CHARACTER_SET_CLIENT) affected 0 rows. The fifth statement (SET CHARACTER_SET_RESULTS) affected 0 rows. The sixth statement (SET COLLATION) affected 0 rows.