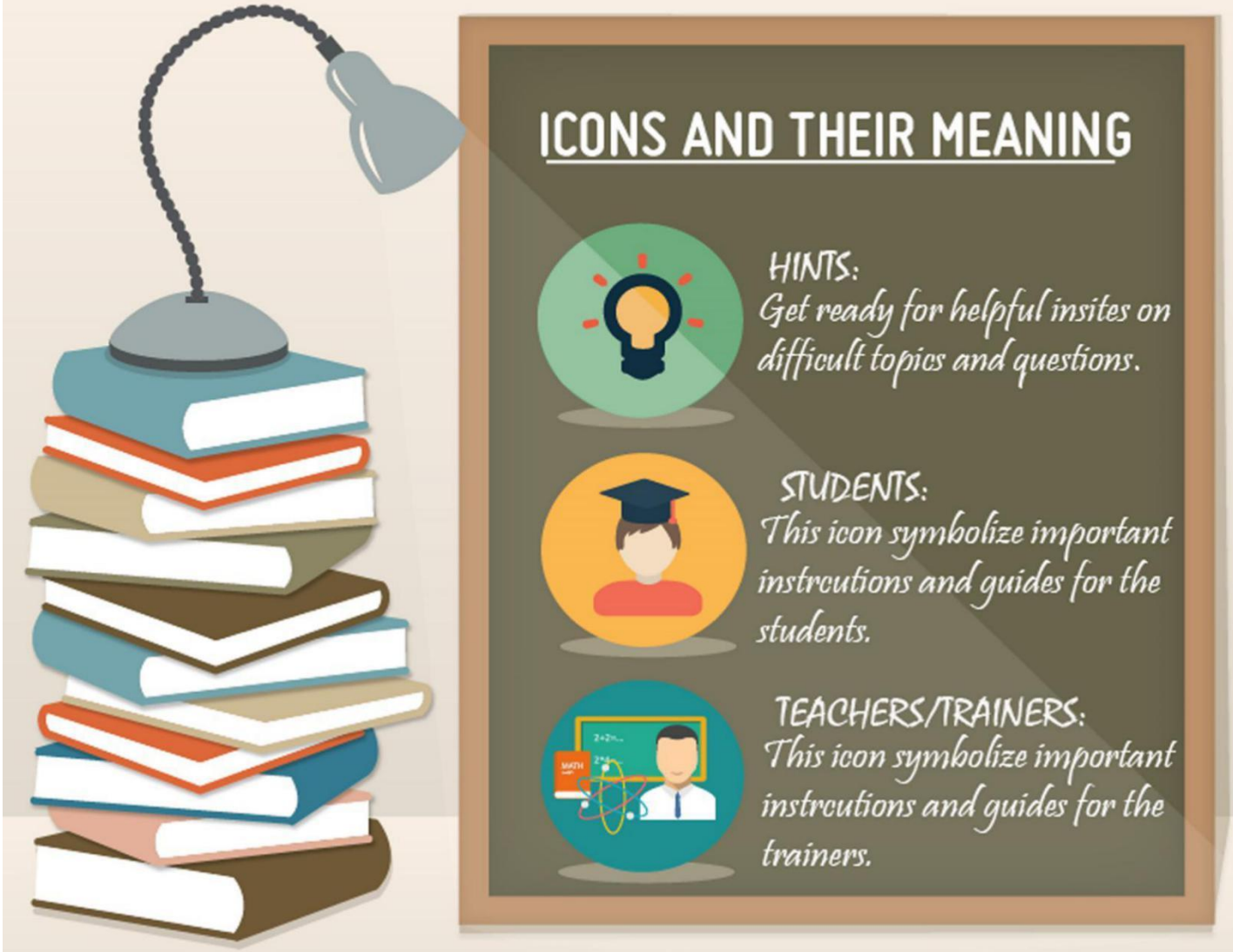
MySQL

MANUAL V8.3

MODULE CODE:

ANUDIP FOUNDATION


ICONS AND THEIR MEANING
HINTS:
Get ready for helpful insites on difficult topics and questions.
STUDENTS:
This icon symbolize important instrcutions and guides for the students.
TEACHERS/TRAINERS:
This icon symbolize important instrcutions and guides for the trainers.

Create a database

Objective: After completing this lesson you will be able to : * Create a database * Gain an understanding of normalization in MySQL	**Materials Required:** 1. Computer 2. Internet access
Theory Duration: 100 minutes	**Practical Duration:** 0 minute
Total Duration: 100 minutes	

Create a Database

MySQL Create Database

Using the MySQL CREATE DATABASE statement lets users create a new server database.

In MySQL, a database is implemented as a directory with all the files which communicate with tables within a database.

Users have to use the CREATE DATABASE statement for creating a new MySQL database. Use the statement with the syntax given below -

CREATE DATABASE [IF NOT EXISTS] database_name

[CHARACTER SET charset_name]

[COLLATE collation_name]

The first step is specifying the database_name after the CREATE DATABASE statement has been mentioned. Users should have a unique database name within the instance of the MySQL server. MySQL shows an error when users try to create a new database with an already existing name.

An error can be avoided if a user has created an already existing database. This can be done by specifying the IF NOT EXISTS option. MySQL stops the CREATE DATABASE statement instead of issuing an error.

The character set has to be specified along with the new database's collation during the time of creation. MySQL utilizes the default character set and new database collation in cases where users leave out the COLLATE and CHARACTER SET clauses.

Using a MySQL program for creating a new database -

Some steps can be followed for using a MySQL program to create a database. These are -

Logging onto the MySQL Server using the root user -

>mysql -u root -p

Enter password: ********

Typing the root user password and pressing Enter.

Following that, the SHOW DATABASES command had to be used for displaying the existing database in the server. It helps to ensure that a user is not creating a database that is already present within the server. Using the SHOW DATABASES command -

mysql> SHOW DATABASES;

+--------------------+

```
| Database           |
+--------------------+
| classicmodels      |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)
```

In the example given above, MySQL displays the five databases which exist in the server.

The CREATE DATABASE command has to be issued with the database. Type in the database name and press Enter -

```
mysql> CREATE DATABASE testdb;
```

Query OK, 1 row affected (0.12 sec)

Following this, users can use the SHOW CREATE DATABASE command for reviewing a created database. Example -

```
mysql> SHOW CREATE DATABASE testdb;
```

MySQL will return the name and character set of the database along with database collation.

The USE database command can be utilized for accessing the database that was created -

```
mysql> USE testdb;
```

Database changed

Users can then start creating tables and database objects within the testdb database.

Using the exit command lets users quit the MySQL program -

```
mysql> exit
```

Bye

Using MySQL Workbench to create a new database

MySQL Workbench can be used for creating a new MySQL database. Follow the steps shown here -

The first step is launching MySQL Workbench and clicking on the setup new connection button. Refer to the screenshot below -

The second step is typing the connection name and clicking on the Test Connection button.

MySQL Workbench shows a dialog that asks users to input the root user's password -

The steps at this stage are -

1. Typing the root user's password
2. Checking the Save password in vault option
3. Clicking the OK button

The next step involves double-clicking the connection name Local for connecting to the MySQL server.

MySQL Workbench launches the window which has four different parts i.e. Query, Navigator, Information, and Output.

The next step involves clicking the create a new schema in the connected server button -

In MySQL, the schema is the database synonym. Creating a new schema is equivalent to creating a new database.

Users will come across the window given in the screenshot below. Here two steps need to be taken -

1. Entering the name of the schema
2. Changing the character set and collation if they are required
3. Clicking the Apply button

In the next step, the MySQL Workbench opens up the window displaying the SQL script to be executed. The CREATE SCHEMA statement is equivalent to the CREATE DATABASE statement.

Users will see a new database created if every condition is met. The database will appear in the Navigator section's Schemas tab.

The next step involves selecting the testdb2 database. Users have to -

1. Right-click on the name of the database
2. Choose Set as Default Schema from the menu options -

The testdb2 node has been opened as can be seen in the screenshot below.

After following the steps above, users can utilize testdb2 from MySQL Workbench.

The information given above can give you a clear idea of how to create a new MySQL program database with the MySQL CREATE DATABASE statement, and how to use MySQL WorkBench CREATE SCHEMA statement.

Normalization

Normalization refers to the process of streamlined data organization within a database. It can be used for organizing data that is split across larger tables to smaller tables. This procedure helps to define relationships among tables to make data management easier.

The six normal types of normalization in MySQL

1. 1st Normal Form (1NF)

2. 2nd Normal Form (2NF)

3. 3rd Normal Form (3NF)

4. Boyce-Codd Normal Form (BCNF)

5. 4th Normal Form (4NF)

6. 5th Normal Form (5NF)

Normalization Advantages

- Normalization is considered to be cleaner and easier to maintain and modify based on requirements.
- Normalization makes index search, creation, and sorting faster.
- Normalization enables users to optimize resources with increasing MySQL database design requirements.
- Normalization helps users to normalize a database as larger tables are turned into smaller ones.
- Normalization enhances performance and improves query speed.
- Normalization also enhances data integrity by splitting data into different entities.

Normalization Disadvantages

- Normalization requires the joining of more tables as data is spread across more tables.
- Experienced design professionals are needed for designing databases for normalization.
- Design for normalization is considered as difficult.
- Normalization databases can be hard to model unless requirements are known beforehand.

Instructions: The progress of students will be assessed with the exercises mentioned below.

MCQ

1. In MySQL a database is implemented as a _____.

a) file

b) directory

c) folder

d) none of the mentioned

2. The first step of creating a MySQL database after using the CREATE DATABASE statement is specifying _____.

a) database_field

b) database_name

c) database_index

d) none of the mentioned

3. What happens when a new database is created with the exact name of an existing database?

a) name gets changed

b) error is shown

c) old database is deleted

d) none of the mentioned

4. Which option lets users avoid errors when trying to create a database with the same name as an existing database?

a) IF NOT EXISTS

b) IF EXISTS

c) IF RELATED

d) none of the mentioned

5. The SHOW DATABASES command is used for showcasing _____ in a server.

a) duplicate databases

b) existing databases

c) deleted databases

d) both b and c

6. Which command is used for displaying newly-created database in MySQL?

a) SHOW CREATED DATABASE

b) SHOW CREATE DATABASE

c) SHOW DATABASES

d) none of the mentioned

7. MySQL _____ can be used for a new MySQL database.

a) WORKFLOW

b) WORKBENCH

c) WORKBASE

d) none of the mentioned

8. The commonly used synonym for database is _____.

a) schema

b) script

c) storage

d) none of the mentioned

9. What does normalization in MySQL achieve?

a) data splitting from larger tables to smaller tables

b) streamlining data in a database

c) data splitting from smaller to larger tables

d) both a and b

10. Normalization raises _____.

a) performance

b) query speed

c) both a and b

d) none of the mentioned