

# QB365 Question Bank Software Study Materials

## Data Manipulation Through SQL Important 2, 3 & 5 Marks Questions With Answers (Book Back and Creative)

12th Standard

Computer Science

Total Marks : 75

### 2 Marks

10 x 2 = 20

1) Mention the users who uses the Database.

**Answer :** Users of database can be human users or programmers, other programs or applications.

2) Which method is used to connect a database? Give an example.

**Answer :** Create a connection using connect() method and pass the name of the database file.

**Example:**

```
#connecting to the database
connection = sqlite3.connect ("Academy.db")
#cursor
cursor = connection.cursor()
```

3) What is the advantage of declaring a column as "INTEGER PRIMARY KEY"

**Answer :** If a column of a table is declared to be an INTEGER PRIMARY KEY, then whenever a NULL is used as an input for this column, the NULL will be automatically converted into an integer which will be one larger than the highest value so far used in that column.

4) Write the command to populate record in a table. Give an example.

**Answer :** To populate the table "INSERT" command is passed to SQLite."execute" method executes the SQL command to perform some action.

**Example:**

```
Sql_command = " INSERT INTO student (Rollno, Sname, Grade, Gender, Average, birth_date) values (NULL, "Akshay", "B", "M", "87.8", "2001-12-12");"
cursor.execute(sql_command)
```

5) Which method is used to fetch all rows from the database table?

**Answer :** The fetchall() method is used to fetch all rows from the database table.

```
result = cursor. fetchall()
```

6) What is a cursor in SQL and databases?

**Answer :** (i) A cursor in SQL and databases is a control structure to traverse over the records in a database. So it's used for the fetching of the results.

(ii) The cursor object is created by calling the cursor( ) method of connection. The cursor is used to traverse the records from the result set.

7) What is symbol?

**Answer :** Symbol is used to print the list of all elements in a single line with space. To print all elements in newlines or separated by space use sep = "\n" or sep = ", " respectively.

8) What are the operators used with WHERE clause?

**Answer :** The WHERE clause can be combined with AND, OR and NOT operators. The AND and OR operators are used to filter records based on more than one condition.

9) What is place holders?

**Answer :** The sqlite3 module supports two kinds of placeholders: question marks? ("qmark style") and named placeholders:

name ("named style")

10) How the CLAUSES can be used in Python?

**Answer :** SQL provides various clauses that can be used in the SELECT statements. This clause can be called through Python script.

**3 Marks**

10 x 3 = 30

11) What is SQLite?What is it advantage?

**Answer :** (i) SQLite is a simple relational database system, which saves its data in regular data files or even in the internal memory of the computer.

(ii) It is designed to be embedded in applications, instead of using a separate database server program such as MySQL or Oracle.

**Advantages:**

SQLite is fast, rigorously tested, and flexible, making it easier to work.

Python has a native library for SQLite.

12) Mention the difference between fetchone() and fetchmany()

**Answer :**

<b>fetchone()</b>	<b>fetchmany()</b>
Returns the next row of a query result set or none in case there is no row left.	Returns the next number of rows(n) of the result set.
Using while loop and fetchone() method we can display all the records from a table one by one.	Displaying specified number of records is done by using fetchmany():

13) What is the use of Where Clause.Give a python statement Using the where clause.

**Answer :** The WHERE clause is used to extract only those records that fulfill a specified condition. In this example we are going to display the different grades scored by male students from "student table.

```
import sqlite3
connection = sqlite3.connect ("Academy.db")
cursor = connection.cursor()
cursor.execute ("SELECT DISTINCT (Grade) FROM student where gender = "M")
result = cursor.fetchall()
print(* result, sep ="\n")
```

**Output:**

('B,')  
(A,')  
(C,')  
(D,')

14) Read the following details. Based on that write a python script to display department wise records

database name:- organization.db

Table name:- Employee

Columns in the table:- Eno, EmpName, Esal, Dept

**Answer :** Db: Organization.db

Table name: Employee

Column: Eno, EmpName, Esal, Dept

**Program:**

```
import mysqldb
db = mysqldb.connect("localhost, "user", "123", "organization")
cursor= db.cursor()
Cursor.execute ("SELECT *FROM Employee")
results = cursor.fetchall()
for row in results:
Eno = row[0], EmpName = row[1], EmpDept = row[2]
print Eno, EmpName, EmpDept
db.close()
```

- 15) Read the following details. Based on that write a python script to display records in descending order of

Eno

database name :- organization.db

Table name :- Employee

Columns in the table :- Eno, EmpName, Esal, Dept

**Answer : Program: Display the records in descending order using python script**

```
import mysqldb
db = mysqldb.connect ("local host", "user", "123", "organization")
cursor = db.cursor()
cursor.execute ("SELECT *FROM Employee ORDER BY Name DESC")
result = cursor.fetchall()
for row in results:
ENO = row[0], EmpName = row[1], EmpDept = row[2]
print ENO, EmpName, EmpDept
db.close()
```

- 16) What is the use of aggregate functions used along with SELECT statement? What are they?

**Answer :** Aggregate functions are used to do operations from the values of the column and a single value is returned.

(i) COUNT ( )

(ii) AVG ( )

(iii) SUM ( )

(iv) MAX ( )

(v) MIN ( )

- 17) How will you display a record using fetch one ( )?

**Answer :** The fetchone( ) method returns the next rows of a query result set or none in case there is no row left.

**Example:**

```
import sqlite3
connection = sqlite3.connect ("Academy.db")
cursor = connection.cursor ( )
cursor.execr,rte ("SELECT *FROM student")
print("\n fetchone:")
res = cursor.fetchone( )
print(res)
```

**Output:**

**fetchone:**

(1, 'Akshay', 'B', 'M',87.8, '2001-1212')

- 18) How will you display a record using fetchone ( )?

**Answer :** Using the while loop and fetch one method we can display all the records from a table one by one.

**Example:**

```
import sqlite3
connection = sqlite3.connect ("Academy.db")
cursor = connection.cursor ( )
cursor.execute ("SELECT *FROM student")
print("fetching all records one by one :")
print(result)
result = cursor.fetchone( )
```

**Output:**

**fetching all records one by one:**

```
(1, 'Akshay', 'B', 'M', 87.8, '2001-1212')
(2, 'Aravind', 'B', 'M', 92.5, '2000-08-17')
(3, 'BASKER', 'C', 'M', 95.2, '1999-05-17')
(4, 'SAJINI', 'A', 'F', 95.6, '2002-11-01')
(5, 'VARUN', 'B', 'M', 80.6, '2002-03-14')
```

- 19) Write an example program to demonstrate WHERE with AND operator.

**Answer : Example:**

```
import sqlite3
connection = sqlite3.connect ("Academy.db")
cursor = connection.cursor ( )
cursor.execute ("SELECT Roll no, Sname, Average FROM student WHERE (average > =80 AND average < =90)")
result = cursor.fetchall ( )
print (*result, sep = "\n")
```

**Output:**

```
(1, 'Akshay', 87.8)
(5, 'VARUN', 80.6)
```

- 20) Write an example program to demonstrate WHERE with OR operator.

**Answer : Example:**

```
import sqlite3
connection = sqlite3.connect ("Academy.db")
cursor = connection.cursor ( )
cursor.execute ("SELECT Roll no, Sname, Average FROM student WHERE(Average < 60 OR Average > 70)")
result = cursor.fetchall ( )
print (*result, sep = "\n")
```

Output:

```
(1, 'Akshay')
(2, 'Aravind' )
(3, 'BASKAR')
(4, 'SAJINI')
(5, 'VARUN')
(6, 'PRIYA')
```

**5 Marks**

5 x 5 = 25

- 21) Write in brief about SQLite and the steps used to use it.

**Answer :** (i) SQLite is a simple relational database system, which saves its data in regular data files or even in the internal memory of the computer.

(ii) It is designed to be embedded in applications, instead of using a separate database server program such as MySQL or Oracle.

(iii) SQLite is fast, rigorously tested, and flexible, making it easier to work. Python has a native library for SQLite.

To use SQLite,

**Step 1:** import sqlite3

**Step 2:** create a connection using connect() method and pass the name of the database file

**Step 3:** Set the cursor object cursor = connection.cursor()

(iv) Connecting to a database in step 2 means passing the name of the database to be accessed. If the database already exists the connection will open the same. Otherwise, Python will open a new database file with the specified name.

(v) Cursor in step 3 is a control structure used to traverse and fetch the records of the database.

(vi) Cursor has a major role in working with Python. All the commands will be executed using cursor object only.

(vii) To create a table in the database, create an object and write the SQL command in it.

**Example:** sql\_comm = "SQL statement"

(viii) For executing the command use the cursor method and pass the required sql command as a parameter. Many number of commands can be stored in the sql comm and can be executed one after other.

(ix) Any changes made in the values of the record should be saved by the commend "Commit" before closing the "Table connection" .

22) Write the Python script to display all the records of the following table using fetchmany()

Icode	ItemName	Rate
1003	Scanner	10500
1004	Speaker	3000
1005	Printer	8000
1008	Monitor	15000
1010	Mouse	700

**Answer : Creating database:**

```
Sql_command = " "
CREATE TABLE Hardware (
lcode INTEGER PRIMARY KEY,
Item_Name VARCHAR(20),
Rate DECIMAL(5,2));" "
```

**Program: To display the records using fetchmany()**

```
import sqlite3
connection = sqlite3.connect ("Material.db")
cursor = connection.cursor()
cursor.execute ("SELECT * FROM Hardware")
print("fetching first 5 records:")
result = cursor.fetchmany(5)
print(result)
```

**Output:**

```
fetching first 5 records:
[(1003, 'Scanner', '10500'), (1004, 'Speaker', '3000'), (1005, 'Printer', '8000'), (1008, 'Monitor', '15000'),
(1010, 'Mouse', '700')]
```

23) hat is the use of HAVING clause. Give an example python script

**Answer :** HAVING clause is used to filter data based on the group functions. This is similar to WHERE condition but can be used , only with group functions. Group functions cannot be used in WHERE Clause but can be used in HAVING clause.

**Example:**

```
import sqlite3
connection = sqlite3.connect("Academy.db")
cursor = connection.cursor()
cursor.execute("SELECT GENDER,COUNT(GENDER) FROM Student GROUP BY GENDER HAVING COUNT( GENDER > 3)")
result = cursor.fetchall( )
co = [i[0] for i in cursor. description]
print(co)
print(result)
```

**Output:**

```
['gender', 'COUNT(GENDER)']
[('M', 5)]
```

24) Write a Python script to create a table called ITEM with following specification.

Add one record to the table.

Name of the database :- ABC

Name of the table :- Item

Column name and specification :-

<b>I code</b>	<b>Integer and act as primary key</b>
Item Name	Character with length 25
Rate	Integer
Record to be added	1008, Monitor, 15000

**Answer : Program:**

```
import mysql db
db = mysql db.connect ("local host", "user", "123", "organization")
cursor = db.cursor()
item table creation
database: ABC, table: Item, lcode: int, ItemName: Char
Rate: int. Record: 1008, Monitor: 15000
cursor.execute ("Create table item(icode int, item Name char (25), Rate int");
db.close
cursor. execute ("insert into item values ("1008", 'Monitor', '15000" ));
db.commit()
```

25) Consider the following table Supplier and item .Write a python script for (i) to (ii)

SUPPLIER				
Suppno	Name	City	Icode	SuppQty
S001	Prasad	Delhi	1008	100
S002	Anu	Bangalore	1010	200
S003	Shahid	Bangalore	1008	175
S004	Akila	Hydrabad	1005	195
S005	Girish	Hydrabad	1003	25
S006	Shylaja	Chennai	1008	180
S007	Lavanya	Mumbai	1005	325

i) Display Name, City and Itemname of suppliers who do not reside in Delhi.

ii) Increment the SuppQty of Akila by 40

**Answer :** (i) **Program to Display Name, city and Item Name of suppliers who do not reside in Delhi:**

```
import mysqldb
db = mysqldb.Connect ("Supplier.db")
cursor = db.cursor()
cursor.execute ("SELECT NAME, CITY, ICode FROM Supplier WHERE CITY < > "Delh")
db.commit()
result=cursor.fetchall()
print ("result, sep = "\n")
db.close()
```

**(ii) Program to Increment the suppQty of Akila by 40:**

```
import mysqldb
db = mysqldb.Connect ("Item.db")
cursor = db.cursor()
cursor.execute ("UPDATE Item SET Name = 'Akila' WHERE SuppQty = 235)
db.commit()
cursor.execute ("SELECT * FROM Item")
result = cursor.fetchall()
print ("result, sep ="\n")
db.close()
```