



# Лабораторийн ажил 6

Unit 6: Data Persistence

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# PATHWAY 1: INTRODUCTION TO SQL

## SQLite

SQLite нь хөнгөн, сервергүй харилцан хамааралтай өгөгдлийн сангийн удирдлагын систем (RDBMS) бөгөөд өгөгдлийг удирдахад SQL (Structured Query Language) ашигладаг. Энэ нь ихэвчлэн гар утасны програмууд, суулгагдсан системүүд, хөнгөн өгөгдөл хадгалах хэрэгцээнд ашиглагддаг. С хэлээр хэрэгжүүлэгдсэн тул төрөл бүрийн програмуудтай хялбархан нэгтгэх боломжтой.

## Quiz

- Which of the following statements are true about relational databases and SQLite?  
*Choose as many answers as you see fit.*
  - Referencing one table's primary key in another table lets you model relationships between tables.
  - A SQLite database consists of columns, which consist of tables and rows.
  - Every data table must have at least one foreign key.
  - Rows contain the individual items in the database.
- It is optional to end a SQL statement with a semicolon.
  - True
  - False
- If you want to calculate the sum of all values for a database column, what do you use?
  - Aggregate function
  - WHERE clause
  - DISTINCT keyword
  - LIMIT clause
- Which SELECT statement returns the number of unique email addresses for messages in the spam folder?
  - SELECT COUNT(DISTINCT folder) FROM email WHERE spam != sender;
  - SELECT DISTINCT COUNT(sender) FROM email WHERE folder = 'spam';
  - SELECT COUNT(DISTINCT sender) FROM email WHERE folder = 'spam';
  - SELECT DISTINCT COUNT('spam') FROM email WHERE sender = folder;
- The SQL statement SELECT \* FROM contacts WHERE name LIKE '%Milton' returns all rows where the value of the name column begins with Milton.
  - True
  - False
- Which of the following statements are true about GROUP BY and ORDER BY?  
*Choose as many answers as you see fit.*

- a. The ORDER BY clause comes before the GROUP BY clause.
  - b. In an ORDER BY clause, descending order is the default.
  - c. If a query contains a GROUP BY clause, it overrides the ORDER BY clause.
  - d. ORDER BY and GROUP BY clauses can both accept multiple columns.
7. The WHERE condition NOT read = false and the WHERE condition read != true are equivalent.
- a. True
  - b. False
8. The LIMIT clause LIMIT 30 SKIP 60 returns:
- a. 60 rows
  - b. Rows 31 through 60
  - c. Rows 61 through 90
  - d. 90 rows
9. An UPDATE statement uses a \_\_\_\_ clause to assign values for columns.
- a. WHERE
  - b. SET
  - c. ASSIGN
  - d. LIKE
10. UPDATE and DELETE statements can include a WHERE clause and can affect multiple rows.
- a. True
  - b. False

## PATHWAY 2: USE ROOM FOR DATA PERSISTENCE

### Quiz

1. Which of the following statements is not true about the @Query annotation?
- a. The @Query annotation is used with a method in the DAO.
  - b. The @Query annotation corresponds to a SELECT query.
  - c. The @Query annotation can pass arguments into a SQL statement by preceding their name with a colon.
  - d. The @Query annotation can only be used with a suspend function.
2. Which of the following statements are true about the DAO?

- a. DAO functions use annotations like `@Insert` and `@Update` that correspond to an operation on the database.
  - b. DAO functions can return a flow.
  - c. Instances of DAO classes are referenced in the `AppDatabase` class.
  - d. All of the above
3. The `Database` class, inheriting from the `RoomDatabase` class, is responsible for \_\_\_\_.
  - a. Instantiating the database and providing access to the DAO.
  - b. Representing individual data tables.
  - c. Defining functions that map to SQL statements, such as `SELECT` queries.
  - d. Provides data to the UI.
4. The purpose of the DAO is to:
  - a. Hold reference to the view models and the database.
  - b. Define functions that map to SQL statements, such as `SELECT`, and `INSERT` queries.
  - c. Provide a factory method to create a database instance.
  - d. Create a new database instance.
5. Why do you need to use the `synchronized()` function when you create the database?  
*Choose as many answers as you see fit.*
  - a. It lets you create multiple copies of the database.
  - b. It lets you safely access the code from multiple threads at once.
  - c. It is used to avoid race conditions.
  - d. It ensures only one thread can enter the block of code at once.
6. You can use the `@Insert` and `@Delete` annotations without providing a SQL statement.
  - a. True
  - b. False
7. Fill-in-the-blanks  
*Enter one or more words to complete the sentence.*

To handle conflicts when inserting into a database, you can pass a(n) `onConflict` parameter such as `IGNORE`, to the `@Insert` annotation.
8. Select all the statements that are true about the Database Inspector:  
*Choose as many answers as you see fit.*
  - a. It lets you inspect, query, and modify your app's databases while your app is running.
  - b. It works with other SQLite libraries that you bundle with your app.
  - c. It is especially useful for database debugging.
  - d. It works with plain SQLite and with libraries built on top of SQLite, such as `Room`.

9. Entities represent individual data tables in the Room database.
- a. True
  - b. False
10. Which of the following statement is not true about the primary key:
- a. You can use the primary key to uniquely identify every record/entry in your database tables.
  - b. After you assign the primary key, you cannot modify it.
  - c. Room generates an incrementing primary key value for each entity by default.
  - d. The primary key represents the entity object as long as it exists in the database.

## PATHWAY 3: STORE AND ACCESS DATA USING KEYS WITH DATASTORE

### Quiz

1. The implementations of DataStore are:  
*Choose as many answers as you see fit.*
- a. Proto
  - b. Preferences
  - c. Room
  - d. SQLite
2. The Preferences DataStore uses a predefined schema.
- a. True
  - b. False
3. Which function does DataStore provide to modify the DataStore?
- a. preferencesDataStore()
  - b. updatePreferences()
  - c. edit()
  - d. map()
4. Preferences DataStore uses keys to access stored values.
- a. True
  - b. False
5. Which exception can occur when you attempt to read from a Preferences DataStore?
- a. IllegalArgumentException
  - b. IOException
  - c. IllegalStateException

d. `NumberFormatException`