Assignment - 4

1) What is Data Storage in Android? Explain how many options to store the data in Android.

Ans - Android provides many kinds of storage for applications to store their data.

- These storage places are shared preferences, internal and external storage, SQLite storage, and storage via network connection.

- The system provides several options for you to save your app data.

○ **App-specific storage** :- Store files that are meant for your app's use only, either in dedicated directories within an internal storag volume or different dedicated directories within external storage.

○ **Shared storage** :- Store files that your app intends to share with other apps, including media, documents, and other files.

○ **Preferences** :- Store private, primitive data in key-value pairs

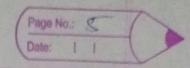○ **Database** :- Store structured data in a private database using the Room persistence library.

- Categories of storage locations

- Android provides two types of physical storage locations :
  ↳ internal storage
  ↳ external storage

2) Differentiate between Internal storage and External storage of Android.

Ans

INTERNAL STORAGE	EXTERNAL STORAGE
• It is smaller than external storage on most devices	• It is bigger than internal storage
• It is always available on all devices	• It is not available on devices (always)
• All the Android system files, OS & app files that users are not allowed to access are stored in the internal storage	• All the media files or documents can also be stored on the external storage
• In order to access these files, you need to download an app that gives you access to these internal files or not your Android devices	• The files stored in the external storage can be accessed by the user & other apps easily.

It also provides an extra security layer because the files stored in the created direction are not accessible by outer apps.	It does not provide an extra security layer
Example :- Internal hard drive built-in memory	Example :- SD card, hard drive, cloud storage such as google cloude

3) What is SQLite Database? Explain how it is useful in Android.

Ans - SQLite is a opensource SQL database that stores data to a text file on a device.

- Android comes in with built in SQLite database implementation.

- SQLite supports all the relational database features.

- In order to success this database, you don't need to establish any kind of connections for it like JDBC, OBBC e.t.c.

- It is used to perform database operations on android devices such as storing manipulating or retriving persistant data from the database.

- It is embedded in android by default. So, there is no need to perform any database setup or admistration task.

- SQLite OpenHelper class provides the functional to use the SQLite database

• **SQLite OpenHelper class**

↳ The android.database.sqlite.SQLite OpenHelper class is used for database creation and version management.

↳ For performing any database operation, you have to provide the implemantation of onCreate() and onUpgrade() methods of SQLite OpenHelper class.

↳ There are two constructors of SQLite OpenHelper class.

• SQLite OpenHelper (context context, String name, SQLite Database.cursorFactory factory, int version)

• SQLite OpenHelper (context context, String name, SQLite Database.cursorFactory factory, int version, Database ErrorHandler errorHandler)

⇒ Hence, it is SQLite Database. and it's use.

4) What is Content Provider? Explain it in detail.

Ans - A content provider presents data to external applications as one or more tables that are similar to the tables found in a relational database.

- A row represents an instance of some type of data the provider collects, and each column in the row represents an individual piece of data collected for an instance.
- A content provider coordinates access to the data storage layer in your application for a number of different APIs and components as illustrated in figur 1, these includes

↳ Sharing access to your application data with other applications.

↳ Sending data to a widget.

↳ Returning custom search suggestions of your application through the search framewrok using SearchRecentSuggestionsProvider.

↳ Synchronizing application data with you server using an implementation of AbstractThereadedSyncAdapter

↳ Loading data in your UI using a CursorLoader

- The figure of this is given further.

o <u>Figure</u>:

```
┌─────────────────────────────────┐              ┌──────────────┐
│  Abstract Threaded SyncAdapter  │              │ CursorLoader │
└─────────────────────────────────┘              └──────────────┘
                   ↑                                      ↑
                   │                                      │
              ↓         ↓
┌──────────────────┐        ┌──────────────┐        ┌──────────┐
│  Other           │ ←───→  │  Content     │ ←───→  │ Widgets  │
│  Applications    │        │  Provider    │        └──────────┘
└──────────────────┘        └──────────────┘
                              ↑      ↑    │
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                                        │ Search   │
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              ↓              ↓
        ┌──────────┐    ┌──────────┐
        │  Data    │    │  Data    │
        │  Storage │    │  Storage │
        └──────────┘    └──────────┘
```