Android Storing & Retrieving Data

PLURALSIGHT

Agenda

- ❏ Internal & External Storage
- ❏ Preferences
- ❏ SQLite Database
- ❏ Content Provider

Internal Storage in Android

- Private data are kept in internal storage on the device's memory.
- When the user deletes or uninstalls your application, these files, which are typically private and accessible only by your application, are also erased.With some exceptions, such as System apps.
- The files stored in an application's private region are not accessible by other apps. Antivirus apps, etc
    - FileOutputStream : used to write content in file
    - Using FileInputStream: used to read a files content

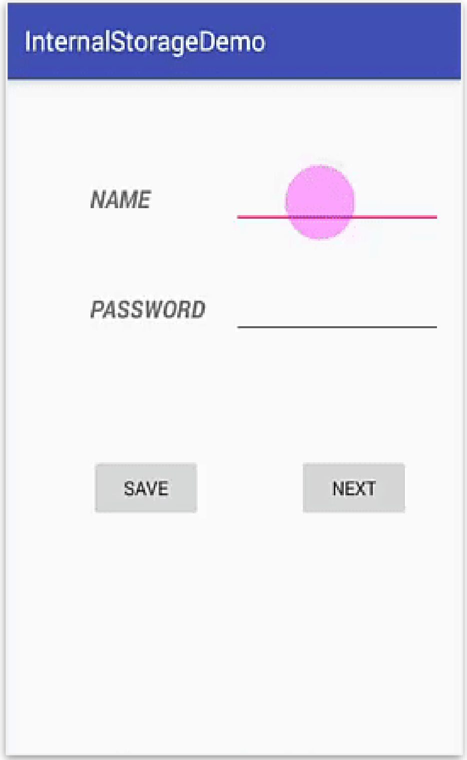
Internal Storage in Android (File Functions)

FileOutputStream class has following methods

- **FileOutputStream(File file, boolean append)**
- **getChannel()**
- **getFD()**
- **write(byte[] buffer, int byteOffset, int byteCount)**

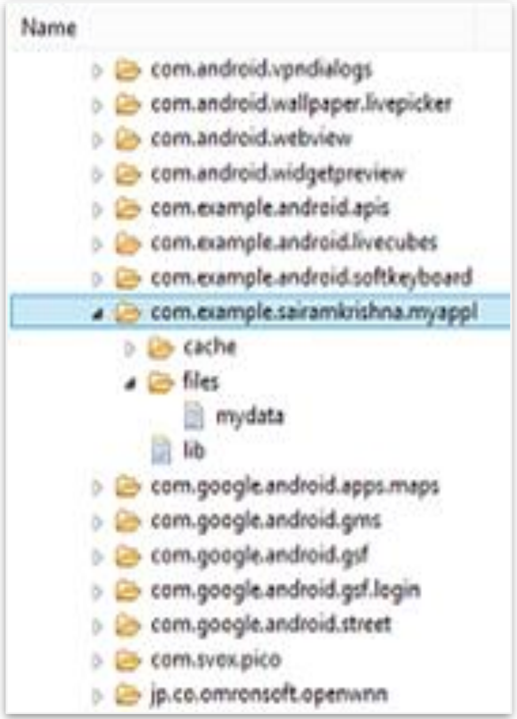
Internal Storage in Android (Real Interface)

The given App interface display, how can we store the data entered by the user in text boxes and how it can be saved in an Internal Storage File



Internal Storage in Android

- Internal files can be viewed in DDMS Tab.
- In DDMS Tab, the path shown in screenshot need to be navigated to see the data stored in given file



```
Name
  ▷ com.android.vpndialogs
  ▷ com.android.wallpaper.livepicker
  ▷ com.android.webview
  ▷ com.android.widgetpreview
  ▷ com.example.android.apis
  ▷ com.example.android.livecubes
  ▷ com.example.android.softkeyboard
  ◢ com.example.sairamkrishna.myappl
      ▷ cache
      ◢ files
            mydata
        lib
  ▷ com.google.android.apps.maps
  ▷ com.google.android.gms
  ▷ com.google.android.gsf
  ▷ com.google.android.gsf.login
  ▷ com.google.android.street
  ▷ com.svox.pico
  ▷ jp.co.omronsoft.openwnn
```

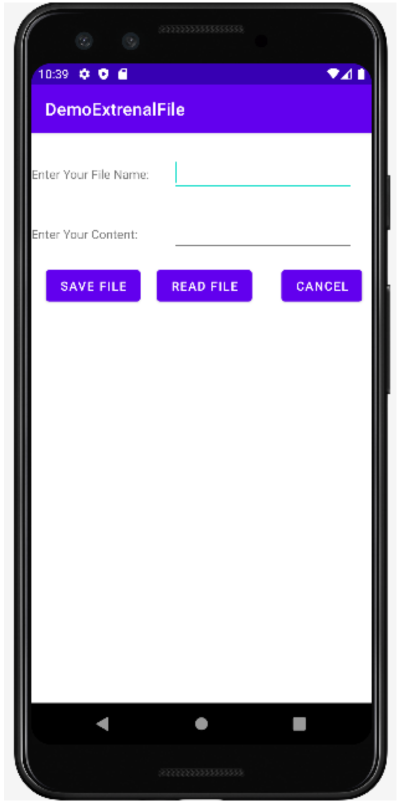
Internal Storage in Android

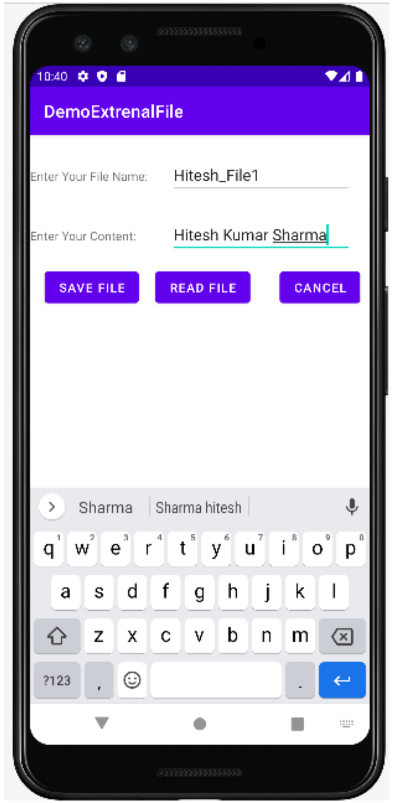
- We can write or read data from the device's external memory, such as an SD card, similarly to internal storage.
- To read and write data into the file, utilize the FileInputStream and FileOutputStream classes.
- The WRITE EXTERNAL STORAGE permission is required.

External Storage in Android

- Like internal storage, we are able to save or read data from the device external memory such as sdcard.
- The FileInputStream and FileOutputStream classes are used to read and write data into the file.
- You need to provide the WRITE_EXTERNAL_STORAGE permission.

External Storage in Android (Real Interface)

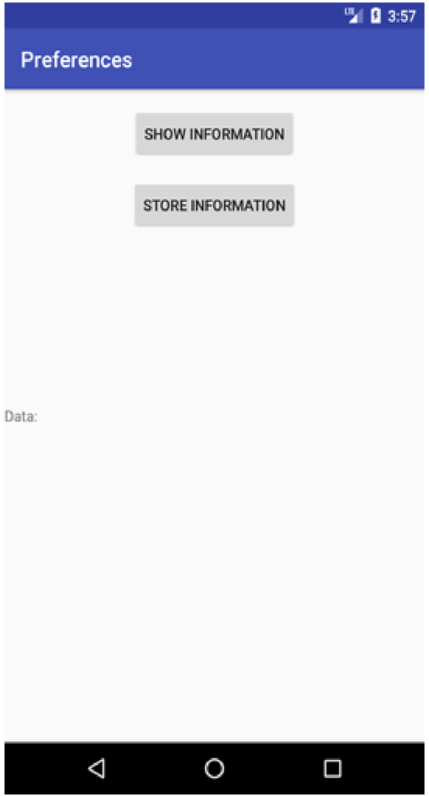




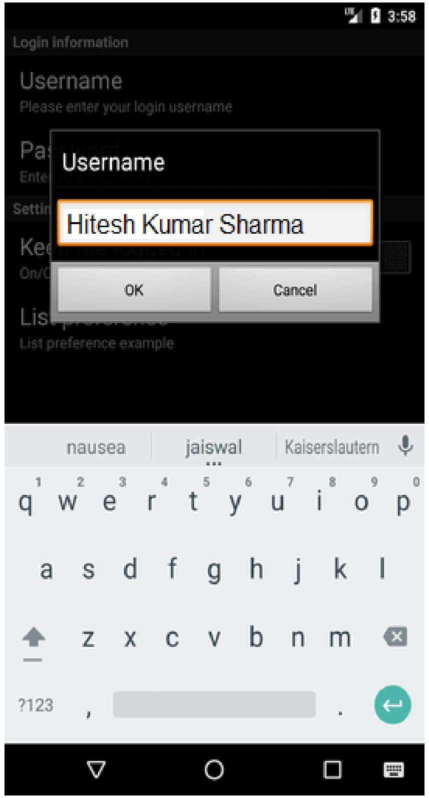
Preference in Android

- Information in basic types is stored and retrieved via Android shared preferences. String, integer, long, number, and other primitive data types are regarded as such on Android.
- In order to access the value based on the key, Android Shared Preferences are also used to store data in key and value pairs.
- It is frequently used to obtain user information, such as in settings.

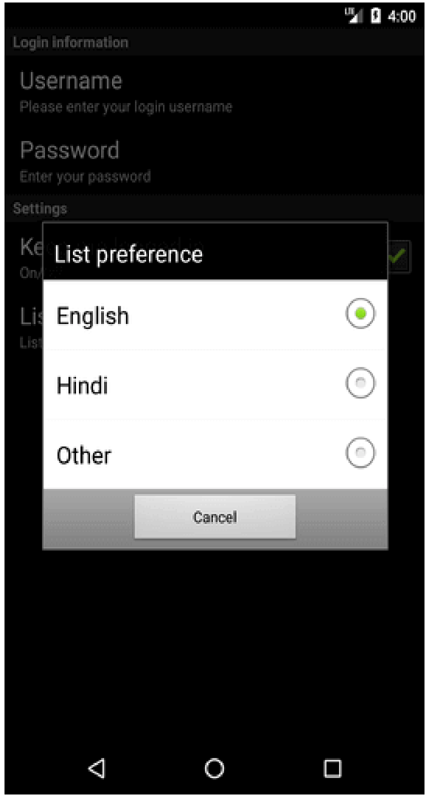
Preference in Android (Real Interface)



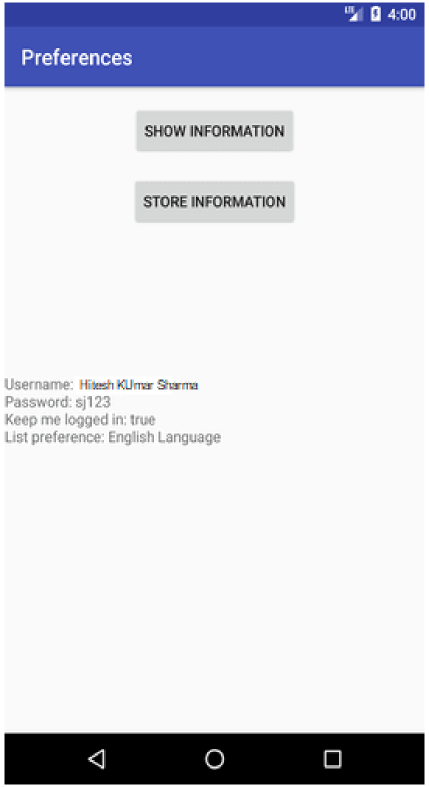
Data:



Username: Hitesh Kumar Sharma



List preference: [✓ English] Hindi Other



Username: Hitesh KUmar Sharma
Password: sj123
Keep me logged in: true
List preference: English Language

SQLite databases in Android App

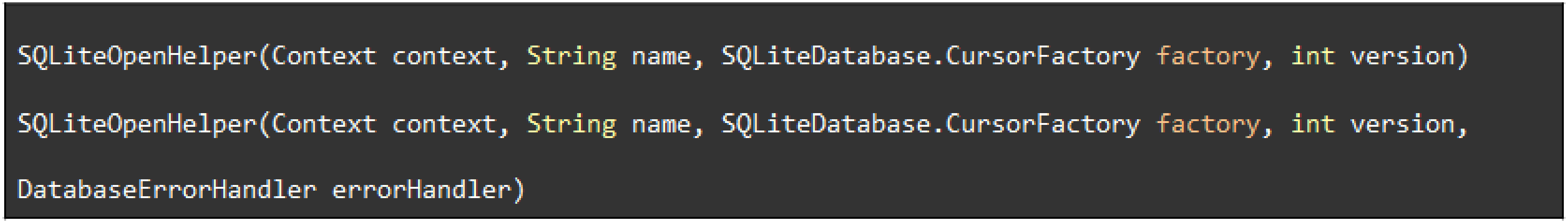
- On Android smartphones, permanent data can be stored, modified, or retrieved using the open-source relational database SQLite.
- There is no need to undertake any database setup or management tasks because it is already integrated into Android.
- The ability to use the SQLite database is provided by the SQLiteOpenHelper class.

Methods of SQLite OpenHelper Class

- The class android.database.sqlite.SQLiteOpenHelper is used to create databases and manage versioning. The onCreate() and onUpgrade() methods of this class must be implemented before you can execute any database activities.

Methods of SQLite OpenHelper Class

- There are two constructors of SQLiteOpenHelper class described below



```
SQLiteOpenHelper(Context context, String name, SQLiteDatabase.CursorFactory factory, int version)

SQLiteOpenHelper(Context context, String name, SQLiteDatabase.CursorFactory factory, int version,

DatabaseErrorHandler errorHandler)
```

Methods of SQLite OpenHelper Class

Some Important methods of SQLiteOpenHelper class are as follows:

```
public abstract void onCreate(SQLiteDatabase db)

public abstract void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion)

public synchronized void close ()

public void onDowngrade(SQLiteDatabase db, int oldVersion, int newVersion)
```

Database Insertion

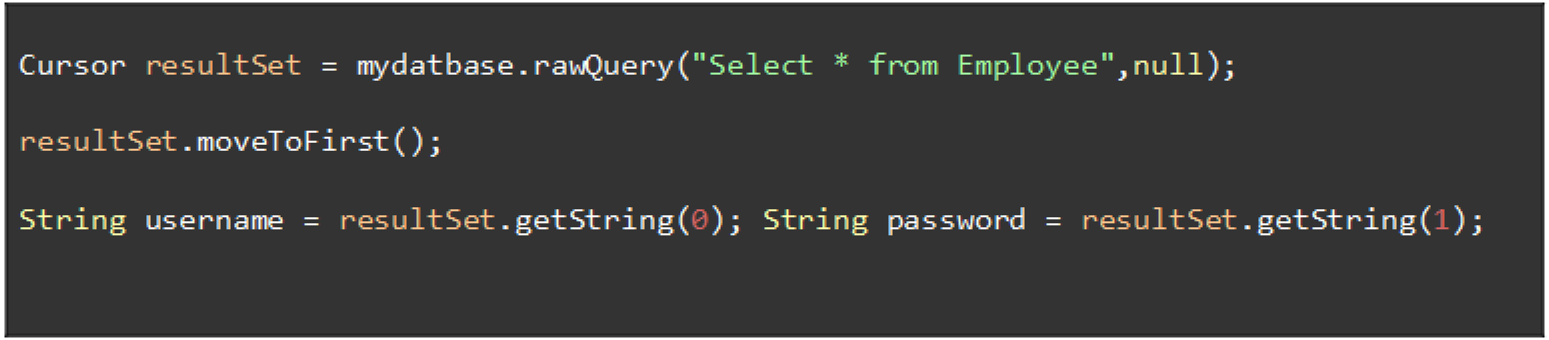
The syntax of insert query is given below

```
mydatabase.execSQL("CREATE TABLE IF NOT EXISTS Employee

(Username VARCHAR,Password VARCHAR);");

mydatabase.execSQL("INSERT INTO Employee VALUES('admin','admin');");
```

Database Fetching

- Using an object of the Cursor class, we may retrieve anything from the database.
- The cursor will point at the records in the table as we run the rawQuery() method of this class, which returns a resultset.
- We can advance the cursor and access the data.

Database Fetching



```
Cursor resultSet = mydatbase.rawQuery("Select * from Employee",null);

resultSet.moveToFirst();

String username = resultSet.getString(0); String password = resultSet.getString(1);
```

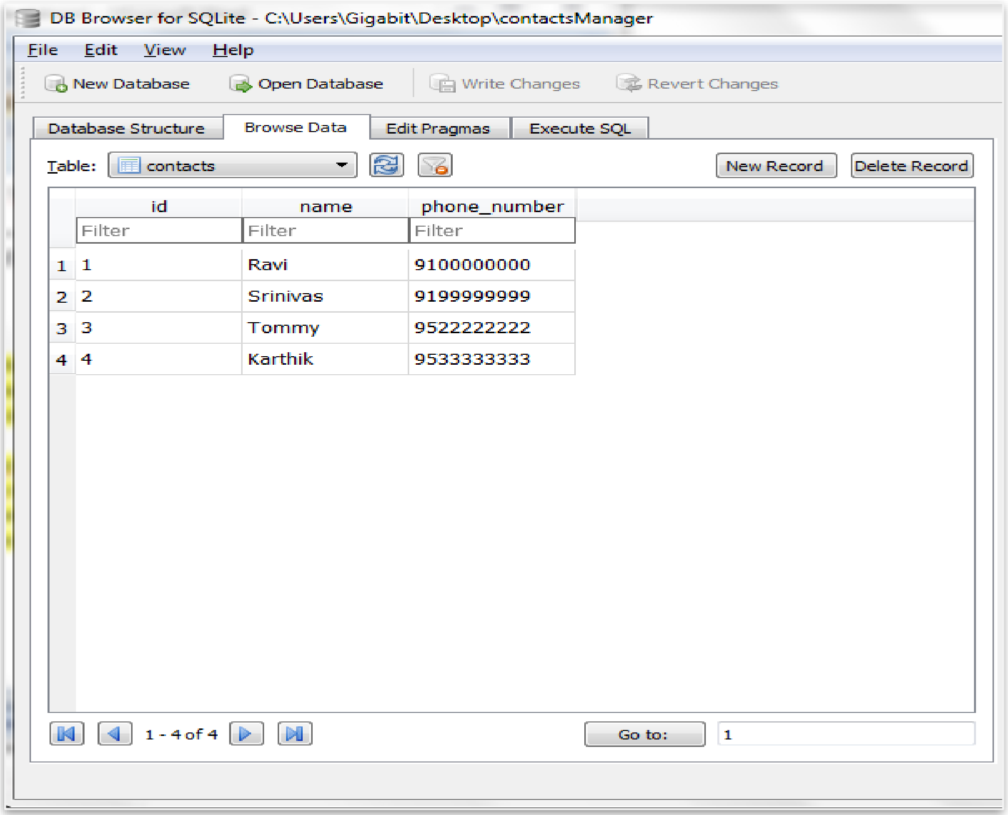
Database Fetching Methods

- getColumnCount()
- getColumnIndex(String columnName)
- getColumnName(int columnIndex)
- getColumnNames()
- getCount()
- getPosition()
- isClosed()

Steps to View Database in SQLite

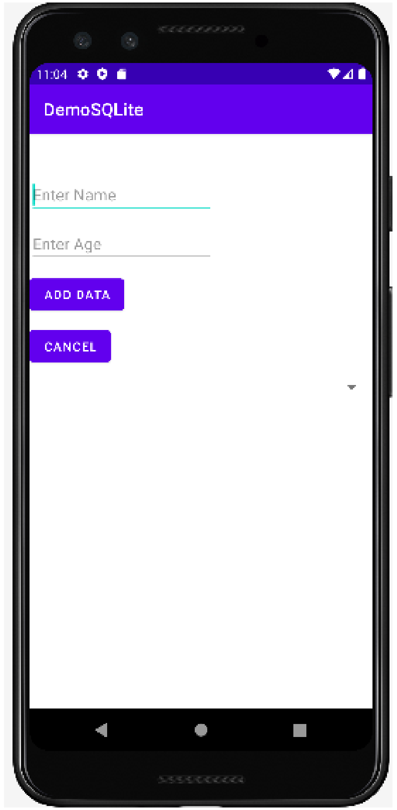
- Launching File Explorer
- access the data directory
- Look up the name of your application package in the data directory.
- Go to databases in your application package to access your database (contactsManager)
- A copy of your database can be saved.
- any tool or browser extension for SQLite. DB Browser for SQLite, for instance
- Open your database in the programme (DB Browser for SQLite) by launching it.
- You can then choose and view the data in your database depending on the tool you're using.
- To see the stored data, for instance, pick your table (contacts) from the Browse Data menu in the DB Browser for SQLite.

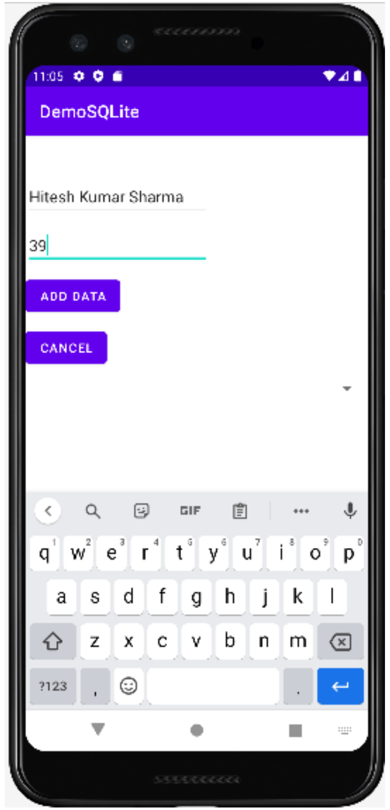
Steps to View Database in SQLite (Real Interface)



	id	name	phone_number
	Filter	Filter	Filter
1	1	Ravi	9100000000
2	2	Srinivas	9199999999
3	3	Tommy	9522222222
4	4	Karthik	9533333333

SQLite Database in Android (Real Interface)


11:04
DemoSQLite
Enter Name
Enter Age
ADD DATA
CANCEL


11:05
DemoSQLite
Hitesh Kumar Sharma
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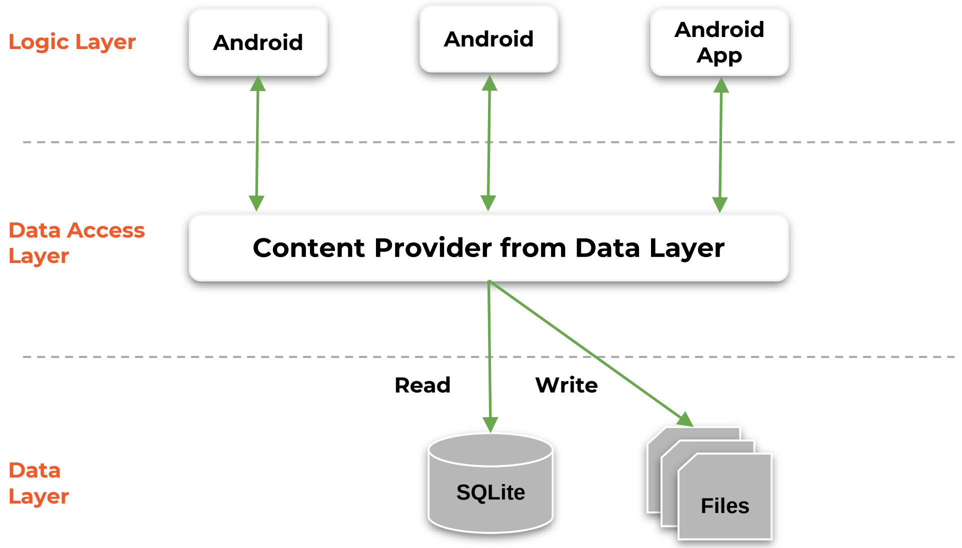
ADD DATA
CANCEL

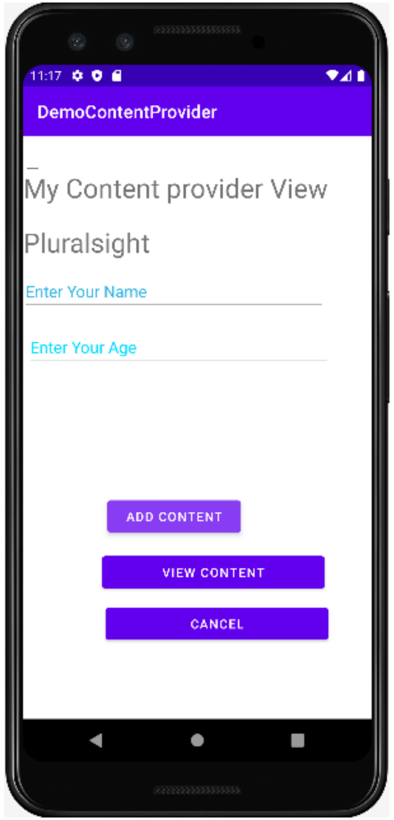
Content Providers in Android App

- Sometimes sharing data between applications is necessary.
- Here is where content providers are quite helpful.
- When requested, a content provider component transfers data from one application to another using the methods of the ContentResolver class.
- A content provider can store its data in a variety of ways, including as files, databases, or even as a stream via a network.

Content Providers in Android App



Content Providers in Android App (Real Interface)


11:17

DemoContentProvider

My Content provider View

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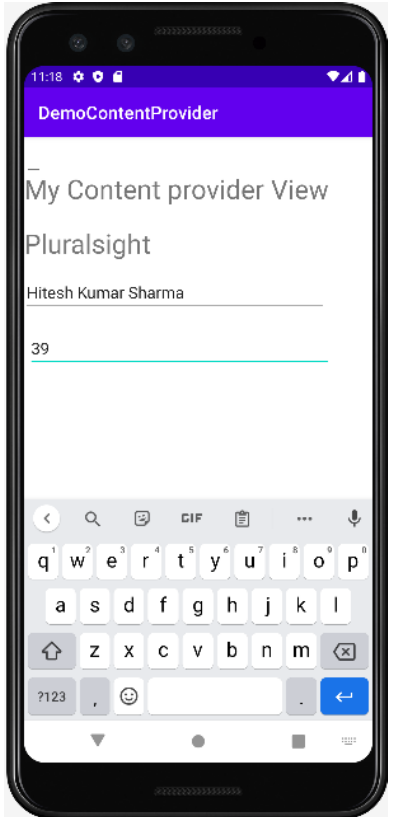
Enter Your Name

Enter Your Age


11:18

DemoContentProvider

My Content provider View

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Questions

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