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Practical Related Questions

1. Write in detail which methods are needed to implement Content Provider class.

Following are the six abstract methods and their description which are essential to override as the part of ContentProvider class:

query()	A method that accepts arguments and fetches the data from the desired table. Data is returned as a cursor object.
insert()	To insert a new row in the database of the content provider. It returns the content URI of the inserted row.
update()	This method is used to update the fields of an existing row. It returns the number of rows updated.
delete()	This method is used to delete the existing rows. It returns the number of rows deleted.
getType()	This method returns the Multipurpose Internet Mail Extension (MIME) type of data to the given Content URI.
onCreate()	As the content provider is created, the android system calls this method immediately to initialise the provider.

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2. Explain different parts of an URI in android application. Also write the format of URI.

URI syntax and components

At the highest level a URI reference (hereinafter simply "URI") in string form has the syntax

```
[scheme : ]scheme-specific-part[ # fragment]
```

where square brackets [...] delineate optional components and the characters `:` and `#` stand for themselves.

An *absolute* URI specifies a scheme; a URI that is not absolute is said to be *relative*. URIs are also classified according to whether they are *opaque* or *hierarchical*.

An *opaque* URI is an absolute URI whose scheme-specific part does not begin with a slash character (`'/'`). Opaque URIs are not subject to further parsing. Some examples of opaque URIs are:

```
mailto:java-net@java.sun.com
```

```
news:comp.lang.java
```

```
urn:isbn:096139210x
```

3. Write steps to create a content provider in android applications.

- Create a class that extends `ContentProvider`.
- Create a contract class.
- Create the `UriMatcher` definition.
- Implement the `onCreate()` method.
- Implement the `getType()` method.
- Implement the CRUD methods.
- Add the content provider to your `AndroidManifest.xml`.

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Exercise

MainActivity.java

```
package com.example.contentprovidereg;

import androidx.appcompat.app.AppCompatActivity;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.MotionEvent;
import android.view.View;
import android.view.ViewGroup;
import android.view.inputmethod.InputMethodManager;
import android.widget.CursorAdapter;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onTouchEvent(MotionEvent event){
        InputMethodManager imm =
        (InputMethodManager) getSystemService(Context.INPUT_METHOD_SERVICE);
        imm.hideSoftInputFromWindow(getCurrentFocus().getWindowToken(), 0);
        return true;
    }

    public void onClickAddDetails(View view){
        ContentValues values = new ContentValues();

        values.put(MyContentProvider.name, ((EditText)
        findViewById(R.id.textName)).getText().toString());

        getContentResolver().insert(MyContentProvider.CONTENT_URI, values);

        Toast.makeText(getBaseContext(), "New Record Inserted",
        Toast.LENGTH_LONG).show();
    }

    public void onClickShowDetails(View view){
        TextView result = (TextView) findViewById(R.id.res);
    }
}
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```
        Cursor c =
getContentResolver().query(Uri.parse("content://com.demo.user.provider/users"), null,
null, null, null);

        if(c.moveToFirst()){
            StringBuilder str = new StringBuilder();
            while(!c.isAfterLast()){
                str.append("\n" + c.getString(c.getColumnIndex("id")) + ":- " +
c.getString(c.getColumnIndex("name")));
                c.moveToNext();
            }
            result.setText(str);
        }
        else{
            result.setText("No Records Found");
        }
    }
}
```

MyContentProvider.java

```
package com.example.contentprovidereg;

import androidx.appcompat.app.AppCompatActivity;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.MotionEvent;
import android.view.View;
import android.view.ViewGroup;
import android.view.inputmethod.InputMethodManager;
import android.widget.CursorAdapter;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onTouchEvent(MotionEvent event){
        InputMethodManager imm =
(InputMethodManager) getSystemService(Context.INPUT_METHOD_SERVICE);
```

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```
        imm.hideSoftInputFromWindow(getCurrentFocus().getWindowToken(), 0);
        return true;
    }

    public void onClickAddDetails(View view){
        ContentValues values = new ContentValues();

        values.put(MyContentProvider.name, ((EditText)
        findViewById(R.id.textName)).getText().toString());

        getContentResolver().insert(MyContentProvider.CONTENT_URI, values);

        Toast.makeText(getBaseContext(), "New Record Inserted",
        Toast.LENGTH_LONG).show();
    }

    public void onClickShowDetails(View view){
        TextView result = (TextView) findViewById(R.id.res);

        Cursor c =
        getContentResolver().query(Uri.parse("content://com.demo.user.provider/users"), null,
        null, null, null);

        if(c.moveToFirst()){
            StringBuilder str = new StringBuilder();
            while(!c.isAfterLast()){
                str.append("\n" + c.getString(c.getColumnIndex("id")) + ":- " +
                c.getString(c.getColumnIndex("name")));
                c.moveToNext();
            }
            result.setText(str);
        }
        else{
            result.setText("No Records Found");
        }
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#168BC34A"
    tools:context=".MainActivity">

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="match_parent"
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```
android:layout_height="wrap_content"
android:layout_centerVertical="true"
android:orientation="vertical"
app:layout_constraintBottom_toTopOf="@+id/imageView"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.13"
tools:ignore="MissingConstraints">

<TextView
    android:id="@+id/textView1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="40dp"
    android:layout_marginBottom="70dp"
    android:text="@string/heading"
    android:textAlignment="center"
    android:textAppearance="@style/TextAppearance.AppCompat.Large"
    android:textColor="@android:color/holo_green_dark"
    android:textSize="36sp"
    android:textStyle="bold" />

<EditText
    android:id="@+id/textName"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="40dp"
    android:hint="@string/hintText" />

<Button
    android:id="@+id/insertButton"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginStart="20dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="20dp"
    android:layout_marginBottom="20dp"
    android:background="#4CAF50"
    android:onClick="onClickAddDetails"
    android:text="@string/insertButtontext"
    android:textAlignment="center"
    android:textAppearance="@style/TextAppearance.AppCompat.Display1"
    android:textColor="#FFFFFF"
    android:textStyle="bold" />

<Button
    android:id="@+id/loadButton"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginStart="20dp"
    android:layout_marginTop="10dp"
    android:layout_marginEnd="20dp"
```

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```
        android:layout_marginBottom="20dp"
        android:background="#4CAF50"
        android:onClick="onClickShowDetails"
        android:text="@string/loadButtonText"
        android:textAlignment="center"
        android:textAppearance="@style/TextAppearance.AppCompat.Display1"
        android:textColor="#FFFFFF"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/res"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:clickable="false"
        android:ems="10"
        android:textColor="@android:color/holo_green_dark"
        android:textSize="18sp"
        android:textStyle="bold" />

    <ListView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/liv">
    </ListView>

</LinearLayout>

<ImageView
    android:id="@+id/imageView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    />

</androidx.constraintlayout.widget.ConstraintLayout>
```

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Output

