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Practical 07

Aim: Demonstrate loading a list of books in the background using AsyncTaskLoader, displaying the results with a progress bar, and managing UI elements using LinearLayout.

Book.java

```
package com.meallistlogger.practical7;

public class Book {
   private String title, author;
   public Book(String title, String author) {
      this.title = title;
      this.author = author;
   }
   public String getTitle() {
      return title;
   }
   public String getAuthor() {
      return author;
   }
}
```

BookTaskLoader.java

```
package com.meallistlogger.practical7;

import android.content.Context;
import android.os.SystemClock;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.loader.content.AsyncTaskLoader;
import java.util.ArrayList;
import java.util.List;
public class BookTaskLoader extends AsyncTaskLoader<List<Book>> {
   private String param1, param2;
   public BookTaskLoader(@NonNull Context context, String param1,
                  String param2) {
      super(context);
      this.param1 = param1;
      this.param2 = param2;
   }
   @Nullable
   @Override
   public List<Book> loadInBackground() {
      List<Book> list = new ArrayList<>();
      list.add(new Book("1984", "George Orwell"));
```

```
        list.add(new Book("To Kill a Mockingbird", "Harper Lee"));
        list.add(new Book("The Catcher in the Rye", "J.D. Salinger"));
        SystemClock.sleep(2000); // Simulating delay
        return list;
    }
}
```

MainActivity.java

```
package com.meallistlogger.practical7;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.ProgressBar;
import android.widget.TextView;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.loader.app.LoaderManager;
import androidx.loader.content.Loader;
import java.util.List;
public class MainActivity extends AppCompatActivity
        implements LoaderManager.LoaderCallbacks<List<Book>>,
        Loader.OnLoadCanceledListener<List<Book>> {
    private static final String LOG_TAG = "BookLoaderExample";
    private static final int LOADER_ID_BOOK = 30000;
    Button load, cancel;
    ProgressBar progress;
    TextView text;
    private static final String KEY_PARAM1 = "Key1", KEY_PARAM2 =
            "Key2";
    private LoaderManager lm;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        load = findViewById(R.id.load);
        cancel = findViewById(R.id.cancel);
        progress = findViewById(R.id.progressBar);
        text = findViewById(R.id.textView);
        progress.setVisibility(View.GONE);
        cancel.setEnabled(false);
        load.setOnClickListener(v -> clickButtonLoad());
        cancel.setOnClickListener(v -> clickButtonCancel());
        lm = LoaderManager.getInstance(this);
    }
```

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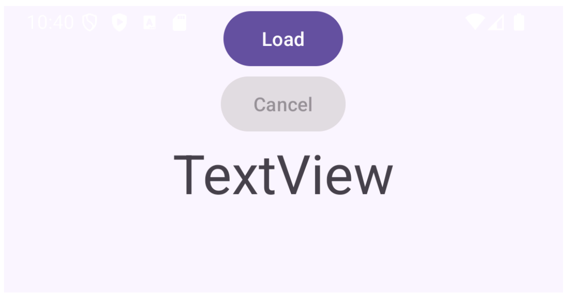
```
private void clickButtonLoad() {
    text.setText("");
    Log.i(LOG_TAG, "Loading Books");
    LoaderManager.LoaderCallbacks<List<Book>> loaderCallbacks = this;
    Bundle args = new Bundle();
    args.putString(KEY_PARAM1, "Param1 Value");
    args.putString(KEY_PARAM2, "Param2 Value");
    Loader<List<Book>> loader = lm.initLoader(LOADER_ID_BOOK, args,
            loaderCallbacks);
    loader.registerOnLoadCanceledListener(this);
    loader.forceLoad();
}
private void clickButtonCancel() {
    Log.i(LOG_TAG, "Canceling Book Load");
    Loader<List<Book>> loader = lm.getLoader(LOADER_ID_BOOK);
    if (loader != null) {
        loader.cancelLoad();
    }
}
@NonNull
@Override
public Loader<List<Book>> onCreateLoader(int id, @Nullable Bundle
        args) {
    Log.i(LOG_TAG, "onCreateLoader");
    progress.setVisibility(View.VISIBLE);
    if (id == LOADER_ID_BOOK) {
        load.setEnabled(false);
        cancel.setEnabled(true);
        String param1 = args.getString(KEY_PARAM1);
        String param2 = args.getString(KEY_PARAM2);
        return new BookTaskLoader(MainActivity.this, param1,
                param2);
    }
    throw new RuntimeException("Unknown loader ID");
}
@Override
public void onLoadFinished(@NonNull Loader<List<Book>> loader,
                           List<Book> data) {
    Log.i(LOG_TAG, "onLoadFinished");
    if (loader.getId() == LOADER_ID_BOOK) {
        lm.destroyLoader(loader.getId());
        StringBuilder sb = new StringBuilder();
        for (Book book : data) {
            sb.append("Title:").append(book.getTitle())
                    .append("\n")
                    .append("Author:")
                    .append(book.getAuthor()).append("\n\n");
            }
            text.setText(sb.toString());
            progress.setVisibility(View.GONE);
            load.setEnabled(true);
            cancel.setEnabled(false);
        }
    }
    @Override
    public void onLoaderReset(@NonNull Loader<List<Book>> loader) {
        Log.i(LOG_TAG, "onLoadReset");
        text.setText("");
    }
    @Override
    public void onLoadCanceled(@NonNull Loader<List<Book>> loader) {
        Log.i(LOG_TAG, "onLoadCancelled");
        if (loader.getId() == LOADER_ID_BOOK) {
            lm.destroyLoader(loader.getId());
            progress.setVisibility(View.GONE);
            load.setEnabled(true);
            cancel.setEnabled(false);
        }
    }
}
```

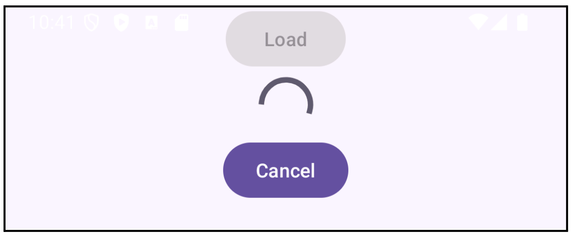
Activity_main.xml

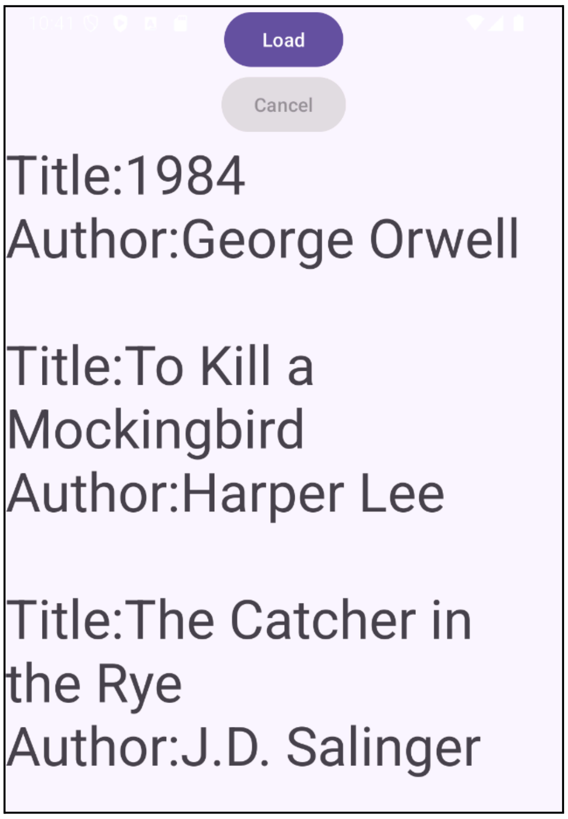
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <Button
        android:id="@+id/load"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Load" />
    <ProgressBar
        android:id="@+id/progressBar"
        style="?android:attr/progressBarStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center" />
    <Button
        android:id="@+id/cancel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Cancel"/>
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="TextView"
        android:textSize="40dp"/>
</LinearLayout>
```

Output:



TextView





Title:1984
Author:George Orwell

Title:To Kill a Mockingbird
Author:Harper Lee

Title:The Catcher in the Rye
Author:J.D. Salinger