**Thực hành buổi 6**

**Lê Quốc Huy 1150070016**

# Bài 1 – MultiThread sử dụng Message + Handler

**Bước 1. Tạo file dimens.xml**

<resources>

<dimen name="margin\_base">5dp</dimen>

<dimen name="text\_small">14sp</dimen>

<dimen name="text\_medium">16sp</dimen>

<dimen name="text\_medium\_large">18sp</dimen>

<dimen name="text\_large">20sp</dimen>

</resources>

**Bước 2. Tạo file strings.xml**

<resources>

<string name="start">Start</string>

<string name="returned\_by\_bg\_thread">Returned by background thread:\n\n</string>

<string name="done\_background\_thread\_has\_been\_stopped">Done \nBackground thread has been stopped</string>

<string name="done">Done</string>

<string name="working">Working...</string>

<string name="global\_value\_seen">\n global value seen by all thread</string>

</resources>

**Bước 3. Thiết kế giao diện (activity\_main.xml)**

*<?*xml version="1.0" encoding="utf-8"*?>*<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 android:padding="@dimen/margin\_base"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/tv\_working"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:textSize="@dimen/text\_medium\_large"  
 android:textStyle="bold" />  
  
 <ProgressBar  
 android:id="@+id/pb\_first"  
 style="?android:attr/progressBarStyleHorizontal"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="@dimen/margin\_base"  
 android:max="100"  
 android:progress="0" />  
  
 <TextView  
 android:id="@+id/tv\_return"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:textSize="@dimen/text\_medium" />  
  
 <FrameLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content">  
  
 <Button  
 android:id="@+id/btn\_start"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:text="@string/start" />  
  
 <ProgressBar  
 android:id="@+id/pb\_second"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="@dimen/margin\_base"  
 android:indeterminate="true"  
 android:visibility="gone" />  
 </FrameLayout>  
</LinearLayout>

**Bước 4. Khai báo biến trong MainActivity**

package com.example.lequochuy\_baithuchanh6;  
import android.os.Bundle;  
import android.os.Handler;  
import android.os.Looper;  
import android.os.Message;  
import android.view.View;  
import android.widget.Button;  
import android.widget.ProgressBar;  
import android.widget.TextView;  
import androidx.appcompat.app.AppCompatActivity;  
import java.lang.ref.WeakReference;  
import java.util.Random;  
public class MainActivity extends AppCompatActivity {  
 private ProgressBar pbFirst, pbSecond;  
 private TextView tvMsgWorking, tvMsgReturned;  
 private boolean isRunning;  
 private int MAX\_SEC;  
 private int intTest;  
 private Thread bgThread;  
 private Button btnStart;  
 private static final int *MSG\_UPDATE* = 1;  
 private static final int *MSG\_DONE* = 2;  
 */\*\* Handler UI dùng WeakReference để tránh leak Activity \*/* private static class UiHandler extends Handler {  
 private final WeakReference<MainActivity> ref;  
 UiHandler(MainActivity act) {  
 super(Looper.*getMainLooper*());  
 ref = new WeakReference<>(act);  
 }  
 @Override  
 public void handleMessage(Message msg) {  
 MainActivity a = ref.get();  
 if (a == null) return;  
 switch (msg.what) {  
 case *MSG\_UPDATE*: {  
 int random = msg.arg1; *// số ngẫu nhiên 0..100* int progress = msg.arg2; *// % tiến độ* int seen = (msg.obj instanceof Integer) ? (Integer) msg.obj : 0; *// intTest* a.tvMsgWorking.setText(a.getString(R.string.*working*));  
 a.pbFirst.setProgress(progress);  
 String prev = a.tvMsgReturned.getText() == null ? "" : a.tvMsgReturned.getText().toString();  
 String line = "random=" + random + ", intTest=" + seen + a.getString(R.string.*global\_value\_seen*);  
 a.tvMsgReturned.setText(prev + line + "\n");  
 break;  
 }  
 case *MSG\_DONE*: { a.tvMsgWorking.setText(a.getString(R.string.*done\_background\_thread\_has\_been\_stopped*));  
 a.pbFirst.setProgress(100);  
 a.pbSecond.setVisibility(View.*GONE*);  
 a.btnStart.setEnabled(true);  
 a.isRunning = false;  
 break;  
 }  
 default:  
 super.handleMessage(msg);  
 }  
 }  
 }  
 private UiHandler handler;  
 private final Random random = new Random();  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 findViewByIds();  
 initVariables();  
 initEvents();  
 }  
 private void findViewByIds() {  
 tvMsgWorking = findViewById(R.id.*tv\_working*);  
 tvMsgReturned = findViewById(R.id.*tv\_return*);  
 pbFirst = findViewById(R.id.*pb\_first*);  
 pbSecond = findViewById(R.id.*pb\_second*);  
 btnStart = findViewById(R.id.*btn\_start*);  
 }  
 private void initVariables() {  
 handler = new UiHandler(this);  
 isRunning = false;  
 MAX\_SEC = 10; *// chạy trong 10 giây* intTest = 0;  
  
 tvMsgWorking.setText("");  
 tvMsgReturned.setText(getString(R.string.*returned\_by\_bg\_thread*));  
 pbFirst.setProgress(0);  
 pbSecond.setVisibility(View.*GONE*);  
 }  
 private void initEvents() {  
 btnStart.setOnClickListener(v -> {  
 if (isRunning) return;  
 initBgThread();  
 btnStart.setEnabled(false);  
 pbSecond.setVisibility(View.*VISIBLE*);  
 });  
 }  
 */\*\* Tạo và chạy background thread \*/* private void initBgThread() {  
 isRunning = true;  
 bgThread = new Thread(() -> {  
 long start = System.*currentTimeMillis*();  
 long durationMs = MAX\_SEC \* 1000L;  
 while (isRunning && System.*currentTimeMillis*() - start <= durationMs) {  
 try {  
 Thread.*sleep*(1000); *// mỗi 1s cập nhật một lần* } catch (InterruptedException e) {  
 break;  
 }  
 *// cập nhật dữ liệu* intTest++;  
 int rand = random.nextInt(101);  
 int percent = (int) (100.0 \* (System.*currentTimeMillis*() - start) / durationMs);  
 if (percent > 100) percent = 100;  
 *// gửi Message về UI: dùng arg1/arg2 và obj* Message m = handler.obtainMessage(*MSG\_UPDATE*);  
 m.arg1 = rand; *// random* m.arg2 = percent; *// progress %* m.obj = intTest; *// Integer - biến đếm global* handler.sendMessage(m);  
 }  
  
 handler.sendEmptyMessage(*MSG\_DONE*);  
 });  
 bgThread.start();  
 }  
 @Override  
 protected void onStop() {  
 super.onStop();  
 isRunning = false;  
 }  
}

**Kết quả**

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# Bài 2 – MultiThread sử dụng Post()

**Bước 1 kiểm tra dimens.xml**

<resources>  
 <dimen name="margin\_base">5dp</dimen>  
 <dimen name="text\_small">14sp</dimen>  
 <dimen name="text\_medium">16sp</dimen>  
 <dimen name="text\_medium\_large">18sp</dimen>  
 <dimen name="text\_large">20sp</dimen>  
</resources>

**Bước 2 Thêm các chuỗi trong strings.xml**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:padding="16dp"  
 android:orientation="vertical"  
 android:gravity="center"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent">  
  
 <Button android:id="@+id/btn\_bai1" android:text="Bài 1 - Handler/Message"  
 android:layout\_width="match\_parent" android:layout\_height="wrap\_content"/>  
  
 <Button android:id="@+id/btn\_bai2" android:text="Bài 2 - post()"  
 android:layout\_width="match\_parent" android:layout\_height="wrap\_content"  
 android:layout\_marginTop="12dp"/>  
  
 <Button android:id="@+id/btn\_bai3" android:text="Bài 3 - AsyncTask"  
 android:layout\_width="match\_parent" android:layout\_height="wrap\_content"  
 android:layout\_marginTop="12dp"/>  
  
 <Button android:id="@+id/btn\_bai4" android:text="Bài 4 - AsyncTask phát nhạc"  
 android:layout\_width="match\_parent" android:layout\_height="wrap\_content"  
 android:layout\_marginTop="12dp"/>  
  
 <Button android:id="@+id/btn\_bai5" android:text="Bài 5 - RxJava phát âm"  
 android:layout\_width="match\_parent" android:layout\_height="wrap\_content"  
 android:layout\_marginTop="12dp"/>  
</LinearLayout>

**Bước 3 Tạo layout activity\_post.xml**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:padding="@dimen/margin\_base"

android:orientation="vertical"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:id="@+id/tv\_top\_caption"

android:textSize="@dimen/text\_medium"

android:text="Post Example"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"/>

<ProgressBar

android:id="@+id/pb\_waiting"

style="?android:attr/progressBarStyleHorizontal"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="@dimen/margin\_base"/>

<EditText

android:id="@+id/et\_input"

android:hint="@string/enter\_some\_data\_here"

android:textSize="@dimen/text\_medium"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"/>

<Button

android:id="@+id/btn\_execute"

android:text="@string/execute"

android:layout\_gravity="center"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"/>

</LinearLayout>

**Bước 4 Tạo class PostActivity.java**

package com.example.lequochuy\_baithuchanh6;

import androidx.appcompat.app.AppCompatActivity;

import android.os.\*;

import android.widget.\*;

public class PostActivity extends AppCompatActivity {

private ProgressBar pbWaiting;

private TextView tvTopCaption;

private EditText etInput;

private Button btnExecute;

private Handler handler;

private int globalValue = 0;

private final Runnable bgRunnable = new Runnable() {

@Override

public void run() {

globalValue++;

tvTopCaption.setText("globalValue = " + globalValue);

handler.postDelayed(this, 1000);

}

};

private final Runnable fgRunnable = () -> {

globalValue += 100;

tvTopCaption.setText("globalValue = " + globalValue);

};

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_post);

pbWaiting = findViewById(R.id.pb\_waiting);

tvTopCaption = findViewById(R.id.tv\_top\_caption);

etInput = findViewById(R.id.et\_input);

btnExecute = findViewById(R.id.btn\_execute);

handler = new Handler(Looper.getMainLooper());

new Thread(() -> handler.post(bgRunnable)).start();

btnExecute.setOnClickListener(v -> {

handler.post(fgRunnable);

Toast.makeText(this, etInput.getText().toString(), Toast.LENGTH\_SHORT).show();

});

}

@Override

protected void onDestroy() {

super.onDestroy();

handler.removeCallbacks(bgRunnable);

handler.removeCallbacks(fgRunnable);

}

}

Kết quả

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# Bài 3 Viết ứng dụng sử dụng Asynctask

Bước 1 Taọ class SlowTask.java

package com.example.lequochuy\_baithuchanh6;

import android.app.ProgressDialog;

import android.content.Context;

import android.os.AsyncTask;

import android.widget.TextView;

@SuppressWarnings("deprecation")

public class SlowTask extends AsyncTask<Void, Integer, String> {

private final Context context;

private final TextView tvStatus;

private ProgressDialog dialog;

public SlowTask(Context ctx, TextView tv) {

this.context = ctx;

this.tvStatus = tv;

}

@Override

protected void onPreExecute() {

dialog = new ProgressDialog(context);

dialog.setMessage(context.getString(R.string.please\_wait));

dialog.setCancelable(false);

dialog.show();

}

@Override

protected String doInBackground(Void... voids) {

for (int i = 0; i <= 5; i++) {

publishProgress(i);

try { Thread.sleep(2000); } catch (InterruptedException ignored) {}

}

return "DONE";

}

@Override

protected void onProgressUpdate(Integer... values) {

tvStatus.setText("Progress: " + values[0]);

}

@Override

protected void onPostExecute(String s) {

if (dialog != null && dialog.isShowing()) dialog.dismiss();

tvStatus.setText(s);

}

}

Bước 2 Taọ class AsyncActivity.java

package com.example.lequochuy\_baithuchanh6;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.widget.Button;

import android.widget.TextView;

import java.text.SimpleDateFormat;

import java.util.Date;

public class AsyncActivity extends AppCompatActivity {

private Button btnQuickJob, btnSlowJob;

private TextView tvStatus;

private SlowTask slowTask;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_async);

btnQuickJob = findViewById(R.id.btn\_quick\_job);

btnSlowJob = findViewById(R.id.btn\_slow\_job);

tvStatus = findViewById(R.id.tv\_status);

slowTask = new SlowTask(this, tvStatus);

btnQuickJob.setOnClickListener(v -> {

SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy HH:mm:ss");

tvStatus.setText(sdf.format(new Date()));

});

btnSlowJob.setOnClickListener(v -> {

slowTask = new SlowTask(this, tvStatus); // tạo lại để bấm nhiều lần

slowTask.execute();

});

}

}

Bước 3 Tạo layuot activity\_async.xml

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:padding="@dimen/margin\_base"

android:orientation="vertical"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:id="@+id/tv\_status"

android:textSize="@dimen/text\_medium"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"/>

<LinearLayout

android:layout\_marginTop="@dimen/margin\_base"

android:orientation="horizontal"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content">

<Button

android:id="@+id/btn\_quick\_job"

android:text="@string/quick\_job"

android:layout\_weight="1"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"/>

<Button

android:id="@+id/btn\_slow\_job"

android:text="@string/slow\_job"

android:layout\_weight="1"

android:layout\_marginLeft="@dimen/margin\_base"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"/>

</LinearLayout>

</LinearLayout>

Kết quả

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# Bài 4 Tự viết 1 ứng dụng sử dụng Asynctask để phát nhạc

**Bước 1 Tạo class MusicAsyncTaskActivity.java**

package com.example.lequochuy\_baithuchanh6;

import androidx.appcompat.app.AppCompatActivity;

import android.media.MediaPlayer;

import android.os.AsyncTask;

import android.os.Bundle;

import android.widget.Button;

@SuppressWarnings("deprecation")

public class MusicAsyncTaskActivity extends AppCompatActivity {

private Button btnPlay, btnStop;

private MediaPlayer mediaPlayer;

private PlayMusicTask playTask;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_music\_async);

btnPlay = findViewById(R.id.btn\_play\_async);

btnStop = findViewById(R.id.btn\_stop\_async);

btnPlay.setOnClickListener(v -> {

if (playTask == null || playTask.getStatus() == AsyncTask.Status.FINISHED) {

playTask = new PlayMusicTask();

playTask.execute();

}

});

btnStop.setOnClickListener(v -> stopMusic());

}

private class PlayMusicTask extends AsyncTask<Void, Void, Void> {

@Override

protected Void doInBackground(Void... voids) {

mediaPlayer = MediaPlayer.create(MusicAsyncTaskActivity.this, R.raw.demo\_music);

mediaPlayer.setLooping(false);

mediaPlayer.start();

return null;

}

}

private void stopMusic() {

try {

if (mediaPlayer != null) {

if (mediaPlayer.isPlaying()) mediaPlayer.stop();

mediaPlayer.release();

mediaPlayer = null;

}

} catch (Exception ignored) {}

}

@Override

protected void onDestroy() {

super.onDestroy();

stopMusic();

}

}

**Bước 2 Tạo layout activity\_music\_async.xml**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:padding="@dimen/margin\_base"

android:orientation="vertical"

android:gravity="center"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/btn\_play\_async"

android:text="@string/play\_async"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"/>

<Button

android:id="@+id/btn\_stop\_async"

android:text="@string/stop\_async"

android:layout\_marginTop="@dimen/margin\_base"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"/>

</LinearLayout>

Kết quả A screenshot of a computer

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# Bài 5 Viết lại ứng dụng bài 4 sử dụng RxJava, Rx Android

**Bước 1 Tạo class** **MusicRxActivity.java**

package com.example.lequochuy\_baithuchanh6;

import androidx.appcompat.app.AppCompatActivity;

import android.media.MediaPlayer;

import android.os.Bundle;

import android.widget.Button;

import io.reactivex.rxjava3.android.schedulers.AndroidSchedulers;

import io.reactivex.rxjava3.core.Completable;

import io.reactivex.rxjava3.disposables.Disposable;

import io.reactivex.rxjava3.schedulers.Schedulers;

public class MusicRxActivity extends AppCompatActivity {

private Button btnPlay, btnStop;

private MediaPlayer mediaPlayer;

private Disposable playDisposable;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_music\_rx);

btnPlay = findViewById(R.id.btn\_play\_rx);

btnStop = findViewById(R.id.btn\_stop\_rx);

btnPlay.setOnClickListener(v -> playWithRx());

btnStop.setOnClickListener(v -> stopMusic());

}

private void playWithRx() {

if (playDisposable != null && !playDisposable.isDisposed()) return;

playDisposable = Completable.fromAction(() -> {

mediaPlayer = MediaPlayer.create(MusicRxActivity.this, R.raw.demo\_music);

mediaPlayer.setLooping(false);

mediaPlayer.start();

})

.subscribeOn(Schedulers.io())

.observeOn(AndroidSchedulers.mainThread())

.subscribe(

() -> { },

throwable -> { }

);

}

private void stopMusic() {

if (playDisposable != null && !playDisposable.isDisposed()) {

playDisposable.dispose();

}

try {

if (mediaPlayer != null) {

if (mediaPlayer.isPlaying()) mediaPlayer.stop();

mediaPlayer.release();

mediaPlayer = null;

}

} catch (Exception ignored) {}

}

@Override

protected void onDestroy() {

super.onDestroy();

stopMusic();

}

}

**Bước 2 Tạo layout activity\_music\_rx.xml**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:padding="@dimen/margin\_base"

android:orientation="vertical"

android:gravity="center"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/btn\_play\_rx"

android:text="@string/play\_rx"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"/>

<Button

android:id="@+id/btn\_stop\_rx"

android:text="@string/stop\_rx"

android:layout\_marginTop="@dimen/margin\_base"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"/>

</LinearLayout>

**Kết quả**

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# Thêm và điều chỉnh các lớp

**Thêm class MenuActivity**

package com.example.lequochuy\_baithuchanh6;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.Button;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MenuActivity extends AppCompatActivity {  
 @Override  
 protected void onCreate(Bundle b) {  
 super.onCreate(b);  
 setContentView(R.layout.*activity\_menu*);  
  
 findViewById(R.id.*btn\_bai1*).setOnClickListener(v ->  
 startActivity(new Intent(this, MainActivity.class)));  
 findViewById(R.id.*btn\_bai2*).setOnClickListener(v ->  
 startActivity(new Intent(this, PostActivity.class)));  
 findViewById(R.id.*btn\_bai3*).setOnClickListener(v ->  
 startActivity(new Intent(this, AsyncActivity.class)));  
 findViewById(R.id.*btn\_bai4*).setOnClickListener(v ->  
 startActivity(new Intent(this, MusicAsyncTaskActivity.class)));  
 findViewById(R.id.*btn\_bai5*).setOnClickListener(v ->  
 startActivity(new Intent(this, MusicRxActivity.class)));  
 }  
}

**Thêm layout activity\_menu.xml**

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:padding="16dp"

android:orientation="vertical"

android:gravity="center"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button android:id="@+id/btn\_bai1" android:text="Bài 1 - Handler/Message"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content"/>

<Button android:id="@+id/btn\_bai2" android:text="Bài 2 - post()"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content"

android:layout\_marginTop="12dp"/>

<Button android:id="@+id/btn\_bai3" android:text="Bài 3 - AsyncTask"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content"

android:layout\_marginTop="12dp"/>

<Button android:id="@+id/btn\_bai4" android:text="Bài 4 - AsyncTask phát nhạc"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content"

android:layout\_marginTop="12dp"/>

<Button android:id="@+id/btn\_bai5" android:text="Bài 5 - RxJava phát âm"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content"

android:layout\_marginTop="12dp"/>

</LinearLayout>

**Điều chỉnh AndroidManifest.xml**

<manifest package="com.example.lequochuy\_baithuchanh6"  
 xmlns:android="http://schemas.android.com/apk/res/android">  
  
 <application  
 android:allowBackup="true"  
 android:label="@string/app\_name"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.AppCompat.Light.NoActionBar">  
  
 <activity  
 android:name=".MenuActivity"  
 android:exported="true">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN"/>  
 <category android:name="android.intent.category.LAUNCHER"/>  
 </intent-filter>  
 </activity>  
  
 <activity android:name=".MainActivity" android:exported="false"/>  
 <activity android:name=".PostActivity" android:exported="false"/>  
 <activity android:name=".AsyncActivity" android:exported="false"/>  
 <activity android:name=".MusicAsyncTaskActivity" android:exported="false"/>  
 <activity android:name=".MusicRxActivity" android:exported="false"/>  
 </application>  
  
</manifest>

**Thêm build.gradle.kts**

implementation("androidx.appcompat:appcompat:1.7.0")

implementation("com.google.android.material:material:1.12.0")