Practical 8

**filename:activity\_main.xml**

<?xml version="1.0" encoding="utf-8"?>

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

android:orientation="vertical"

android:padding="16dp"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center">

<EditText

android:id="@+id/lowerBound"

android:hint="Enter lower bound"

android:inputType="number"

android:layout\_width="match\_parent"

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

<EditText

android:id="@+id/upperBound"

android:hint="Enter upper bound"

android:inputType="number"

android:layout\_width="match\_parent"

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

<Button

android:id="@+id/findButton"

android:text="Find Primes"

android:layout\_width="match\_parent"

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

<TextView

android:id="@+id/resultTextView"

android:text="Results will appear here"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:paddingTop="16dp" />

</LinearLayout>

**filename:MainActivity.java**

package com.example.notificationsapp;

import android.Manifest;

import android.app.NotificationChannel;

import android.app.NotificationManager;

import android.content.pm.PackageManager;

import android.os.Build;

import android.os.Bundle;

import android.os.Handler;

import android.os.Looper;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import androidx.core.app.NotificationCompat;

public class MainActivity extends AppCompatActivity {

private EditText lowerBoundEditText, upperBoundEditText;

private TextView resultTextView;

private static final String CHANNEL\_ID = "prime\_channel";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

checkNotificationPermission();

lowerBoundEditText = findViewById(R.id.lowerBound);

upperBoundEditText = findViewById(R.id.upperBound);

resultTextView = findViewById(R.id.resultTextView);

Button findButton = findViewById(R.id.findButton);

createNotificationChannel();

findButton.setOnClickListener(v -> {

int lower = Integer.parseInt(lowerBoundEditText.getText().toString());

int upper = Integer.parseInt(upperBoundEditText.getText().toString());

new Thread(() -> {

StringBuilder primes = new StringBuilder();

for (int i = lower; i <= upper; i++) {

if (isPrime(i)) primes.append(i).append(" ");

}

String result = primes.toString();

new Handler(Looper.getMainLooper()).post(() -> {

resultTextView.setText(result);

showNotification("Prime Numbers :", result + "are the prime numbers between " + lower + " and " + upper + ".");

});

}).start();

});

}

private boolean isPrime(int num) {

if (num < 2) return false;

for (int i = 2; i <= Math.sqrt(num); i++) {

if (num % i == 0) return false;

}

return true;

}

private void showNotification(String title, String message) {

NotificationCompat.Builder builder = new NotificationCompat.Builder(this, CHANNEL\_ID)

.setSmallIcon(R.drawable.ic\_launcher\_foreground)

.setContentTitle(title)

.setContentText(message)

.setPriority(NotificationCompat.PRIORITY\_DEFAULT);

NotificationManager manager = (NotificationManager) getSystemService(NOTIFICATION\_SERVICE);

manager.notify(1, builder.build());

}

private void createNotificationChannel() {

if (Build.VERSION.SDK\_INT >= Build.VERSION\_CODES.O) {

CharSequence name = "Prime Channel";

String description = "Shows when prime calculation completes";

int importance = NotificationManager.IMPORTANCE\_DEFAULT;

NotificationChannel channel = new NotificationChannel(CHANNEL\_ID, name, importance);

channel.setDescription(description);

NotificationManager manager = getSystemService(NotificationManager.class);

manager.createNotificationChannel(channel);

}

}

private void checkNotificationPermission() {

if (Build.VERSION.SDK\_INT >= Build.VERSION\_CODES.TIRAMISU) {

if (ActivityCompat.checkSelfPermission(this, Manifest.permission.POST\_NOTIFICATIONS)

!= PackageManager.PERMISSION\_GRANTED) {

ActivityCompat.requestPermissions(this,

new String[]{Manifest.permission.POST\_NOTIFICATIONS}, 1);

}

}

}

}

**filename:AndroidManifest.xml**

<?xml version="1.0" encoding="utf-8"?>

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

xmlns:tools="http://schemas.android.com/tools">

<uses-permission android:name="android.permission.POST\_NOTIFICATIONS" />

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:exported="true"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.NotificationsApp">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER" />

</intent-filter>

</activity>

</application>

</manifest>

**filename:build.gradle**

dependencies {

...

implementation 'androidx.localbroadcastmanager:localbroadcastmanager:1.1.0'

}