**EX NO: 07 Implement an application that implements Multi-threading.**

**DATE: 06/09/21**

**AIM:**

To Implement an application that implements Multi-threading.

**SOURCE CODE:**

**Activity\_main.xml**

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical" >

<ImageView

android:id="@+id/imageView"

android:layout\_width="250dp"

android:layout\_height="250dp"

android:layout\_margin="50dp"

android:layout\_gravity="center" />

<Button

android:id="@+id/button"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_margin="10dp"

android:layout\_gravity="center"

android:text="Load Image 1" />

<Button

android:id="@+id/button2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_margin="10dp"

android:layout\_gravity="center"

android:text="Load image 2" />

</LinearLayout>

**MainActivity.java**

package com.example.ex7;  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.ImageView;  
public class MainActivity extends AppCompatActivity  
{  
 ImageView img;  
 Button bt1,bt2;  
 @Override  
 protected void onCreate(Bundle savedInstanceState)  
 {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 bt1 = (Button)findViewById(R.id.*button*);  
 bt2= (Button) findViewById(R.id.*button2*);  
 img = (ImageView)findViewById(R.id.*imageView*);  
  
 bt1.setOnClickListener(new View.OnClickListener()  
 {  
 @Override  
 public void onClick(View v)  
 {  
 new Thread(new Runnable()  
 {  
 @Override  
 public void run()  
 {  
 img.post(new Runnable()  
 {  
 @Override  
 public void run()  
 {  
 img.setImageResource(R.drawable.*india1*);  
 }  
 });  
 }  
 }).start();  
 } });  
  
 bt2.setOnClickListener(new View.OnClickListener()  
 {  
 @Override  
 public void onClick(View v)  
 {  
 new Thread(new Runnable()  
 {  
 @Override  
 public void run()  
 {  
 img.post(new Runnable()  
 {  
 @Override  
 public void run()  
 {  
 img.setImageResource(R.drawable.*india2*);  
 }  
 }); }  
 }).start();  
 }  
 });  
 }}

**OUTPUT:**

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

**RESULT:**

Thus an application that implements Multi-threading has been developed and executed.

**EX NO: 08 Develop a native application that uses GPS location information**

**DATE: 13/09/21**

**AIM:**

To develop a native application that uses GPS location information.

**SOURCE CODE:**

**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"  
 tools:context=".MainActivity">  
  
 <LinearLayout  
 android:id="@+id/linearLayout"  
 android:layout\_width="0dp"  
 android:layout\_height="0dp"  
 android:layout\_marginStart="1dp"  
 android:layout\_marginLeft="1dp"  
 android:layout\_marginTop="1dp"  
 android:layout\_marginEnd="1dp"  
 android:layout\_marginRight="1dp"  
 android:layout\_marginBottom="1dp"  
 android:orientation="vertical"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent">  
  
 <TextView  
 android:id="@+id/textView2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:text="Latitude" />  
  
 <TextView  
 android:id="@+id/txtlat"  
 android:layout\_width="match\_parent"  
 android:layout\_height="35dp"  
 android:text="" />  
  
 <TextView  
 android:id="@+id/textView4"  
 android:layout\_width="match\_parent"  
 android:layout\_height="35dp"  
 android:text="Longitude" />  
  
 <TextView  
 android:id="@+id/txtlong"  
 android:layout\_width="match\_parent"  
 android:layout\_height="35dp"  
 android:text="" />  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

**MainActivity.java:**

package com.example.gps;  
import androidx.annotation.NonNull;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.content.ContextCompat;  
import android.Manifest;  
import android.content.Context;  
import android.content.pm.PackageManager;  
import android.location.Criteria;  
import android.location.Location;  
import android.location.LocationListener;  
import android.location.LocationManager;  
import android.os.Build;  
import android.os.Bundle;  
import android.widget.TextView;  
import android.widget.Toast;  
public class MainActivity extends AppCompatActivity implements LocationListener {  
 LocationManager lmanager;  
 String provider;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
  
 if (Build.VERSION.SDK\_INT >= 23) {  
 if (ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS\_FINE\_LOCATION) != PackageManager.PERMISSION\_GRANTED ||  
 ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS\_COARSE\_LOCATION) != PackageManager.PERMISSION\_GRANTED) {  
 requestPermissions(new String[]{Manifest.permission.ACCESS\_COARSE\_LOCATION, Manifest.permission.ACCESS\_FINE\_LOCATION}, 0);  
 }  
 else init();  
  
 } else {  
 init();  
 }  
 }  
  
 private void init() {  
 lmanager= (LocationManager)getSystemService(Context.LOCATION\_SERVICE);  
 Criteria criteria=new Criteria();  
 provider= lmanager.getBestProvider(criteria,false);  
  
 if (ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS\_FINE\_LOCATION)!= PackageManager.PERMISSION\_GRANTED ||  
 ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS\_COARSE\_LOCATION)!= PackageManager.PERMISSION\_GRANTED)  
 return;  
  
 if(provider!=null && !provider.equals("")){  
 Location location= lmanager.getLastKnownLocation(provider);  
 lmanager.requestLocationUpdates(provider, 100, 1, this);  
 if(location!=null){  
 onLocationChanged(location);  
 }  
 else{  
 Toast.makeText(getBaseContext(), "Location not available!!", Toast.LENGTH\_LONG).show();  
 }  
 }  
 else{  
 Toast.makeText(getBaseContext(), "No Provider found!!", Toast.LENGTH\_LONG).show();  
 }  
 }  
  
 @Override  
 public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull int[] grantResults) {  
 super.onRequestPermissionsResult(requestCode, permissions, grantResults);  
 if (requestCode == 0 && grantResults.length == 2) {  
 init();  
 }  
 else Toast.*makeText*(getBaseContext(), "Required permissions not granted!", Toast.*LENGTH\_SHORT*).show();  
 }  
  
 @Override  
 public void onLocationChanged(@NonNull Location location) {  
 TextView T1= (TextView)findViewById(R.id.txtlat);  
 TextView T2= (TextView)findViewById(R.id.txtlong);  
  
 T1.setText(""+ location.getLatitude());  
 T2.setText(""+ location.getLongitude());  
  
 }  
  
 @Override  
 public void onStatusChanged(String provider, int status, Bundle extras) {  
  
 }  
  
 @Override  
 public void onProviderEnabled(@NonNull String provider) {  
 }  
 @Override  
 public void onProviderDisabled(@NonNull String provider) {  
  
 }  
}

**AndroidManifest.xml**

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.example.gps">  
 <uses-permission android:name="android.permission.ACCESS\_FINE\_LOCATION"/>  
 <uses-permission android:name="android.permission.ACCESS\_COARSE\_LOCATION"/>  
 <uses-permission android:name="android.permission.INTERNET"/>  
  
  
 <application  
 android:allowBackup="true"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.Gps">  
 <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>

**OUTPUT:**

Graphical user interface, text, application

Description automatically generated

**RESULT:**

Thus a native application that uses GPS location information has been developed and executed.

**EX NO: 09 Develop a Android Application that writes data to the SD Card.**

**DATE: 20/09/21**

**AIM:**

To develop a Android Application that writes data to the SD Card.

**SOURCE CODE:**

**MainActivity.java:**

package com.example.sdcard;  
import android.content.Context;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
import androidx.appcompat.app.AppCompatActivity;  
import java.io.BufferedReader;  
import java.io.File;  
import java.io.FileInputStream;  
import java.io.FileNotFoundException;  
import java.io.FileOutputStream;  
import java.io.IOException;  
import java.io.InputStreamReader;  
import java.io.OutputStreamWriter;  
public class MainActivity extends AppCompatActivity {  
 EditText editTextFileName,editTextData,e1;  
 Button saveButton,readButton;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
 editTextFileName=findViewById(R.id.editText1);  
 editTextData=findViewById(R.id.editText2);  
 saveButton=findViewById(R.id.button1);  
 readButton=findViewById(R.id.button2);  
 e1 = findViewById(R.id.editText4);  
  
  
//Performing Action on Read Button  
 saveButton.setOnClickListener(new View.OnClickListener(){  
 @Override  
 public void onClick(View arg0) {  
 String filename=editTextFileName.getText().toString();  
 String data=editTextData.getText().toString();  
 FileOutputStream fos;  
 try {  
 fos = openFileOutput(filename, Context.MODE\_APPEND);  
//default mode is PRIVATE, can be APPEND etc.  
 fos.write(data.getBytes());  
 fos.close();  
 Toast.makeText(getApplicationContext(),filename + " saved",  
 Toast.LENGTH\_LONG).show();  
 } catch (FileNotFoundException e) {e.printStackTrace();}  
 catch (IOException e) {e.printStackTrace();}  
 } });  
//Performing Action on Read Button  
 readButton.setOnClickListener(new View.OnClickListener(){  
 @Override  
 public void onClick(View arg0) {  
 String filename=editTextFileName.getText().toString();  
 StringBuffer stringBuffer = new StringBuffer();  
 try {  
//Attaching BufferedReader to the FileInputStream by the help of InputStreamReader  
 BufferedReader inputReader = new BufferedReader(new InputStreamReader(  
 openFileInput(filename)));  
 String inputString;  
//Reading data line by line and storing it into the stringbuffer  
 while ((inputString = inputReader.readLine()) != null) {  
 stringBuffer.append(inputString + "\n");  
 }  
 } catch (IOException e) {  
 e.printStackTrace(); }  
 Toast.makeText(getApplicationContext(),stringBuffer.toString(),Toast.LENGTH\_LONG).show();  
 e1.setText(stringBuffer.toString().trim());  
  
 }  
 }  
 ); }  
}

**Activity\_main.xml:**

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

<RelativeLayout 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"

tools:context=".MainActivity">

<EditText

android:id="@+id/editText1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentRight="true"

android:layout\_alignParentTop="true"

android:layout\_marginRight="20dp"

android:layout\_marginTop="24dp"

android:ems="10" >

<requestFocus />

</EditText>

<EditText

android:id="@+id/editText2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignRight="@+id/editText1"

android:layout\_below="@+id/editText1"

android:layout\_marginTop="24dp"

android:ems="10" />

<TextView

android:id="@+id/textView1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignBaseline="@+id/editText1"

android:layout\_alignBottom="@+id/editText1"

android:layout\_alignParentLeft="true"

android:text="File Name:" />

<TextView

android:id="@+id/textView2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignBaseline="@+id/editText2"

android:layout\_alignBottom="@+id/editText2"

android:layout\_alignParentLeft="true"

android:text="Data:" />

<Button

android:id="@+id/button1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignLeft="@+id/editText2"

android:layout\_below="@+id/editText2"

android:layout\_marginLeft="5dp"

android:layout\_marginTop="16dp"

android:text="save" />

<Button

android:id="@+id/button2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignBaseline="@+id/button1"

android:layout\_alignBottom="@+id/button1"

android:layout\_toRightOf="@+id/button1"

android:text="read" />

<EditText

android:id="@+id/editText4"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:hint="Retrived data"

android:layout\_alignParentTop="true"

android:layout\_alignParentRight="true"

android:layout\_marginTop="271dp"

android:layout\_marginRight="91dp"

android:ems="10">

<requestFocus />

</EditText>

</RelativeLayout>

**OUTPUT:**

Graphical user interface, application, Teams

Description automatically generatedGraphical user interface, application, Teams

Description automatically generated

**RESULT:**

Thus Android Application that writes data to the SD Card is developed and executed successfully.

**EX NO: 10 Implement an application that creates an alert upon receiving a message.**

**DATE: 20/09/21**

**AIM:**

To Implement an application that creates an alert upon receiving a message.

**SOURCE CODE:**

**Activity\_main.xml:**

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_margin="10dp"  
 android:orientation="vertical">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Message"  
 android:textSize="30sp" />  
 <EditText  
 android:id="@+id/editText"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:singleLine="true"  
 android:textSize="30sp" />  
 <Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="30dp"  
 android:layout\_gravity="center"  
 android:text="Notify"  
 android:textSize="30sp"/>  
</LinearLayout>

**MainActivity.java:**

package com.example.ex10;  
  
import android.app.Notification;  
import android.app.NotificationManager;  
import android.app.PendingIntent;  
import android.content.Intent;  
import android.os.Bundle;  
  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import androidx.appcompat.app.AppCompatActivity;  
public class MainActivity extends AppCompatActivity  
{  
 Button notify;  
 EditText e;  
 @Override  
 protected void onCreate(Bundle savedInstanceState)  
 {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 notify= (Button) findViewById(R.id.*button*);  
 e= (EditText) findViewById(R.id.*editText*);  
  
 notify.setOnClickListener(new View.OnClickListener()  
 {  
 @Override  
 public void onClick(View v)  
 {  
 Intent intent = new Intent(MainActivity.this, SecondActivity.class);  
 PendingIntent pending = PendingIntent.*getActivity*(MainActivity.this, 0, intent, 0);  
 Notification noti = new Notification.Builder(MainActivity.this).setContentTitle("New Message").setContentText(e.getText().toString()).setSmallIcon(R.mipmap.*ic\_launcher*).setContentIntent(pending).build();  
 NotificationManager manager = (NotificationManager) getSystemService(*NOTIFICATION\_SERVICE*);  
 noti.flags |= Notification.*FLAG\_AUTO\_CANCEL*;  
 manager.notify(1, noti);  
 }  
 });  
 }  
}

**SecondActivity.java:**

package com.example.ex10;  
import android.os.Bundle;  
  
import androidx.appcompat.app.AppCompatActivity;  
public class SecondActivity extends AppCompatActivity {  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_second*);  
 }  
}

**activity\_second.java:**

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_margin="10dp"  
 android:orientation="vertical">  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="hi"  
 android:textSize="30sp" />  
</LinearLayout>

**OUTPUT:**

Graphical user interface, application

Description automatically generated Graphical user interface, application, Teams

Description automatically generated

**RESULT:**

Thus an application that creates an alert upon receiving a message has been developed and executed successfully.

**EX NO: 11 Write a mobile application that creates an alarm clock.**

**DATE: 04/10/21**

**AIM:**

To Implement a mobile application that creates an alarm clock.

**SOURCE CODE:**

**AndroidManifest.xml:**

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.example.ex11">  
  
 <application  
 android:allowBackup="true"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.Ex11">  
 <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>  
 <receiver android:name=".AlarmReceiver" >  
 </receiver>  
 </application>  
  
</manifest>

**Activity\_main:**

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <TimePicker  
 android:id="@+id/timePicker"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center" />  
  
 <ToggleButton  
 android:id="@+id/toggleButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="20dp"  
 android:checked="false"  
 android:onClick="OnToggleClicked" />  
  
</LinearLayout>

**MainActivity.java:**

package com.example.ex11;  
  
import android.app.AlarmManager;  
import android.app.PendingIntent;  
import android.content.Intent;  
import android.os.Bundle;  
  
import android.view.View;  
import android.widget.TimePicker;  
import android.widget.Toast;  
import android.widget.ToggleButton;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import java.util.Calendar;  
  
public class MainActivity extends AppCompatActivity  
{  
 TimePicker alarmTimePicker;  
 PendingIntent pendingIntent;  
 AlarmManager alarmManager;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState)  
 {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 alarmTimePicker = (TimePicker) findViewById(R.id.*timePicker*);  
 alarmManager = (AlarmManager) getSystemService(*ALARM\_SERVICE*);  
 }  
 public void OnToggleClicked(View view)  
 {  
 long time;  
 if (((ToggleButton) view).isChecked())  
 {  
 Toast.*makeText*(MainActivity.this, "ALARM ON", Toast.*LENGTH\_SHORT*).show();  
 Calendar calendar = Calendar.*getInstance*();  
 calendar.set(Calendar.*HOUR\_OF\_DAY*, alarmTimePicker.getCurrentHour());  
 calendar.set(Calendar.*MINUTE*, alarmTimePicker.getCurrentMinute());  
 Intent intent = new Intent(this, AlarmReceiver.class);  
 pendingIntent = PendingIntent.*getBroadcast*(this, 0, intent, 0);  
  
 time=(calendar.getTimeInMillis()-(calendar.getTimeInMillis()%60000));  
 if(System.*currentTimeMillis*()>time)  
 {  
 if (calendar.*AM\_PM* == 0)  
 time = time + (1000\*60\*60\*12);  
 else  
 time = time + (1000\*60\*60\*24);  
 }  
 alarmManager.setRepeating(AlarmManager.*RTC\_WAKEUP*, time, 10000, pendingIntent);  
 }  
 else  
 {  
 alarmManager.cancel(pendingIntent);  
 Toast.*makeText*(MainActivity.this, "ALARM OFF", Toast.*LENGTH\_SHORT*).show();  
 }  
 }  
}

**AlarmReceiver.java**

package com.example.ex11;  
  
import android.content.BroadcastReceiver;  
import android.content.Context;  
import android.content.Intent;  
import android.media.Ringtone;  
import android.media.RingtoneManager;  
import android.net.Uri;  
import android.widget.Toast;  
  
public class AlarmReceiver extends BroadcastReceiver  
{  
 @Override  
 public void onReceive(Context context, Intent intent)  
 {  
 Toast.*makeText*(context, "Alarm! Wake up! Wake up!", Toast.*LENGTH\_LONG*).show();  
 Uri alarmUri = RingtoneManager.*getDefaultUri*(RingtoneManager.*TYPE\_ALARM*);  
 if (alarmUri == null)  
 {  
 alarmUri = RingtoneManager.*getDefaultUri*(RingtoneManager.*TYPE\_NOTIFICATION*);  
 }  
 Ringtone ringtone = RingtoneManager.*getRingtone*(context, alarmUri);  
 ringtone.play();  
 }  
}

**OUTPUT003A**

A screenshot of a car dashboard

Description automatically generated with medium confidence A screenshot of a car dashboard

Description automatically generated with low confidence

**RESULT:**

Thus an application that creates an alarm clock has been developed and executed successfully.