**Experiment-9:**

**Create an application that record the audio file and storing it in the external directory in 3gp format. Also, add a button which will be able play the same recorded sound.**

**Android\_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="@drawable/img3"  
 tools:context=".MainActivity"**>  
  
 <**Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentLeft="true"  
 android:text="Record"  
 android:textSize="25dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.054"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.221"** />  
  
 <**Button  
 android:id="@+id/button2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignTop="@+id/button"  
 android:layout\_centerHorizontal="true"  
 android:text="STOP"  
 android:textSize="25dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.916"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.221"** />  
  
 <**Button  
 android:id="@+id/button3"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignTop="@+id/button2"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:text="Play"  
 android:textSize="25dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.498"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.221"** />  
  
 <**Button  
 android:id="@+id/button4"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/button2"  
 android:layout\_alignParentEnd="true"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginStart="32dp"  
 android:text="STOP PLAYING RECORDING "  
 android:textSize="25dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.343"** />  
</**androidx.constraintlayout.widget.ConstraintLayout**>

**MainActivity.java**

**package** com.example.practical9;  
**import** androidx.appcompat.app.AppCompatActivity;  
**import** androidx.core.app.ActivityCompat;  
**import** androidx.core.content.ContextCompat;  
**import** android.content.pm.PackageManager;  
**import** android.media.MediaPlayer;  
**import** android.media.MediaRecorder;  
**import** android.os.Bundle;  
**import** android.os.Environment;  
**import** android.view.View;  
**import** android.widget.Button;  
**import** android.widget.Toast;  
**import** java.io.IOException;  
**import** java.util.Random;  
**import static** android.Manifest.permission.***RECORD\_AUDIO***;  
**import static** android.Manifest.permission.***WRITE\_EXTERNAL\_STORAGE***;  
  
**public class** MainActivity **extends** AppCompatActivity {  
 Button **buttonStart**, **buttonStop**, **buttonPlayLastRecordAudio**,  
 **buttonStopPlayingRecording** ;  
 String **AudioSavePathInDevice** = **null**;  
 MediaRecorder **mediaRecorder** ;  
 Random **random** ;  
 String **RandomAudioFileName** = **"ABCDEFGHIJKLMNOP"**;  
 **public static final int *RequestPermissionCode*** = 1;  
 MediaPlayer **mediaPlayer** ;  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState) {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 **buttonStart** = (Button) findViewById(R.id.***button***);  
 **buttonStop** = (Button) findViewById(R.id.***button2***);  
 **buttonPlayLastRecordAudio** = (Button) findViewById(R.id.***button3***);  
 **buttonStopPlayingRecording** = (Button)findViewById(R.id.***button4***);  
  
 **buttonStop**.setEnabled(**false**);  
 **buttonPlayLastRecordAudio**.setEnabled(**false**);  
 **buttonStopPlayingRecording**.setEnabled(**false**);  
  
 **random** = **new** Random();  
  
 **buttonStart**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View view) {  
  
 **if**(checkPermission()) {  
  
 **AudioSavePathInDevice** =  
 Environment.*getExternalStorageDirectory*().getAbsolutePath() + **"/"** +  
 CreateRandomAudioFileName(5) + **"AudioRecording.3gp"**;  
 Toast.*makeText*(getApplicationContext(),**AudioSavePathInDevice**,Toast.***LENGTH\_LONG***).show();  
 MediaRecorderReady();  
  
 **try** {  
 **mediaRecorder**.prepare();  
 **mediaRecorder**.start();  
 } **catch** (IllegalStateException e) {  
 *//* ***TODO Auto-generated catch block*** e.printStackTrace();  
 } **catch** (IOException e) {  
 *//* ***TODO Auto-generated catch block*** e.printStackTrace();  
 }  
  
 **buttonStart**.setEnabled(**false**);  
 **buttonStop**.setEnabled(**true**);  
  
 *// Toast.makeText(MainActivity.this, "Recording started", Toast.LENGTH\_LONG).show();* } **else** {  
 requestPermission();  
 }  
  
 }  
 });  
  
 **buttonStop**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View view) {  
 **mediaRecorder**.stop();  
 **buttonStop**.setEnabled(**false**);  
 **buttonPlayLastRecordAudio**.setEnabled(**true**);  
 **buttonStart**.setEnabled(**true**);  
 **buttonStopPlayingRecording**.setEnabled(**false**);  
  
 *// Toast.makeText(MainActivity.this, "Recording Completed", Toast.LENGTH\_LONG).show();* }  
 });  
  
 **buttonPlayLastRecordAudio**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View view) **throws** IllegalArgumentException,  
 SecurityException, IllegalStateException {  
  
 **buttonStop**.setEnabled(**false**);  
 **buttonStart**.setEnabled(**false**);  
 **buttonStopPlayingRecording**.setEnabled(**true**);  
  
 **mediaPlayer** = **new** MediaPlayer();  
 **try** {  
 **mediaPlayer**.setDataSource(**AudioSavePathInDevice**);  
 **mediaPlayer**.prepare();  
 } **catch** (IOException e) {  
 e.printStackTrace();  
 }  
  
 **mediaPlayer**.start();  
 Toast.*makeText*(MainActivity.**this**, **"Recording Playing"**,  
 Toast.***LENGTH\_LONG***).show();  
 }  
 });  
  
 **buttonStopPlayingRecording**.setOnClickListener(**new** View.OnClickListener() {  
 @Override  
 **public void** onClick(View view) {  
 **buttonStop**.setEnabled(**false**);  
 **buttonStart**.setEnabled(**true**);  
 **buttonStopPlayingRecording**.setEnabled(**false**);  
 **buttonPlayLastRecordAudio**.setEnabled(**true**);  
  
 **if**(**mediaPlayer** != **null**){  
 **mediaPlayer**.stop();  
 **mediaPlayer**.release();  
 MediaRecorderReady();  
 }  
 }  
 });  
  
 }  
  
 **public void** MediaRecorderReady(){  
 **mediaRecorder**=**new** MediaRecorder();  
 **mediaRecorder**.setAudioSource(MediaRecorder.AudioSource.***MIC***);  
 **mediaRecorder**.setOutputFormat(MediaRecorder.OutputFormat.***THREE\_GPP***);  
 **mediaRecorder**.setAudioEncoder(MediaRecorder.OutputFormat.***AMR\_NB***);  
 **mediaRecorder**.setOutputFile(**AudioSavePathInDevice**);  
 }  
  
 **public** String CreateRandomAudioFileName(**int** string){  
 StringBuilder stringBuilder = **new** StringBuilder( string );  
 **int** i = 0 ;  
 **while**(i < string ) {  
 stringBuilder.append(**RandomAudioFileName**.  
 charAt(**random**.nextInt(**RandomAudioFileName**.length())));  
  
 i++ ;  
 }  
 **return** stringBuilder.toString();  
 }  
  
 **private void** requestPermission() {  
 ActivityCompat.*requestPermissions*(MainActivity.**this**, **new** String[]{***WRITE\_EXTERNAL\_STORAGE***, ***RECORD\_AUDIO***}, ***RequestPermissionCode***);  
 }  
  
 @Override  
 **public void** onRequestPermissionsResult(**int** requestCode,  
 String permissions[], **int**[] grantResults) {  
 **switch** (requestCode) {  
 **case *RequestPermissionCode***:  
 **if** (grantResults.**length**> 0) {  
 **boolean** StoragePermission = grantResults[0] ==  
 PackageManager.***PERMISSION\_GRANTED***;  
 **boolean** RecordPermission = grantResults[1] ==  
 PackageManager.***PERMISSION\_GRANTED***;  
  
 **if** (StoragePermission && RecordPermission) {  
 Toast.*makeText*(MainActivity.**this**, **"Permission Granted"**,  
 Toast.***LENGTH\_LONG***).show();  
 } **else** {  
  
  
  
  
 Toast.*makeText*(MainActivity.**this**,**"Permission Denied"**,Toast.***LENGTH\_LONG***).show();  
 }  
 }  
 **break**;  
 }  
 }  
  
 **public boolean** checkPermission() {  
 **int** result = ContextCompat.*checkSelfPermission*(getApplicationContext(),  
 ***WRITE\_EXTERNAL\_STORAGE***);  
 **int** result1 = ContextCompat.*checkSelfPermission*(getApplicationContext(),  
 ***RECORD\_AUDIO***);  
 **return** result == PackageManager.***PERMISSION\_GRANTED*** &&  
 result1 == PackageManager.***PERMISSION\_GRANTED***;  
 }  
}

**output**

