Exercise Audio

Create an application, which uses a microphone to record into a file, and plays the recording. Use AudioTrack and AudioRecord classes – not MediaPlayer or MediaRecorder.

Hint 1: Notice that Android Studio emulator is able to connect your computer's audio output and input. You can thus test your application with the emulator also. If you use an emulator, remember to set the 'Virtual microphone uses host audio input' selection on in the Emulator's extended controls section.

Hint 2: Remember to insert permission request for the file access to the Android Manifest.xml file

```
<uses-permission android:name="android.permission.RECORD_AUDIO"/>
```

Remember also to request permissions at a runtime like

```kotlin
private fun hasPermissions(): Boolean {
    if (checkSelfPermission(Manifest.permission.RECORD_AUDIO) != PackageManager.PERMISSION_GRANTED) {
        Log.d("DBG", "No audio recorder access")
        requestPermissions(arrayOf(Manifest.permission.RECORD_AUDIO), 1);
        return true // assuming that the user grants permission
    }

    return true
}
```

Hint 3: You can use threads/coroutines to avoid blocking the UI thread

Hint 4: If you want to listen to your recorded file with an external application, e.g. Audacity, use File-Import-Raw data to read the file to the application.