

“ITUNE” – GUITAR TUNER APPLICATION FOR ANDROID DRIVEN MOBILE DEVICES.

Alexandr PATRAȘCO,
scientific supervisor Mihail KULEV

Technical University of Moldova

Abstract: *The purpose of iTune application is to make easier the process of guitar tuning. This application provides an opportunity to tune one's guitar in the standard tuning, which is 'E2 A2 D3 G3 B3 E4'. It embodies an intuitively understandable user interface. This application has minimalistic and appealing to the eye design. It is suitable for any actual version of Android operating system.*

Keywords: *Android operating system, mobile application, Java, guitar tuner.*

1. Introduction

Sounds surround us everywhere, and once human understood that those sounds can be combined to create something beautiful and everlasting, history of music began.

While the precise lineage of the instrument is still unclear, historians believe that the guitar is the descendant of the Greek kithara, European and Middle Eastern lutes, and the Spanish vihuela [1].

The design of the modern classical guitar can be attributed to Antonio de Torres [2]. The construction of these guitars has been considered the standard in "traditional" instruments since the mid-19th century. Most of contemporary guitars have 19, 20, 21 frets and six strings, which have to be tuned impeccably to produce great sound.

2. Task

Sometimes, people who play guitar encounter the problem of inability to tune guitar precisely due to lack of experience or other reasons, thus emerging a need of a mobile application that can be used anywhere. Therefore, it has been decided to create such an application for Android devices.

In order to create an Android application it is necessary to use an IDE (Integrated Development Environment) for Java programming language and Android SDK (Software Development Kit), a package of useful tools for Android developers. Because of these requirements, the choice has fallen on Eclipse IDE [3].

Java is a general-purpose, class-based, object-oriented computer programming language that is specifically designed to have as few implementation dependencies as possible. Java was originally developed by James Gosling at Sun Microsystems and released in 1995 as a core component of Sun Microsystems' Java platform. Java applications are typically compiled to bytecode (class file) that can run on any Java virtual machine (JVM) regardless of computer architecture [4].

3. Classes Used

Google's ADT (Android Developer Tools) provides developer with SDK, which includes many useful libraries. For example, core of the application is MediaPlayer class [5], which allows developer to create applications for audio and video playback. Playback control of audio/video files and streams is managed as a state machine. The diagram below (fig. 1) shows the life cycle and the states of a MediaPlayer object driven by the supported playback control operations. The ovals represent the states a MediaPlayer object may reside in. The arcs represent the playback control operations that drive the object state transition. There are two types of arcs. The arcs with a single arrow head represent synchronous method calls, while those with a double arrow head represent asynchronous method calls. As well, were used RadioButton and Button classes, but they're quite similar, the major difference is in graphical representation [6, 7]. And the most important class of this application is MainActivity, since it is the application itself.

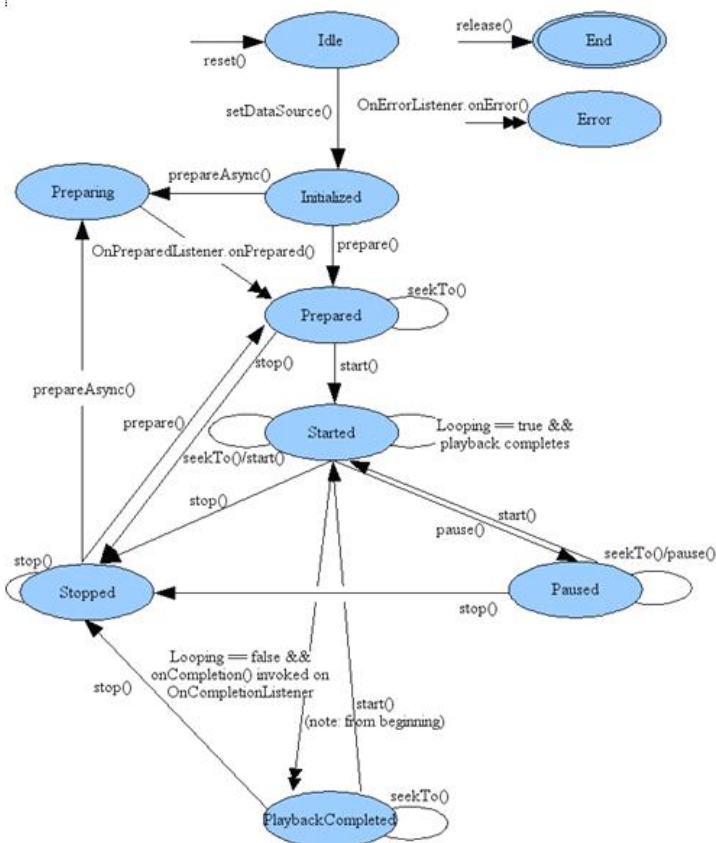


Fig. 1. MediaPlayer class scheme

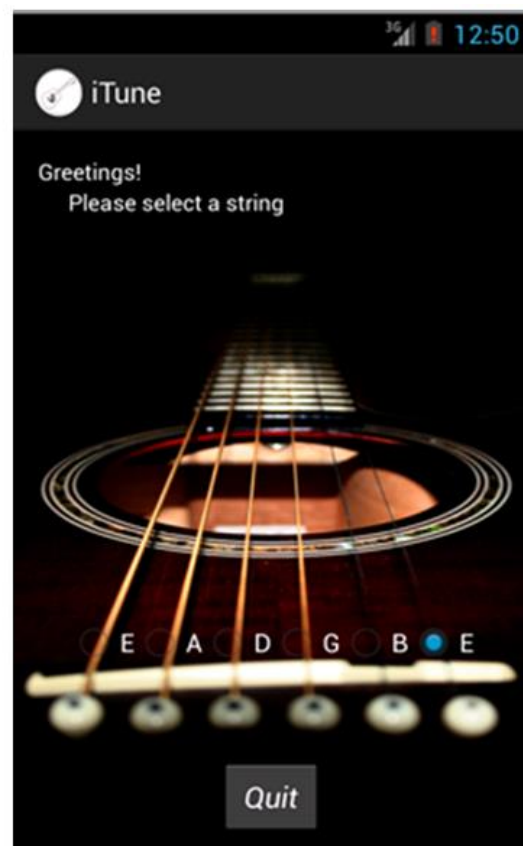


Fig. 2. Application Interface

4. Software Description

The application, after being launched, represents a window, which contains a greeting message for the user, six radio-buttons, corresponding to each string of guitar (Standard Tuning), and a button for exiting (fig. 2).

In order to use this application, user has to press a button corresponding to the string needed to be tuned, and then adjust string's tension according to the sound played repeatedly for several seconds.

5. Bibliography

1. *Origins and history of modern guitar/* <http://en.wikipedia.org/wiki/Guitar> (accessed 10.05.2013).
2. *Antonio Torres's Biography/* http://en.wikipedia.org/wiki/Antonio_de_Torres_Jurado (accessed 10.05.2013).
3. DEITEL, H.M. & P.J., *Android for Programmers: An App-Driven Approach*, 2011.
4. DEITEL, H.M. & P.J., *Java How to Program*, 4th edition, Upper Saddle River, NJ: Prentice Hall, 2001.
5. *MediaPlayer class reference/* <http://developer.android.com/reference/android/media/MediaPlayer.html> (accessed 25.04.2013).
6. *RadioButton class reference/* <http://developer.android.com/reference/android/widget/RadioButton.html> (accessed 24.04.2013).
7. *Button class reference/* <http://developer.android.com/reference/android/widget/Button.html> (accessed 24.04.2013).