Music Player Application with Sleeping Timer for Android Platform

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Abstract

As the Android operating system is getting more popular, the user for the mobile device are now more paying attention on the application of mobile device. This report presents the music player application with sleeping timer and advertising free for the Android Platform. The music player application will obtain the music files and plays the music. The sleeping timer for this music player application will obtain the time from the mobile’s clock itself and allowing user to set the timer to stop this music player application.

Keyword: Android

INTRODUCTION

Nowadays, smartphone has already to replace the normal mobile phone device. Mobile phone device is no longer only just can act as communication tool but also one of the daily needs for most of the people. Android system, one of the mobile operating system which also known as open-source platform are now getting more and more popular, especially in the smartphone market. Because of the open-source platform, there are a lot of applications had generated. [1]

Music is what feelings sound like and because of music are so inspiring people, it’s so important to get a music player application that can work well for the user. [2] With the rising of the smartphone, the natural that now the one mobile device we carry with us is also our primary media player. Over the years music fans have gradually changed how they listen to their music and what they listen to it on. Therefore, music application has been being one of the important part for the mobile device.

Timer is the specialized type of clock for measuring time intervals. Timer usually used for counts down from a specified time interval. Many timers are now implemented in software. Sleeping timer is one of the countdown timer that used for counting down the time which applied in the software. Sleeping timer as the featuring function for the music player that allow the user fall asleep to their favorite song [3]. User simply start the songs and set the countdown timer. At the end of the countdown, sleep timer features will stops your music out and allow the user get back precious sleep. This is also one of the features that can help user to save their mobile device’s battery from draining.

Android application which also known as Android apps are built as a combination of distinct components that can be invoked individually. [4] Applications are also changing how the user experience computing and use the mobile phones. [5] Android developers can develop not only for smartphones, but also for new and emerging consumer electronic devices that are network-compatible and thus available to connect to the Android Market. [6] Therefore, user are not only allow to purchase or download the Android application from Google Play Store but also have the opportunity to build their own application through the Android Studio.

RELATED WORK

The music player which also known as audio player is using Java platform to achieve. In order to develop and build the Android application, Android studio application with Android SDK is required. It also defines the interface in the Application Framework layer, the music files will acquires through the ContentResolver. At last, the Service component will call the MediaPlayer class which located in the Libraries layer plays the music. [7] The following figure showing how the SD card being read and showing out the song list.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{songmanager_flowchart.png}
\caption{SongManager Flow Chart}
\end{figure}

The entrance of the audio application will be the main interface module. When the application is started, the user will first see at the main interface modules. At this module, it will not reflect any information to the user. All the audio files will be scanned by audio file scanner module. In the audio player flow chart, SongManager in this flow chart is a class that has the static method to read the SD card. Cursor class method that provided by Android system will acted as static method which will acquired the SD card audio resources. After that, static method will turned the audio file into the list class instance object and the list will be returned once being called by the user.
A timer operand allows the user to count the time according to the certain logic conditions. [8] Timer must have the present value, current value, start and run condition and the bit value. Figure 2 shows the timer operate through certain logic conditions.

![Figure 2. Timer operate through logic condition [8]](image)

The timer’s Start & Run condition is the condition that timer has to fulfill in order to start to operate the timer. When the timer’s Start & Run condition is off, the timer’s Bit Value will also be off. When the timer’s Start & Run condition rises, the timer’s Present Value is now loaded into the timer’s Current Value and the timer is beginning to run. Bit value for the timer will only rises when the timer running finished running. When the reset condition is on, the bit value will turn off and the present value will loaded into the current value again. In this case, the timer’s Start & Run condition will not activate as long as the reset condition is still turning on. When the timer’s reset condition is turned off, timer’s Start & Run condition will turn on and the timer will begin to run again.

Passing the data is also very important for this music player application. In this application, there will be two different main activities which are music player main activity and sleeping timer activity. Figure 3 shows how the data is passing between two activities.

![Figure 3. Passing data diagram [9]](image)

The first activity will store the data itself and through the certain function to send out the data. The data will be received by the second activity and stored it. When the user want to get the data, they can either get it from the first activity or the second activity.

**PROPOSED SYSTEM**

All the adapter and service module are only activated when the user are pressing the play music button. Figure 4 is showing the prototype music player main page and the timer setting page.

![Figure 4. [a] Prototype Music Player Main Page, [b] Timer Setting Page](image)

In this prototype music player main page, there will be song list display area at the top part. All of the songs will be listed up and the song file that read by the SongManager module from the SD card memory area will be shown at the page. User can easily to find the certain music title. This main page will have play/stop, backward and forward button to let user to play, stop, seek fast forward and seek reverse backward the music. It also have to seeking bar to let the user to seek the music to the certain part that the user want to. It will make user to more enjoy the song they want. Besides, there is also one sleep timer button that allow user to set a countdown timer for this music player application.

When the user click the timer button, the main page will proceed to timer setting page. In this timer setting page, users are allowed to set countdown timer for this music player. After the user set the timer, user have to click the “confirm” button to confirm the countdown clock timer. When it is end of the countdown timer, this music player will automatically show the title of “Time’s up!” and turn off the song. The countdown timer counts down from a set time to 10 minutes and stop the music from the music player application. The timer will have a maximum time setting to 500 minutes.

**PROPOSED ALGORITHM**

This music player application main function will be focusing on the list page and the countdown timer page. Figure 5 is the flow chart for this music player application.
As the figure 5 shown, once the user activated this music player application, the user will first access to the main interface or main page. User are now allowed to do the several function which are find the song through the list view or set the countdown timer. If the users do not select any song from the song list and press the button function, it will not respond any comment to the user. If the user press the Song List button, it will proceed to list page which will show out all the song list. User are now allowed to selected song from the list. Once the user selected the certain song, the music player will activated and start to play song.

After the user selected and played the song from the song list page. User can activated the button function to change the current song to the next song or the previous song by pressing the “Forward” or “Backward” button. The button will change the song through the song list page by selecting which song will play when the user press the certain button. Figure 6 is showing how the forward and backward button function.

Countdown timer functions is used to switch off the music player itself. Once the user pressed the timer button, user will proceed to timer setting page. In this timer setting page, users are allowed to insert the time for the countdown timer. First, user have to insert the time for the countdown timer. If the user do not insert the time and press the “return to main” button, user will proceed back to the main page. Once, the user insert the time for the countdown timer, the system of the timer will execute the code and check for the stop condition. In every second, the timer will run the code and check for the time. If the time have not met the timer setting time yet, the system flow back to execute code and execute the time again until the time is met with the timer setting time. Once the time for the timer setting is met, the system will delay and send out the signal to the main interface. When the timer interface is finished for countdown the time that user set, the timer interface will send signal or code to the main interface. Figure 8 shows how the timer setting flow to stop the music player.

Besides, there will be another system function named as the sleep timer that allow user to set a countdown clock timer to let the music player application switching off itself. Figure 7 is the flow of the timer system.
PERFORMANCE EVALUATION

This music player application main function will be focusing on the song list and the countdown timer page. Figure 9 is the actual music player application.

![Figure 9. Music Player Application Main Page](image)

All the songs that read by the SongManager module from the SD card memory area will be listed up and showed the song file at the main page. This song will be listed and selectable by the user. The song list will also list out the duration for the certain song.

At the progressive bar, there are selected song title to show which of the song is playing. Besides, there will be also contain three differences button which is play/stop logo button, seek forward logo button and seek backward logo button. All the button can be used to play the song or pause the song, seek forward for 5 seconds of the song and seek backward for 5 seconds of the song. Progressive bar will be also contained at this music application. User can drag the progressive bar to seek the song to the part that the user want to.

At the bottom part, it will be the timer button, this button is used to allow the user to access the timer page. Figure 10 is showing the timer page.

![Figure 10. Countdown Timer Page.](image)

The countdown timer page will show out the 10 minutes as the minimum time limit setting and the 500 minutes as the maximum time limit setting. Once the user start the timer with the certain time setting, the timer will started to countdown.

During the countdown timing, the song is still able to play and the music player application is still running. When the time’s up, the countdown timer will show out the title of “Time’s up!” On that certain time, the music player will now start to turn off the song and exit the music player.

For the coding part, there will be two different main activity in this music player application. The first main activity will be the music player itself and the second main activity will be the timer setting.

CONCLUSION

This music player application is mainly focusing on two different main activity. The first activity will be the music player function itself and the second activity will be the sleeping timer function. The timer setting have to send out the timer setting data to the first activity to stop the music player and this is the main contribution of this project. The data have to send to the music player to close the music player once the timer is time’s up.

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REFERENCE


