Android Video Player for Gallery Use

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July 17, 2017

Summary

The video player is an android application made to loop a video for a given amount of time without any outside interference. The application allows a gallery attendant to set a finishing time for the video, and then play the video. While the video is playing, no users can use any component of the device, and the video will loop repeatedly. The video is shown in the landscape orientation.

Instructions

The application consists of four screens, the alarm screen, the video selection screen, the video player screen and the closing screen. The application is started by turning on the phone. This is done by holding down the power button while the phone is off. The phone will start its normal startup routine, and then show the standard lockscreen. The lockscreen can be unlocked and the alarm screen will be shown.

The alarm screen shows a standard android time picker and a short description for the gallery attendant. The time picker consists of an analog clock and a readout of the time. To select a time, first set the clock to the hour desired, then the minute. AM and PM can be switched by pressing the buttons after the digital readout. The selected option is shown as brighter.

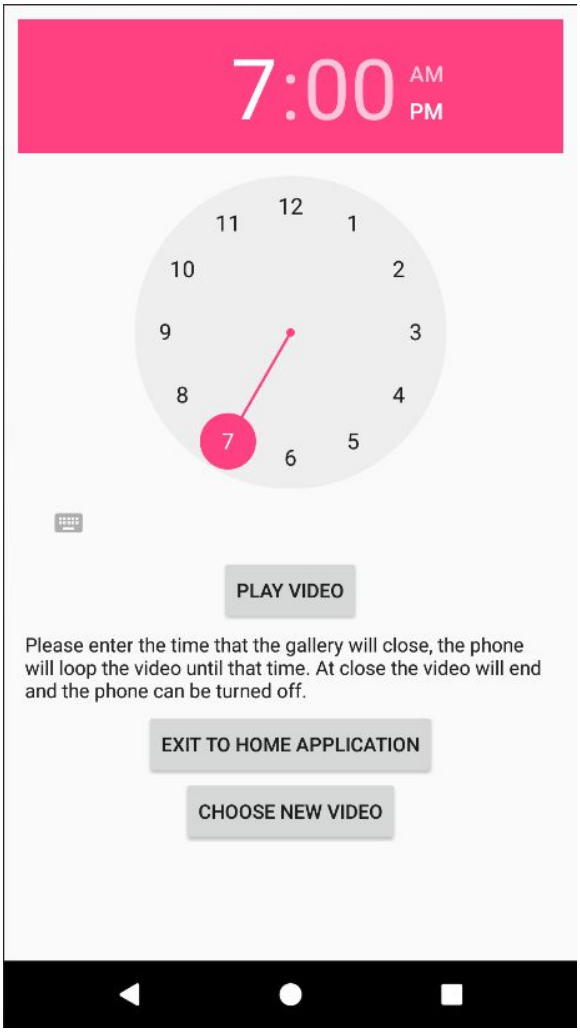

Figure 1: Alarm Screen

The time that should be selected should be at **closing**. The video player will loop continuously until this moment. When the stop time is reached the video player will stop, then a notification that the gallery is closed will show. The attendant can choose this time each time the application is started, the application will automatically save the last closing time. The attendant may want to leave 15 minutes if the gallery takes time to close.

The alarm screen also offers two other buttons. The “EXIT TO HOME APPLICATION” button allows the user to exit to the default android home menu. The user can alter settings such as wifi, volume, and background application which would be otherwise inaccessible in the app. Pressing the button will open a selector menu, shown in *Figure 2.* With the Alcatel A30 select the app “Joy Launcher”. This is the default home menu. After pressing the app, the home menu will open up. The video player can be opened by either pressing the home button (◯), or by opening the application “Video Player”.

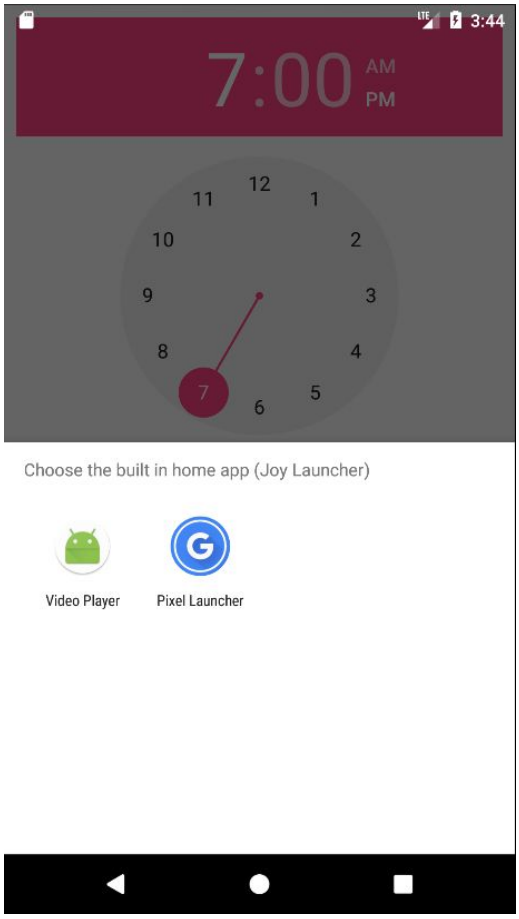

Figure 2: App Selector[1]

The other button, “CHOOSE NEW VIDEO”, allows the user to select a different video to play. Pressing the button opens a new screen with options for selecting a new video, shown in *Figure 3*. The first button, “SELECT A NEW VIDEO”, will open the file manager. The user can select any mp4 file on the phone. It is important to note, that the file must be downloaded onto the phone before selecting it from the file manager. The other button, “LAUNCH BROWSER TO DOWNLOAD FILE”, will open the phone’s default internet browser. The user can find the video file they want, save it to the phone. After downloading, they can return to the screen using the back key, or pressing home and returning to the alarm screen.

[1] **This is a screenshot from a different model android. The default home application is “Pixel Launcher”, on the alcatel it is “Joy Launcher”.**

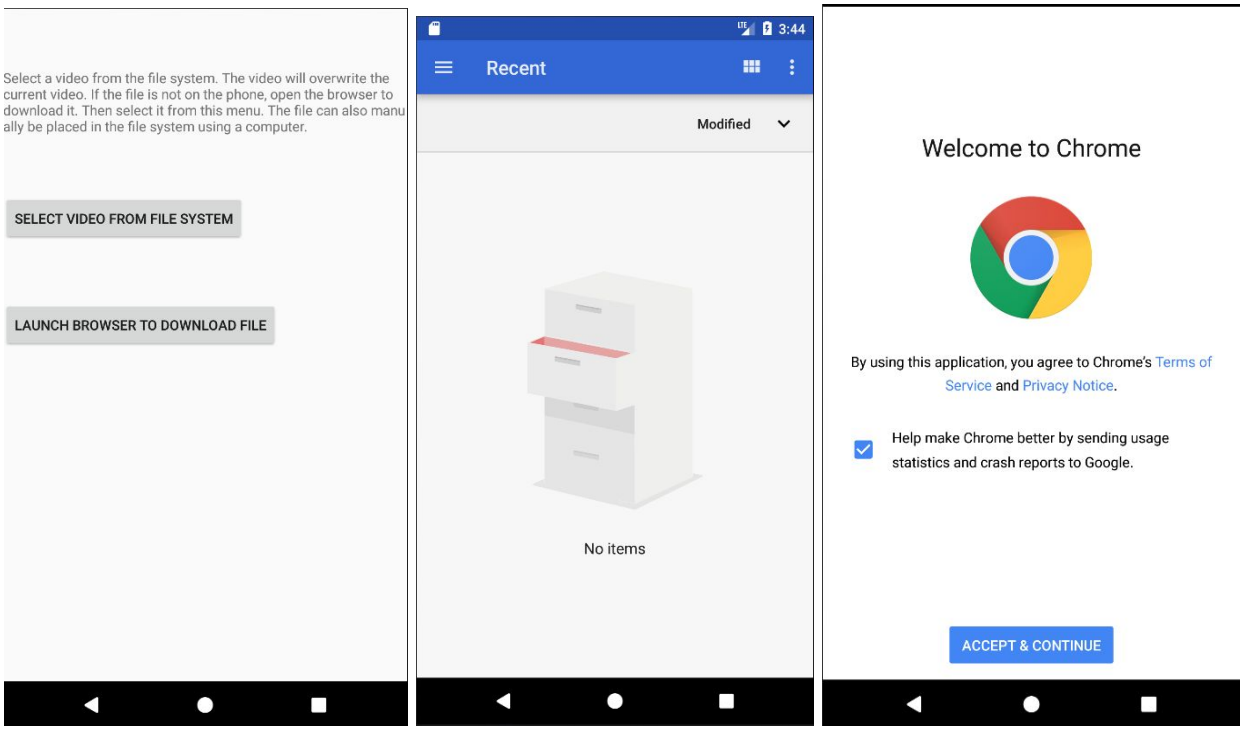

Figure 3: Video Selection Screens. From Left to Right: Video Selection, File Manager, Browser.

The alarm screen can be returned to by pressing either the back (◁) or the home (◯) buttons. The video player can then be launched with the new video, by pressing the “PLAY VIDEO” button.

The video player screen loops the video continuously, and cannot be interacted with. Nothing can be done to the phone at this time, including changing the volume, turning it off, and putting the phone to sleep.

At the ending time, the gallery closed screen will show, shown in *Figure 4*. The screen contains text which informs the reader that the gallery is closed. The phone can be turned off at this point by holding the power button and pressing the power off button on the screen that appears. This is the normal way of turning off an android phone. The power off menu is shown in *Figure 5.*

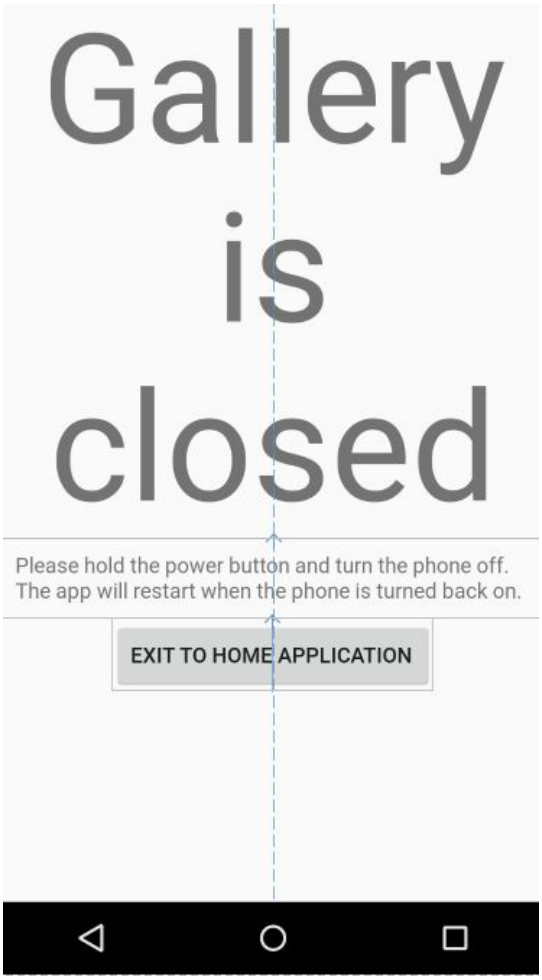

Figure 4: Gallery Closed Screen

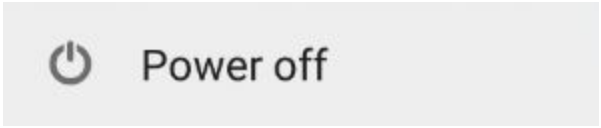

Figure 5: Android power off menu

Application Technical Details

The application uses several standard Android tools such as VideoView, and an Alarm. It also uses a series of workarounds to force the application into a kiosk mode with no interaction.

The VideoView is setup to loop, and to display no time tracker or any buttons. The alarm is set based on the TimePicker, and calls the EndingView activity when the alarm is activated.

The kiosk mode is achieved using workarounds to hide and disable the functionality of the android. This can be achieved directly on a rooted Android phone, where the developer has access to administrator tools. At the time of making this application, the Alcatel A30 does not

have a known way to root it. Rooting a phone is generally not encouraged by the phone manufacturer, as it can also allow the phone to be hacked and compromised.

The application does need developer access to run parts of the disabling code. In order to have permission to force a kiosk mode, where the navigation bar is disabled, the application must be added into the owner group in the android. This is done by enabling developer options in the android. Then the Android Debug Bridge (ADB) can be used to set the owner. After connecting the android to the computer with a usb device, on a computer with ADB installed run the command:

$adb shell dpm set-device-owner *name.of.application*/*.AdminReciever*

For this application the exact code would be:

$adb shell dpm set-device-owner *com.example.elizabeth.myapplication*/.MyAdmin

Admin receiver is a java class which enables the android to set the owner. This step cannot be undone unless the device is rooted. This is why this application should only be used on a device dedicated to be a video player.

The back button and volume buttons are disabled by overriding the normal routine, and simply returning true. This effectively disables these buttons. Sleep mode is disabled by obtaining a wake lock, which controls when sleep mode is active. With the permission to use the wake lock, it can be released as soon as it is received. This has the effect of only allowing sleep mode to last for a few seconds before rewaking the application. The long power press is disabled by closing all windows when the focus of the application is lost. This allows the power window to only pop up momentarily before being deactivated. With all of these disabled, there is no way to leave the app. The application is also added as a startup application, and is set to the default home application. This enabled it to run on startup, and allows redundancy to prevent leaving the application.

Appendix: Code Repository

Stored at this location:

https://elizabethadelaide.github.io/DavideAndroidVideoPlayer/

Java code, layouts and resources are available through this link. This documentation is also located at this location.