

# CS478: Software Development for Mobile Platforms

## Project #5

Due time: 11:59 pm on 4/28/2017

Submit using Blackboard web site

Total points: 100

Instructor: Ugo Buy

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You are to code two Android apps. The first app, named *FunCenter* stores a number of pictures and audio clips, such as songs or other recordings. The pictures are numbered from 1 through  $m$  and the clips are numbered 1 through  $n$ , where  $m$  and  $n$  are the total number of clips with  $m, n \geq 3$ . The app contains a service intended to be bound (as opposed to started), which exposes an API for clients to use. The API supports two kinds of functionality. The first kind of functionality will support requests for pictures by the clients. When a client bound to the service requests a picture, the picture will be returned to the client, which will then display the picture. The second functionality involves playing one of the audio clips. A client can start playing a clip, pause the clip, resume the clip and stop the playback altogether. This application should include at least 3 pictures and 3 audio clips of variable duration. You are at liberty to choose the duration of the clips; however, the duration of Clip 1 should be at least 30 seconds and no more than 3 minutes.

The second app, *FunClient* consists of an activity that exposes functionality for using the *FunCenter* and binds to the service for either playing an audio clip or downloading a picture. Your interface should minimally include appropriate *View* elements for the following functionality: (1) Requesting a picture (by number), (2) Displaying a picture (3) Playing a given clip (by number), (4) Pausing the playback, (5) Resuming the playback, and (6) Stopping the player. When the client activity is stopped, the service should continue playing; however, the service should be unbound and stopped if the activity is destroyed.

In addition the *FunClient* app keeps track of all requests that it makes while bound to the service. The list of requests is displayed in an appropriate scrollable view on the app's display. When the *FunClient* app is selected by the user, it will first display the list of requests from the previous user session (i.e., app execution). New requests will be appended to the current list; however, the interactive user can choose to erase the list by selecting an appropriate button in the app's interface.

**Hints.** You are at liberty to choose pictures and audio clips from segments and pictures publicly-available (and not copyrighted or otherwise protected) on the Internet. When testing your application, make sure to upload *FunServer* app first, or else the client app may fail to initialize properly. Finally, use Android's built-in *MediaPlayerService* to play the music.

**Implementation notes.** You must use an AIDL spec to expose the service's functionality to the clients. Make sure that the service's code is thread-safe; multiple clients could be bound to the service at the same time. Use a Nexus 5 virtual device running the usual Android platform (API 23—Marshmallow). Design your client app layout in such a way that it will display best in portrait mode. You are not required to provide backward compatibility with previous Android versions or to support device reconfigurations.

*You must work alone on this project.* Submit a zip archive containing two root directories; each directory contains the full Android Studio repository of the corresponding app. No late submissions will be accepted.