# CS478: Software Development for Mobile Platforms

*Project #5*

Due time: 11:59 pm on 12/6/2020
*Total points: 100*
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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 well as 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 the clips 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*'s service and binds to the service for playing an audio clips or downloading a picture. Your interface should mininally include appropriate *View* elements for supporting the following functionality:

1. Requesting a picture (by number),
2. Playing a given clip (by number),
3. Pausing the playback,
4. Resuming the playback, and
5. Stopping the playback.

Your apps are subject to the following additional requirements: (1) The client should be able to request pictures while a music clip is playing; (2) The service's code should be thread-safe; (3) When the client activity is stopped, the service should continue playing; however, the service should be unbound; and (4) When the client activity is destroyed, the service should be stopped (along with any music clip that may be playing).

**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 the *FunServer* app first, or else the client app may fail to initialize properly. Finally, use Androids built-in *MediaPlayerService* to play the music.

**Implementation notes.** You must use an AIDL spec to expose the services functionality to the clients. Make sure that the services code is thread-safe; multiple clients could be bound to the service at the same time. Use the usual Pixel 3 XL virtual device running the usual Android platform (API 28—Pie). 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. You are not allowed to post any amount of your code on Piazza. 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.