[CPSC 312](#) Mobile App Development (Android)

[Gonzaga University](#)

[Gina Sprint](#)

PA7 Persistent Data Storage (100 points)

<mark>Individual, non-collaborative assignment</mark>

Learner Objectives

At the conclusion of this programming assignment, participants should be able to:

- Add an options menu and handle menu action selections
  - Utilize contextual action mode to perform batch operations on items in a `RecyclerView`
- Save the data of our model in a SQLite database
  - Create tables
  - Perform insert, select, update, and delete operations on table records
- Utilize a subclass of `SQLiteOpenHelper` and a subclass of `RecyclerView.Adapter` to connect a database to a `RecyclerView`

Prerequisites

Before starting this programming assignment, participants should be able to:

- Organize views/widgets in a `ConstraintLayout`
- Interact with the user via `AlertDialogs`
- Pass information between activities using an `Intent`
- Utilize common Android views such as `TextView`, `EditText`, `Button`, `ImageView`, and `RecyclerView`

Acknowledgments

Content used in this assignment is based upon information in the following sources:

- None to report

Github Classroom Setup

For this assignment, you will use GitHub Classroom to create a private code repository to track code changes and submit your assignment. Open this PA7 link to accept the assignment and create a private repository for your assignment in Github classroom:
https://classroom.github.com/a/IZYtUMfR

1. Open your PA6 project
2. Execute: git remote add origin2 <your PA7 github url>
   a. This sets up a second remote called origin2
3. Execute: git push -u origin2 master
   a. This sets up push/pull to/from your new remote, origin2

Your repo, for example, will be named GonzagaCPSC312/pa7-yourusername (where yourusername is your GitHub username). I highly recommend committing/pushing regularly so your work is always backed up. We will grade your most recent commit, even if that commit is after the due date (your work will be marked late if this is the case).
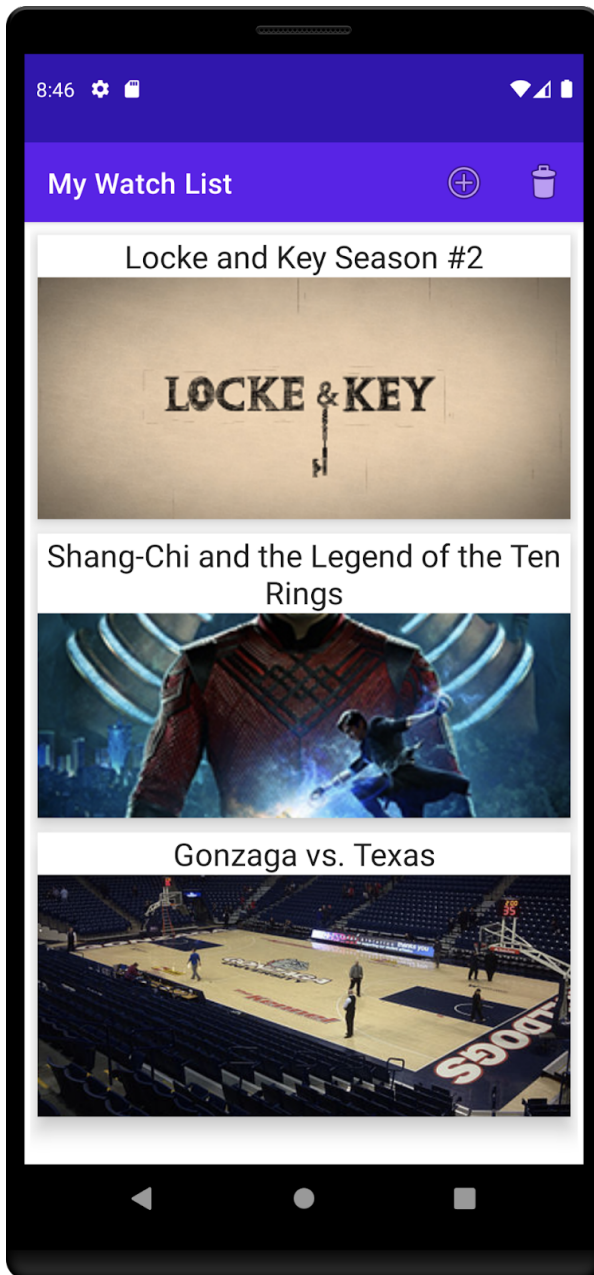
Overview and Requirements

We are going to add new functionality to PA6, our "My Watch List" app, to make My Watch List 2.0! Before reading on in this document, please refer to PA6 for a refresher of the details of the My Watch List app. I also recommend *making a backup copy of your original PA6 code* before modifying it for PA7.

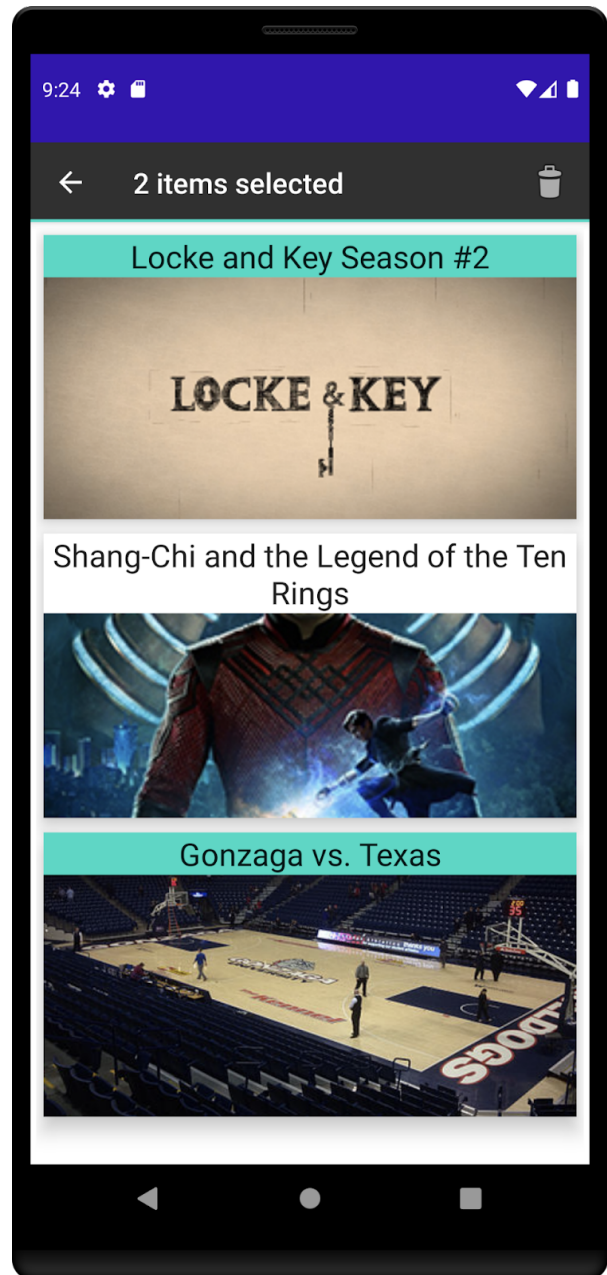The new functionality we are going to add includes the following:
1. Remove the "Add Video" button and replace its functionality with an options menu action
2. Add a back button (home arrow) to `VideoDetailsActivity` to allow the user to cancel creating/editing a video (changes are not saved) and return to `MainActivity`
3. Save videos in a SQLite database for persistent storage of videos across app runs. We will need the following SQL operations supported:
   a. Insert: insert a new video when the user creates a video in `VideoDetailActivity`
   b. Select: select an existing video when the user selects an item in the `RecyclerView` corresponding to a video
   c. Update: update an existing video when the user edits a video in `VideoDetailActivity`
   d. Delete: delete video(s) by entering contextual action mode on a `RecyclerView` item long click
      i. Show the number of items selected in the context menu
      ii. Add a delete action to the context menu that deletes all selected items
      iii. Note: do not show an `AlertDialog` when the user deletes videos this way
4. Add an options menu action to delete all videos
   a. Show an `AlertDialog` to confirm with the user they want to delete all videos
   b. Note: this is different from the contextual action mode delete

Data Model Note

Our model for PA7 *does not make use of a `List of Video`* objects like PA6. Instead, our `CustomAdapter`'s data source is a SQLite database with a videos table. You should remove/comment all code that stores videos in a `MainActivity List` attribute, we don't need it and it will introduce redundancy!

MainActivity with a few videos.

MainActivity after the user has selected two videos in contextual action mode.

Bonus (10 pts)

Add support for the user to select the video preview image when creating a new video or editing an existing video. The user initiates this by clicking on the `ImageView` in `VideoDetailActivity`. When clicking on the `ImageView`, allow the user to choose:

1. (5 pts) Taking a picture. Hint: follow the [Take photos](#) documentation
2. (5 pts) Selecting a picture that is currently stored on the device (external to your app). Hint: follow the [Access documents and other files from shared storage](#) documentation

You can prompt the user to choose from these two options via an AlertDialog. The Uri string for the image selected with either option should be persisted in the database and used to set images for the `ImageViews`.

Submitting Assignments

1. Use Github classroom to submit your assignment via a Github repo. See the "Github Classroom Setup" section at the beginning of this document for details on how to do this. You must commit your solution by the due date and time.
2. Before your final commit, go to Build->Clean Project. Your repo should contain your entire Android Studio project. Double check that this is the case by cloning (or downloading a zip) your submission repo and opening your project in Android Studio and running your code.

Grading Guidelines

This assignment is worth 100 points + 10 points bonus. Your assignment will be evaluated based on a successful compilation and adherence to the program requirements. We will grade according to the following criteria:

- 5 pts for the options menu add action in `MainActivity`
- 5 pts for the options menu back (home) action in `VideoDetailsActivity`
- 50 pts for saving videos in a SQLite database
  - 10 pts for creating the database and inserting a videos table
  - 10 pts for inserting a video into the videos table
  - 10 pts for selecting a video from the videos table
  - 10 pts for updating a video in the videos table
  - 10 pts for deleting a video in the videos table
- 20 pts for deleting videos by entering contextual action mode on an item long click
  - 5 pts for showing the number of items selected in the context menu
  - 10 pts for adding a delete action to the context menu that deletes selected items
  - 5 pts for deselecting items on contextual action mode cancel
- 10 pts for the options menu delete all action, including showing an `AlertDialog`
- 10 pts for adherence to proper [programming style and comments established for the class](#)
  - Note: Throughout the semester I am going to update the style guidelines document as we learn more about Android conventions. Always take a look at it before you submit.