Tutorial Week 5 – 31285 MAD
4%
Due before next class

Objectives:

- Get familiar with RecyclerView and adapters, apply AsyncTask
- Get familiar with Menus, menu icons.

1. (5%) Create a new Android Studio project with the following characteristics:
    - Application name: Exercise 5
    - Package name: com.mad.exercise5
    - Min SDK: API15
    - **Basic** Activity
    - Activity name: MainActivity

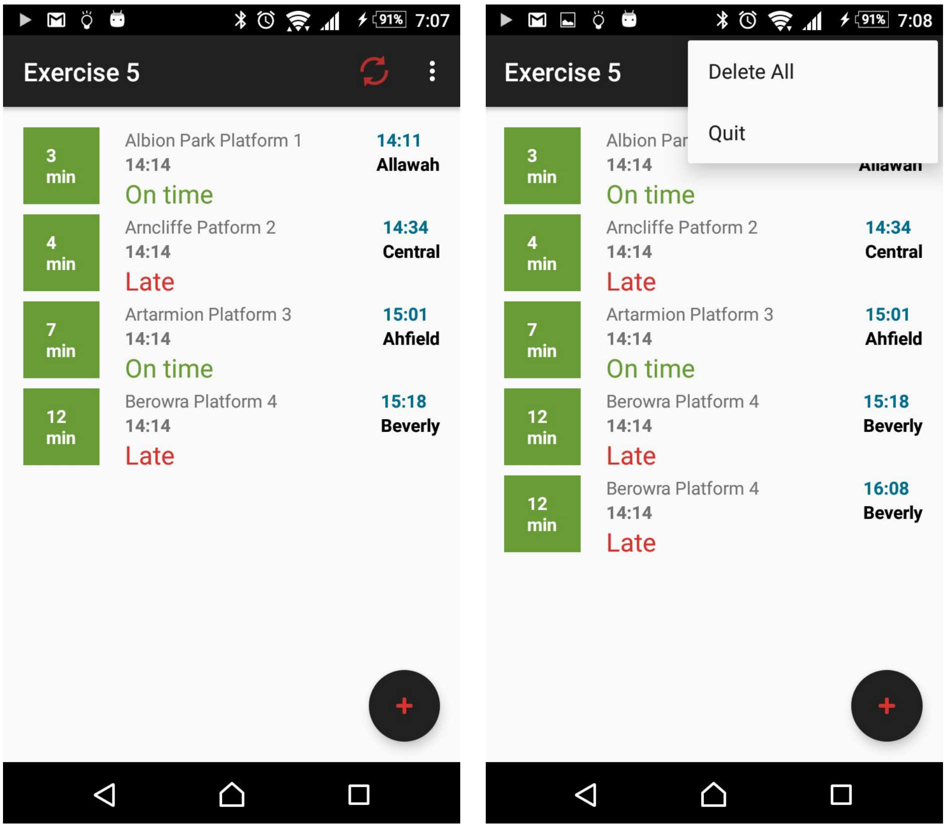


Fig. 1

2. (5%) Create a menu with the following items: “Refresh”, “Delete All” and “Quit”. The “Refresh” item is always visible as an icon on the action bar and the others are never visible on the action bar (i.e. they are in the overflow menu). It should look like Figure 1.

   Hint: To add a menu icon to your project, right-click on your “res” folder and select New -> Image Asset -> Action Bar and Tab Icons -> Clipart. etc. etc.

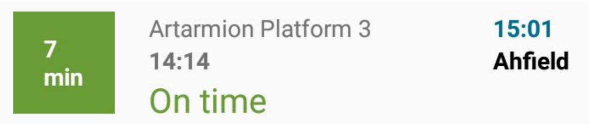
3. (5%) To represent the domain model of this app, create a **Train** class with the following fields (also create getter/setter methods. Remove the “m” in the getter/setter methods!):

   ```
   private String mPlatform;
   private int mArrivalTime;
   private String mStatus;
   private String mDestination;
   private String mDestinationTime;
   ```

   Create a constructor like this:

   ```
   public Train(String platform, int arrivalTime, String status, String destination, String
   destinationTime)
   ```

4. In the content_main.xml layout add a RecyclerView widget and a ProgressBar which is hidden (i.e. android:visibility=”gone”).



7
min

Artarmion Platform 3
14:14
On time

15:01
Ahfield

Fig 2

5. Create a new layout called train_item.xml. Place the following widgets in the train_item layout. The layout should look like one row (Fig 2).
   - RelativeLayout with 3 child LinearLayouts.
     - LinearLayout (left): TextView arrival_time (bold, white), and ProgressBar (visibility -> GONE)
     - LinearLayout (middle): TextView platform, TextView 14:14, TextView status
     - LinearLayout (right): TextView destination_time, TextView destination

6. (5%) Create a new public class (not an inner class) called TrainAdapter which must extend RecyclerView.Adapter<TrainAdapter.ViewHolder>. It must have a constructor like this: public TrainAdapter(Context context, ArrayList<Train> trains)

   Inside the TrainAdapter class define an inner class called ViewHolder which must extend RecyclerView.ViewHolder.

7. (40%) Add code to MainActivity onCreate(..) so that you create an ArrayList of Train objects and fill them with some train data. This ArrayList is passed into the TrainAdapter. So when you start the app it looks like Fig 1, left.

   Implement the TrainAdapter class and make it so that each train object is displayed as shown in Fig 2. See the following tutorial (and last week’s homework videos) for how to implement an adapter that extends RecyclerView.Adapter<TrainAdapter.ViewHolder>:

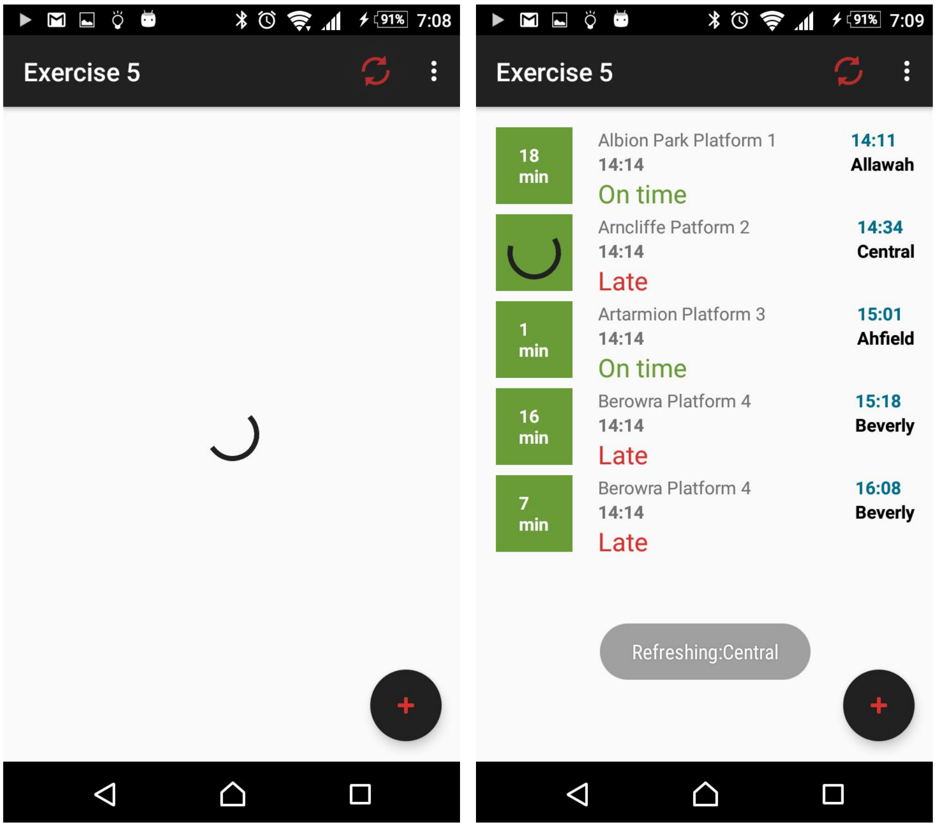
   http://www.androidhive.info/2016/01/android-working-with-recycler-view/

8. (5%) Modify the image used for the floating action button to @android:drawable/ic_input_add. When you click this button, you add a new Train object to the list so that it is displayed in the RecyclerView. For new Train objects, just use the same data as Berowra Platform 4.

9. (5%) When you click on the “Delete All” menu item, you clear the ArrayList and update the RecyclerView.

10. (10%) When you click on the “Refresh” menu item, you show the hidden ProgressBar for 3 seconds (see Fig 3, left) using Thread.sleep(3000); and hide the RecyclerView. After those 3 seconds, you hide the ProgressBar and show the RecyclerView again with **changed** arrival times! Update the arrival times in the Train objects, and update the RecyclerView.

    Requirement: You need to use the AsyncTask construction. Generate a random number between 1 and 20 and update the arrival time for each row.



18 min | Albion Park Platform 1 | 14:14 | On time | 14:11 | Allawah
Arncliffe Patform 2 | 14:14 | Late | 14:34 | Central
1 min | Artarmion Platform 3 | 14:14 | On time | 15:01 | Ahfield
16 min | Berowra Platform 4 | 14:14 | Late | 15:18 | Beverly
7 min | Berowra Platform 4 | 14:14 | Late | 16:08 | Beverly

Refreshing:Central

Fig. 3

11. (20%) When you click a green square in a row (Fig 3, right) and NOT on any other part of the row, you hide the arrival time for that row only and show the ProgressBar on that row for 2 seconds. You update the arrival time for that row only. **Hint**: use AsyncTask techniques like in task 10.

12. Make your code conform 100% to the Android coding standards. Not doing so will lose you up to 25% of your mark!
See: https://source.android.com/source/code-style.html

Homework: Watch the following two Lynda.com sections on how to use Preferences and SQLite databases in your app:

https://www.lynda.com/Android-tutorials/Using-preferences-Android-apps/112584/121164-4.html
https://www.lynda.com/Android-tutorials/Creating-new-SQLite-database/112584/121175-4.html

NOTE: First go through the Lynda.com link through UTSOnline (Orientation and Preparation weeks) to activate your Lynda.com session. Then the above lynda.com link should work.

Another video on SQLite:

https://www.youtube.com/watch?v=LZ8kJg4Pg4Y