![The Chinese University of Hong Kong logo] 香港中文大學
The Chinese University of Hong Kong

IEMS5722   Assignment 1: Building the UI of Instant Message App

Submit to Blackboard by **23:59, Friday, February 14, 2020**.

Notes:
1. Read carefully the instructions and requirements to understand what you have to do.
2. Follow the instructions to submit your files for marking.
3. Late submissions will receive **30% mark penalty**.
4. This assignment accounts for **10%** of your final grade.

1. Objectives
- To learn how to construct the user interface of an Android app
- To learn how to receive and handle user input
- To understand page transition in Android
- To learn how to use ListView and adapters

2. Instructions

In this assignment, you are going to develop a "mock-up" instant messaging app based on the "Hello World" app developed in Assignment 0. The app should have a chat interface similar to those found in common messaging apps like WeChat, WhatsApp or Facebook Messenger.

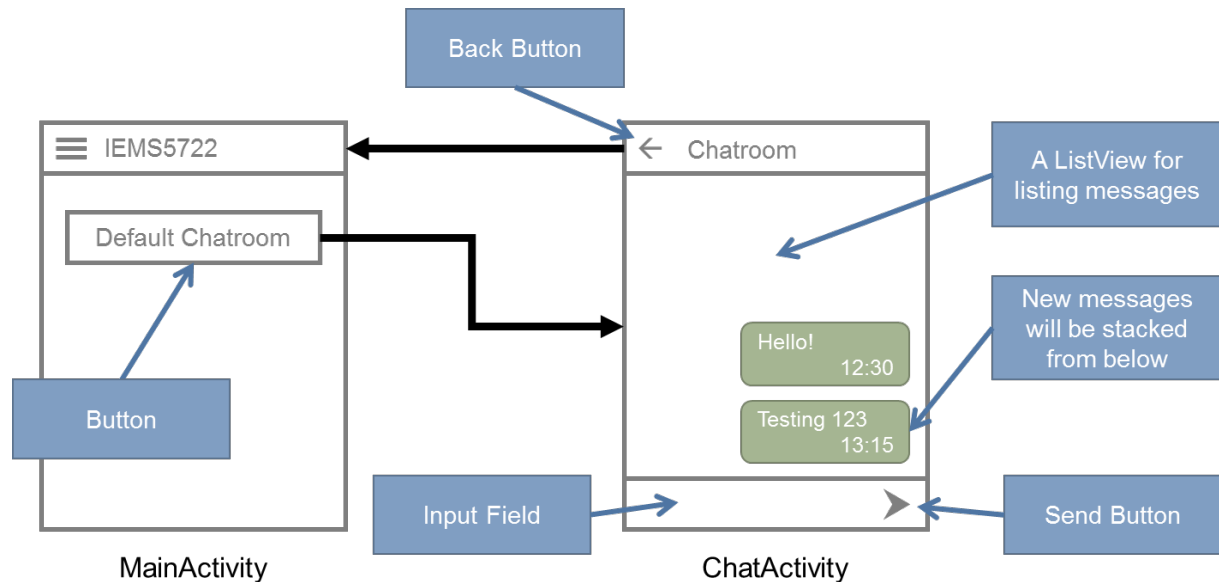The figure below shows a draft of the UI of the app.

Fig. 1. UI of the Instant Messaging App

The app has two activities. One activity is the **Main Activity**. The Main Activity has a button called "Default Chatroom". When the user clicks on the button, the app should redirect the user to another activity called the **Chat Activity**. The Chat Activity has an interface containing a ListView, which displays the past messages in the chatroom, an input area where the user can input his or her own message, and a "Send" button to allow the user to submit the message.

In this assignment, you do not have to worry about creating a real instant messaging app. This assignment is mainly for you to get familiar with the UI components in Android development.

You can style the UI components in your own way, but the app you submit in this assignment should have a layout the same as what is illustrated in Fig. 1.

3. Requirements

The app you submit in this assignment should have the following features
- **Two activities** (Main Activity and Chat Activity)
- There is a **button** on Main Activity which will allow the user to enter the Chat Activity
- The Chat Activity has a **back button** on the Action Bar, allowing the user to go back to the Main Activity
- The Chat Activity consists of a **ListView** for listing past messages, an **EditText** for user input, and an **ImageButton or ImageView** for user to send the message.
- Each item in the ListView should contain two elements, one is the message itself, another is the time (HH:MM) when the message is sent
- When the user clicks on the send button, the app should perform the following actions:
  o Check if the user has input any text (i.e. check whether the input area is empty)
  o If the user has input some text, add a new item containing the message to the end of the ListView; and then clear the input area

Note that you DO NOT need to store the messages input by the user. As a result, when the user enters the Chat Activity, he or she should always see a blank ListView. We will see how to make the app more realistic in the next assignment.

4. Guidelines
As mentioned above, you will have to use ListView in this assignment. ListView is a UI component for displaying a list of items vertically. You can refer to Android's online tutorial for the usage of ListView:
https://developer.android.com/guide/topics/ui/declaring-layout.html#AdapterViews

Generally speaking, you need to perform the following steps when you use the ListView:
1. Define a ListView component in the Activity's XML layout file.
2. Determine the data to be presented in each item (e.g., the date and time, the message), and define the layout of an item in an XML file.
3. Create an adapter for binding data to the layout (e.g., by extending the ArrayAdapter class).
4. In the activity, populate the data (e.g., in the form of an ArrayList), bind the data to the ListView using the adapter you created.

For a complete example of using ListView, you can refer to:
https://github.com/codepath/android_guides/wiki/Using-an-ArrayAdapter-with-ListView

Note:
In this assignment, you will need to stack the items from the bottom of the ListView, i.e., the latest item will appear at the bottom of the ListView, while previous items will be pushed upwards. You will have to set some attributes of the ListView in the XML layout file.

5. Submission
To facilitate marking of the assignments, you should strictly follow the instructions below:
- The **package name** of your app should be in the following format:
  hk.edu.cuhk.ie.iems5722.a1_<your_student_id>
- The **name** of your app should be in the following format: A1_<your_student_id>

To submit your assignment, create a folder name <your_student_id>_a1. In the folder, you should include the following items:
- The **APK file** generated using Android Studio (a debug version is enough).
- The whole **project folder** of the app (delete the 'build' folders to reduce the total size of the submission).

Compress this folder using ZIP, you should now have a file named
<your_student_id>_a1.zip. Submit it to Blackboard (https://blackboard.cuhk.edu.hk/).

6. Grading Scheme (Total 100 Marks)
- **(20 marks)** Main Activity can go to Chat Activity, Chat Activity can go to Main Activity via buttons as stated in requirements
- **(60 marks)** User is able to enter and send messages - messaging interface, message ListView and timestamp meet requirements.
- **(20 marks)** Message is validated and resets text area when message is sent.

7. Resources
- Layouts
  https://developer.android.com/guide/topics/ui/declaring-layout.html
- Look and Feel (particularly Text and Button)
  https://developer.android.com/guide/topics/ui/look-and-feel
- Input Events
  https://developer.android.com/guide/topics/ui/ui-events.html