

# Advanced Java

## Project 5

The project is almost the same as Project 2, except for using Widgets on Android.

- Appearances
  - Activity 1: Show as left figure below, you need at least 2 TextView, 2 EditText, 1 Button.
    - ◆ Input your IP and your port.
    - ◆ And then press ok button will go to Activity 2 after you successfully connect to the server.
    - ◆ If you fail to connect, you can't go to Activity 2 and a notification (an Android widget called Toast) will shows the "Error: Connection fails."
  - Activity 2: Show as right figure below, you need at least 1 View (or extends View)(for "Whiteboard"), 1 TextView (for "Chat Region"), 1 EditText (for "Command Region"), 1 Button.
    - ◆ When the server is closed, you should back to activity 1.



Specification:

- In project 5, you are asked to implement your chat system on Android simulator.
- In this project, TA will provide the following three classes as widgets (Drawable in Android),
  - Widget.java
  - RectangleWidget.java
  - CircleWidget.java
- All widgets inherit an abstract class Widget which is provided by TA.
  - void parseCommand(String cmd):  
Parse a string “**x y** data1 data2 ...” into properties of this Widget.
  - String toCommand():  
Convert properties of this Widget into a string without <CR>, “**x y** data1 data2 ...”.
  - Boolean isPicked(int x, int y):  
To check whether the point that user touched is inside the widget.
- Commands to/from the server:
  - All commands to/from the server required in Project 2.
  - Difference:Create Widget Command Format:  
/post ClassName x y data1 data2 ...  
Hint: use toCommand to generate “**x y** data1 data2 ...” in the sender side; and use parseCommand() to set properties from the string.
  - Move Object Command Format:  
/move id x y
    - ◆ Note: clients can only move widgets which are created by themselves. Basically, we simply check the user names.
  - Remove Widgets:  
/remove id
    - ◆ Note: clients can only move widgets which are created by themselves. Basically, we simply check the user names.
- New Widget Loading:
  - When create a new widget in the InputCommand EditText in the command format  
/post <WidgetName> x y data1 data2 ...or receive new widget from server:
    - ◆ If <WidgetName> is not one of the loaded widgets, load the new widget <WidgetName> and add it into menu.
    - ◆ Each client does the loading locally. If there is no <WidgetName> locally, using **Toast** to report an error, e.g., “Error: <WidgetName> is not found for ‘/post <WidgetName> x y data1 data2’.”.
- Activity Life Cycle
  - You should disconnect your connection to the server, when you using “Home Button” on the Android phone. But at this moment, the process of the chat room has not been killed.
  - When you restart the program again, it should reconnect to the server with same name,

and the information in the console and the whiteboard should show as same as before you disconnect your server.

In Project 5, you need to do the following.

- Widget menu.
  - Invoke “Widget menu” by clicking “menu” button of Android phone.
  - Touch a Widget and then touch on whiteboard.
  - Record the touch point (x, y) and associate this point with the Widget.
  - Post the touch point and the widget content to the server, and then broadcast to all.
- Whiteboard.
  - Create Widgets by the above action on Widget menu.
  - Move Widgets by the onTouch event of Whiteboard.
    - ◆ Show the trace of moving Widgets in the client locally. Other clients do not show the trace.

Other requirements:

- TA may ask you to add another new Widget during the demo.
- For wrong id or format, clients/servers should display error messages.
- For every error messages, you should use **Toast** (an Android widget called Toast) to show these messages, not show on the whiteboard.

Hint:

- Use “fill\_parent”, “wrap\_content” in your layout, don’t assign number with sp or dp..etc.
- You can override **public boolean** onCreateOptionsMenu(Menu menu) to create your menu.
- You can override **public boolean** onOptionsItemSelected(MenuItem item) to do what you want after you chose a widget from menu.
- For Toast, you can use **public static Toast makeText(Context context, CharSequence text, int duration).**
- For any problems about Android API, reference <http://developer.android.com/reference/packages.html>

Good luck!

Due date: 6/28(Thu)