

Design of CSE 586 Programming Assignment 1

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Main components

1. One activity---MainActivity,

2. A server thread---setup Server socket, wait connection from client, receive message from client, and post the message to MainActivity. In server socket operations, "accept" is a blocking operation, so AsyncTask---server thread is necessary.

3. A client thread---receive message from MainActivity, connect to Server, send the message to socket, and close socket. In client's operation, "connect" is a blocking operation, so AsyncTask---client thread is necessary.

What each component do

Please include figures if necessary when describing each component.

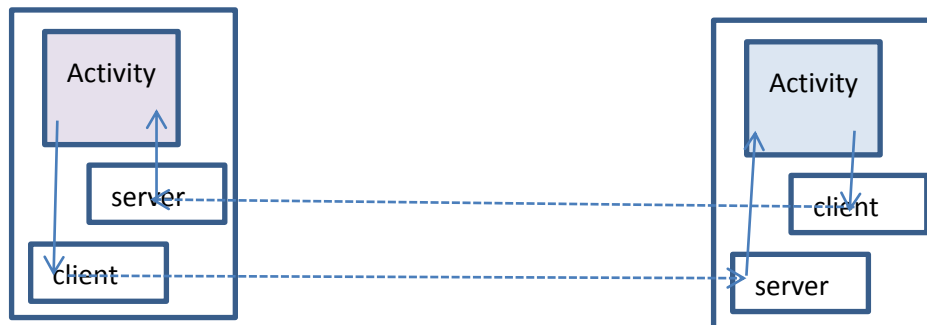


Figure 1

In MainActivity.onCreate(), judge if the virtual machine run on Avd0 or Avd1; then create Server socket, at last spin off a ServerTask. The ServerTask will receive the messages from client.

When click button, MainActivity.sendMessage is called, it will spin off a ClientTask. The ClientTask connect to Server on peer machine, and send the message to remote Server.

Establishing communication channels

This project is a peer2peer model, each machine run as a server and a client. And the two comuncion channels are independent. When MainActivity startup, it spin off a server task to create one listening server which wait for client. When MainActivity need to send a message to peer, it spin off a client task to connect to peer, then pump the message to remote.

Interaction between Activity and Server thread

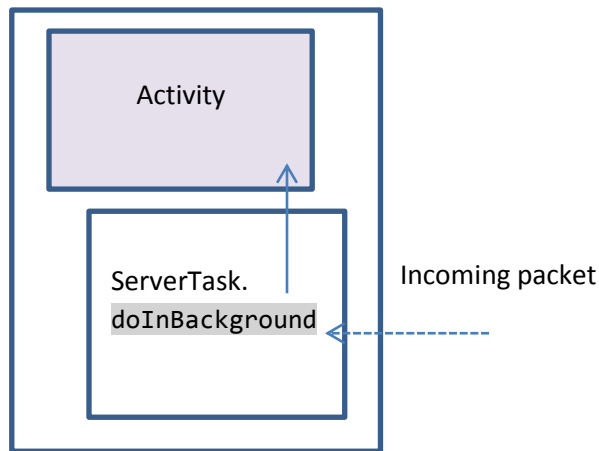


Figure 2

When ServerTask.doInBackground receive incoming packet, it notify system by calling publishProgress(). Accordingly onProgressUpdate() run in the context of MainActivity and print the received message.

Interaction between Activity and client thread

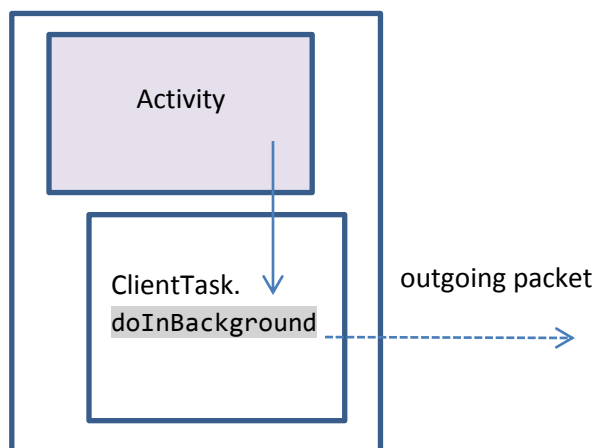


Figure 3

When MainActivity detect user click button, it collect user's input text and send it to ClientTask by calling executeOnExecutor. At last ClientTask.doInBackground collect to Sever and pump out the message.

Learned From this assignment

- 1> learn about multithread programming in Adroid, learn how interact between AsyncTask and Activity.
- 2> For mutiple thread parrallel programming, should call AsyncTask.executeOnExecutor(). At beginning I call AsyncTask.execute(), it can't work.
- 3> Get to know that Android is an event driven system,and Actitiy is the core programming elment.
- 4> Get to know how to connect virutal machines
- 5> LogCat is important to asynconized Andorid programming.

Appendix:

1. python run_avd.py 2
2. python set_redir.py 10000
3. start two applications from Eclipse
4. if log can't work, restart "run_avd.py" and "set_redir.py"
5. when retart application, don't need to restart avd.