Homework #1

資工三 B04902009 蕭千惠
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Program structure

1. Robot(client) connet to irc.freenode.net(server) via the socket.

2. Set client's username, hostname, servername and realname on irc.freenode.net.

3. Join #CN_Demo channel.

4. Receive message from the server and check if the message contains '@' symbol.

   If so, check if it is `@repeat <Message>`, `@convert <Number>` or `@ip <String>` and do the corresponding implemtation.

5. Close the socket.

Challenge & Solution

1. Client can't join a channel immediately after connect to the server.

   → Use `USER <username> <hostname> <servername> <realname>` and `NICK <nickname>` command to finish the setting of user before joining a channel.

2. Receving error message **Nickname is already in use**.

   → Change the nickname (`nick = nick + str(time.time())`) and use `NICK <nickname>` command to set nickname again.

3. When client receiving messages from the server, '\r\n' appears in the end of every message, causing problems in the implementation of `@ip` and `@convert` command.
   → Remove '\r\n' before doing implementation.

4. When the valid IPv4 address of the string in `@ip <String>` command is too many, error message like **Message to #CN_DEMO throttled due to flooding** may occur.

   → It is cause by sending too many private messages to the server in a period of time. To solve this problem, sleep for 1 seconds after sending a message to the server.

5. Quit with error message: **Ping timeout XXX seconds**

   → When receiving **PING** from the server, send **PONG** back.

Reflections

This homework is quit simple. However, we still have to be concerned with some details metioned above. Also, some errors may occur when there are multiple users in a channel, such as race condition. To handle such problems, more efforts are required.