Computer Network HW1
IRC ROBOT

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1 Program Structure

I use Python 3.6.2 on OSX as programming environment.
`python3 main.py` will start the program.

1.1 Overview

There are four files :

1. **main.py** : The main function is in this file, start the robot and execute commands from the requests.

2. **config.py** : configurations of IRC host, port and room name.

3. **client.py** : the class for IRC connection.

4. **util.py** : utility functions for ip command.

1.2 client.py

```python
import socket

class IRCClient:
    """A class for IRC client connection"""
    # define lots of useful functions below
    def __init__(self, verbose=True):
    def connect(self, host, port):
    def send(self, msg):
    def ping_pong(self, text):
    def user(self, userName, hostName, serverName, realName):
    def nick(self, nickName):
    def join(self, channelName):
    def privMsg(self, channel, msg):
    def receive(self):
```

1.3 main.py

```python
# import files here
# client, util, config, ...

# Configuration
ircServer   = config.SERVER
portNumber  = config.PORT
channelName = config.CHAN

# Robot's name
# userName, hostName, serverName, realName, nickName.

# Start IRC connection
irc = client.IRCClient()
irc.connect(ircServer, portNumber)
irc.user(userName, hostName, serverName, realName)
irc.nick(nickName)
irc.join(channelName)
irc.privMsg(channelName, loginMsg)

# Define command strings
# repeatCmd, convertCmd, ipCmd, helpCmd.

# Loop
while(True):
    text = irc.receive()
    if not irc.ping_pong(text):
        # check whether the text is command,
        # and act corresponding to the command.
        if text.find(repeatCmd) != -1:
        elif text.find(convertCmd) != -1:
        elif text.find(ipCmd) != -1:
        elif text.find(helpCmd) != -1:
```

1.4 config.py

```python
SERVER = 'irc.freenode.net'
PORT   = 6667
CHAN   = '#CN_Demo'
```

2   Challenges & Solutions

This is my first time to write a program totally in python. I am not familiar with lots of functions, class declaration and string manipulation. The challenges can be summarized as following:

1. Use my program to send a message to IRC server through socket, but there is no any response. This is because I didn't add a EOL char at the end of line.

2. How to detect whether a message is a command ? I think it's a difficult problem. I try to find the substring `'PRIVMSG <channelName> :@<command> '` in the text from IRC server. This may cause some bugs, but works well in normal usage.

3. When I call `'@ip'` command, the robot may need to send many lines to IRC server. When the number of sending messages is large, I cannot see all messages from IRC server side. So I insert an one second sleep between every send operations. But I think it may be solved by sending one message with multiple EOL chars. I'm not sure.

3   Reflections

The functions we need to build are not complicated, but we can learn how to use socket to send/receive messages between server and clients. I think it's good, and maybe there should be bonus problem for those who have interests to explore more and learn more.