Lab 4 Network Programming

Monday, March 11, 2019   12:05 PM

Scenario of the operation of the needed program:-

1. The client writes a message and clicks enter.
2. the server receives ===> client: …………
3. same with the server.

Problems of previous Program:-

- When running the server more than one time, it says that its IP is in use.
- Adding exception handlings.

Programming

Server:-

```
from socket import *
s = socket(AF_INET, SOCK_STREAM)
```
Address reusability problem solving,
```
s.setsockopt(SOL_SOCKET,SO_REUSEADDR,1)
```
1. Level of applying the function
2. Option of reusability of address
3. Value of the option (1 ===> allow), (2 ===> disable)
```
host = "127.0.0.1"
port = 7000 ===> Any number higher than 1024 "Reserved port numbers".
s.bind ((host, port))
s.listen (5)
```
we're going to make only one connection.
```
c, ad = s.accept()
print ("connection from", ad[0])
while True:
        x=c.recv (2048)
        print ( "client: ", x.decode('UTF-8'))
        c.send( input("server: ").encode('UTF-8'))
```

What do the encode, and decode words mean???

- encode is an essential part of the transmission of the message so that it's able to move through the medium.
- decode is the opposite operation of the decode so that the data is returned back to the original state to be read by the receiver.

Syntax of exception handling:-

```
Try :
    …….
    ………..
except "error_name" as e "renaming":
    print (e)
```

- There're some built in exceptions like:-
  1. except error:
        print (error)
     This exception is responsible for raising an error if the session is terminated is an abnormal way "closing the window".

  2. except KeyboardInterrupt:
            print("chat is terminated")
     This exception is responsible for being raised when a keyboard shortcut is pressed ===> ctrl + c

- Could more than one exception be handled for the same try segment???
  o Yes, by finishing the first exception, then start the second one.
  o try:
        ………
        ……..
        ……..
    except error:
        print (error)
    except KeyboardInterrupt:
            print("chat is terminated")

The final server code:-

```python
# -*- coding: utf-8 -*-
"""
Created on Fri Mar  8 22:14:41 2019
@author: M7md_Karam
"""
from socket import *
try:
    s = socket(AF_INET, SOCK_STREAM)
    s.setsockopt(SOL_SOCKET,SO_REUSEADDR,1)
    host = "127.0.0.1"
    port = 7000
    s.bind ((host, port))
    s.listen (5)
    c, ad = s.accept()
    print ("connection from", ad[0])
    while True:
        x=c.recv (2048)
        print("client: ",x.decode('utf-8'))
        c.send(input("server: ").encode('UTF-8'))
    s.close()
except error as e:
    print ("error happened")
except KeyboardInterrupt:
    print("chat is terminated")
```

The client code:-

```python
# -*- coding: utf-8 -*-
"""
Created on Fri Mar  8 22:42:26 2019
@author: M7md_Karam
"""
from socket import *
s = socket (AF_INET, SOCK_STREAM)
host = "127.0.0.1"
port = 7000
s.connect((host,port))
while True:
    s.send(input("client: ").encode('utf-8'))
    y=s.recv(2048)
    print ("server: ", y.decode('utf-8'))
s.close()
```