CSE 461: Introduction to Computer Communication Networks

Rajalakshmi Nandakumar

Goal

- Help finish Project 0
- Learn
  - Socket Programming
  - Threads
  - Asynchronous events

python socket example

All Videos Shopping Images News More Settings Tools

About 1,930,000 results (0.68 seconds)

Socket Programming HOWTO — Python 2.7.14 documentation

https://docs.python.org/2/howto/sockets.html

The client application (your browser, for **example**) uses "client" **sockets** exclusively; the web server it's talking to uses both "server" **sockets** and "client" **sockets**.

TCP/IP Client and Server - Python Module of the Week

https://pymotw.com/2/socket/tcp.html

Echo Server. This **sample** program, based on the one in the standard library documentation, receives incoming messages and echos them back to the sender. It starts by **creating** a TCP/IP **socket**. Then bind() is used to associate the **socket** with the server address.

(Very) basic Python client socket example - Stack Overflow

https://stackoverflow.com/questions/.../very-basic-python-client-socket-example

Oct 13, 2011 - It's trying to connect to the computer it's running on on port 5000, but the connection is being refused. Are you sure you have a server running?

7.2.3 Example

https://docs.python.org/2.4/lib/socket-example.html

Oct 18, 2006 - Here are four minimal **example** programs using the TCP/IP protocol: a server that echoes all data that it receives back (servicing only one client), and a client using it. ... Also note that the server does not send()/recv() on the **socket** it is listening on but on the new **socket** returned by accept().

UDP Server

Receiving

Here's simple code to receive UDP messages in Python:

Toggle line numbers

```
1  import socket
2
3  UDP_IP = "127.0.0.1"
4  UDP_PORT = 5005
5
6  sock = socket.socket(socket.AF_INET, # Internet
7                       socket.SOCK_DGRAM) # UDP
8  sock.bind((UDP_IP, UDP_PORT))
9
10 while True:
11     data, addr = sock.recvfrom(1024) # buffer size is 1024 bytes
12     print "received message:", data
```

UDP Client

Sending

Here's simple code to post a note by UDP in Python:

Toggle line numbers

```
1 import socket
2
3 UDP_IP = "127.0.0.1"
4 UDP_PORT = 5005
5 MESSAGE = "Hello, World!"
6
7 print "UDP target IP:", UDP_IP
8 print "UDP target port:", UDP_PORT
9 print "message:", MESSAGE
10
11 sock = socket.socket(socket.AF_INET, # Internet
12                       socket.SOCK_DGRAM) # UDP
13 sock.sendto(MESSAGE, (UDP_IP, UDP_PORT))
```

Echo Server Client

MSG

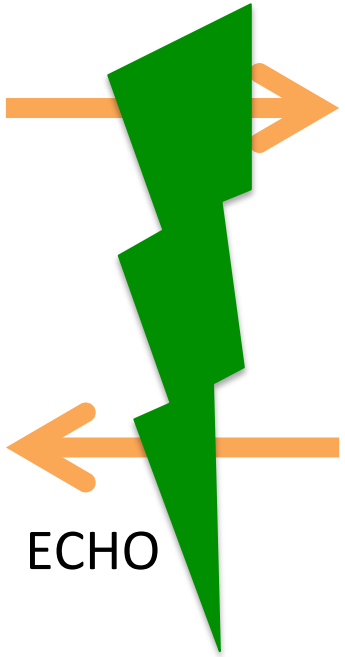
ECHO

CLIENT

SERVER

Echo Server Client

CLIENT



SERVER

Solution

1)Thread based

2)Event-loop based

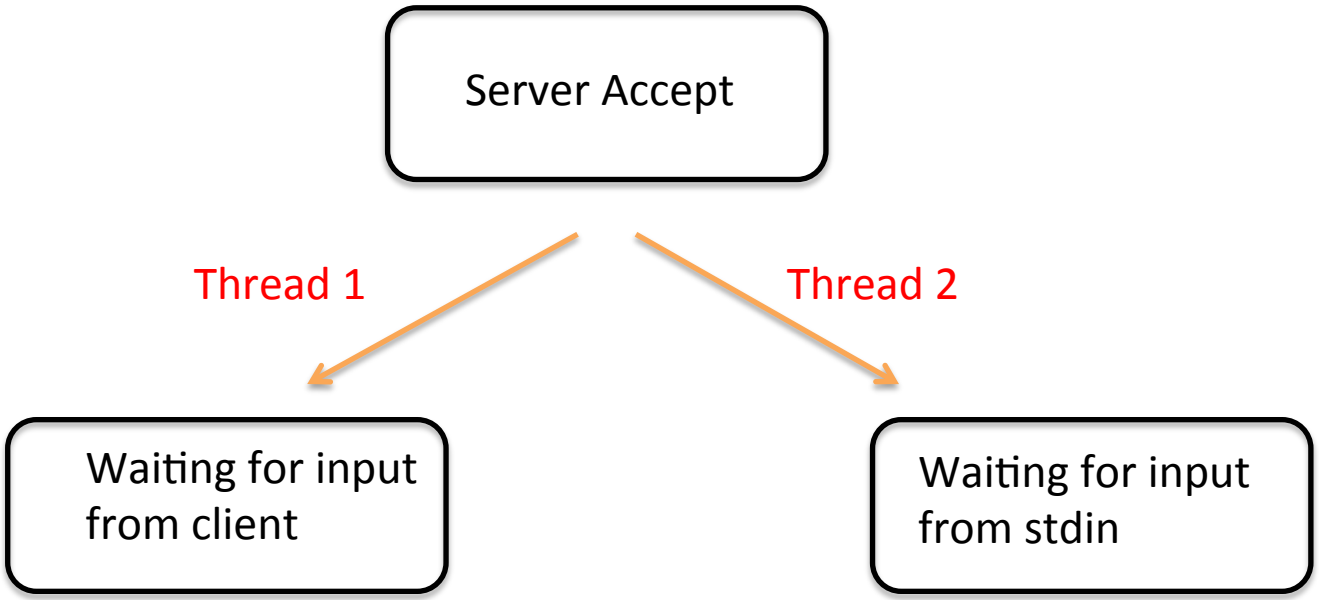
1) Thread based

Thread – Sequence of instructions that are run independently. Main code is a thread

- Create multiple threads each waiting on one input

- You can interact with the server atleast with one thread.

Example – multi threaded Server



Example – multi threaded Server

Use Threading package

Define a thread with the function

```
Class ServerThreadPool
    def listenToClient(self, client, address):
```

Some important Thread functions

- Create a thread
- Kill a thread
- Join thread
- Number of active thread
- Current thread

2) Event Loop method

Waits for and notifies events

Occurs asynchronously

- Create an event handle

- Wait for it to notify the occurrence of the event

Example – Event handling

Use pyuv package

Define a event handler function