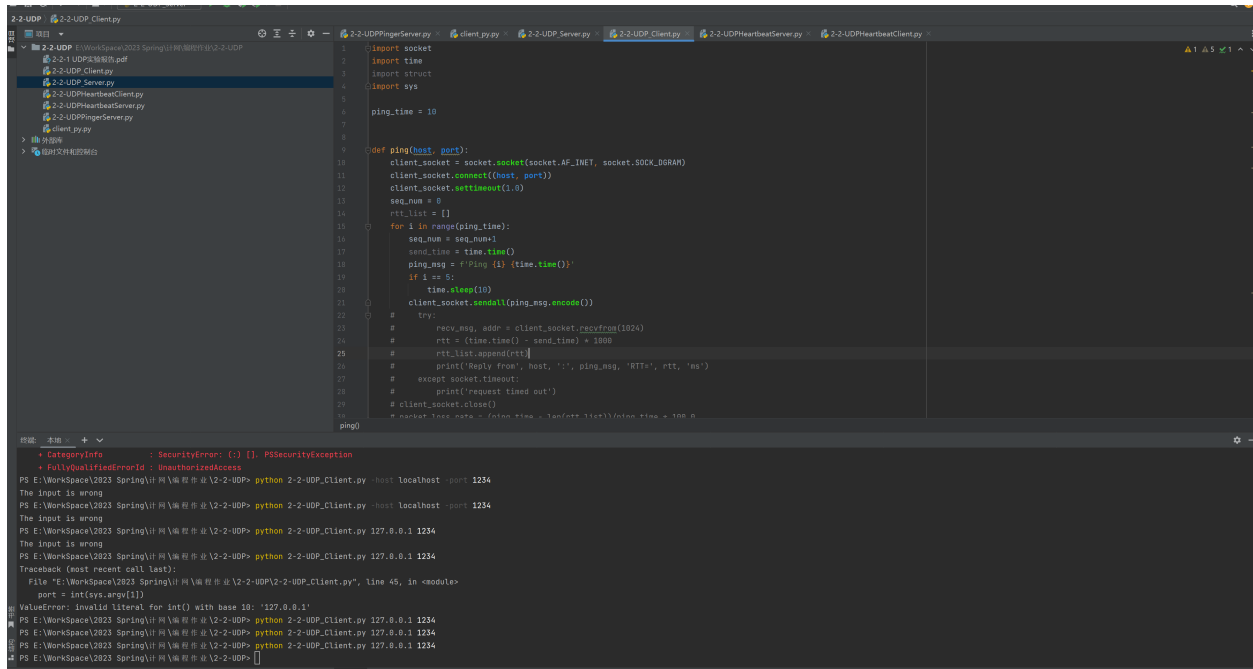


# 2-2-UDP选做实验报告

## 1. Client界面



```
1 import socket
2 import time
3 import struct
4 import sys
5
6 ping_time = 10
7
8 def ping(host, port):
9     client_socket = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
10    client_socket.connect((host, port))
11    client_socket.settimeout(1.0)
12    seq_num = 0
13    rtt_list = []
14    for i in range(ping_time):
15        seq_num = seq_num + 1
16        send_time = time.time()
17        ping_msg = f'Ping {i} {time.time()}'
18        if i == 5:
19            time.sleep(10)
20        client_socket.sendall(ping_msg.encode())
21        try:
22            recv_msg, addr = client_socket.recvfrom(1024)
23            rtt = (time.time() - send_time) * 1000
24            rtt_list.append(rtt)
25            print('Reply from', host, ':', ping_msg, 'RTT:', rtt, 'ms')
26        except socket.timeout:
27            print('request timed out')
28        client_socket.close()
29    # packet loss rate = (ping_time - len(rtt_list))/ping_time * 100.0
30    ping()
```

```
+ CategoryInfo          : SecurityError: (0) [], PSSecurityException
+ FullyQualifiedErrorId : UnauthorizedAccess
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py host localhost -port 1234
The input is wrong
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py host localhost -port 1234
The input is wrong
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py 127.0.0.1 1234
The input is wrong
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py 127.0.0.1 1234
Traceback (most recent call last):
  File "E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP\2-2-UDP_Client.py", line 45, in <module>
    port = int(sys.argv[1])
ValueError: invalid literal for int() with base 10: '127.0.0.1'
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py 127.0.0.1 1234
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py 127.0.0.1 1234
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP> python 2-2-UDP_Client.py 127.0.0.1 1234
PS E:\Workspace\2023 Spring\计算机组成原理\2-2-UDP>
```

client会连续发送10次ping请求，在发送第六次请求之后会暂停10秒后再发送第七次请求。

## 2. Server界面

```
2-2-UDP_Server.py
1 from socket import *
2 import random
3 import time
4
5 serverSocket = socket(AF_INET, SOCK_DGRAM)
6 serverSocket.bind(('localhost', 12343))
7 time_rec = 0
8 serverSocket.settimeout(2)
9
10 while True:
11     time_now = time.time()
12     try:
13         msg_add = serverSocket.recvfrom(1024)
14         msg = msg[0].upper()
15         serverSocket.sendto(msg, add)
16         time_rec = time.time()
17     except timeout:
18         print("The app shuts down")
19         print(time_now - time_rec)
20
```

```
2-2-UDP_Server
2-2-UDP_Client
E:\Anaconda3\python.exe "E:\Workspace\2023 Spring\11月\编程作业\2-2-UDP\2-2-UDP_Server.py"
The app shuts down
1685891521.4214628
The app shuts down
1685891523.4287417
The app shuts down
1685891525.4387544
The app shuts down
1685891527.4447541
-1.2136204242786299
0.0
0.0
0.0
0.0
The app shuts down
0.0
```

server会监听该端口的Ping请求，如果2s内未收到client发送的信息，则打印关闭信息。