

Project 2: Reliable UDP- DEMO

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Run the make file in the submitted deliverables. The server will be compiled into “./server” and the client will be compiled into “./client”

Command Line arguments:

Server:

Server takes the following command line arguments in order.

- Port[2000-65000]: The port number with which the server should listen to
- Drop Probability [0-1]: The probability of dropping packets from the server.
- Receiver window size: Should be in bytes.

Client:

Client takes the following command line arguments in order.

- Host name: The host where the server is running.
- Port: The port number which the server is listening on.
- File name: File name to transfer. Some sample files are supplied in the deliverables: a.txt, b.txt, c.txt, s3.txt, story.txt, xl.txt, large.txt. File sizes vary from 1 KB to 121 KB.
- Probability [0-1]: The probability to simulate high latency communication on client side.
- Receiver window size: Should be in bytes.

Sample Runs:

1. Run 1

Input:

Server:

```
./server 2500 0.1 1000
```

Client:

```
./client localhost s3.txt 0.01 1000
```

Output:

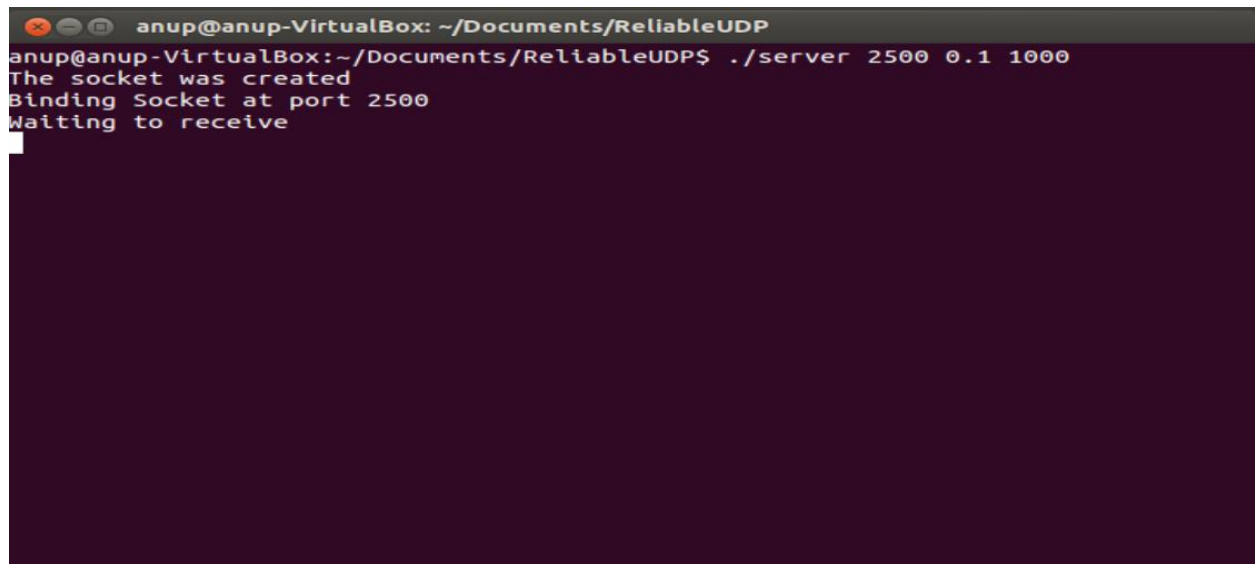
Client:

Contents of the file s3.txt. Please note that some files contain explicit “\n” as the file content and therefore might appear misaligned in the terminal.

Whenever there is a packet that is out of order, the client will input “Out of order packet received” on the terminal as an indication. At the end of the file, it also appends the word “close” to indicate that the client closed its connection. Actual file data is the remainder of the content displayed on the terminal.

The server displays each packet to be sent, the RTT calculated and some stats at the end of the file transfer.

Screenshots:

A screenshot of a terminal window titled 'anup@anup-VirtualBox: ~/Documents/ReliableUDP'. The terminal shows the command './server 2500 0.1 1000' being executed, followed by the output: 'The socket was created', 'Binding Socket at port 2500', and 'Waiting to receive'. The terminal background is dark purple.

```
anup@anup-VirtualBox: ~/Documents/ReliableUDP
anup@anup-VirtualBox:~/Documents/ReliableUDP$ ./server 2500 0.1 1000
The socket was created
Binding Socket at port 2500
Waiting to receive
```

```
anup@anup-VirtualBox: ~/Documents/ReliableUDP
anup@anup-VirtualBox:~/Documents/ReliableUDP$ ./client localhost 2500 s3.txt 0.0
1000
```

```
anup@anup-VirtualBox: ~/Documents/ReliableUDP
anup@anup-VirtualBox:~/Documents/ReliableUDP$ ./client localhost 2500 s3.txt 0.0
1000
Socket has been created
Send request to Fetch the file s3.txt
Some day, I know... I can faintly see a day approaching through the
haze of time, coming to me, coming for us, bringing us together forever. I
call through the endless span of time, and I can barely hear a whisper
coming back, saying softly, "Yes, James. I hear you, and I want you to know
this: There is a day in the future... Hold on to your hopes, because it will
789
1231234567890123
header to be sent: 7:1:801:701:
asde
Packet received
Ack received with ack_num:801
RTT: 130
Packet received
header to be sent: 5:-1:808:808:close
Packet received
Number of packets sent: 10
Number of packets sent at slow start: 10
Number of packets sent at Congestion Avoidance: 0
Percentage of packets in slow start: 100.00
Percentage of packets in congestion avoidance: 0.00
Congestion window grew till 1364
At once, the max number of packets that were sent was: 4
Waiting to receive
```

2. Run 2

When the file does not exist:

Server:

```
./server 2500 0.1 1000
```

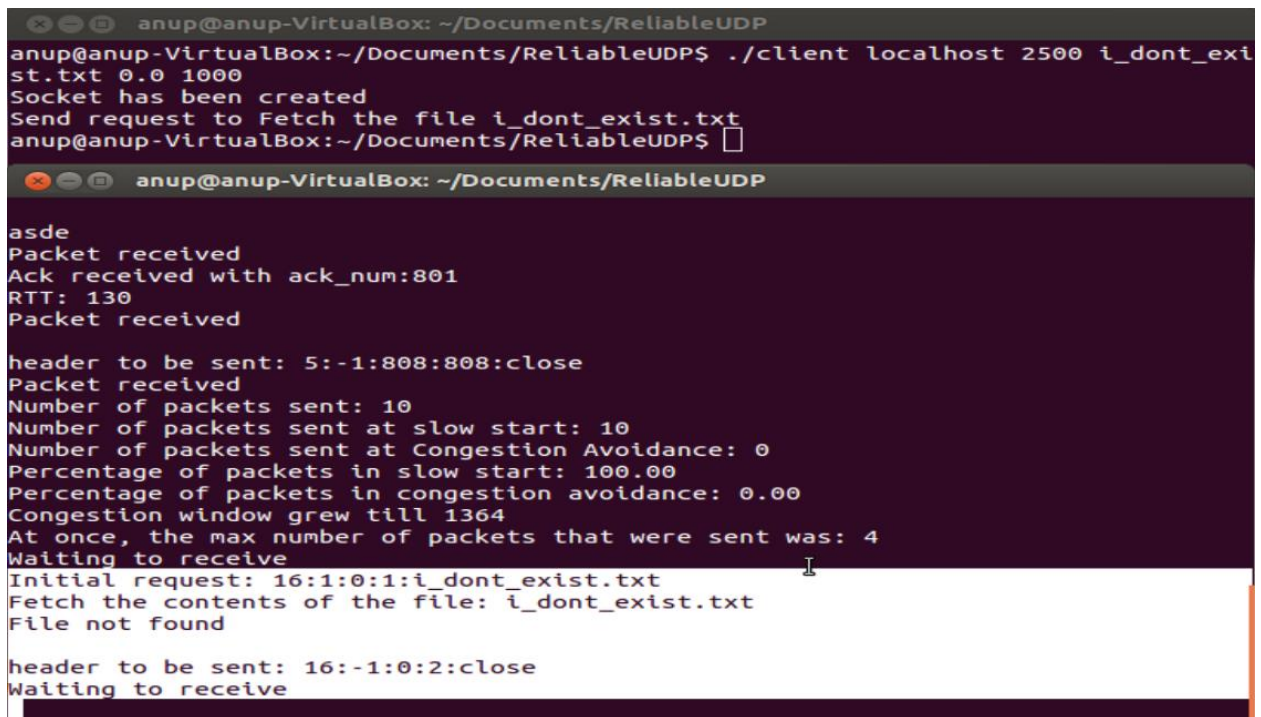
Client:

```
./client localhost i_dont_exist.txt 0.01 1000
```

Output:

The server displays a message “File not found” in the terminal and goes back to waiting for more requests. The client simply closes its connection as the server sent the “close” signal to the client.

Screenshot:



```
anup@anup-VirtualBox: ~/Documents/ReliableUDP
anup@anup-VirtualBox:~/Documents/ReliableUDP$ ./client localhost 2500 i_dont_ext
st.txt 0.0 1000
Socket has been created
Send request to Fetch the file i_dont_exist.txt
anup@anup-VirtualBox:~/Documents/ReliableUDP$

anup@anup-VirtualBox: ~/Documents/ReliableUDP

asde
Packet received
Ack received with ack_num:801
RTT: 130
Packet received

header to be sent: 5:-1:808:808:close
Packet received
Number of packets sent: 10
Number of packets sent at slow start: 10
Number of packets sent at Congestion Avoidance: 0
Percentage of packets in slow start: 100.00
Percentage of packets in congestion avoidance: 0.00
Congestion window grew till 1364
At once, the max number of packets that were sent was: 4
Waiting to receive
Initial request: 16:1:0:1:i_dont_exist.txt
Fetch the contents of the file: i_dont_exist.txt
File not found

header to be sent: 16:-1:0:2:close
Waiting to receive
```