Alex Banning
October 8, 2019
Programming Assignment 1
Computer Networks

Part 1: Wireshark Lab

1) My browser is running HTTP 1.1

47 2.917012	10.0.0.201	128.119.245.12	HTTP	623 GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
51 3.020461	128.119.245.12	10.0.0.201	HTTP	540 HTTP/1.1 200 OK (text/html)

2) US English

```
Accept-Language: en-US,en;q=0.9\r\n
```

3) My computer: 10.0.0.201

   Server: 128.119.245.12

```
Internet Protocol Version 4, Src: 10.0.0.201, Dst: 128.119.245.12
```

4) Status Code: 200

```
HTTP/1.1 200 OK\r\n
```

5) Last modified: Wed, Oct. 09th 2019 5:53:01 GMT

```
Last-Modified: Wed, 09 Oct 2019 05:53:01 GMT\r\n
```

6) 128 bytes

```
Accept-Ranges: bytes\r\n
Content-Length: 128\r\n
```

7) No, all of the headers are in the raw data.

Part 2: UDP Ping Program

Server Console Output:

```
alex@bletchleyPark:~/Documents/School/Senior/FirstSemester/Networks/PingAssignment$ python UDP_Ping_Server.py
PING: 0 TUE OCT  8 22:37:15 2019
PING: 1 TUE OCT  8 22:37:16 2019
PING: 2 TUE OCT  8 22:37:16 2019
PING: 3 TUE OCT  8 22:37:16 2019
PING: 4 TUE OCT  8 22:37:16 2019
PING: 5 TUE OCT  8 22:37:16 2019
PING: 6 TUE OCT  8 22:37:17 2019
PING: 7 TUE OCT  8 22:37:18 2019
PING: 8 TUE OCT  8 22:37:18 2019
PING: 9 TUE OCT  8 22:37:19 2019
```

Client Console Output

```
alex@bletchleyPark:~/Documents/School/Senior/FirstSemester/Networks/PingAssignment$ python UDP_Ping_Client.py
Message Lost.
Packet time: 0.000140

PING: 1 TUE OCT  8 22:37:16 2019
Packet time: 0.000065

PING: 2 TUE OCT  8 22:37:16 2019
Packet time: 0.000063

PING: 3 TUE OCT  8 22:37:16 2019
Packet time: 0.000061

PING: 4 TUE OCT  8 22:37:16 2019
Message Lost.
Message Lost.
Packet time: 0.000101

PING: 7 TUE OCT  8 22:37:18 2019
Message Lost.
alex@bletchleyPark:~/Documents/School/Senior/FirstSemester/Networks/PingAssignment$
```

Code:

```
## @filename: UDP_Ping_Client.py
## @author: Alex Banning
## @assignment: UDP Ping
## @date: October 9th, 2019
## @description: UDP Client side for ping program. Sends 10 packets to localhost server
##              And records the RTT time for each packet.
#!/usr/bin/env python2
# -*- coding: utf-8 -*-
import random
import time
from socket import *

## Define consts
clientSocket = socket(AF_INET, SOCK_DGRAM)
address = ('localhost', 12000)
## Only send necessary packets
for ProgramCNT in range(10):
   data = "Ping: " + str(ProgramCNT) + " " + time.asctime()
   clientSocket.sendto(data.encode(), address)
   timeCNTStart = time.time()
   clientSocket.settimeout(1)

   try:
      returnMessage, returnAddress = clientSocket.recvfrom(1024)
      timeCNTEnd = time.time()
      timeCNT = timeCNTEnd - timeCNTStart
      print ("Packet time: %6.6f\n" % (timeCNT))
      print (returnMessage.decode())
   except:
      print ("Message Lost.")

clientSocket.close()
```