

# COMP9331 Lab 2

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## Exercise 1

### Question 1

- IP address of gaia.cs.umass.edu : 128.119.245.12
- port number : 80
- client IP address : 192.168.1.102
- port number : 1161

### Question 2

- sequence number : 2322129013

### Question 3

TCP seg	seq numbers	send time	ACK recv time	RTT	EstimatedRTT/ms
segment 1	232129013	0.026477	0.053937	27.46	27.46
segment 2	232129578	0.041737	0.077294	35.557	28.472
segment 3	232131038	0.054026	0.124085	70.059	33.670
segment 4	232132498	0.054690	0.169118	114.428	43.765
segment 5	232133958	0.077405	0.217299	139.894	55.781
segment 6	232135418	0.078157	0.267802	189.645	72.514

#### Question 4

- The TCP segment length of the packet containing the POST request is 565 Bytes.
- The TCP segment length of the rest first six packets is 1460 Bytes.

#### Question 5

- The advertised Win size is 5840 Bytes.
- No, there is no throttle events because the Win size increases along the time.

#### Question 6

- There are no retransmitted segments because the Time/Sequence Graph shows that the sequence number increases along the time. It means no duplicated sequence numbers.

#### Question 7

- Typically, the length of the TCP segment is 1460 Bytes.

#### Question 8

- The last ACK sent from server is 232293103.
- The first Seq sent from client is 232129012.
- The total size of data is  $232293103 - 232129012 - 1 = 164090$ .
- The total time of transmitting is 5.455830.
- So the throughput for the TCP connection is 30076.08 Bytes/s.

## Exercise 2

#### Question 1

- Initial Seq : 2818463618

### Question 2

- SYNACK Seg : 1247095790
- SYNACK ACK : 2818463619
- The server determine the SYNACK ACK by adding SYN Seq and the length of SYN packet.

### Question 3

- ACK Seg : 2818463619
- ACK Ack : 1247095791
- No,it does not contain any data.

### Question 4

- Both of server and client did the active close.
- They sent the [FIN,ACK] packet to each other.
- A simultaneous close has been performed.

### Question 5

- client to server :  $2818463653 - 2818463618 = 35$  Bytes
- server to client :  $1247095832 - 1247095790 = 42$  Bytes
- the final ACK number minus the initial Seq number is the data Bytes sent to the other side.