

HW 3.

1. 다음은 UDP segment (header와 data)와 pseudo-header 를 나타내고 있다. Check sum을 계산하십시오. (10점)

153.18.8.105			
171.2.14.10			
All 0s	17	15	
1087		13	
15		All 0s	
T	E	S	T
I	N	G	All 0s

10011001 00010010 → 153.18 ①
 00001000 01101001 → 8.105
 10101011 00000010 → 171.2
 00001110 00001010 → 14.10
 00000000 00010001 → 0 and 17 ②
 00000000 00001111 → 15
 00000100 00111111 → 1087 ③
 00000000 00001101 → 13
 00000000 00001111 → 15
 00000000 00000000 → 0 (checksum)
 01010100 01000101 → T and E
 01010011 01010100 → S and T ④
 01001001 01001110 → I and N
 01000111 00000000 → G and 0 (padding)

①

```

10011001 00010010
00001000 01101001
10101011 00000010
-----
1 01001100 01111101
= 01001100 01111110
  
```

②

```

00001110 00001010
00000000 00010001
00000000 00001111
-----
00001110 00101010
  
```

③

```

00000100 00111111
00000000 00001101
00000000 00001111
-----
00000100 01011011
  
```

④

```

01010100 01000101
01010011 01010100
01001001 01001110
01000111 00000000
-----
10100111 10011001
10010000 01001110
-----
1 00110111 11100111
= 00110111 11101000
  
```

① + ②

③ + ④

```

01011010 10101000
00111100 01000011
-----
1001011011101011
  
```

∴ Checksum = 0110100100010100

2. Assume that GBN (N=4) sliding window algorithm is used, and a timeout interval is $2 \times \text{RTT}$.

Draw a timeline diagram for the scenario that the 4th packet (seq. no.=3) is lost and the ACK packet of the 3rd packet (seq. no. = 2) is lost. In timeline diagram, describe the status of sender and receiver window and whether the received packet is accepted or discarded. (Assumptions: cumulative ACK is used. The ACK number is the next expected number. The sequence number of data packet begins with '0'. NAK is not used. And more than 5 packets can be transmitted within the RTT, and the RTT is fixed.) (20점)

(이 문제에 대해서 **부분 점수는 없습니다**. 완전히 맞은 경우만 점수가 주어집니다. Timeline diagram은 loss와 관련된 효과가 완전히 없어질 때까지 그려야 합니다)

