

## Mid-Term Grading Rubik Csci4211 Spring 2019

1. Solution:
  - a. Application layer: supporting network applications (2 points)
  - b. Transport layer: process-process data transfer (2)
  - c. Network layer: routing of datagrams from source to destination (2)
  - d. Data link layer: data transfer between “neighboring” elements (2)
  - e. Physical layer: encoding/decoding information (bits) into physical media (2)

2. Solution:

```
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
+1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
= 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 (binary addition, with overflow wrapped around)
+1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0
= 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0
```

checksum=1's completion =1 1 0 1 1 1 0 1 1 1 0 1 1 1 0 1

3. Solution :

### Steps

Step 1: client end system sends TCP FIN control segment to server

Step 2: server receives FIN, replies with ACK. half closed

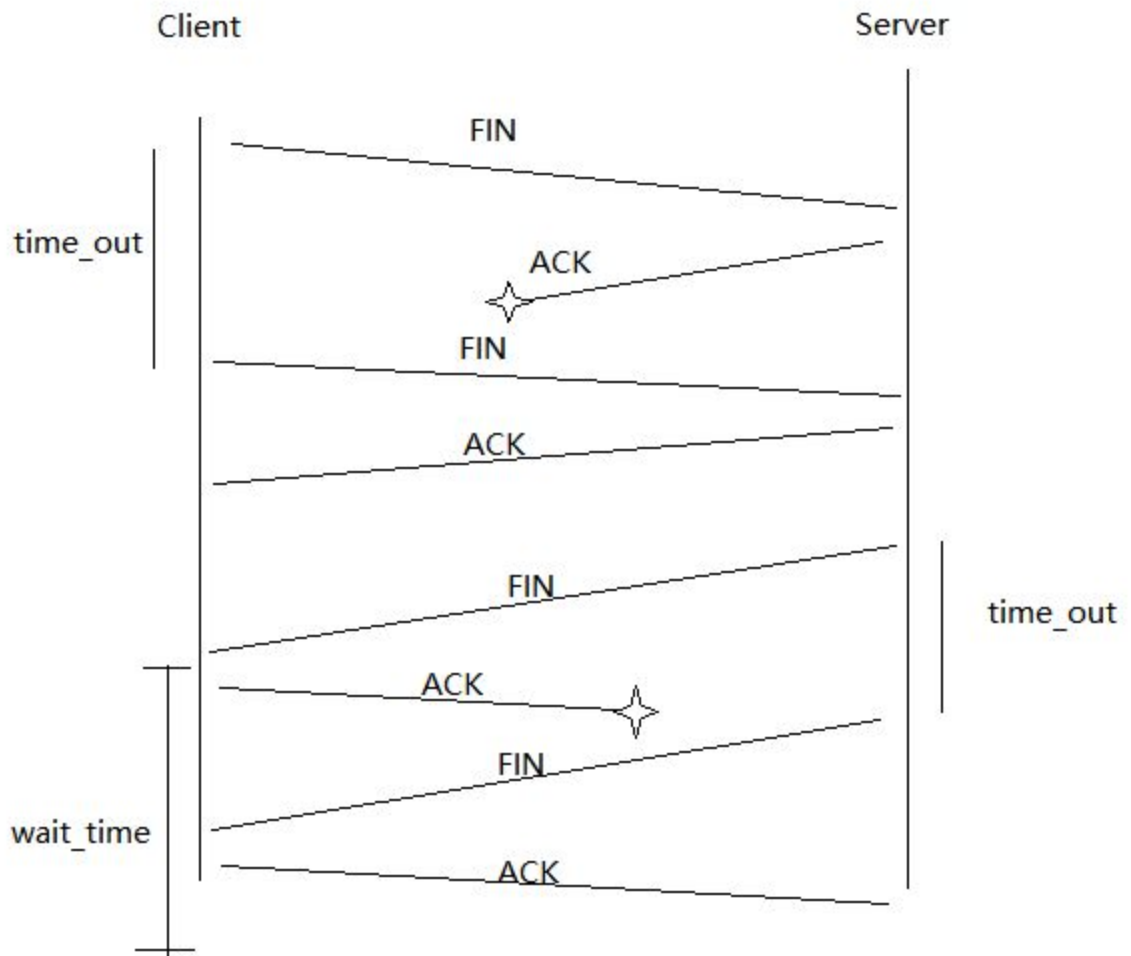
Step 3: client receives FIN. half closed, wait for server to close

Step 4: server sends FIN.

Step 5: client receives FIN, replies with ACK. Enters “timed wait” - will respond with ACK to received FINs

Step 6: server, receives ACK. connection fully closed

Step 7: client, timer expires, connection fully closed



4. Solution:

It is used in TCP Flow Control. Receiver advertises spare room by including value of RcvWindow in segments. Sender limits unACKed data to RcvWindow – guarantees receive buffer doesn't overflow.