Announcements

- Reading
  - Chapter 6 (6.1 & 6.2)

- Project #3
  - Is on the web

- Midterm #1
  - Was returned at the end of class

Project Notes

- Suggested order:
    - Start with timer thread and timer functions
    - Write shortest path code
    - Add hello packets
    - Add flood packets
    - Add full routing table computations
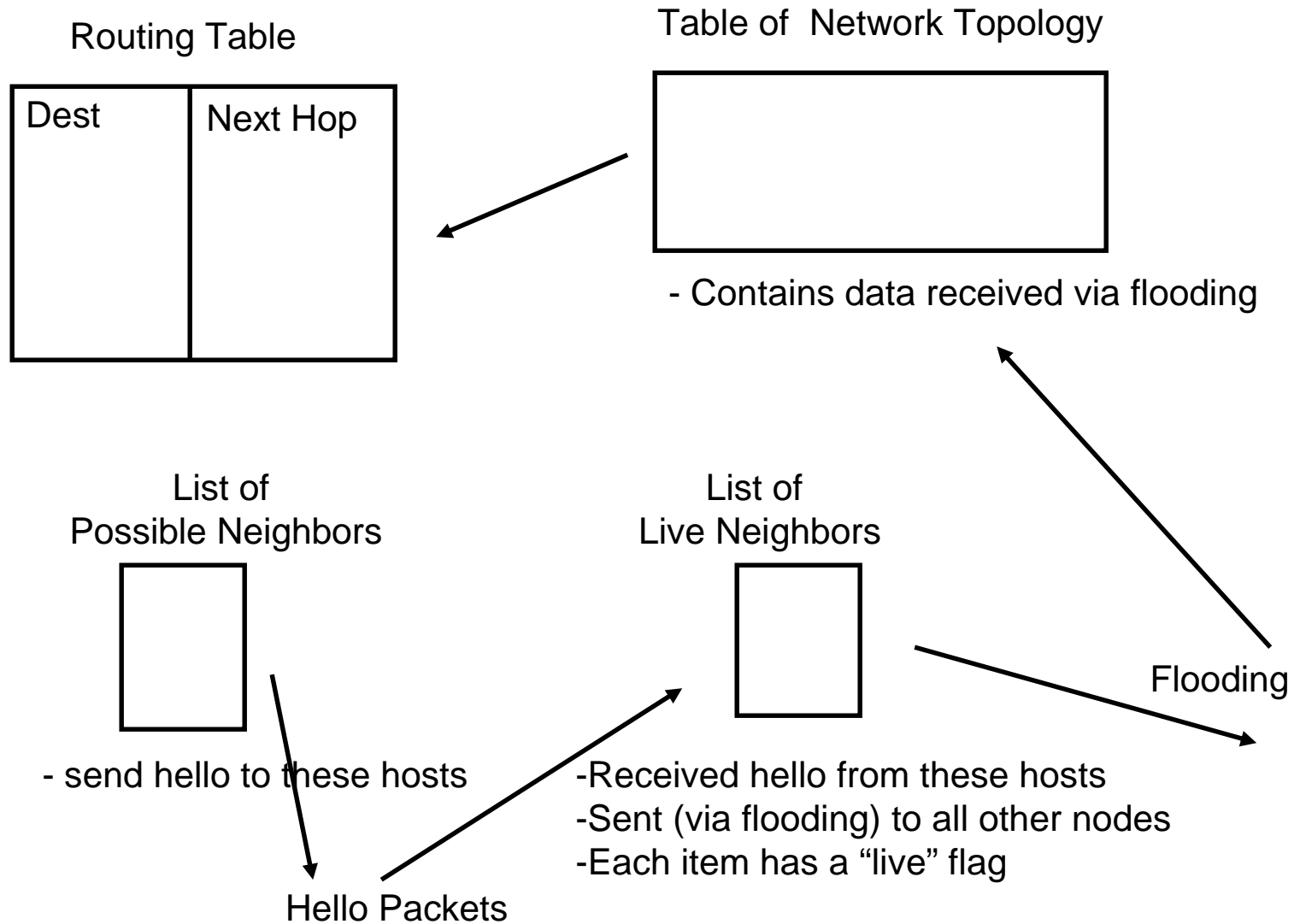
Timer Thread

- Queue is used like an inbox
  - Other threads submit requests via queue
- Keep a linked list of pending timeouts
  - Convert timeouts to absolute time using pthread_get_expiration_np
  - Change dequeue to use take absolute timeout

Table of pending Timers

10:10:5.3	
10:10:8.9	

T.O. Req
4 sec.
ICMPQ
Id #5

T.O. Req
5 sec.
RoutingQ
Id #3
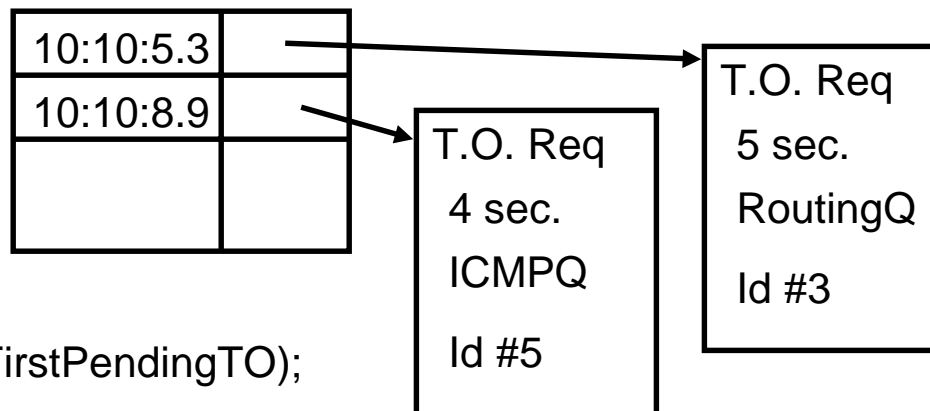
```
While (1) {
    dequeue(timerQ, timeOfFirstPendingTO);
    if (ret value == timeout) {
        processTimeout – remove from table, send message to requesting thread
    } else {
        processRequestForNewTimeOut
            - add to pending timers table
}}
```

Routing Information Flow

Routing Table

Dest	Next Hop

Table of Network Topology

- Contains data received via flooding

List of
Possible Neighbors

List of
Live Neighbors

Flooding

- send hello to these hosts

-Received hello from these hosts
-Sent (via flooding) to all other nodes
-Each item has a "live" flag

Hello Packets

Managing IP Addresses

- IP Addresses used to be allocated based on
  - Class A: 16 million addresses
  - Class B: 64K addresses
  - Class C: 256 addresses
  - One routing table entry for each assigned user in each class
- Need to make better use of IP addresses
  - Add a mask bit to the routing tables
    - And an address with the mask and then match entry
    - If two match, one with most 1's in mask wins
      - More specific info used
  - Allocate from geography based pools

Midterm Results

Problem	1	2	3	4	5	6	Total
Min	0	0	0	4	2	0	33
Max	10	15	15	20	25	15	92
Mean	8	10	8	18	11	10	64.3
Std. Dev							14.6

- Grades are based on a curve
- Exam #1 is 12.5% of the semester grade

Midterm Re-grading Policy

- **All Requests must be submitted in writing**
  - Please type your request.
  - Requests should explain why you feel additional credit is deserved.

- **When to submit**
  - No sooner than 24 hours after the exams were made available for return.
  - No later than 1 week (end of class Th. Oct. 18) from when they were made available.

- **Requests can result in**
  - Points being added or subtracted from score.
  - All questions being re-graded, not just the one(s) requested.