**Karen Shay West**

9 Shannon Marie Way, North Easton, MA 02356

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

508-844-9776 <http://www.linkedin.com/in/karenshaywest> [KarenWest15@gmail.com](mailto:KarenWest15@gmail.com)

**SUMMARY OF RECENT ONLINE TECHNICAL COURSE, Network Protocols, a review of protocols already known, and an introduction to those that I've not used before** – see my Linked In Project Section for details and github links to files:

* **The network protocols and topics covered in this course were:**
  + Internet layers
  + IP service model
  + TCP and UDP service models
  + encapsulation
  + packet switching
  + end to end principle
  + the Finite State Machine of the HTTP Request and TCP Connections
  + Internet names and addresses
  + **Packet Switching topics:**
    - delay guarantees
    - delay model
    - end to end delay
    - playback buffers
  + **Queue properties:**
    - Burstiness increases delay and Little's Result
    - Packet Arrivals are not Poisson processes but some events are, such as web requests and new flow arrivals
    - the M/M/1 simple queue model
  + Rate guarantees
  + Fragmentation,
  + Flow Control using Stop and Wait
  + Flow Control using sliding window
  + Congestion Windows Using TCP Tahoe and Slow Start
  + Congestion Timeout estimates using round-trip-time (RTT) and self-clocking
  + Congestion Performance Improvements Using TCP Reno and TCP NewReno
  + Max-Min Fairness in Throughput and Allocation
  + Additive Increase Multiplicative Decrease (AIMD) for varying window size for TCP Congenstion Control for a single flow and multiple flows
  + TCP header
  + reliable connections
  + reliability error detection
  + Domain Name System (DNS) Queries and Resource Records
  + IP Address subnetting
  + flooding computer networks
  + source routing
  + forwarding table and the spanning tree
  + multicast routing
  + routing in the internet
  + Bellman-Ford algorithm
  + Dijkstra's algorithm
  + open shortest path first
  + autonomous system for the internet
  + border gateway protocol
  + Ethernet over twisted pair
  + Carrier Sense Multiple Access With Collision Detection (CSMA/CD)
  + WiFi and IEEE 802.11
  + Address Resolution Protocol (ARP)
  + Dynamic Host Configuration Protocol (DHCP)
  + IPv4 32-bit address
  + IPv6 128-bit address
  + Network Address Translation (NAT)
  + Medium Sharing Algorithms use Media Access Control (MAC) Algorithms to share it:
    - the Aloha Packet Switched Radio Network
    - Token Passing / Token Ring (IEEE 802.5)
    - The Wireless MAC protocol
    - Wireless Carrier Sense Multiple Access / Collision Avoidance (CSMA/CA),
    - Wireless Request-to-Send and Clear-to-send
    - Wireless WiFi