Instructions:

I. You must submit your homework electronically only in .pdf format. All word processed, no handwriting.
II. Submit your homework via Blackboard no later than **11:59 pm April 13, 2020**.
III. Late homework is subject to 10% penalty for each day past the due date, and before the solutions are posted. No homework will be accepted after the solutions are posted.
IV. Students can discuss problems and share their ideas among themselves, but MUST work out the homework problems individually. Any deviation from this policy may result in an "F" grade for the course.
V. You must start working on these problems immediately. Otherwise, you may not have enough time to submit them on time.

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1. Consider the network of Fig. 5-12(a). Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The cost of the links from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the cost. Problem 6, page 490 of the text

2. If costs are recorded as 8-bit numbers in a 50-router network, and distance vectors are exchanged twice a second, how much bandwidth per (full-duplex) line is chewed up by the distributed routing algorithm? Assume that each router has three lines to other routers. Problem 18, page 491 of the text

3. A router can process 2 million packets/sec. The load offered to it is 1.5 million packets/ sec on average. If a route from source to destination contains 10 routers, how much time is spent being queued and serviced by the router? Hint; queuing delay at each node is $1/(\mu - \lambda)$ Problem 28, page 491 of the text

4. A large number of consecutive IP addresses are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the w.x.y.z/s notation.

   Problem 30, page 492 of the text

5. A router has the following (CIDR) entries in its routing table:

Address/mask	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

   Problem 33, page 492 of the text

   For each of the following IP addresses, what does the router do if a packet with that address arrives?
   (a) 135.46.63.10
   (b) 135.46.57.14
   (c) 135.46.52.2
   (d) 192.53.40.7
   (e) 192.53.56.7