Solutions to the problems week 4-5

1. Link state algorithms: Computes the least-cost path between source and destination using complete, global knowledge about the network. Distance-vector routing: The calculation of the least-cost path is carried out in an iterative, distributed manner. A node only knows the neighbor to which it should forward a packet in order to reach given destination along the least-cost path, and the cost of that path from itself to the destination.

2. Routers are aggregated into autonomous systems (ASs). Within an AS, all routers run the same intra-AS routing protocol. Special gateway routers in the various ASs run the inter-autonomous system routing protocol that determines the routing paths among the ASs. The problem of scale is solved since an intra-AS router need only know about routers within its AS and the gateway router(s) in its AS.

3. 1 1 0 1 1 1 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 1 1 1 0 0

4. 8 interfaces; 4 routing tables

5. 50% overhead

6. See "Principles in Practice" on page 331

7. need for buffers at input port: multiple packets arriving to switch at same time may need to go to output port; need for buffers at output port: switching fabric may not be faster than line speed

8. Yes, because the entire IPv6 datagram (including header fields) is encapsulated in an an IPv4 datagram