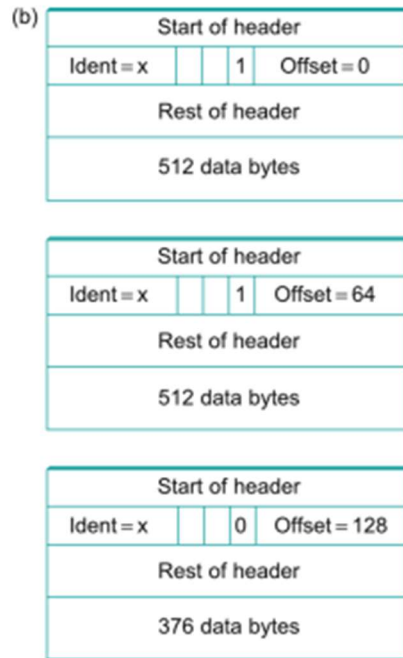


## Homework 4

37. Suppose the fragments of Figure 3.19(b) all pass through another router onto a link with an MTU of 380 bytes, not counting the link header. Show the fragments produced. If the packet were originally fragmented for this MTU, how many fragments would be produced?



■ FIGURE 3.19 Header fields used in IP fragmentation: (a) unfragmented packet; (b) fragmented packets.

53. Suppose a router has built up the routing table shown in Table 3.20. The router can deliver packets directly over interfaces 0 and 1, or it can forward packets to router R2, R3, or R4. Describe what the router does with a packet addressed to each of the following destinations: (a) 128.96.39.10. (b) 128.96.40.12. (c) 128.96.40.151. (d) 192.4.153.17. (e) 192.4.153.90.

Table 3.20 Routing table for Exercise 53.		
SubnetNumber	SubnetMask	NextHop
128.96.39.0	255.255.255.128	Interface 0
128.96.39.128	255.255.255.128	Interface 1
128.96.40.0	255.255.255.128	R2
192.4.153.0	255.255.255.192	R3
(default)		R4

66. An organization has been assigned the prefix 200.1.1/24 (a class C) and wants to form subnets for four departments, with hosts as follows:

A 72hosts, B 35hosts, C 20hosts, D 18hosts.

There are 145 hosts in all.

- (a) Give a possible arrangement of subnet masks to make this possible.
- (b) Suggest what the organization might do if department D grows to 34 hosts.

70. Table 3.22 is a routing table using CIDR. Address bytes are in hexadecimal. The notation "/12" in C4.50.0.0/12 denotes a netmask with 12 leading 1 bits, that is, FF.F0.0.0. Note that the last three entries cover every address and thus serve in lieu of a default route. State to what next hop the following will be delivered:

- (a) C4.5E.13.87.
- (b) C4.5E.22.09.
- (c) C3.41.80.02.
- (d) 5E.43.91.12.
- (e) C4.6D.31.2E.
- (f) C4.6B.31.2E.

Net/MaskLength	Nexthop
C4.50.0.0/12	A
C4.5E.10.0/20	B
C4.60.0.0/12	C
C4.68.0.0/14	D
80.0.0.0/1	E
40.0.0.0/2	F
00.0.0.0/2	G