Hamming Distance Clarification

- If the Hamming distance of a code is $H$, the code is **efficient** IFF you can pick any codeword, flip $H$ bits, and always end up at another codeword.
- See piazza’s @147 for more details
IP Fragmentation

- Suppose a router is connected to two interfaces that implement different link layer protocols.
- The protocol on interface “A” allows frames to have payloads up to a maximum size of 980 bytes. Interface “B” uses FDDI (payloads > 1400 bytes).
IP Fragmentation

- Assume the router receives the following packet (format like shown on lecture 9 slide 17) on interface “B” and needs to forward it out of interface “A”. *Note, in a real IP header the offset would be given in # of bytes / 8, but for this problem just specify the offset in # of bytes.

| ... | Length = 2940 | ID = x | MF = 0 | Offset = 5840 | ... |
**IP Fragmentation**

- Show the fragmented that the router would create to send them out of interface “A”

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>ID</th>
<th>MF</th>
<th>Offset</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>980</td>
<td>x</td>
<td>1</td>
<td>5840</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>980</td>
<td>x</td>
<td>1</td>
<td>6800</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>980</td>
<td>x</td>
<td>1</td>
<td>7760</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>60</td>
<td>x</td>
<td>0</td>
<td>8720</td>
<td>...</td>
</tr>
</tbody>
</table>
IP Fragmentation

- If there was another router “Y” that received the fragmented packets and needed to forward on an FDDI interface, would it first reassemble the packets?
IP Fragmentation

- If there was another router “Y” that received the fragmented packets and needed to forward on an FDDI interface, would it first reassemble the packets?
- No, packet reassembling only happens at the destination host
Class-based Addressing

184.86.92.182

- Suppose that we were still using class-based addressing. What type of network would this IP address be a part of?
Class-based Addressing

184.86.92.182

- Suppose that we were still using class-based addressing. What type of network would this IP address be a part of?
- Class B
  - 1011 1000 0101 0110 0101 1100 1011 0110
If the network administrator had decided to break the network in the previous part into 8 different subnets, what would the subnet mask of the subnet to which this IP address belongs be?
Subnetting

184.86.92.182

- If the network administrator had decided to break the network in the previous part into 8 different subnets, what would the subnet mask of the subnet to which this IP address belongs be?
- 1111 1111. 1111 1111. 1110 0000. 0000 0000 or 255.255.224.0
  - Class B has 16-bit network name. Need 3 more bits for 8 subnets.
184.86.92.182

- What is the full network address (including subnet) of the subnet to which this IP address would be attached?
Network Address

184.86.92.182

- What is the full network address (including subnet) of the subnet to which this IP address would be attached?
- $184.86.92.182 \& 255.255.224.0 = 184.86.64.0$ (All host bits are 0s)
CIDR

184.86.92.182

- Now suppose instead that we are using CIDR addressing instead of Class-based addressing and subnets. What would the length of CIDR prefix for the physical network to which the host was attached be?
CIDR

184.86.92.182

- Now suppose instead that we are using CIDR addressing instead of Class-based addressing and subnets. What would the length of CIDR prefix for the physical network to which the host was attached be?
- 19, (The CIDR prefix is 184.86.64/19.)
Broadcast Address

184.86.92.182

- What would the broadcast address for this network be?
Broadcast Address

184.86.92.182

- What would the broadcast address for this network be?
- 184.86.95.255 (All host bits are 1s)
Forwarding Example

- Definitely understand the forwarding example in the “IPv6” slides taught on 2/3
- Ensure understanding of longest prefix match related to the example
IPv6

- Listen to the podcast for the lecture
- Know the basics about the header
- Don’t spend toooooo much time studying this for the midterm
  - There are many other important things you will want to know
  - If you’re crunched for time study everything else first and don’t forget you can have a cheat/crib sheet of notes for the test