Midterm 2

Link layer

CRC checksums
  - Pad a bit string with a sequence of digits that makes it divisible by a generator polynomial.

  Example:

  \[ x^3 + x^2 + 1 \rightarrow 1x^3 + 1x^2 + \phi(x) + 1 \]

  \[ \xrightarrow{\text{div}} \]

  \[ \text{Encode: } 101101101 \text{ - Length } n \]

  \[ 1101 | [101101101] \quad 000 \text{ - Length } n-1 \]

  \[ \begin{array}{c}
  1101 \\
  1100 \\
  1101 \\
  1110 \\
  1101 \\
  1110 \\
  1101 \\
  1100 \\
  1101 \\
  \end{array} \]

  \[ \text{Encoded: } 1011101101/001 \]

  - Should be divisible by generator polynomial
Network Layer

- Interior gateway protocols develop a sink tree over a subnet

- Packet needs to travel from A to E

- How can?
- Link state packets broadcast delays

<table>
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<th>Last</th>
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**Exterior Gateway protocols**

Routing mostly based on network address prefixes.

IPv4: 32 bits, organized into bytes and shared as 4 decimal numbers.

\[ 7.163.102.97 \]

\[ 4+2+1 \]
\[ 128+32+2+1 \]
\[ 64+32+4+2 \]
\[ 0000 \]
\[ 011.1010 \]
\[ 0011.0110 \]
\[ 0110 \]
\[ 0001 \]

The subnet mask masks the bits belonging to the network. Example:

\[ 7.163.102.97/15 \]

\[ 255.254.0.0 \]

What is the host address?

\[ 0.0.0.000.0000001.0110 \]

Start here: \[ 0.10.102.97 \]