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21BCI0022

1Q) $x^3+1 = 1\cdot x^3 + 0\cdot x^2 + 0\cdot x^1 + 1\cdot x^0$

$\Rightarrow$ generated polynomial 1001

Add $n-1 = 3$ zeroes at the end of message

$\Rightarrow x^7 + x^5 + x^1 = 1\cdot x^7 + 0\cdot x^6 + 1\cdot x^5 + 0\cdot x^4 + 0\cdot x^3 + 0\cdot x^2 + 1\cdot x^0$

$= 10100001$

```
1001 | 10100001000
       1001
       -----
        00110 0
          1001
          ----
           0101 0
             1001
             ----
              0001 110
                 1001
                 ----
                  0111
```

Remainder $= 0\cdot x^3 + 1\cdot x^2 + 1\cdot x^1 + 1\cdot x$

$= x^2 + x + 1$

$\therefore$ Remainder $= x^2 + x + 1$

1) CRC is almost always mounted in a trailer rather than a header in data link protocols. What is the reason for this?

=> Error detection: By putting the CRC in the trailer, errors in headers and payload can be detected

=> Packet size: If the CRC were placed in the header it would increase the size of the header and reduce amount of payload that could be carried in each packet

=> Efficiently: The receiver can check the integrity of the packet before processing the payload

=> Flexibility

=> Security