

$$X^4 + X + 1 \equiv 10011$$

$$X + 1 \equiv 11$$

$$X^5 + X^4 + X^2 + 1 \equiv 110101$$

$$X^5 + X^4 + X^2 + X \equiv 110110$$

$$1 \times X^4 + 0 \times X^3 + 0 \times X^2 + 1 \times X^1 + 1 \times X^0$$

$$1 \times X^1 + 1 \times X^0$$

$$1 \times X^5 + 1 \times X^4 + 0 \times X^3 + 1 \times X^2 + 0 \times X^1 + 1 \times X^0$$

$$1 \times X^5 + 1 \times X^4 + 0 \times X^3 + 1 \times X^2 + 1 \times X^1 + 0 \times X^0$$

$$\begin{array}{r}
 X^4 \qquad \qquad \qquad + X + 1 \\
 \qquad \qquad \qquad \qquad \qquad \qquad X + 1 \\
 \hline
 X^4 \qquad \qquad \qquad + X + 1 \\
 X^5 \qquad \qquad \qquad + X^2 + X \quad 0 \\
 \hline
 X^5 + X^4 \qquad \qquad + X^2 \qquad \qquad + 1
 \end{array}$$

$$X^5 + X^4 + X^2 + 1$$

$X^4 + X + 1$ Divisor \equiv LFSR taps

$X^5 + X^4 + X^2 + 1$ Dividend \equiv input stream

0 Remainder \equiv Values in Register at end

$X + 1$ Quotient \equiv output stream

$$\begin{array}{r} X^4 + X + 1 \quad \left| \begin{array}{r} X^5 + X^4 + X^2 + 1 \\ X^5 + X^2 + X \end{array} \right. \\ \hline X^4 + X + 1 \\ \hline X^4 + X + 1 \\ \hline 0 \end{array}$$

$X^4 + X + 1$ Divisor \equiv LFSR taps

$X^5 + X^4 + X^2 + X$ Dividend \equiv input stream

$X + 1$ Remainder \equiv Bits in Register at end

$X + 1$ Quotient \equiv output stream

$$\begin{array}{r} X^4 + X + 1 \quad \left| \begin{array}{r} X^5 + X^4 + X^2 + X \\ X^5 + X^2 + X \end{array} \right. \\ \hline X^4 + X + 1 \\ \hline X^4 + X + 1 \\ \hline X + 1 \end{array}$$

$$\begin{aligned}
X^4 + X + 1 &\equiv 10011 \\
X + 1 &\equiv 11 \\
X^5 + X^4 + X^2 + 1 &\equiv 110101 \\
X^5 + X^4 + X^2 + X &\equiv 110110
\end{aligned}$$

$$\begin{aligned}
&1 \times X^4 + 0 \times X^3 + 0 \times X^2 + 1 \times X^1 + 1 \times X^0 \\
&1 \times X^1 + 1 \times X^0 \\
&1 \times X^5 + 1 \times X^4 + 0 \times X^3 + 1 \times X^2 + 0 \times X^1 + 1 \times X^0 \\
&1 \times X^5 + 1 \times X^4 + 0 \times X^3 + 1 \times X^2 + 1 \times X^1 + 0 \times X^0
\end{aligned}$$

$$\begin{array}{r}
X^4 \quad + X + 1 \\
\hline
X^4 \quad + X + 1 \\
\hline
X^5 \quad + X^2 + X \quad 0 \\
\hline
X^5 + X^4 \quad + X^2 \quad + 1
\end{array}$$

$$X^5 + X^4 + X^2 + 1$$

$X^4 + X + 1$ Divisor \equiv LFSR taps
 $X^5 + X^4 + X^2 + 1$ Dividend \equiv input stream
0 Remainder \equiv Values in Register at end
 $X + 1$ Quotient \equiv output stream

$$\begin{array}{r}
X^4 + X + 1 \quad \overline{) \quad X^5 + X^4 + X^2 + 1} \\
\quad \underline{X^5 \quad + X^2 + X \quad 0} \\
\quad \quad X^4 \quad + X + 1 \\
\quad \quad \underline{X^4 \quad + X + 1} \\
\quad \quad \quad 0
\end{array}$$

$X^4 + X + 1$ Divisor \equiv LFSR taps
 $X^5 + X^4 + X^2 + X$ Dividend \equiv input stream
 $X + 1$ Remainder \equiv Bits in Register at end
 $X + 1$ Quotient \equiv output stream

$$\begin{array}{r}
X^4 + X + 1 \quad \overline{) \quad X^5 + X^4 + X^2 + X} \\
\quad \underline{X^5 \quad + X^2 + X} \\
\quad \quad X^4 \\
\quad \quad \underline{X^4 \quad + X + 1} \\
\quad \quad \quad X + 1
\end{array}$$