Let n be the input that is being checked for primality.

If n is composite (not prime), then it will be of the form

$$n = a \times b,$$

$$1 < a, b < n$$

$$77 = 7 \times 11$$

$$77 \% 7 = 0$$

$$n \% a \stackrel{?}{=} 0$$

$$n = 2 \times b$$

$$n = 3 \times b$$

$$n = 5 \times b$$

$$\vdots$$

$$n = \sqrt{n} \times \sqrt{n}$$

$$49 = 7 \times 7$$

$$
\begin{array}{r|l}
2 & 48 \\
\hline
2 & 24 \\
\hline
2 & 12 \\
\hline
2 & 6 \\
\hline
3 & 3 \\
\hline
 & 1
\end{array}
$$

$48 = 2^4 \times 3^1$

$28 = 2^2 \times 7^1$

$LCM(48, 28) = 2^4 \times 3^1 \times 7^1$

$GCD(48, 28) = 2^2 \times 3^0 \times 7^0$

$$
\begin{array}{r|l}
2 & 28 \\
\hline
2 & 14 \\
\hline
7 & 7 \\
\hline
 & 1
\end{array}
$$

$28 = 2^2 \times 7^1$

$= 2^2 \times 3^0 \times 5^0 \times 7^1$