Computer algebra is the study of algorithms that perform exact computations and manipulations on algebraic objects. One common obstacle in computer algebra algorithms is intermediate expression swell. That is, the intermediate results encountered during the computation may grow dramatically even though the size of the input and the desired output is small. We illustrate intermediate expression swell on Gaussian elimination and the Euclidean algorithm, two of the most well-known algorithms in mathematics. Then we look at how intermediate expression swell can be controlled in computing normal forms for polynomial matrices and matrices of Ore polynomials. These objects play important roles in control theory and the study of linear differential and recurrence equations. Finally, we show how other techniques can be applied to the computation of the decimal digits of well-known constants, significantly improving on the standard binary splitting algorithm for such computations.