* Why is the design matrix X containing n + 1 columns and not just n?

The design matrix X is derived from the Error function of polynomial functions for writing it as as product of a vector and a matrix. In this error function we need to find a partial derivates for aj , for j = 0, … n getting (n + 1) equations. The fact that we introduce an x0 (normally = 1) involves that the matrix (and tor will have a size of m x (n +1) and in the case of the vector of 1 x (n +1).