Ex: Find the simplest Sum-Of-Products (SOP) form for the following Boolean expression:

\[(A+B)(\bar{A} + \bar{B})C\]

Sol'n: We first use the distributive law to expand the expression. This is akin to "foiling" the terms. (FOIL = first, outside, inside, last)

\[(A+B)(\bar{A} + \bar{B})C = (A\bar{A} + AB + BA + BB)C\]

Terms \(A\bar{A}\) and \(BB\) are zero since a signal cannot be 1 and 0 at the same time.

\[(A+B)(\bar{A} + \bar{B})C = (AB + BA)C\]

We use the distributive law again to get our final answer in SOP form:

\[(A+B)(\bar{A} + \bar{B})C = ABC + BAC\]