1. Build switch circuits to implement the following Boolean algebra expressions. In each case, determine the number of transistors used for the design.
   a) \( F = AB\overline{C}(D + E) \)
   b) \( F = AB(C + \overline{D}) \)
   b) \( F = (A + B)(C + \overline{D}) \)

2. Use DeMorgan's Law to simplify the following expressions to remove long bars (bars over multiple signals).
   a) \( F = A(B + \overline{C}\overline{D}) \)
   b) \( F = (A + \overline{B})(\overline{C} + \overline{D}) \)
   c) \( F = \overline{AB} + \overline{CD} \)